Indian Journal of Library and Information Science

Indexing information: The journal is indexed with google Scholar, Index Copernicus, Poland, EBSCO Publishing's Electronic Databases, USA, Library & Information Science Source, USA, National Science Library, New Delhi, ProQuest, UK, Genamics JournalSeek, Scientific Indexing Services, USA.

Corresponding address: **Red Flower Publication Pvt. Ltd,** 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110 091(India), Phone: 91-11-22754205, Fax: 91-11-22754205, E-mail: redflowerppl@vsnl.net, redflowerppl@gmail.com, Web:www.rfppl.co.in

Printed at: R.V. Printing Press, C-97, Okhla Industrial Area Phase-I, New Delhi - 110 020.

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 google Scholar, Index Copernicus, Poland, EBSCO Publishing's Electronic Databases, USA, Library & Information Science Source, USA, National Science Library, New Delhi, ProQuest, USA, Genamics JournalSeek.

Subscription Information

India

Individual	
1 year	Rs.7200
Life Subscription (Valid for 10 Years)	Rs.72000
Institutional (1 year) Rs.8000	

Rest of the World

Individual (1 year)	USD100
Insitutional (1 year)	USD600

PAYMENT METHOD

By cheque/Demand Draft:

Cheque should be in the name of **Red Flower Publication Pvt. Ltd**. payable at Delhi.

By Bank Transfer / TT:
1. **Complete Bank Account No.** 604320110000467
2. **Beneficiary Name (As per Bank Pass Book):** Red Flower Publication Pvt. Ltd.
3. **Address:** 41/48, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi – 110 091(India)
4. **Bank & Branch Name:** Bank of India; Mayur Vihar
5. **Bank Address & Phone Number:** 13/14, Sri Balaji Shop,Pocket II, Mayur Vihar Phase- I, New Delhi - 110091 (India); Tel: 22750372, 22753401.
Email: mayurvihar.newdelhi@bankofindia.co.in
6. **MICR Code:** 110013045
7. **Branch Code:** 6043
8. **IFSC Code:** BKID0006043 (used for RTGS and NEFT transactions)
9. **Swift Code:** BKIDINBBDOS
10. **Beneficiary Contact No. & E-mail ID:** 91-11-22754205, E-mail: redflowerppl@vsnl.net

Send all Orders to: **Red Flower Publication Pvt. Ltd.,** 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi – 110 091, India, Phone: 91-11-22754205, 45796900, Fax: 91-11-22754205, E-mail: redflowerppl@vsnl.net, Website: www.rfppl.co.in

Indian Journal of Library and Information Science

May - August 2015
Volume 9 Number 2

Contents

Revised Rates for 2015 (Institutional)

Title	Freequency	Rate (Rs): India	Rate ($):ROW
Dermatology International	2	4500	280
Gastroenterology International	2	5000	360
Indian Journal of Agriculture Business	2	4500	300
Indian Journal of Anatomy	2	6000	260
Indian Journal of Ancient Medicine and Yoga	4	7000	330
Indian Journal of Anesthesia and Analgesia	2	5000	600
Indian Journal of Anthropology	2	10500	500
Indian Journal of Applied Physics	2	3500	400
Indian Journal of Biology	2	3000	170
Indian Journal of Cancer Education and Research	2	6500	500
Indian Journal of Communicable Diseases	2	7500	58
Indian Journal of Dental Education	4	4000	288
Indian Journal of Forensic Medicine and Pathology	4	14000	576
Indian Journal of Forensic Odontology	4	4000	288
Indian Journal of Genetics and Molecular Research	2	6000	262
Indian Journal of Law and Human Behavior	2	5000	500
Indian Journal of Library and Information Science	3	8000	600
Indian Journal of Maternal-Fetal & Neonatal Medicine	2	8000	400
Indian Journal of Mathematics and Statistics	2	5000	200
Indian Journal of Medical & Health Sciences	2	6000	120
Indian Journal of Obstetrics and Gynecology	2	5000	200
Indian Journal of Pathology: Research and Practice	2	10000	915
Indian Journal of Plant and Soil	2	5000	1700
Indian Journal of Preventive Medicine	2	6000	250
Indian Journal of Reproductive Science and Medicine	4	3000	180
Indian Journal of Scientific Computing and Engineering	2	4000	280
Indian Journal of Surgical Nursing	3	3000	70
Indian Journal of Trauma & Emergency Pediatrics	4	8500	302
International Journal of Agricultural & Forest Meteorology	2	8000	800
International Journal of Food, Nutrition & Dietetics	2	4000	900
International Journal of History	2	6000	500
International Journal of Neurology and Neurosurgery	2	9000	276
International Journal of Political Science	2	5000	400
International Journal of Practical Nursing	3	3000	70
International Physiology	2	6500	240
Journal of Animal Feed Science and Technology	2	4000	280
Journal of Cardiovascular Medicine and Surgery	2	9000	238
Journal of Orthopaedic Education	2	4500	190
Journal of Pharmaceutical and Medicinal Chemistry	2	15000	350
Journal of Psychiatric Nursing	3	3000	70
Journal of Social Welfare and Management	4	7000	276
Meat Science International	2	5000	500
Microbiology and Related Research	2	6000	150
New Indian Journal of Surgery	4	7000	360
Ophthalmology and Allied Sciences	2	5000	150
Otolaryngology International	2	4500	300
Pediatric Education and Research	4	6500	150
Physiotherapy and Occupational Therapy Journal	4	8000	360
Urology, Nephrology and Andrology International	2	6500	350

Terms of Supply:

1. Advance payment required by Demand Draft payable to Red Flower Publicaion Pvt. Ltd. payable at Delhi.
2. Cancellation not allowed except for duplicate payment.
3. Agents allowed 10% discount.
4. Claim must be made within six months from issue date.

Order from

Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110 091 (India), Tel: 91-11-22754205, 45796900, Fax: 91-11-22754205. E-mail: redflowerppl@vsnl.net, redflowerppl@gmail.com, Website: www.rfppl.co.in

Indian Journal of Library and Information Science
Volume 9 Number 2, May - August 2015

Original Article

Research Publications of G B Pant University of Agriculture and Technology: A Scientometrics Study

Sanjay Kumar Kaushik

Abstract

In any modern society, information and knowledge are taken as the social wealth. India is an agriculture based country. Under such conditions, effective dissemination of agricultural information is of paramount importance. It is the fact that agricultural practices and research have opened new avenues for all those associated with the field of agriculture science viz. researchers, scientists, farmers, entrepreneurs, policy makers, etc. The present paper reports the results of a Scientometrics study conducted on the research publications of researchers, scientists and faculty of G B Pant University of Agriculture and Technology, Pant Nagar. It is found that on an average about 210 publications are contributed every year. The average number of authors per publication is 3.68. The contributions include 85% share in the form of research articles. The degree of collaboration is 0.98.

Introduction

India is an agriculture dependant country. **"**After independence, development of the rural sector was considered the primary concern of the Government of India. In 1949, with the appointment of the Radhakrishnan University Education Commission, imparting of agricultural education through the setting up of rural universities became the focal point. Later, in 1954 an Indo-American team led by Dr. K.R. Damle, the Vice-President of ICAR, was constituted that arrived at the idea of establishing a 'Rural University' on the land-grant pattern of USA. As a consequence a contract between the Government of India, the Technical Cooperation Mission and some land-grant universities of USA, was signed to promote agricultural education in the country. The US universities included the universities of Tennessee, the Ohio State University, the Kansas State University, The University of Illinois, the Pennsylvania State University and the University of Missouri. The task of assisting Uttar Pradesh in establishing an agricultural university was assigned to the University of Illinois which signed a contract in 1959 to establish an agricultural University in the State. Dean, H.W. Hannah, of the University of Illinois prepared a blueprint for a Rural University to be set up at the Tarai State Farm in the district Nainital, UP. In the initial stage the University of Illinois also offered the services of its scientists and teachers. Thus, in 1960, the first agricultural university of India, UP Agricultural University, came into being by an Act of legislation, UP Act XI-V of 1958. The Act was later amended under UP Universities Re-enactment and Amendment Act 1972 and the University was rechristened as Govind Ballabh Pant University of Agriculture and Technology keeping in view the contributions of Pt. Govind Ballabh Pant, the then Chief Minister of UP. The University was dedicated to the Nation by the first Prime Minister of India Pt Jawaharlal Nehru on 17 November 1960.

The G.B. Pant University is a symbol of successful partnership between India and the United States. The establishment of this university brought about a revolution in agricultural education, research and extension. "It paved the way for setting up of 31 other agricultural universities in the country" [1].

Objectives

The present study is an attempt to identify the various bibliometric aspects of the research

Author's Affilation: Assistant Librarian (Stage –4), Maharshi Dayanand University, Rohtak-124001 (Haryana).

Reprint's Request: Sanjay Kumar Kaushik, Assistant Librarian (Stage –4), Maharshi Dayanand University, Rohtak-124001 (Haryana).
E-mail: kaush_s@rediffmail.com

publications of the researchers and faculty of G B Pant University of Agriculture and Technology, Pantnagar, Uttrakhand. The objectives of the study are:

- To know the authorship pattern in Agriculture Science
- To identify the proportion of single versus multi authored articles
- To study the degree of collaboration in the field of Agriculture Science
- To analyze the trend in the average number of authors per paper
- To analyze year wise research productivity and growth pattern
- To know the most preferred journals in the field of Agriculture Science

Methodologies Adopted

The study is conducted by attempting an advanced search with the help of Boolean operators on the Scopus database. The search is restricted to G B Pant University of Agriculture and Technology, Pantnagar and time period of 2010 to 2014. After retrieving the data, the data was saved in MS-Excel and refined to avoid the noise, and codified. To get the results in tabular form SPSS has also been used. On some aspects, the analysis facility available within Scopus has also been utilized.

Results

The results obtained on the basis of different parameters are presented in the form of tables along with description under the different subheadings.

Year wise distribution and growth trend

A total of 1047 research publications have been contributed by the researchers, scientists and faculty members of G B Pant University of Agriculture and Technology, Pantnagar (GBPUAT) during the period of study. The year 2012 attracted the highest number of contributions amounting to 234. On the other hand year 2014 have least number of contributions i.e. 160. The average number of contributions per year is 209.4. The growth pattern indicates a downward low.

Table 1: Showing the year wise contributions

YEAR	Number of contributions
2014	160
2013	223
2012	234
2011	231
2010	199

Authorship Pattern

No solo authorship trend is indicated from the results as mere 2.5% of the total contributions are single authored, which is almost equal to that of CCSHAU, Hisar [2]. Almost half of the total contributions are double and triple authored contributions. About 1% of the contributions have more than 10 contributors. The average number of authors per contribution is 3.68.

Table 2: Showing the Authorship wise contributions

No. of Authors	Frequency	Per cent
1	26	2.5
2	269	25.7
3	258	24.6
4	229	21.9
5	126	12.0
6	77	7.4
7	28	2.7
8	16	1.5
9	8	.8
10	3	.3
11	1	.1
12	4	.4
14	1	.1
15	1	.1
Total	**1047**	**100.0**

Degree of collaboration

To measure the collaboration in research a formula designed by K Subramanyam [3] is used. The formula is as under:

$$C = NM/(NM+NS)$$

Where C is Degree of Collaboration, NM is number of multi-authored contributions and NS is number of single authored contributions. In other words it is the ratio of the number of multi-authored contributions to total contributions.

The degree of collaboration in the contribution of GBPUAT is 0.98, almost equal to that of CCSHAU [4] is 0.99. The study also supports the results of Raja Ramanna Centre for Advanced Technology contributions [5]. The researchers and scientists at GBPUAT had foreign research collaboration with twenty eight other countries. The highest foreign research collaboration is with United States followed by UK. While comparing the foreign collaboration of GBPUAT and CCSHAU, the foreign collaboration of CCSHAU is higher than that of GBPUAT.

Table 3: Showing Top Ten Foreign Collaborations

COUNTRY/TERRITORY	No. of contributors
United States	16
United Kingdom	7
France	6
Germany	6
Japan	6
Philippines	6
Australia	4
Ethiopia	3
Switzerland	3
Canada, Italy, Namibia, Taiwan	2 each

Subject-wise distribution of contributions

More than half of the (535) contributions belong to the field of Agriculture and Biological Sciences. Biochemistry, Genetics and Molecular Biology have 165 contributions and an equal number of contributions belong to Veterinary. There are

Table 4: Showing major subject-wise contributions

Subject Area	No. of contributions
Agricultural and Biological Sciences	535
Biochemistry, Genetics and Molecular Biology	165
Veterinary	165
Engineering	142
Environmental Science	110
Materials Science	88
Physics and Astronomy	67
Chemistry	61
Immunology and Microbiology	59
Medicine	49
Business, Management and Accounting	39
Chemical Engineering	34
Computer Science	33
Pharmacology, Toxicology and Pharmaceutics	29
Earth and Planetary Sciences	26
Energy	24
Social Sciences	19
Multidisciplinary	17
Mathematics	13
Nursing	5
Health Professions	3
Arts and Humanities	1
Decision Sciences	1
Economics, Econometrics and Finance	1

contributions even in the subject of Arts and Humanities and social Sciences. This shows that GBPUAT has a blend of inter disciplinary faculty.

Table 5: Showing Type of contributions

Document Type	No. of contributions
Article	929
Conference Paper	55
Review	32
Article in Press	14
Letter	6
Book Chapter	5
Note	3
Short Survey	3

Document type wise Distribution of contributions

The results indicate that 89% of the contributions are in the form of research article, whereas conference Paper (55) and Review (32) are the other significant forms of document.

Preferred journals

The contributions of GBPUAT are scattered over one hundred fifty three journals of national and international repute. Indian Journals of Animal Sciences is on top position with 54 contributions published in it. Indian Veterinary Journal, Indian Journal of Agricultural Sciences, and Indian Journal of Horticulture stand at number two, three and four position respectively.

Table 6: Showing Top Ten Journals

Source Title	No. of Contributions
Indian Journal of Animal Sciences	54
Indian Veterinary Journal	39
Indian Journal of Agricultural Sciences	37
Indian Journal of Horticulture	33
Veterinary Practitioner	23
Journal of Food Science and Technology	18
Molecular Biology Reports	16
Vegetos	14
Indian Journal of Agronomy	12
Annals of Biology	10
Indian Journal of Agricultural Research	10
Veterinary World	10
Man Made Textiles in India	10
Veterinarski Arhiv	9
Annals of Agri Bio Research	9
Pestology	9
Indian Journal of Genetics and Plant Breeding	9
Applied Biochemistry and Biotechnology	8
AMA Agricultural Mechanization in Asia Africa and Latin America	8
Journal of Environmental Biology	8
Plant Signaling and Behavior	8
Journal of Materials and Environmental Science	8

Top Performers

As far as the total number of contributions during the period of study is concerned, Agrawal, Hari M. is on the top with 37 contributions. Ramesh Chandra Srivastava occupies the second position and Alok K Shukla stands at third position.

Table 7: Showing the Top Performers

Contributor	No. Of contributions
Agrawal, Hari M.	37
Srivastava, Ramesh Chandra	29
Shukla, Alok K.	22
Srivastava, Prakash Chandra	20
Goel, Reeta	19
Singh, Vinay Kumar	18
Rai, Jai Prakash Narayan	18
Zaidi, Mohd Ghulan Haider	17
Dixit, Gagan	17
Goel, Alka	15
Bhatt, Prakash	15
Kumar, Jatinder Dinesh	15

Table 8: Showing the Top Ten Collaborating Institutes

Affiliation	No. of Contributions
Indian Veterinary Research Institute	48
Indian Agricultural Research Institute	36
College of Veterinary and Animal Science, Palampur	27
CCS Haryana Agricultural University	20
Inter University Accelerator Centre India	18
Kumaun University India	16
Banaras Hindu University	14
Hemwati Nandan Bahuguna Garhwal University	12
Punjab Agricultural University India	11
Indian Institute of Technology Delhi	11
Indian Council of Agricultural Research	10
International Centre for Genetic Engineering and Biotechnology	10

Top Ten Collaborating Institutes

The researchers of GBPUAT have collaboration with other institutions. Among these, Indian Veterinary Research Institute is ranked as first, Indian Agricultural Research Institute as second and College of veterinary and Animal Science as third.

Conclusion

Research is really a matter of team work. The results of this study also support the previous findings and indicate that there is a collaborative and team research trend in the field of agriculture science. The growth rate of publications shows a downward trend, which is point of concern for agriculture scientists. The researchers, scientists and faculty of GBPUAT are having a vast degree of collaboration not only within India but outside as well. Most of their contributions are published in the form of research articles; it means the output of their research is reaching first hand to the agriculture science community in the Primary sources of information. This is a great sign for the growth and development in the field of agriculture science and technology. In a nutshell we can say that GBPUAT is contributing significantly towards the research and development of agriculture science.

References

1. http://www.gbpuat.ac.in/history.htm
2. Kaushik, Sanjay K. Scientific Contributions of CCS Haryana Agriculture University, Hisar: A

Scientometric Study. Indian Journal of Library and Information Science. 7(3); Sept.-Dec. 2013; pp. 219-226.

3. Subramayam, K. Bibliometric study of research collaboration: A review. Journal of Information Science. 6; 1982; 33-38.

4. Kaushik, Sanjay K. Op. Cit. Rajendiran, P. Quantitative analysis of research publications of Raja Ramanna Centre for Advanced Technology, Indore: A bibliometric study from 1995-2004. IASLIC Bulletin; 51(4); 2006; 228-233.

Indian Journal of Library and Information Science
Volume 9 Number 2, May - August 2015

Original Article

E-Publishing and Collection Development: A Study of Current Practices and Status in Central Library, University of Delhi, New Delhi and Central Library, Jawaharlal Nehru University, New Delhi

***Ruchi Jain, **Shiva Kanaujia Sukula**

Abstract

Central Library, University of Delhi, New Delhi (DUCL) and Central Library, Jawaharlal Nehru University, New Delhi (JNUCL) are among the leading libraries of India which are serving to a vast number of users concerned with numerous subjects and disciplines. The present article highlights facets of technologies and procedures being used by these libraries. The paper discusses about the collection development especially of the e-resources in the perspectives of electronic publishing. In this digital era it is imperative to analyze the impact of e-resources on the traditional print resources as well as to check the effectiveness of the collection and development process. With the easy access and retrieval of the information, the libraries are providing efficient services, the same has been tried to study in both of these libraries and a comparative study has been made.

Keyword: E-resources; Collection Development; Information Technology; Impact.

Introduction

Today is the age of computer technology. Through it comes many changes of life and method of knowledge. New storage media as well as mechanisms of access have brought up the changes in usual approaches to the library and its services. Uprising computer age has taken on the world of publishing also. Now paperless and electronic publishing are ahead distinction. In changing circumstances libraries and librarians will have to play a more important part and key of the managing print and electronic publishing. The core aim of electronic publishing is to provide simple, powerful and easy reach to the information content in the publication.

The computer age has fully changed customs of publishing company. The age of e-publishing has brought a very big change in publishing world. It is very difficult that the fast change and trend of internet and its use has greatly precious and style of use hugely effect print publishing a very large change. Internet and multimedia is the real challenge for publishing industry.

There are various factors which functions as benefits also when the electronic publishing is taken into account. These may not be limited to portability, fast renewals, enhancing the features and pleasures of reading. Librarians grow with these advanced technologies, they would be selection & decision with care for these types product e-publishing is base of books, journals and magazine by electronic rather than print.

Review of Literature

The published literature in any area of study reflects the developments and changes occurred. The literature on e-publishing and collection development in libraries does not leave behind any other narrower aspect of librarianship.

According to Singh, Kapila and Pateria (2007), the libraries are upgrading in response to the advancements of ICT. Most of the libraries are equipped with printed collection along with digital resources, not present physically but available for use. The technology has acted as catalyst for digital revolution of the libraries. In purview of this, libraries will need re-defining or re-engineering.

Okello-Obura and Magara (2008) investigated electronic information access and utilization at the

Author's Affilation: *Research Scholar, Dr. K. N. Modi University, Newai, Rajasthan. **Deputy Librarian, Central Library, Jawaharlal Nehru University, New Delhi.

Reprint's Request: Ruchi Jain, C-13, Fafrana Road, Modinagar, Ghaziabad, Uttar Pradesh, Pin- 201204.

E-mail: ruchi.library@gmail.com

East African School of library and Information Science, Maker ere University, Uganda and revealed that users derived a lot of benefits from electronic resources gaining access to a wider range of information and improved academic performance as a result of access to quality information. The usage patterns and library patron attitudes toward e-books is significant in developing a collection development policy. The purchasing and acquisition of electronic resources is subject to users' feedback also.

Shelburne, Wendy Allen (2009) evaluated the university communality's finding and knowledge of e-books, their likes and dislikes with respect to e-books available in digital form as against print, and their forecast of exploiting electronic and print books materials in the future. They found e-books have become a vital part of the libraries in the digital era. They studied in collaboration with Springer, segregated e-book awareness and attitudes into faculty, graduate student, and undergraduate student constituent groups. The users' response is related with their demands as well as utility of electronic resources on a broader level.

According to Sharma, Chetan (2009), the availability of e-resources in a university library is quite general. But their effective utilization is a matter of concern, with the knowledge of the preferences and importance of online-resources among the teachers and research scholars.

Adeniran, Pauline (2011) investigated the correlation between Service quality and users' satisfaction at Redeener's University and evaluated the importance of user surveys in a variety of previously published literatures.

Thanuskodi, S. (2012) focused his research on evaluating the use of e-resources by the post graduate students and research scholars of Faculty of Arts in the Annamalai and found out that maximum users were aware of the availability of e-resources. He analyzed that many of the respondents search e-resources through linking facility available on the library website.

Chauhan, Sharma & Tomar (2012) studied the extent of use of e-resources by post graduate students, research scholars and faculty members at Ratan Tata Library, University of Delhi, (DU) Delhi with the aim to identify the hurdles faced by the users and suggested solutions for their improvement. It was found that majority of subjects were acquainted with various types of e-resources, e-database, e-books and e-journals. Enhancement in the access facilities were recommended, with more computer terminals, high internet speed, including Wi-Fi connectivity and subscription to more e-resources by the University of Delhi Library System (DULS). A change in the users' approach was noticed in using electronic resources over print, including internet, website or Rattan Tata Library (RTL) and Faculty Of Management Studies (FMS), Online Public Access Catalogue (OPAC), etc. by the users of RTL and FMS. The usefulness of electronic resources over print resources was also discussed i.e., technical ability for a single copy to be made accessible by multiple users; their durability their use in preservation; the fact they don't go out or print; their ability to support distance learning; and their potential to provide users with access 24/7.

According to Lefevre and Huwe (2013), in the previous time when the internet was introduced, libraries focused on switching to the services online and collection development. The developments in the past few decades have witnessed the librarians acting as focal points in the world of digital publishing. Librarians join the ranks of many others who have discovered the barriers around digital publishing are lower than ever. Library-based digital publishing solutions have grown-up to the extent that digital publishing has the potential to be core competency for the library profession. The study revealed that librarians are equipped with the requisite skills to become digital publishers. Researchers opined that library-based Web publishing services can strengthen total growth of information management programs and also press forward the status of libraries within their respective host organization. The relative simplicity of digital publishing has paved the way for librarians to chase the user as they use the Web in creative ways.

Objectives of the Study

As the libraries have included the electronic resources in their collection due to the demands and impacts of electronic publishing, the library scenario with the users' demands in mind compels to study and analyze how these libraries are progressing towards e-resource collection development. The present research is an endeavor to answer the questions discussed here.

- To find out collection development policies in context of e-publishing in University of Delhi (DU) Library and Jawaharlal Nehru University (JNU) Library.
- To explore the current practices of selection and evaluation of e-collection development in University of Delhi (DU) Library and Jawaharlal Nehru University (JNU) Library.

- To study the emerging new information environment of impact of e-publishing in University of Delhi (DU) Library and Jawaharlal Nehru University (JNU) Library.

Research Methodology

In this study, questionnaire has been used for data collection. Data has been collected by the questionnaires designed for Librarians, from Central Library of University of Delhi and Jawaharlal Nehru University. A detailed as well as structured questionnaire was designed with the aim to study the current practices of collection development in the perspectives of electronic publishing. The questionnaire has been designed in such a way as it could find out the intricate methods of collection development in context with electronic publishing in these significant libraries.

Data Analysis and Discussion

Data analysis is comprised of the responses in the questionnaire reveals facts for comparisons between Central Libraries of DU and JNU. Data collected with the help of questionnaires is presented in the tables below.

Table 1: Year of Establishment

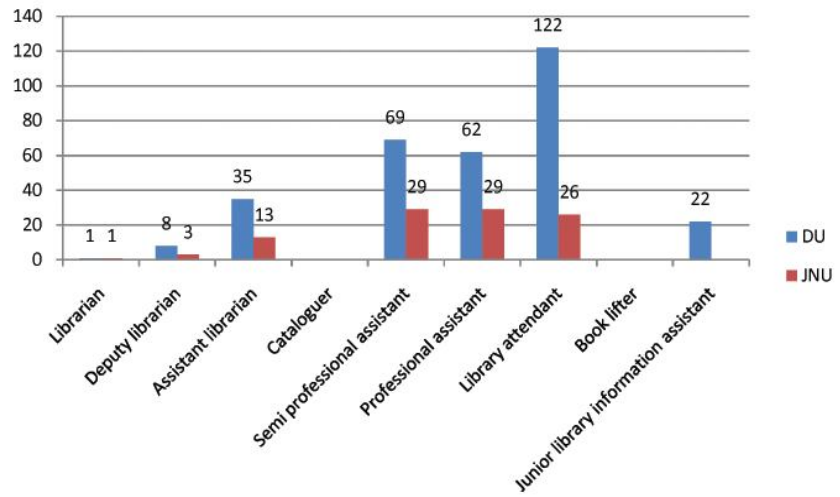
Sr. No.	Name of University	Year of Establishment
i.	DU	1922
ii.	JNU	1969

It is evident from the years of establishment mentioned in the table-1 that both the libraries are serving the academic communities since a long time. The libraries have gone through a long phase of development, alteration and adoption of technologies in their functions as well as services.

Table 2: Library Staff

Sr. No.	Posts	DU	JNU
i	Librarian	1	1
ii	Deputy librarian	8	3
iii	Assistant librarian	35	13
iv	Cataloguer	-	-
v	Semi professional assistant	69	29
vi	Professional assistant	62	29
vii	Library attendant	122	26
viii	Book lifter	-	-
ix	Any other (please specify)		
	a) Junior library information assistant	22	-
	b) Machine operator	1	-
	c) Tech. assist.		1
x	Total staff	320	101

Fig. 1:



Data in the table-2 and figure-1 above reveal the number of Library Staff in DU and JNU. There are 1 Librarian, 8 Deputy Librarian, 35 Assistant Librarian, 69 Semi-professional assistant, 62 professional assistant, 122 Library attendants, and 22 Junior Library Information Assistant, and 1 Machine operator in DU. The total number of Library staff of DU is 320.

JNU has 1 Librarian, 2 Deputy Librarian, 13 Assistant Librarian, 29 Semi-professional assistant, 29 professional assistant, 26 Library attendants and 1 Technical assistant. The total number of Library staff of JNU is 101.

Table 3: Total Collection of Print Material

Sr. No.	Types of Print Sources	DU	JNU
i.	Books (text books)	2,00,000	5,50,000 (including all)
ii.	Reference books	60,000	-
iii.	National journals	198	-
iv.	International journals	222	-
v.	Research report	-	-
vi.	Dissertation/thesis	17805	22000
vii.	Manuscripts	2100	-
viii.	Conference Proceedings	500	-
ix.	Research monograph	-	-
x.	Any other (please specify)	-	-

Figures in the Table-3 above; provide a comparative fact sheet about print material available in the libraries of DU and JNU. It is evident that both the libraries are equipped with text books. JNU has 550000 text books and 22,000 dissertations. DU has 200000 text books, 60,000 reference books, 198 National Journals, 222 International Journals, 8482 Dissertations, 17805 Thesis, 2100 Manuscripts and 500 Conference Proceedings. There has not been provided information regarding the research report and monographs in both libraries.

Table 4: Periodicals Subscribed

Sr. No.	Types of Periodicals	DU	JNU
i	Print Periodicals	420	437
ii	Online Periodicals	170	1000

Fig. 2:

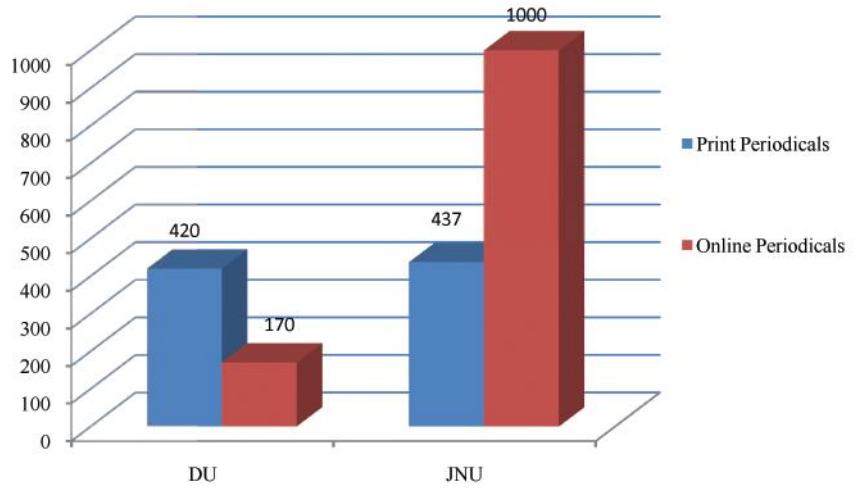


Table-4 reveals about the number of Periodicals subscribed. On one hand, DU has 420 Print Periodicals and 170 Online Periodicals, on the other hand, JNU has 437 Print periodicals and about 75 databases (include approx. 1000 online periodicals). The figures of online periodicals reflect the subscribed as well as consortium based periodicals in these universities.

Table 5: E-Journals Subscribed Through Consortia

Sr. No.	Consortium	DU	JNU
i	INDEST	✓	-
ii	UGC Info net	✓	✓
iii	EBSCO	-	✓
iv	Total IT Solution	-	-
v	Other	-	-

While comparing the E-journals subscribed through consortia, the figures in the table-5 provide us the information that DU is equipped with e-journals through INDEST and UGC INFONET Consortium but JNU has subscribed from UGC Infonet, EBSCO. During discussion with the acquisition staff, it has been found that JNU library is providing ebooks / databases from ProQuest, Cambridge University Press, and Oxford University Press etc.

Table 6: Sources of Finance for the Library Collection

Sr. No.	Sources of finance	DU	JNU
i	UGC grant	✓	✓
ii	Special grant	✓	-
iii	Library fine	-	-
iv	Library fees	-	-
v	Any other	-	-

A careful analysis of the data in the Table-6 above gives the information about sources of finance of the library collection. DU is financially supported by UGC grant and Special grant. JNU Central Library is funded through UGC grant only. No other sources of finance are mentioned in both the libraries. But it may be assumed that the collection of library fines do exist due to rules and regulations.

Table 7: Initiation of E-resources & Electronic Services

Sr. No.	Universities	Year
i	DU	2006
ii	JNU	2000

Table-7 Conveys the years since when these libraries are providing the e-resources and Electronic Services. DU provides the e-resources and Electronic Services since the year 2006 and JNU provide e-resources and Electronic Service since the year 2000. Both the libraries are serving the users since a long time but these libraries have started providing e-resources only since last decade.

Table 8: Initiation of E-resources and Services

Sr. No.	Initiation of E-resources and Services	DU	JNU
i	To Modernization your library	-	✓
ii	Reservation	-	-
iii	Building space	-	-
iv	Easy access	✓	✓

Comparative analysis of the information in the table-8 above reveals that in DU Central Library, easy access was the cause for initiating and using e-resources. The analysis of response regarding JNU Central Library, there are two reasons mentioned above in the table. Modernizations of the library as well as easy access have been the factors to initiate the e-resources purchasing/subscribing. No responses were received in any other category in both of the libraries.

Table 9: Motivation for E-resources Collection

Sr. No.	Sources of motivation	DU	JNU
i	Vice chancellor	✓	-
ii	Library committee	✓	-
iii	Faculty members	✓	-
iv	Research scholars	✓	✓
v	Students	✓	✓

Data in table-9 reveals the motivators for e-resources Collection in the libraries of DU and JNU. It is evident from the information in the table that Vice chancellor, Library Committee, faculty members, research scholars and students motivate for e-resources Collection to DU. in JNU Central Library, the picture is slight different as research scholars and students motivate for e-resources collection to JNU library.

Table 10: Influential in e-resource Policy

Sr. No.	Influential in e-resource policy	DU	JNU
i	Vice chancellor	-	-
ii	Library committee	✓	-
iii	Faculty members	-	✓
iv	Research scholars	-	-
v	Students	-	✓

The above table reflects the motivating factors as well as influencing factors for the formulation of e-resource policy. Utilization of the e-resources in the library and the policy regarding it in both of the libraries is influenced by the top authorities starting from Vice Chancellor to the end user "the students". The analysis of the facts presented in the table-10 above states the influence on e-resources policy in both Universities. Library committee influences and plays a major role in framing and implementing e-resources policy of DU, while in JNU the faculties and students have a major role in influencing, framing and implementing the policy for e-resources.

Table 11: Efforts to promote the E-resources

Sr. No.	Efforts	DU	JNU
i	Creation of web portal	✓	✓
ii	Mouth to mouth publicity	✓	-
iii	Print pamphlets/ Notices to departments	✓	-
iv	Through E-mail	✓	✓
v	Through alerts	✓	✓
vi	Through Social Networking	✓	✓

Table-11 gives the information about various types of efforts to promote the e-resources. While in DU, this promotion is done by all the listed ways including creation of web portal, mouth to mouth

publicity, print pamphlets / Notices to departments, through E-mail, through alerts and through Social Networking. But in JNU, e-resources are promoted only through creation of web portal, through E-mail, through alerts and through Social Networking. There is no data is available about e-resource promotion through mouth to mouth publicity, print pamphlets / Notices to departments in JNU. It seems that DU Central Library has incorporated both the ways to promote the e-resources i.e. conventional as well as IT based. JNU Central Library has reflected the use of IT based methods to promote the e-resources.

Table 12: Separate Section for E-resources

Sr. No.	Universities	YES	NO
i	DU	✓	-
ii	JNU	✓	-

It is evident from the table-12 that both of the universities are committed to devote their efforts for creating a separate section for e-resources. When this table is analyzed in connection with the table-11above, it can be concluded that both libraries are dedicatedly making efforts for promotion of e-resources also. The observation made during visit to JNU Central Library compelled to state here that separate reading halls are available to users to access the e-resources.

Table 13: Staff working in e-resource Section

Sr. No.	Staff	DU	JNU
i	No. of professional having computer knowledge	12	04
ii	No. of professional without computer knowledge	0	02
iii	No. of non professional	1	0

Fig. 4:

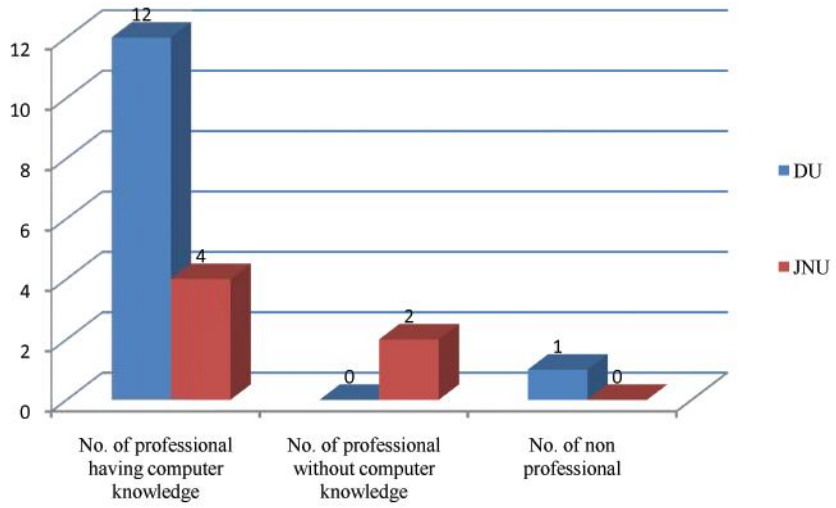


Table -13 shows the capacity of staff which is working in e-resource section. The comparison reveals that DU library is more equipped with staff in the e-resources section than JNU library. There are 12 professionals in DUCL who are working for the e-resource section and have computer knowledge but number of professionals without computer knowledge in this section is nil and there is 1 non-professional who works for e-resource section. While in JNU, there is less number of professionals who are working for this section and have computer knowledge (only 04) and two professionals working in this section do not have computer knowledge. Also there is no any non-

professional in this section at JNU. Observations made during the visit reflect the transition and development phase of this section in JNU Central Library.

Table 14: Software using for e-resource Section

Sr. No.	Software	DU	JNU
i	Soul	-	-
ii	Libsys	-	-
iii	koha	-	-
iv	Ebrary	-	-
v	Green stone	-	-
vi	Dspace	✓	✓
vii	Any other (please specify)	-	VIRTUA

Table -14 reveals the information about the software being used for e-resource section in both Universities. Among the various software available for utilizing e-resources DU library uses only one software which is D-space while in JNU library D-Space and VIRTUA software are used. The reason for not using other available software was out of the scope of the current study and can be explored in future researches. It is worth mentioning here that VIRTUA is library automation and management software which is being used for managing and facilitating access to e-resources.

Table 15: E-resource section policy

Sr. No.	Universities	YES	NO
i	DU	✓	-
ii	JNU	✓	-

This table shows that both Universities libraries (DU and JNU) have e-resource section policy. The presence of e-resource policy informs about the enthusiasm as well as gravity of these libraries towards collection building in the perspectives of electronic publication.

Table 16: Participants' in e-resource Selection Policy

Sr. No.	Participants	DU	JNU
i	Vice chancellor	-	-
ii	Library committee	✓	✓
iii	Faculty members	-	✓
iv	Research scholars	-	✓
v	Students	-	✓
vi	Any other	-	✓

Table-16 gives the information about Participants' in e-resource selection policy in DU and JNU. Only Library committee participation in e-resource selection policy at DU. There is Library committee, Faculty members, Research scholars, Students and any other which are not included in this table, Participants' in e-resource selection policy at JNU. The data reflects the inclusion as well as role of various kinds of users in these libraries. The e-resource selection process and policy at JNU Central Library gives opportunity to various kinds of users to participate in collection building.

Discussion on Findings

1. Collection and development of e-resources initiates with library staff and the study finds that both DUCL and JNUCL are equipped with sufficient number of library staff. Though the aspect of continuous development and change cannot be denied so both the libraries are moving further in the direction of having trained and efficient manpower to provide e-resource based services.
2. The study finds that both DUCL and JNUCL are well equipped with print and non-print materials, however more print material is available in DUCL as compared to JNUCL and more non-print material is available in JNUCL than DUCL. However, the inclination towards electronic resources is reflected and libraries are considering the options and direction due to electronic publishing.
3. The number of online periodicals is high in both the libraries. There may be the factors such as easy access as well maintenance facets towards subscription of online periodicals.

4. DUCL has subscribed e-journals through two consortia (INDEST and UGC INFONET) while JNUCL uses e-journals subscribed through (UGC INFONET and EBSCO). This side of consortium based service is because of types of users present in these libraries.
5. Utilization of the e-resources in the library and the policy regarding it in both of the libraries is influenced by the top authorities as well as inclusion of kinds of users in selection and policy framing process. It is found that the faculties and students have a major role in influencing, framing and implementing the policy for e-resources.
6. Various ways to promote the e-resources have been found in both of the libraries. It is evident that conventional as well as ICT based methods are being applied in order to inform and creating awareness among the users.

Conclusion

It can be concluded based on the findings that both JNUCL and DUCL are updated with the digital collection and are among the world class libraries regarding their collection. These libraries are continuously planning to provide the best available resources. The provisions and the status of the transition from print to digital collection, reflects the collection building in the perspective of electronic publishing. There are certain areas which clearly indicate the effect of electronic publishing. Since the huge cost and expenditure is involved in acquiring, subscribing and maintaining the electronic resources, so both the libraries are taking actions for promotion and awareness of e-resources and have dedicated policies for the same. Essential software required for making the e-collection usable is available in both libraries. The status of library staff i.e. trained and eager to serve the users is really as asset of these libraries. The present number of staff as competent with information literacy skills is pillar of these libraries. It can be concluded that collection development policies in these libraries are moving in right direction along with electronic publishing.

References

1. Chauhan, Jai karan Singh, Sharma, Lokesh and Tomar, Manju, Dynamic Shift from Print to Electronic Resources. International Journal of Information Technology and Business Management 2012; 1: 1. http://www.jitbm.com/Volume1/EResources.pdf.
2. Lefevre, Julie and Huwe, Terence K., Digital Publishing from the Library: A New Core Competency. Journal of Web Librarianship 2013; 7: 2190-214.
3. Pauline, Adeniran, User satisfaction with academic libraries services: Academic Staff and students perspectives. International Journal of Library and Information Science 2011; 3: (10) 209-216.
4. Saxena, Archana, Electronic publishing: impact of ICT on academic libraries.670-672. ICAL2009.
5. Sharma, Chetan, Use and Impact of E-Resources at Guru Gobind Singh Indraprastha University (India): A Case Study. Electronic Journal of Academic and Special Librarianship 2009; 10: 1. (Spring 2009).
6. Singh, Balwan, Kapila, P.C. and Pateria, Rajive, University Libraries in digital environment: vision 2020. ILA Bulletin 2007; 43: 35-12.
7. Thanuskodi, S., Use of E-resources by the Students and Researchers of Faculty of Arts, Annamalai University. International Journal of Library Science 2012; 1: 11-7. http;//creative commons.org/licenses/by/2-0.Accessed 8th November, 2011.
8. Thornton, Glenda A., Impact of Electronic Resources on Collection Development, the Roles of Librarians, and Library Consortia. Library Trends 2000; 48: 4843-845.

Web Links

1. Okello-Obura, C. and Magara, E., Electronic Information access and utilization by Maker ere University in Uganda. Evidence Based Library and Information Practice 2008; 3: 3. http://ejournals.library.ualberta.ca/index.php/EBLIP/article/view/935/3328
2. Shelburne, Wendy Allen., E-Book usage in an academic library: Usage attitudes and behaviors. *Library: collections, acquisitions, and technical services.* 2009; 33: 259-72. http://www.sciencedirect.com/science/article/pii/S1464905509000311.
3. Thakur, D.S. and Thakur, K.S., Electronic publishing and its future. 2002:1-3. http://www.nuepa.org/libdoc/e-library/articles/2002dst.pdf.

Indian Journal of Library and Information Science
Volume 9 Number 2, May - August 2015

Original Article

Dimensions of Scientometric Research in India (2000-2012): A Bibliometric Study

Bulu Maharana*, Indurekha Baghel, Sabitri Majhi*****

Abstract

The paper analyses the various dimensions of scientrometric research in India during 2000-2012. The research data was collected from Google Scholar and Scopus data bases. Bibliometric analysis of the growth in literature, authorship pattern, themes of research, ranking of authors, source of publication, international collaboration, accessibility, etc. were made based on the citations of published literature over a period of 12 years. The study found the year 2012 as the highest productive year in scientometric research with 115 (16.66%) research papers on published in India. Highest number of papers i.e. 201 (29.13%) were authored by Two authors jointly. The highest number of publications 495 (71.73%) are subject / topic based on scientometric studies. B.M. Gupta is the most productive author 40 (5.79%). The highest affiliations of authors are National Institute of Science, Technology and Development Studies (NISTAD), New Delhi with 65 (9.42%) scientometric research publications. The international collaboration of publication has very low in India.

Key words: Scientometrics; Scientometric Research; Bibliometric Study.

Introduction

Scientific research has always been playing an important role in social, economic and physical development of a country. The outcome of scientific research produces social wellbeing directly or indirectly. Thus, promotion of scientific research has become a worldwide phenomenon at each level. The usage and impact of any research particularly scientific research is being measured through bibliometric analysis of citations of research publications. Scientific publications seems to have provided the best available basis for measuring the outputs of individual scientists as there is a good correlation between the eminence of scientists and their sustained research publications (Price, 1986). Nowadays the scientometrics is used for studying mainly the quantitative aspects of science and therefore it is otherwise termed as '*science of science*'. It is considered as a complete disciplinary field with clearly outlined subjects of research, specific set of good elaborated research methods and techniques. A well developed research community across the world are engaged with scientometric research. The international journal *Scientometrics* published since 1979 by Springer has been devoted to original studies, short communications, preliminary reports, review papers, letters to the editor and book reviews on scientometrics.

Scientometric techniques are being used for several of purposes in science like evaluation of scientific output by analyzing author collaboration, output of publication, authorship pattern, citation impact etc., can be measured by this technique. Scientometrics is a discipline which analyses scientific publications and citations appended to the papers to gain an understanding of the structure of science, growth of science at global level, performance of a country in a particular domain, performance of institutions, departments / divisions, and scientific eminence of an individual scientist. Research publications are clearly one of the quantitative measures for the basic research activity in a country. It must be added, however, that what excites the common man, as well as the scientific community, are the peaks of scientific and technological achievement, not just the statistics on publications.

Objectives and Scope of Research

The present study limits its scope to two citation databases Scopus and Google Scholar as source

Author's Affilation: *Reader & Head,** M.Phil Scholar ***Lecturer, P. G. Dept. of Library and Information Science, Sambalpur University, Jyoti Vihar, Burla, Odisha-768 019.

Reprint's Request: Bulu Maharana, P. G. Dept. of Library and Information Science, Sambalpur University, Jyoti Vihar, Burla, Odisha-768 019.
E-mail: bulumaharana@gmail.com

databases. The study also has the following objectives:

- To quantify research publications in the areas of scientometric research in India.
- To study the year wise growth of scientometric research publications in India.
- To identify the most productive author and most productive institution with regard to scientometric research.
- To analyze types of scientometric research undertaken by Indian researchers.
- To find out the core journals where majority of Indian papers are published.
- To determine the authorship pattern and degree of collaboration in scientometric research in India.

Methodology

The study employs scientometric method of research. The basic data (citations of research publications on scientometric research in India) was gathered from Scopus database covering a period of 12 years, i.e. 2000 to 2012. As only a few standard papers on scientometric research from India are published in journals indexed in Scopus database, Google Scholar was also used as a data source to cover those publications which are not included in Scopus. Google Scholar is a open citation system and therefore, indexes lot many papers published / archived in varieties of sources other than the journals. The advance search option of Google Scholar was used to retrieve citations pertaining to the topic of the present research. After a careful scrutiny of the retrieved citations, a comprehensive list of 690 citations was prepared and it was further extracted, tabulated and analysed for necessary scientometric interpretations. From the master record of citations, total number of papers, type of scientomtric research, degree of collaboration, and such other scientometric scores were determined and interpreted in the lines of scientometric principles.

Review of Literature

A literature review goes beyond the search for information and includes the identification and articulation of relationships between the literature and their field of research. Taking the entities of study into account, scientometric research could base on Subject / Topics, Publication Sources, countries / institutions,individuals, etc. A few of important published literature sources have been reviewed for the present study. Gunasekaran and Balasubramani (2012), in their study "*Scientometric Analysis of Artificial Intelligence Research Output: An Indian Perspective"* analysed the artificial intelligence (AI) research output of India carried out during the year 1973 – 2011. The different parameters including authorship pattern, growth, rank with global publication, institutions contribution, most productivity journals were analysed. Scopus citation database has been used to retrieve the data for 39 years (1973-2011) by using the keywords (Artificial, Intelligence, Neural networks). The profile of India research output was compared with other countries help of scientometrics technique. Raja and Ba,asubramani (2011), in their study *"Plasmodium Falciparum Research Publication in India: A Scientometric Analysis"* studied the plasmodium falciparum research publications in India measured from *Histcite* software and other tools. The results revealed the growth of Indian literature in plasmodium falciparum deposition and made a quantitative assessment of the research in terms of year-wise research output, geographical distribution, and nature of collaboration, characteristics of highly productive institutions and the channel of communication used by the scientists. Srinivasa, Surulinath and Neelakandan (2012) in their study "Indian Perspective of Medicinal Plant Research: A Scientometric Study" analysed the scientometric parameters for medicinal plant research publications. Investigators have compared the author productivity and citations by various institutions at national level.

Scientometrics as a research method

Kalyane and others (2001) in their paper "Scientometric portrait of Ranjit Kumar Mitra" published in IL*A Bulletin* have stated,

"Scientometrics has carved a niche between Science / Scientists and Texts. Scientometrics, Journal of the American Society for Information Science (JASIS), Information Processing and Management, Research Policy, and Science and Public Policy are the most important journals publishing articles related to scientometrics (Kalyane & Others; 2001). The majority of scientometric papers deal with empirical investigation of publications in specific scientific fields and subfields. Such research is often carried out by information specialists and is published in information science journals. Research publications useful to scientists, experts in specific scientific fields, are scattered in many specialised journals. From the scientometric point of view

empirical investigations of this kind are of applied character. Their role is pivoted to creation of an empirical basis for scientometrics".

Classification of Scientometric Methods

There are some classifications of the scientometric methods and models, submitted mainly by representatives of the Russian school of scientometrics. Haitun (1983) divides the scientometric methods into several classes: statistical method with measures – number of discoveries, number of journals, number of institutions, number of scientists, frequency of co-authorships, and some others; a method of publication counting with a measure – number of research products (articles, monographs, patent descriptions, reports, etc.); citation index with a measure – number of citations; text analyses (content analysis, thesaurus and slang method) with measures – different text entities.

W. Glänzel (2003) divides the scientometrics and its methods into the following structural entities:

- *Dynamical Scientometrics*, handling with the construction of comprehensive models of growing of the scientific knowledge, the aging of the scientific information, the development of the citation processes, etc.;
- *Structural Scientometrics*, corresponding mainly with the problem "mapping of the cognitive structure of scientific knowledge", based on methods as co-citation, bibliographic coupling or co-word analysis;
- *Evaluative Scientometrics*, with a subject – the assessment in the sphere of scientific research, and for the purposes of the science policy;
- *Prognostic Scientometrics*, drawing visions about the development of the science processes in the future.

Data Analysis and Discussion

Growth of research publications

The growth of research publication presented in the Table.1 presents the data relating to growth of scientometrics research in India over a period of 12 years i.e. during 2000-2012. It is evident from the data as reflected in the table above that, the research publications in scientometrics is persistently increasing from only 27 publications in 2000 to 115 publications in 2012. The year 2012 stood as the highest productive year in which 115 (16.66%) research papers on scientometrics were published in India.

Table 1: Year-wise growth of scientometrics research publications in India

Year	Number of Research Papers Published (N=690)	Percentage (%)
2000	27	3.91
2001	35	5.07
2002	35	5.07
2003	16	2.31
2004	24	3.48
2005	33	4.78
2006	30	4.35
2007	36	5.22
2008	48	6.96
2009	113	16.38
2010	65	9.42
2011	113	16.38
2012	115	16.67
	Total=690	100.00

Authorship Pattern

Table-2 below indicates that the highest number of papers, i.e, 201 (29.13%) have been authored by two authors jointly followed by 191 (27.68%) by single author. While 149 (21.59%) and 60 (8.69%) publications authored by three and four authors respectively, 89 (12.89%) articles are authored by more than four authors. Data relating to authorship pattern as above is evident that collaboration of two authors in scientometrics research has produced highest number of articles.

Table 2: Authorship pattern of publications

Authorship Pattern	Nos. of Publications	Percentage (%)
Single author	191	27.68
Two authors	201	29.13
Three authors	149	21.59
Four authors	60	8.69
More than four authors	89	12.89

Types of Scientrometric Research

Any scientometric study / research has a theme which is mainly classified into four broad categories such as Subject / Topic based, Source of publication based, institution based or based on individuals. Out of 690 citations of scientometric publications in India used in this study highest number of publications i.e. 495 (71.73%) are subject / topic based studies. The second highest rank of type of scientometric research is 'source of publication' base mostly journals. Next

to this, 'institution' based scientometric studies is the third major types of research in India with 51 (7.1%) publications. A few studies have also been conducted on scholarly contributions of individual scientists, academicians, etc.

Table 3: Distribution of papers by theme of research

Type of Scientometric Study	Nos. of publications	Percentage (%)
Subjects/Topics	495	71.73
Publication sources (Journals)	77	11.16
Institutions	51	7.34
Individuals	35	5.07
Others	32	4.64
Total	690	100%

Ranking of Authors

Table 4: Ranking (Top Ten) of authors by their productivity

Name of Authors	Affiliation	Number of Contributions (n=690)	Percentage (%)
Gupta, B. M.	National Institute of Science, Technology and Development Studies (NISTADS) New Delhi	40	5.79
Kademani, B. S.	Bhabha Atomic Research Centre, Mumbai	33	4.78
Garg, K.C.	National Institute of Science, Technology and Development Studies (NISTADS) New Delhi	29	4.20
Kumar, Vijai	Bhabha Atomic Research Centre (BARC) in Trombay, Mumbai	23	3.33
Kalyane, V.L	Bhabha Atomic Research Centre (BARC) in Trombay, Mumbai	17	2.46
Sagar, Anil	Bhabha Atomic Research Centre (BARC) in Trombay, Mumbai	15	2.17
Bala, Adarsh	Government Medical College & Hospital, Sector 32, Chandigarh.	10	1.44
Kumar, Suresh	Bhabha Atomic Research Centre (BARC) in Trombay, Mumbai	10	1.45
Arunachalam, S.	M S Swaminathan Research Foundation (MSSRF), Chennai	10	1.45
Kumar, Anil	Bhabha Atomic Research Centre (BARC), Trombay, Mumbai	9	1.30
Dhawan, S.M.	Information Consultant, New Delhi	9	1.30

Ranking of Institutions

Affiliation of authors is another important indicator of research productivity. The present research has also identified such a trend of "vital few" institutions contributing to scientometric research in India. Table-4 reveals that, the highest affiliations of authors are from National Institute of Science, Technology and Development Studies (NISTAD), New Delhi with 65 (9.42%) publications. The institution ranked second in the productivity of scientometrics publications is Scientific Information Resource Division, Bhabha Atomic Research Centre (BARC), Mumbai with 44 (6.37%) publications. The publications of these two institutions alone constitute more than 15% of the research publications in scientometrics from India. The other institutions who have more than 1% publications are Annamalai University (Tamilnadu), Bharathidasan University (Tirichirapalli) and Indian Institute of Science (Bangalore).

Sources of Publications

In the present research found that highest number of scientometric publications in India was published in *Scientometrics* journal. 136 (19.71%) papers were published in this journal. The second highest source of publications is Handbook of Research on Innovations in Database Technologies and Applications: Current and Future Trends where 63

Table 5: Ranking of institutions by author affiliation in scientometrics publications in India

Affiliation of authors	Nos. of Papers (N=690)	Percentage
National Institute of Science, Technology and Development (NISTAD) Studies, New Delhi http://www.nistads.res.in/	65	9.4
Scientific Information Resource Division, Bhabha Atomic Research Centre (BARC), Mumbai http://www.barc.gov.in	44	6.4
Annamalai University, Tamilnadu http://annamalaiuniversity.ac.in/	9	1.3
Bharthidasan University, Tiruchirappalli http://www.bdu.ac.in/	9	1.3
Indian Institute of Science, Bangalore http://www.iisc.ernet.in/	8	1.1
Department of Library and Information Science, Sambalpur University, Orissa http://www.suniv.ac.in/	6	0.8
M. S. Swaminathan Research Foundation Chennai, India http://www.mssrf.org/	6	0.8
Information and Library Network Centre (INFLIBNET), Ahmedabad http://www.inflibnet.ac.in/	4	0.6
ManonmaniamSundaranar University, Tirunelveli, Tamil Nadu http://www.msuniv.ac.in/	3	0.43
Centre Studies Science Policy, Jawaharlal Nehru University, New Delhi http://www.jnu.ac.in/	3	0.43
Indian Institute of Chemical Technology, Hyderabad http://www.iictindia.org/	3	0.43
Indian Statistical Institute, Kolkata http://www.isical.ac.in/	3	0.43

(9.13%) papers were published.The *Handbook of Research on Innovations in Database Technologies and Applications: Current and Future Trends* provides a wide compendium of references to topics in the field of database systems and applications. *Annals of Library and Information Studies* is the third position in ranking of sources of publications with 39(5.65%) paper is published.

Table 6: Distribution of papers by sources of publication

Sources of Publication	Nos. of Papers (N=690)	Percentage
Scientometrics	136	19.71
Handbook of Research on Innovations in Database Technologies and Applications: Current and Future Trends	63	9.13
Annals of Library and Information Studies	39	5.65
Malaysian Journal of Library & Information Science	31	4.49
Current Science	28	4.05
DESIDOC Bulletin of Information Technology	25	3.62
Library Philosophy and Practice	15	2.17
Indian Journalof Information Sources and Services	13	1.88
SRELS Journal of Information Management	8	1.15
International Journal of Nuclear Knowledge Management	8	1.16
Social Sciences Research Network	7	1.01
COLLNET Journal of Scientometrics and Information Management	6	0.87

International Collaboration in India

During the recent years, international collaboration in science has increased so as collaboration in scientometric research. Table-6 evidences that, even though greater international collaboration in scientific research in general,

scientometric research in India has a very low level of collaboration. Out of 860 papers, only 15(2.17%) paper are having international collaboration

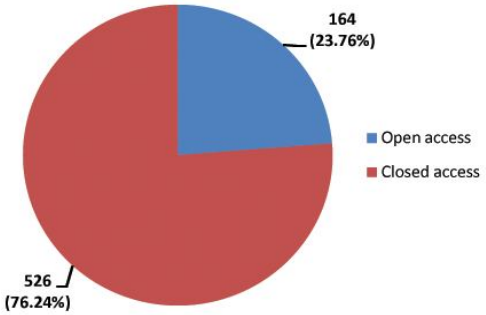
Accessibility to Scientometric Publications

The usability of research publications and citations to them are highly reliant on their accessibility. Open accesses to the publications essentially results in more usability and more citations and reverse the case when it is closed access. Open Access (OA) means free online access to all peer-reviewed journal articles. The above table described that 526(76.13%) paper are closed accesses and only 164(23.76%) paper are open accesses.

Table 7: International collaboration in scientometric research

	Number of paper of papers (n=690)	Percentage %
Yes	15	2.17
No	675	97.82

Fig. 1: Accessibility of scientometric research publications



Top Cited papers in Scientometrics in India

Citation counts are one of the important measures of ranking of papers in a specific area of research. In the present investigation the following research papers having citation above 50 are listed below.Table.7 reflects that, out of 12 papers highest number of citations (94) is credited to the thematic paper authored by I. N. Sengupta. Out of 12 high cited papers 5 are authored by V. L. Kalyane, a scientist at Bhaba atomic Research Centre, Mumbai followed by B. S. Kademeni, a scientist from the same institution with 4 papers. It is evident that, in India BARC has been excelling in the scientometric research over the years.

Table 8: Top cited research papers in scientometrics (as retrieved from *Google Scholar*)

Sl. No.	Papers on Scientometric Research	Nos. of Citations *(from Google Scholar)*
1.	Sengupta, I. N. Bibliometrics, Informetrics, Scientometrics, and Librametrics: An Overview. *Libri,* vol. 42, n.2. pp 75-98.	94
2.	Kademani, B. S. and Kalyane, V. L. and Kademani, A. B. Scientometric portrait of Nobel laureate Dr. C.V. Raman. *Indian Journal of Information, Library and Society*, 1994, vol. 7, n. 3-4, pp. 215-249.	68
3.	Kalyane, V. L. and Sen, B. K. Research Productivity of Tibor Braun: An Analytical Chemist - cum - Scientometrician. *Annals of Library and Information Studies*, 2003, vol. 50, n. 2, pp. 47-61.	58
4.	Kademani, B. S. and Kalyane, V. L. Outstandingly cited and most significant publications of R. Chidambaram, a nuclear physicist.*Malaysian Journal of Library & Information Science*, 1996, vol. 1, n. 1, pp. 21-36.	57
5.	Kademani, B. S. and Kalyane, V. L. and Kademani, A. B. Scientometric portrait of Sir K. S. Krishnan. *Indian Journal of Information, Library and Society*, 1996, vol. 9, n. 1-2, pp. 125-150.	57
6.	Kalyane, V. L. and Sen, B. K. Scientometric portrait of C. R. Bhatia, an indian geneticist and plant breeder. *Malaysian Journal of Library & Information Science*, 1998, vol. 3, n. 1, pp. 25-42.	56
7.	Arunachalam, S and Gunasekaran, S. Diabetes research in India and China today: From literature-based mapping to health-care policy. *Current Science*, 2002, vol. 82, n. 9, pp.1086-1097	53
8.	Munnolli, S. S. and Kalyane, V. L. Scientometric portrait of Ram GopalRastogi. *Annals of Library and Information Studies*, 2003, vol. 50, n. 1, pp. 1-17.	52
9.	Kalyane, V. L. and Munnolli, S. S. Scientometric portrait of T. S. West. *Scientometrics.* 1995. *vol. 33, n. 2.* Pp. 233-256	51
10.	Kademani, B. S. and Kalyane, V. L. and Balakrishnan, M. R. Scientometric portrait of P. K. Iyengar. *Library Science*, 1994, vol. 31, n. 4, pp. 155-176.	50
11.	Kalyane, V. L. and Kalyane, S. V. Scientometric portrait of M. S. Swaminathan. *Library Science*, 1994, vol. 31, n. 1, pp. 31-46.	50
12.	Kalyane, V. L. and Kademani, B. S. Scientometric portrait of R. Chidambaram: a publication productivity analysis. *Journal of Information Sciences*, 1995, vol. 5, n. 3, pp. 101-140.	50

Findings of the Study

It was found that scientometrics research in India over a period of period of 12 years during 2000-2012 have published 690 numbers of articles (as indexed in Socpus database and retrieved from Google Scholar). The year 2012 is the most productive year for scientometrics research having published 115 (16.66%) research papers. According to the authorship patterns of scientometrics research in India, the contributions of two authors have the highest number of articles 201 (29.13%) which in the top publications. Hence it is found that research in collaboration of two authors is dominants on individual and other collaborative research. B. M. Gupta ranked first among the contributors of scientometric research publications in India. B.M Gupta was working in National Institute of Science, Technology and Development Studies (NISTADS) New Delhi. He is the most productive author with 40 (5.79%) numbers of publications.In this study highest affiliation of authors is with National Institute of Science, Technology and Development Studies (NISTADS), New Delhi. The authors of 65 (9.4%) scientometric publications are affiliated with this institution. In this analysis the highest number of papers are published in *Scientometric* (ISSN: 0138-9130) Journal. Scientometrics is a peer-reviewed academic journal in the field of scientometrics published by Springer. It was found that a majority of research publications i.e. 71.73% included scientometrics of various subjects / topics as their theme. The themes basically included emerging areas of physics, chemistry, biological sciences, medicine, etc. It was found that the degree of international collaboration remains very low (0.02). This is one area which needs immediate attention of the Indian scientometric researchers to undertake research projects in collaboration with researchers abroad for more visibility and impact. It was found that the paper entitled "Bibliometrics, Informetrics, Scientometrics, and Librametrics: An Overview", a theoretical paper authored by I. N. Sengupta ranked first with highest number of citations (94). Most of the publications having 50 or more citations are authored by V. L. Kalyane and B. S. Kadameni of Bhaba Atomic Research Centre, Mumbai.

Suggestions

- In India there are a lot of research funding to universities, research laboratories, and such other institutions are made through University Grants Commission (UGC), Indian Council of Social Science Research (ICSSR), Indian Council of Medical research (ICMR), Council Scientific and Industrial Research (CSIR), etc. It is suggested that these funding agencies should undertake scientometric evaluation of their funded research in order to assess their impact, usability, citations, etc.
- Many of the scientometric research publications in India are published in conference proceedings which are neither indexed in Scopus nor found in Google Scholar are missed while quantifying scientometric literature in India. Therefore, it is suggested that the authors should communicate their papers to Journals and if they are already published in other sources, a copy of such papers should be archived in the online repositories.
- Scintometrics is called as "*Science of Science*" and hence demands increased collaboration in research. A close collaboration between the scientists and information professionals would result high quality scientometric research in India.
- Scientometrics involves mathematical derivations and therefore, the students of library science schools should be taught scientometric principles and its mathematical derivations. This will again lead to better scientometric assessment.
- Many a times it is found that data of institutional publications are difficult to obtain form databases. If collected the data is incomplete and incomprehensive. Therefore, it is suggested that the universities, research institutions and other such establishment engaged in science research should have their own institutional repository of research papers. This will immensely beneficial for scientometric research.

Conclusion

Scientometrics is one of the most important quantitative measures for the assessment of scientific research. Many of the research in scientometrics in India are simple quantifications of published literature in scientific research. This kind of research does not add much value to the science. It requires deeper scientometric analysis, applications of mathematical and statistical tools and formulas for derivation of meaningful information about scientific research in India. The LIS scholars in collaboration with the scholars various scientific disciplines

should work together for better understanding of the behaviour of mathematics and students should be taught bibliometric and scientometric techniques at their graduation level and the government should promote scientometric research endeavours in India to evaluate scientific research.

References

1. Balasubramani, R. and Murugan, C. (2011). Mapping of Tapioca (Sago)Research in India: A Scientometric Analysis*. Library Philosophy and Practice,* 2011:pp.1-14 ISSN 1522-0222. Retrived in http://www.webpages.uidaho.edu/~mbolin/balasubramani-murugan.htm.
2. Das, Prabiir Kumar and Pall, JJiiban K.. (2012). Scientometric evaluation of Sankhyá – the Indian Journal of Statistics.*Malaysian Journal of Library & Information Science*, Vol. 17, no. 2, August 2012: Measurement of Indian science and technology using publications output data during 1996-2010. Retrived in http://hdl.handle.net/10760/17521.
3. Ganguli , Ranjan (2008). A scientometric analysis of recent aerospace research.*Current Science*, VOL. 95, NO. 12, 25 DECEMBER 2008:pp.1670-1672.retrived in http://eprints.iisc.ernet.in/id/eprint/17864.
4. Gupta, B. M.[et.al] (2010). Mapping of Typhoid Research in India: A Scientometric Analysis of Publications Output in 2000-2009. *Chinese Librarianship: an International Electronic Journal*: pp.1-22. Retrived in www.white-clouds.com/iclc/cliej/cl31GBBCC.pdf.
5. Garg, K C, Dutt, B and Kumar, Suresh (2006). Scientometric profile of Indian science as seen through Science Citation Index. *Annals of library and information studies*, Vol.53, September2006, pp. 114-125. Retrived in http://nopr.niscair.res.in/handle/123456789/7492.
6. Gunasekaran, M. and Balasubramani, R. (2012). Scientometric Analysis of Artificial Intelligence Research Output: An Indian Perspective.*European Journal of Scientific Research*, Vol.70, No.2 (2012): pp. 317-322, ISSN 1450-216X. retrived in www.europeanjournalofscientific research.com/.../EJSR_70_2_14.pdf.
7. Hood,William W., Wilson, Concepción S. (2001). The literature of bibliometrics, scientometrics, and informetrics. *Scientometrics, Vol. 52, No. 2 (2001): pp.291–314.*
8. Raja, S. and Balasubramani, R. (2011). Plasmodium Falciparum Research Publication in India: A Scientometric Analysis.*European Journal of Scientific Research*, Vol. 56, No.3, (2011): pp.294-300, ISSN 1450-216X. retrived in www.eurojournals.com/EJSR_56_3_01.pdf.
9. Raja, S., Kumar, Ram and Amsaveni, N. (2012). Scientometric Measures in Scientometric, Technometric, Bibliometrics, Informetric, Webometric Research Publications.*International Journal of Librarianship and Administration*, Volume 3, Number 2 (2012), pp. 87-94, ISSN 2231-1300.
10. Surulinathi M. [et al.] (2009). Scientometric Dimensions of Knowledge Management Research in India: A Study based on Scopus database. Sri Lankan Journal of Librarianship and Information Management, Volume 2, No.2: pp. 13-24.retrived in http://www.sljol.info/index.php/SLLIM/article/view/442.
11. Van Raan A.F. G. (1997). Scientometric: State-Of-The-Art. *Scientometrics*, Volume 38, No.1: 205-218.

Indian Journal of Library and Information Science
Volume 9 Number 2, May - August 2015

Original Article

Bibliometric Analysis of Literature on Ebola (1995 – 2014)

J. Ramakrishnan*, G. Ravi Sankar**

Abstract

The aim of this study is to present the bibliometric analysis of the literature in the field of Ebola as indexed in the MEDLINE database for the period of 1995-2014 which are covered in Pubmed. Maximum number of records (841) was published during the year 2014, followed by 153 in 2011 and 144 in 2012. On the whole, it is noticed that from 1995 onwards there is a gradual increase in research on Ebola except few years. The distribution of the 'Ebola' research output according to various publication types of MEDLINE shows that 32.63% were published in journals, 19.45% are Research Support, Non-U.S. Govt, 13.02% are Reviews and 8.97 are News. Relative Growth Rate (RGR) is in fluctuating trend. The Doubling Time (Dt) has also shown an fluctuating trend. Ranking of the journals along with the country of origin based on the research output on 'Ebola' for the year 1995-2014 is United States the first two ranks, Russia contributes to the third, England contributes to the fourth and fifth positions respectively. Frequently cited journals are United States titles with 45.46% out of the 11 journals in zone-1. 32 frequently cited journals are United States, 22 in England, 8 in Netherland, 5 each in Switzerland and France etc. in zone-2. It is also found that in zone-1 & 2 combined; 37 frequently cited journals are United States, 25 in England, 8 in Netherland, 6 in Switzerland, 5 in France, 4 each in Russia and Sweden etc. The research productivity of Ebola confirms the implication of Bradford's Law of Scattering.

Keywords: Bibliometric Analysis; Ebola Literature; PUBMED; MEDLINE.

Introduction

Bibliometrics is an academic discipline and much research is being carried out for a quantitative study of the various aspects of literature of a given subject. It is a branch of Information Science which analyses quantitatively the published information based on bibliographic data elements. It is the study and measurement of the patterns of all forms of published knowledge. It is coined to describe the studies dealing with the quantification of written communication. It analysis is the quantitative study of a subject growth by using bibliometric techniques.

This paper analysed the growth of literature in the field of Ebola covered in the MEDLINE database which is covered in the Pubmed and also to identify the core journals and their countries in the field of Ebola.

Author's Affilation: *,**Deputy Librarian, Regional Medical Library, The Tamil Nadu Dr. M.G.R. Medical University, Guindy, Chennai – 600032.

Reprint's Request: J. Ramakrishnan, Deputy Librarian, Regional Medical Library, The Tamil Nadu Dr. M.G.R. Medical University, Guindy, Chennai – 600032.

E-mail: dhanaram@yahoo.com

Objectives of the Study

The Objectives of this study are:

1. To study the growth of literature in the field of Ebola covered in the MEDLINE database which is covered in Pubmed.
2. To examine the Relative Growth Rate and Doubling Time of the literature on Ebola during the study period
3. To study the implications of the Bradford Law of Scattering on Ebola research
4. To identify the core journals and their countries in the field of Ebola.

Limitations

This study is confined to a period of twenty years from 1995 to 2014 in the field of Ebola in the MEDLINE database which is covered in the Pubmed only.

Review of Literature

Scientific growth has involved not only increase in manpower but also finance [1]. Wooster [2] has estimated the number of journals that existed in the world at any one time, whereas some estimate of the number of papers published annually at various time was done by Vickery [3] and Martyn [4]. Gottschalk and Desmond [5] have estimated the number of scientific and technical journals that existed in the world. Growth studies in scientific areas studied by Baker [6] in chemistry, Conard [7] in biology, May [8] and Lamb [9] in mathematics, Sengupta in microbiology [10], physiology [11], and biochemistry [12].

There are several studies on the growth of literature and its doubling [13-17] Rajendran, Ramesh Babu and Gopalakrishnan (2005) [18] analyzed the global output of "fiber optics" research. Articles covered in the Ei-Tech Index database covering the period of 1999-2003 have been studied. Growth of literature by year wise, country wise, authorship pattern, bibliographic forms, ranking of core journals and nature of research have been analysed. Ramesh babu and Ramakrishnan (2007) [19] studied the growth of literature on "Hepatitis" and Ramakrishnan and Thavamani (2013) [20] in the field of "Hepatitis-C"

There are number of studies on mapping and Bradford law in health sciences [21-32]. Schloman studied Mapping the literature of allied health [33]. Kundra [34] studied the behaviour of Bradford's Law towards citation data on Indian Medical Journal. Ramesh Babu and Ramakrishnan [35] studied on Indian Contributions to the field of Hepatitis (1984-2003) and used Bradford law to identify the core journals. Patra and Prakash Chand [36] studied HIV/AIDS research in India. They used Bradford's law of scattering to identify core journals. The review of literature on collaborative articles showed that so far no quantitative study on "Ebola" was conducted. Hence the present study.

Ebola: A Brief Note

Ebola virus disease (EVD; also Ebola hemorrhagic fever, or EHF), or simply Ebola, is a disease of human and other primates caused by Ebola viruses. Signs and symptoms typically start between two days and three weeks after contracting the virus with a fever, sore throat, muscle pain, and headaches. Then vomiting, diarrhea and rash usually follow, along with decreased function of the liver and kidneys. At this time some people begin to bleed both internally and externally. The disease has a high risk of death, killing between 25 per cent and 90 per cent of those infected with an average of about 50 per cent. This is often due to low blood pressure from fluid loss, and typically follows six to sixteen days after symptoms appear [37].

Database and Methodology

The records published during the year 1995 to 2014 in the field of Ebola in the MEDLINE data which are covered in the Pubmed (www.pubmed.com) which is a free resource that is developed and maintained by the National Center for Biotechnology Information (NCBI), at the U.S. National Library of Medicine (NLM), located at the National Institutes of Health (NIH) was searched and bibliographic details like author, title, publication type, language, year; address of the contributors, country of publications, source etc. were collected.

The retrieved records were converted into FoxPro and loaded in SPSS for the purpose of analysis. The keyword 'Ebola' has been used for extracting the number of records available in the above said database. The data thus collected from the source database on the literary production of 'Ebola' for the period 1995 - 2014 has been analysed by using bibliometric techniques such as Relative Growth Rate (RGR), Doubling Time (Dt) and Bradford's Law of Scattering.

Analysis and Discussion

Data collected from the source database namely MEDLINE on the literary production of 'Ebola' for the period 1995-2014 has been analysed by using various bibliometric indicators and techniques.

Quantum of ebola research productivity

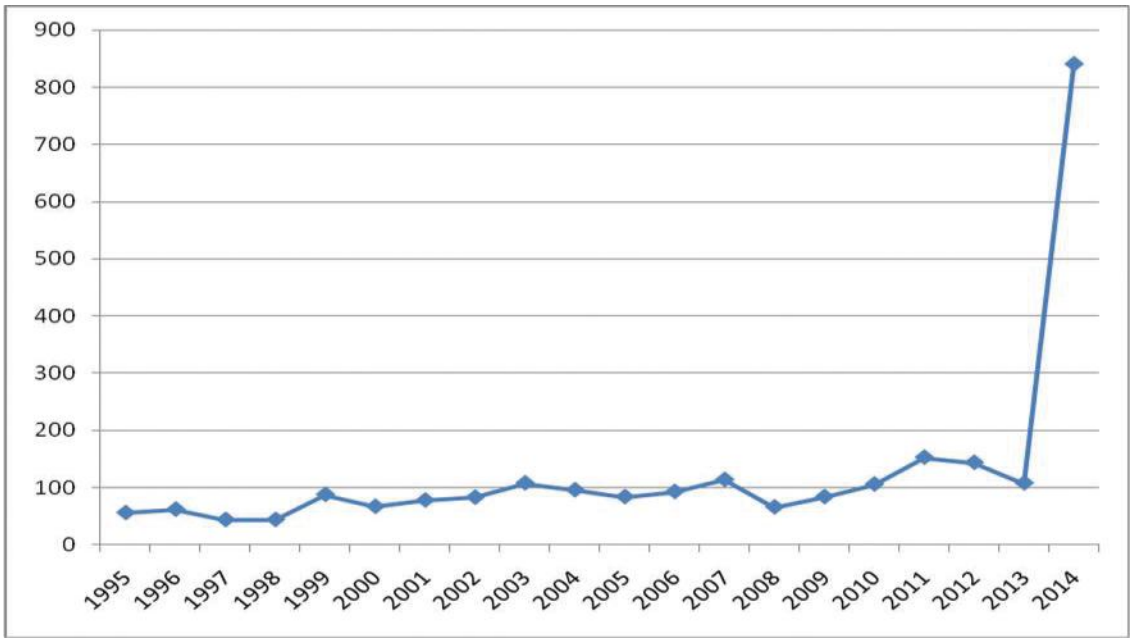
The year wise research productivity on 'Ebola' covered in the database is shown in Table 1. Total of 2519 records are covered in the database MEDLINE on 'Ebola'. It is found that the maximum number of records (841) was published during 2014, followed by 153 in 2011 and 144 in 2012. On the whole, it is noticed that from 1995 onwards there is a gradual increase of Ebola research

productivity every year except few years where the records low compare to previous years. Of course, the records in 2014 is very high compare to other years in the study period which shows that recent year the research in Ebola is very active and also the disease is taken very serious recent year throughout the world.

Table 1: Quantum of Literature published in 'Ebola' Year wise

S. No.	Years	No. of Records on Ebola	Percentage	Cumulative Records	Cumulative Percentage
1.	1995	56	2.22	56	2.22
2.	1996	62	2.46	118	4.68
3.	1997	44	1.75	162	6.43
4.	1998	44	1.75	206	8.18
5.	1999	88	3.49	294	11.67
6.	2000	67	2.66	361	14.33
7.	2001	78	3.10	439	17.43
8.	2002	83	3.29	522	20.72
9.	2003	108	4.29	630	25.01
10.	2004	96	3.81	726	28.82
11.	2005	84	3.33	810	32.16
12.	2006	93	3.69	903	35.85
13.	2007	114	4.53	1017	40.37
14.	2008	66	2.62	1083	42.99
15.	2009	84	3.33	1167	46.33
16.	2010	106	4.21	1273	50.54
17.	2011	153	6.07	1426	56.61
18.	2012	144	5.72	1570	62.33
19.	2013	108	4.29	1678	66.61
20.	2014	841	33.39	2519	100.00
	Total	**2519**	**100.00**		

Fig. 1: Quantum of Literature published in 'Ebola' Year wise



Publication Types Distribution of Ebola Research

Table 2 reveals the distribution of the 'Ebola' research output according to various publication types of MEDLINE. It was found that 32.63% are journal articles, 19.45% are Research Support, Non-U.S. Gov't, 13.02% are Review and 8.97 are News. The literature published as other Publication Type is 25.92%.

Table 2: Publication Type

Publication Type	Total	%
Journal Article	822	32.63
Research Support, Non-U.S. Gov't	490	19.45
Review	328	13.02
News	226	8.97
Research Support, U.S. Gov't, Non-P.H.S.	169	6.71
Research Support, U.S. Gov't, P.H.S.	122	4.84
Letter	95	3.77
Editorial	93	3.69
Research Support, N.I.H., Extramural	92	3.65
Research Support, N.I.H., Intramural	42	1.67
Other types	40	1.59
Total	**2519**	**100.00**

Fig. 2: Publication types distribution of Ebola Research

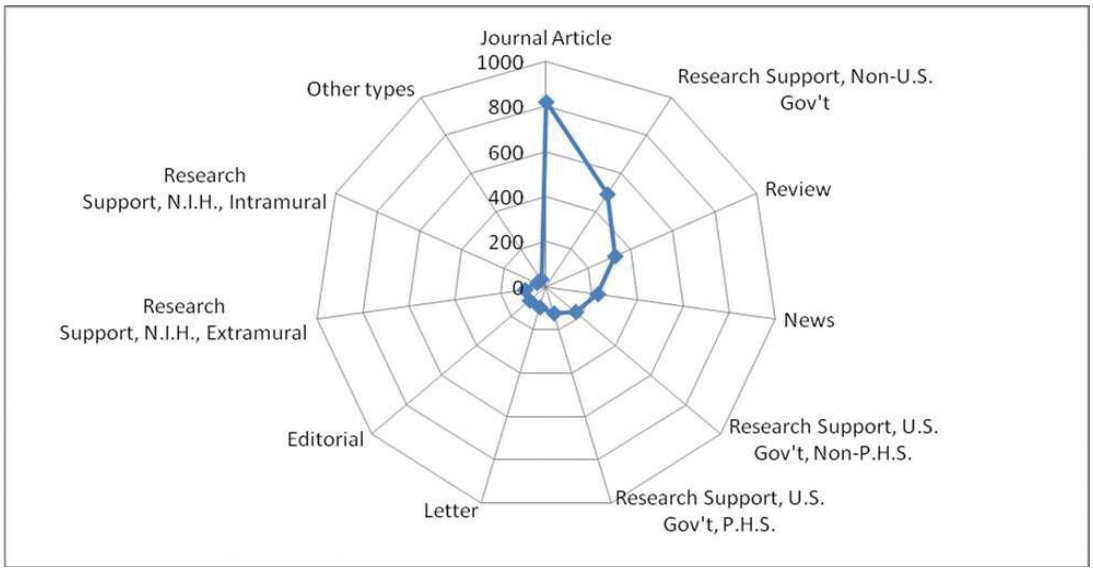


Table 3: RGR and Dt for Ebola Research Output by Year-wise

Year	Quantum of Output	Cumulative Output	W_1	W_2	$1-2^{\overline{R}(aa^{-1}\ year^{-1})}$ RGR	Dt(a)
1995	56	56		4.03		
1996	62	118	4.03	4.77	0.74	0.94
1997	44	162	4.77	5.09	0.32	2.18
1998	44	206	5.09	5.33	0.24	2.91
1999	88	294	5.33	5.68	0.35	1.96
2000	67	361	5.68	5.89	0.21	3.32
2001	78	439	5.89	6.08	0.19	3.56
2002	83	522	6.08	6.26	0.18	3.90
2003	108	630	6.26	6.45	0.19	3.73
2004	96	726	6.45	6.59	0.14	5.04
2005	84	810	6.59	6.70	0.11	6.47
2006	93	903	6.7	6.81	0.11	6.55
2007	114	1017	6.81	6.92	0.11	6.05
2008	66	1083	6.92	6.99	0.07	10.27
2009	84	1167	6.99	7.06	0.07	9.60
2010	106	1273	7.06	7.15	0.09	7.78
2011	153	1426	7.15	7.26	0.11	6.15
2012	144	1570	7.26	7.36	0.10	7.01
2013	108	1678	7.36	7.43	0.07	10.60
2014	841	2519	7.43	7.83	0.40	1.73

Relative Growth Rate (Rgr) and Doubling Time (Dt)

The analysis of data on the literary output in Ebola has been done with parameters such as Relative Growth Rate (RGR) and Doubling Time (Dt). It is seen from Table 3 and Figure 3 that RGR has been fluctuating from 1995 (0.74) to 2014 (0.40). On the other hand, the Doubling Time (Dt) has also shown an fluctuating trend. The data in Table 3 reveals that Doubling time has increased from 0.94 in the year 1995 to 10.60 in the year 2013 except few years and suddenly reduced to 1.73 in the year 2014 (Figure 4).

Fig. 3: Relative Growth Rate for Research Output in Ebola

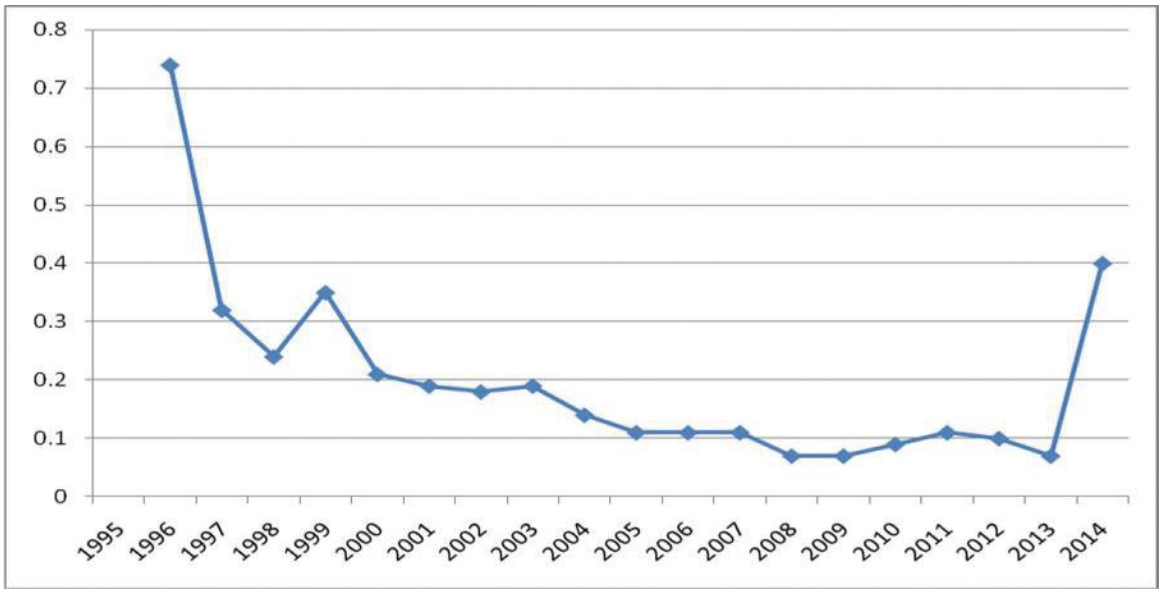
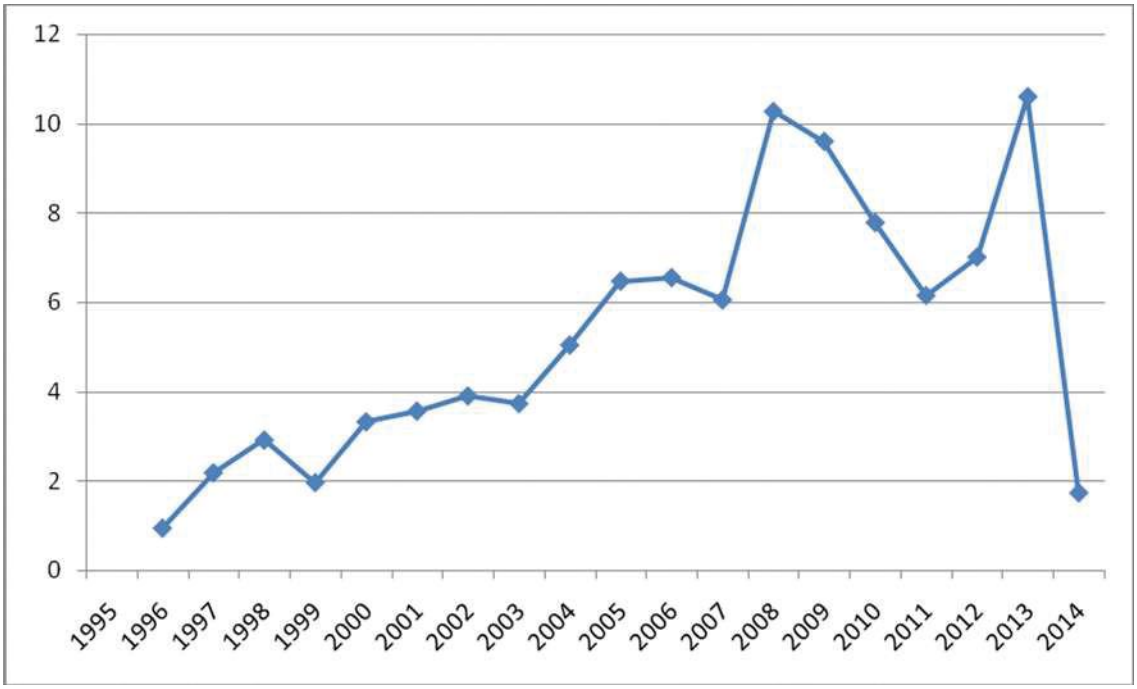


Fig. 4: Doubling time for Research output in Ebola



Distribution of journals in Ebola based on Bradford law of scattering

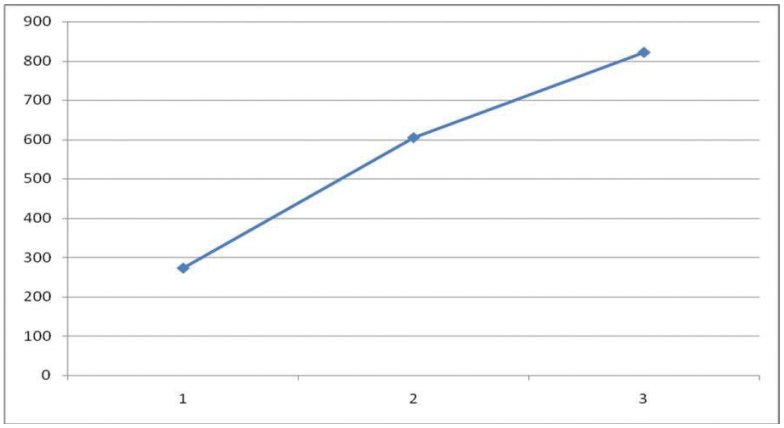
As per the Bradford Law, the journals are grouped into three zones producing similar number of articles. The distribution of journal by zone wise is given in the Table 4. It is seen from Table 4 that 11 core journals grouped in zone 1 published 273 articles accounting for one third of the total output. Similarly

the second zone comprises of 104 journals and 217 journals grouped in third zone. The Bradford's Law states that the number of periodicals in zones, the first zone and second zone will be 1: n: n_2... Accordingly the relationship is the zone will be 11: 104: 217. On comparison with the data in Table 4, it is clear that the trend of research publication confirms the implication of Bradford's Law (Figure 5).

Table 4: Distribution by Zone of cited journals and references in Ebola

Zone	No. of Journals		No. of Papers	
	No.	(%)	No.	(%)
Zone 1	11	3.31	273	33.21
Zone 2	104	31.33	332	40.39
Zone 3	217	65.36	217	26.40
Total	**332**	**100.00**	**822**	**100.00**

Fig. 5: Distributions of Journals by Zones



Country wise coverage of zone-1 journals in ebola

Table-5 shows that the most frequently cited journals are United States titles with 45.46%. Of the 11 titles in zone-1, 5 are associated with United States, 3 with England, 1 each in Russia and Switzerland. One journal not indexed the country. (Fig.-6)

Table 5: Country wise coverage of Zone-1 journals in Ebola

S. No.	Country	Frequency	%	Cumulative %
1	United States	5	45.46	45.46
2	England	3	27.27	72.73
3	Russia	1	9.09	81.82
4	Switzerland	1	9.09	90.91
5	Not mentioned	1	9.09	100.00
	Total	**11**	100.00	

Fig. 6: Country wise coverage of Zone-1 journals in Ebola

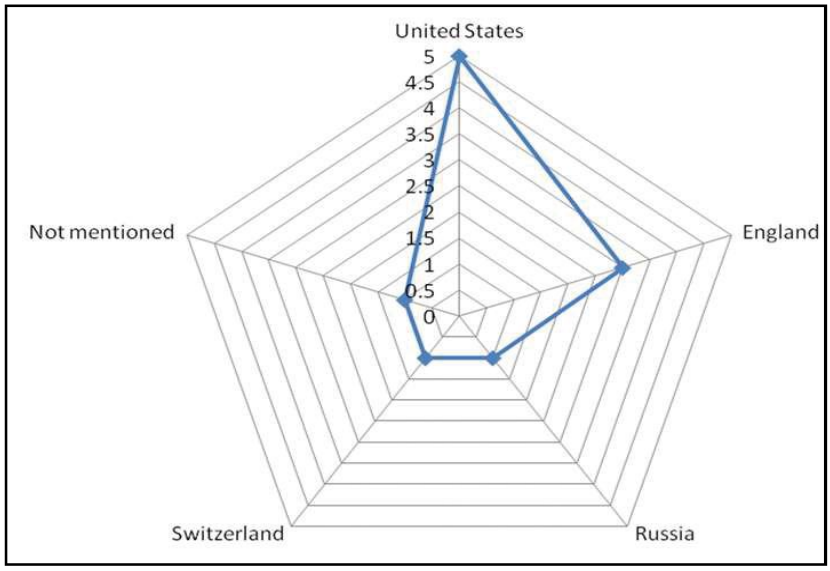


Table-6 shows that in zone-2 ; 32 frequently cited journals are United States, 22 in England, 8 in Netherland, 5 each in Switzerland and France, 4 in Sweden, 3 each in Canada and Russia, 2 each in Austria, China, Germany and Korea, 1 each in Australia, Czech Republic, Denmark, India, Japan, Kenya, Nigeria, Norway, Romania, Scotland, Spain and Uganda. Two journals not indexed the country. (Fig.-7)

Table 6: Country wise coverage of Zone-2 journals in Ebola

S. No.	Country	Frequency	%	Cumulative %
1.	United States	32	30.77	30.77
2.	England	22	21.15	51.92
3.	Netherlands	8	7.69	59.62
4.	France	5	4.81	64.42
5.	Switzerland	5	4.81	69.23
6.	Sweden	4	3.85	73.08
7.	Canada	3	2.88	75.96
8.	Russia	3	2.88	78.85
9.	Austria	2	1.92	80.77
10.	China	2	1.92	82.69
11.	Germany	2	1.92	84.62
12.	Korea	2	1.92	86.54
13.	Australia	1	0.96	87.50
14.	Czech Republic	1	0.96	88.46
15.	Denmark	1	0.96	89.42
16.	India	1	0.96	90.38
17.	Japan	1	0.96	91.35
18.	Kenya	1	0.96	92.31
19.	Nigeria	1	0.96	93.27
20.	Norway	1	0.96	94.23
21.	Romania	1	0.96	95.19
22.	Scotland	1	0.96	96.15
23.	Spain	1	0.96	97.12
24.	Uganda	1	0.96	98.08
25.	Not mentioned	2	1.92	100.00
Total		**104**	**100.00**	

Fig. 7: Country wise coverage of Zone-2 journals in Ebola

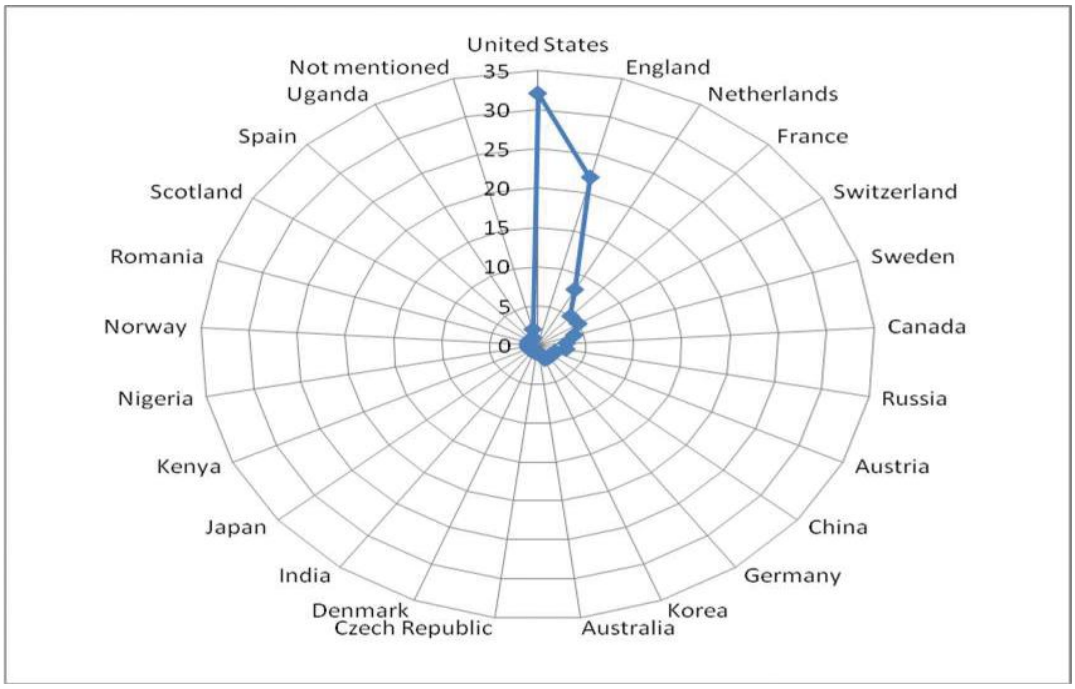


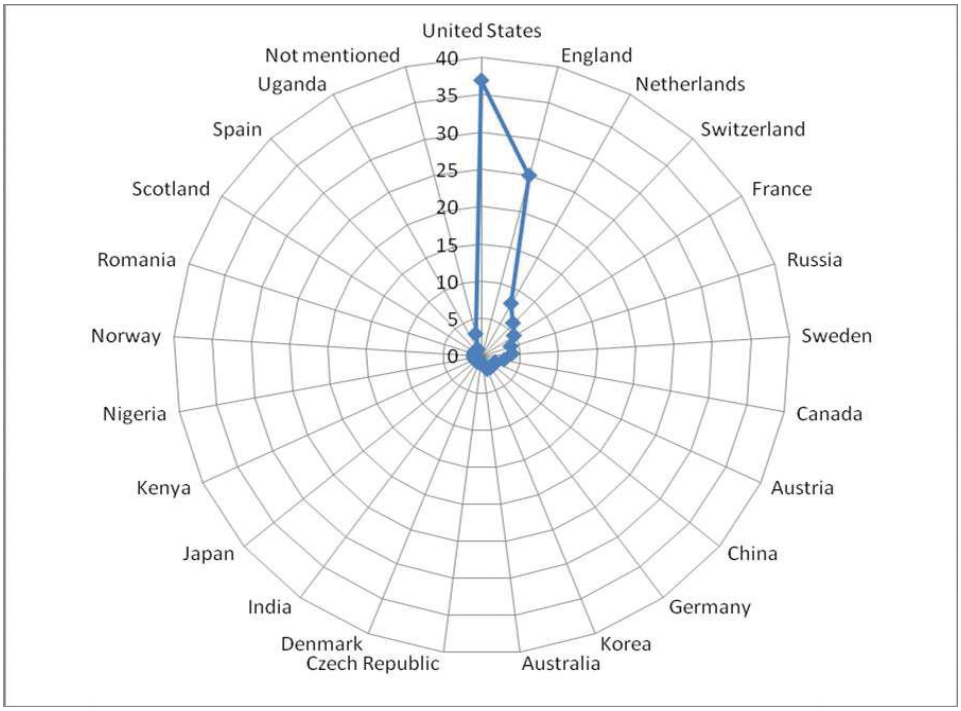
Table-7 shows that in zone-1 & 2 ; 37 frequently cited journals are United States, 25 in England, 8 in Netherland, 6 in Switzerland, 5 in France, 4 each in Russia and Sweden, 3 in Canada and 2 each in Austria, China, Germany and Korea, 1 each in Australia, Czech Republic, Denmark, India, Japan,

Kenya, Nigeria, Norway, Romania, Scotland, Spain and Uganda. Three journals not indexed the country. (Fig.-8)

Table 7: Country wise coverage of Zone1 & 2 journals in Ebola

S. No.	Country	Frequency	Percent	Cumulative Percent
1.	United States	37	32.17	32.17
2.	England	25	21.74	53.91
3.	Netherlands	8	6.96	60.87
4.	Switzerland	6	5.22	66.09
5.	France	5	4.35	70.43
6.	Russia	4	3.48	73.91
7.	Sweden	4	3.48	77.39
8.	Canada	3	2.61	80.00
9.	Austria	2	1.74	81.74
10.	China	2	1.74	83.48
11.	Germany	2	1.74	85.22
12.	Korea	2	1.74	86.96
13.	Australia	1	0.87	87.83
14.	Czech Republic	1	0.87	88.70
15.	Denmark	1	0.87	89.57
16.	India	1	0.87	90.43
17.	Japan	1	0.87	91.30
18.	Kenya	1	0.87	92.17
19.	Nigeria	1	0.87	93.04
20.	Norway	1	0.87	93.91
21.	Romania	1	0.87	94.78
22.	Scotland	1	0.87	95.65
23.	Spain	1	0.87	96.52
24.	Uganda	1	0.87	97.39
25.	Not mentioned	3	2.61	100.00
Total		**115**	**100.00**	

Fig. 8: Country wise coverage of Zone1 & 2 journals in Ebola



Ranking of journals in ebola research

Ranking of the journals along with the country of origin based on the research output on 'Ebola' for the year 1995-2014 is given in Table 8. The highly productive journals up to five ranks are as follows:

1. 'Journal of Infectious Diseases' published from United States with 45 contributions amounting to 5.47% of total contributions.
2. 'MMWR Morb Mortal Wkly Rep' published from United States with 35 contributions amounting to 4.26%.

3. 'Vopr Virusol' published from Russia with 34 contributions amounting to 4.14%.
4. 'New England Journal of Medicine' published from England with 26 contributions amounting to 3.16%.
5. 'Lancet' published from England with 25 contributions amounting to 2.80%.

Out of the top five ranks United States is dominating the first two ranks, Russia contributes to the third position, and England contributes to the fourth and fifth positions respectively.

Table 8: Ranking of Journals in Ebola Research

S. No.	Name of the Journal	No. of Records	%	Country of origin	Rank
1.	Journal of Infectious Diseases	45	5.47	United States	1
2.	MMWR Morb Mortal Wkly Rep	35	4.26	United States	2
3.	Vopr Virusol	34	4.14	Russia	3
4.	New England Journal of Medicine	26	3.16	England	4
5.	Lancet	25	3.04	England	5
6.	Wkly Epidemiol Rec	23	2.80	Switzerland	6
7.	British Medical Journal (BMJ)	20	2.43	England	7
8.	Virology	20	2.43	United States	7
9.	Journal of Virology	19	2.31	United States	8
10.	JAMA	14	1.70	United States	9
11.	Disaster Med Public Health Prep	12	1.46	Not mentioned	10
12.	Am J Trop Med Hyg	10	1.22	United States	11
13.	Nature	10	1.22	England	11
14.	Nurs Stand	10	1.22	England	11
15.	Ann Intern Med	9	1.09	United States	12
16.	Antiviral Res	9	1.09	Netherlands	12
17.	Bull Soc Pathol Exot	8	0.97	France	13
18.	Rev Med Suisse	8	0.97	Switzerland	13
19.	Emerg Infect Dis	7	0.85	United States	14
20.	Med Trop (Mars)	7	0.85	France	14
21.	Biosecur Bioterror	6	0.73	United States	15
22.	J Bioeth Inq	6	0.73	Netherlands	15
23.	Virus Res	6	0.73	Netherlands	15
24.	CMAJ	5	0.61	Canada	16
25.	Euro Surveill	5	0.61	Sweden	16
26.	Br J Nurs	4	0.49	England	17
27.	Can Commun Dis Rep	4	0.49	Canada	17
28.	Clin Infect Dis	4	0.49	United States	17
29.	ED Manag	4	0.49	United States	17
30.	Emerg Nurse	4	0.49	England	17
31.	Future Virol	4	0.49	Not mentioned	17
32.	Glob Issues	4	0.49	United States	17
33.	Lancet Infect Dis	4	0.49	England	17
34.	Microbes Infect	4	0.49	France	17
35.	Nat Med	4	0.49	United States	17
36.	Sci China Life Sci	4	0.49	China	17
37.	Soc Sci Med	4	0.49	England	17
38.	Vestn Ross Akad Med Nauk	4	0.49	Russia	17
39.	Viruses	4	0.49	Switzerland	17
40.	Afr Health Sci	3	0.36	Uganda	18
41.	Arch Pathol Lab Med	3	0.36	United States	18
42.	Arch Virol Suppl	3	0.36	Austria	18
43.	Biull Eksp Biol Med	3	0.36	Russia	18
44.	Clin Microbiol Infect	3	0.36	England	18
45.	Commun Dis Rep CDR Wkly	3	0.36	England	18
46.	Dtsch Med Wochenschr	3	0.36	Germany	18
47.	Front Public Health	3	0.36	Switzerland	18
48.	Int J Nurs Stud	3	0.36	England	18
49.	Intensive Care Med	3	0.36	United States	18

50.	Lakartidningen	3	0.36	Sweden	18
51.	Mod Healthc	3	0.36	United States	18
52.	Ned Tijdschr Geneeskd	3	0.36	Netherlands	18
53.	Nurs Child Young People	3	0.36	England	18
54.	Prehosp Disaster Med	3	0.36	United States	18
55.	Travel Med Infect Dis	3	0.36	Netherlands	18
56.	Ugeskr Laeger	3	0.36	Denmark	18
57.	Virol Sin	3	0.36	China	18
58.	Afr J Health Sci	2	0.24	Kenya	19
59.	Afr J Med Med Sci	2	0.24	Nigeria	19
60.	Am J Epidemiol	2	0.24	United States	19
61.	Am J Nurs	2	0.24	United States	19
62.	Arch Virol	2	0.24	Austria	19
63.	Biochem Biophys Res Commun	2	0.24	United States	19
64.	BMC Biol	2	0.24	England	19
65.	Br Dent J	2	0.24	England	19
66.	Bull World Health Organ	2	0.24	Switzerland	19
67.	Cell Host Microbe	2	0.24	United States	19
68.	Curr Opin Mol Ther	2	0.24	England	19
69.	Ecol Evol	2	0.24	England	19
70.	Emerg Health Threats J	2	0.24	Sweden	19
71.	Epidemiol Bull	2	0.24	United States	19
72.	Epidemiol Health	2	0.24	Korea	19
73.	Epidemiol Infect	2	0.24	England	19
74.	Epidemiol Mikrobiol Imunol	2	0.24	Czech Republic	19
75.	Front Microbiol	2	0.24	Switzerland	19
76.	Genome Announc	2	0.24	United States	19
77.	Germs	2	0.24	Romania	19
78.	Glob Health Action	2	0.24	Sweden	19
79.	Int J Infect Dis	2	0.24	Canada	19
80.	J Biol Chem	2	0.24	United States	19
81.	J Bioterror Biodef	2	0.24	Not mentioned	19
82.	J Clin Virol	2	0.24	Netherlands	19
83.	J Comp Pathol	2	0.24	England	19
84.	J Gen Virol	2	0.24	England	19
85.	J Glob Infect Dis	2	0.24	India	19
86.	J Health Commun	2	0.24	United States	19
87.	J Immunol	2	0.24	United States	19
88.	J Spec Oper Med	2	0.24	United States	19
89.	J Virol Methods	2	0.24	Netherlands	19
90.	Kansenshogaku Zasshi	2	0.24	JAPAN	19
91.	Lab Med	2	0.24	United States	19
92.	Lancet Glob Health	2	0.24	England	19
93.	Med Clin (Barc)	2	0.24	Spain	19
94.	Med Hypotheses	2	0.24	Scotland	19
95.	Med J Aust	2	0.24	Australia	19
96.	Med Mal Infect	2	0.24	France	19
97.	Med Sci (Paris)	2	0.24	France	19
98.	Milbank Q	2	0.24	United States	19
99.	Mol Pharm	2	0.24	United States	19
100.	Nurs Times	2	0.24	England	19
101.	Nursing	2	0.24	United States	19

102.	Osong Public Health Res Perspect	2	0.24	Korea	19
103.	Pediatr Infect Dis J	2	0.24	United States	19
104.	Pharm Unserer Zeit	2	0.24	Germany	19
105.	PLoS Curr	2	0.24	United States	19
106.	PLoS One	2	0.24	United States	19
107.	Proc Natl Acad Sci U S A	2	0.24	United States	19
108.	Sci Am	2	0.24	United States	19
109.	Tidsskr Nor Laegeforen	2	0.24	Norway	19
110.	Trans R Soc Trop Med Hyg	2	0.24	England	19
111.	Trop Med Int Health	2	0.24	England	19
112.	Vaccine	2	0.24	Netherlands	19
113.	Vet Pathol	2	0.24	United States	19
114.	Vet Rec	2	0.24	England	19
115.	Zh Mikrobiol Epidemiol Immunobiol	2	0.24	Russia	19

Conclusion

In the field of medicine, the results show that Ebola literature is growing year after year is in inconsistent manner. United States records on Ebola literature covered maximum numbers followed by England. Further the research productivity of Ebola confirms the implications of Bradford's Law of Scattering.

References

1. Mahapatra, M. (1985). On the Validity of the theory of Exponential Growth of Scientific Literature, Proceedings of the 15th IASLIC Conference, Bangalore, p. 61-70.
2. Wooster, H. (1970). The future of scientific publishing - or, what will scientists be doing for Brownic points?, *Journal of Washington Academy of Sciences*, 60: 41-50.
3. Vickery, B.C. (1968). Statistics of scientific and technical articles, *Journal of Documentation,* 24: 192-196.
4. Martyn, J. (1973). Secondary services and the rising tide of paper, *Library Trends*, 22: 9-17
5. Gottschalk, C.M. and Desmond,W.F. (1963). Worldwide census of Science and Technology serials. *American Documentation,* 14: 188-194.
6. Baker, D. (1976). Recent trends in the growth of chemical literature*, Chemical and Engineering news,* 54: 23-27.
7. Conard, G.M. (1957). Growth of biological literature and the future of biological abstracts, *Federal Proceedings*, 16: 711-715.
8. May, K.O. (1966). Quantitative growth of the mathematical literature, *Science,* 154: 1672-1673.
9. Lamb, G.H. (1971). The coincidence of quality and quantity in the literature of mathematics. (Ph.D. dissertation, Case Western Reserve University), *Dissertation Abstracts International* 32/06-A: 33-40.
10. Sengupta, I.N. (1973). Recent growth of the literature of biochemistry and changes of ranking of periodicals*, Journal of Documentation*, 29: 192-211.
11. Sengupta, I.N. (1974). Choosing physiology journals: A recent study of the growth of its literature, *Annals of Library Science and Documentation*, 20: 39-57.
12. Sengupta, I.N. (1975). Choosing microbiology journals: Study of the growth of literature in the field, *Annals of Library Science and Documentation*, 21: 39-57.
13. Maheswarappa, B.S. and Ningoji, M.M. (1992). Growth of literature in the field of Science and Technology in India, *International Information Communication and Education,* 11(2): 186-197.
14. Maheswarappa, B.S. and Ningoji, M.M. (1993). A study of the growth of Biological Science Literature in India from 1965-1989, *ILA Bulletin,* 29(1-2): 47-57.
15. Alexandre, R. et al. (1995). 10 Years of Literature on AIDS (1983-1992): Bibliometric Analysis. *Enfermedades Infecciosasy Microbiologia Clinica*, 13: 338-344.
16. Karki, M.M.S., Garg, K.C. and Sharma, P. (2000). Activity and Growth of Organic Chemistry Research in India during 1971-1989' *Scientometrics*, 49: 279-88.17. Macias-Chapula CA. (2000). AIDS in Haiti: a bibliometric analysis. Bulletin of the Medical Library Association, 88(1): 56-61.

18. Rajendran, P, Ramesh Babu, B and Gopalakrishnan, S (2005). Bibliometric Analysis of "Fiber Optics" literature. *Annals of Library and Information Studies*, 52 (3): 82-85.

19. Ramesh Babu B and Ramakrishnan J, Trends in the growth of literature on hepatitis (1984-2003), *Journal of Korean Library and Information Science Society,* 38 (2) (2007) 31-50.

20. Ramakrishnan J and Thavamani K. "Growth of literature in the field of Hepatitis-C" (2013). *Library Philosophy and Practice (e-journal)* at University of Nebraska - Lincoln. Paper 944.

21. Steven SR, Mapping the literature of cytotechnology, *Bulletin of Medical Library Association*, 88(2) (2000) 172-77.

22. Hook S A, Wagner c e, Mapping the literature of dental assisting, *Bulletin of Medical Library Association*, 87(3) (1999) 277-82.

23. Walcott B M, Mapping the literature of diagnostic medical sonography, *Bulletin of Medical Library Association*, 87(3) (1999) 287-91.

24. Smith A M, Mapping the literature of dietetics, *Bulletin of Medical Library Association*, 87(3) (1999) 292-96.

25. Haaland A, Mapping the literature of dental hygiene, *Bulletin of Medical Library Association*, 87(3) (1999) 283-86.

26. Burnham J E, Mapping the literature of respiratory therapy, *Bulletin of Medical Library Association*, 85(3) (1997) 293-96.

27. Slater L G, Mapping the literature of speech-language pathology, *Bulletin of Medical Library Association*, 85(3) (1997) 297-02.

28. Wakiji E M, Mapping the literature of physical therapy, *Bulletin of Medical Library Association*, 85(3) (1997) 284-88.

29. Burnham J E, Mapping the literature of radiologic technology, *Bulletin of Medical Library Association*, 85(3) (1997) 289-92.

30. Reed K L, Mapping the literature of occupational therapy, *Bulletin of Medical Library Association*, 87 (3) (199) 298-04.

31. Hall E E, Mapping the literature of perfusion, *Bulletin of Medical Library Association*, 87 (3) (1999) 305-10.

32. Delwiche F A, Mapping the literature of clinical laboratory science, *Bulletin of Medical Library Association*, 91(3) (2003) 303-10.

33. Schloman B E, Mapping the literature of allied health: project overview, *Bulletin of Medical Library Association,* 85 (3) (1997) 271-77.

34. Ramesh Kundra et al, Behavior of Bradford's Law towards citation data on Indian Medical Journal. In: *International Conference on Scientometrics and Informetrics Proceedin.1999.* Colima; Mexico. p.580.

35. Ramesh Babu B and Ramakrishnan J, Indian contributions to the field of hepatitis (1984-2003): A Scientometric Study. In: Third International Conference on Webometrics, Informetrics, Scientometrics Science and Society & Eighth COLLNET Meeting. 2007. ICAR Symposium Hall, National Agriculture Science Complex; New Delhi (India). pp.22-32.

36. Patra S K and Prakash Chand, HIV/AIDS Research in India: A bibliometric study, *Library and Information Science Research.* 29 (2007) 124-134.

37. http://en.wikipedia.org/wiki/Ebola_virus_disease.

38. Hunt R, Plant growth analysis: London: Edward Arnold.1978.

39. Blackman V H, The compound interest law and plant growth, *Annals of Botany,* 33 (1919) 353-360.

40. Mahapatra M. (1985). Op.cit., pp.61-70. Bradford S C, Sources of Information on specific subjects, *Engineering,* 137 (1934) 85-86.

Indian Journal of Library and Information Science
Volume 9 Number 2, May - August 2015

Original Article

Growth Analysis of Research Literature on Malnutrition in Children, 1999 to 2014: A Scientometric Study

Keshava*, Lakshminarasimhappa M. C.**

Abstract

The paper analyse the articles as reflected through PubMed database for the year 1999 to 2014 to investigate the trend in the growth of literature on Malnutrition in children. The results of the study reveals that , the value of an average RGR of articles R_t(P) increased gradually from 0.63to 2.47 (1999 to 2013) and there is miniature decrease in the year 2012 (2.33). The mean relative growth R_t(P) for the first 8 years (1999 - 2006) indicates a growth rate of 2.53 years, whereas for the next 8 years (2007 - 2014) it was increased 4.48 yearsThe R^2 value for the linear trend (0.9187) is more than that of exponential trend (0.9262), which indicates that the exponential trend is more suitably fit to as compared to linear trend.

Keywords: Malnutrition; Nutrition Food; Children; Scientometric Study; Growth of Literature; RGR (Relative Growth Rate); Doubling Time(D_t).

Introduction

Scientometrics is a branch of 'Science'. It is one of the most significant measures for assessment of scientific productivity. It is also interrelated to and overlapping benefits with bibliometrics and informetrics.

In 1969, Nalimov and Mulchenkocoined the Russian equivalent of the term "Scientometrics" *(Nalimov, and Mulchenko, 1969).* The term 'Scientometric' is a field which consists of the quantitative methods applied to the study of the science as an information process. This techniquecontains statistical and thesaurus methods, and indicators as to the number of citations, terms so on and it is a scientific discipline, which performs reproducible measurements of scientific activity, and exposes its objective quantitative regularities. *(Keshava, 2014)*

'Scientrometrics is an application of *quantitative techniques* (i. e. system analysis, mathematical and statistical techniques etc)*to scientific communication* (science output, science policy, science administration etc.) with the objectives of:

(a) Developing science indicators; (b) Measuring the impact of science on society; and (c) Comparing the output as well as the impact of science at national and international levels.(Pouris, 1989).

The world's most dangerous issue in children's health is that Malnutrition. It is one of the serious healthiness problems and high contributor to child mortality. Nearly 1/3 (one- third) of children in under developed and developingcountries are either skin-and-bone or stunted. In addition to that more than 30% of people living in developing countries suffer from micronutrient deficiencies.*(ICN2, 2014)*

Entire physical development of Children depends on their Nutrition food,if the body does not have the energy it wants in the form of food, otherwise they may suffer weight loss (generally due to lack of muscle mass). Malnutrition affectedtoinsufficient fat stores and very pint-sized muscle in children.They often have prominentbonesand excessive large abdomens.it reduces brain development, and these children have a high incidence of problem because their bodies lost power to fight with infection. Malnutrition causes to the high death rate among children in developing countries.*(JAMA,2004)*

The world has failed to control malnutrition over the past decades until now, even though well-tested methodologies for doing so exist. More than 1/8 (One in Eight) of the population still suffer from malnutrition in world. The scale of the problem will

Author's Affilation: *Associate Professor **Project Fellow (UGC-MRP), Department of Library and Information Science, Tumkur University, Tumakuru, Karnataka, India- 572103.

Reprint's Request: Dr. Keshava, Associate Professor, Department of Library and Information Science, Tumkur University, Tumakuru, Karnataka, India- 572103.
Email:keshtut@gmail.com

prevent many countries from placing the foundation for sustainable development that is central to *the post-2015 development agenda* and unless policies and priorities are changed. Where as in Sub-Saharan Africa, there is malnutritionwillgoing to increase and malnutrition remains widespread and improving slowly in South-East Asia. *(JAMA, 2004)*

Home-based treatment is been developing by WHO for severe acute malnutrition for cultivating the lives of thousands of children per year. Ready-to-use Therapeutic Food (RUTF) has revolutionized the treatment of severe malnutrition. WHO is providingfoodsfor malnourished children for safe to use at home and certify rapid weight gain to severe cases.(WHO, 2015)

Department of Nutrition for Health and Development stated about Malnutrition as, "We are guilty of many errors and many faults, but our worst crime is abandoning the children, neglecting the foundation of life. Many of the things we need can wait. The child cannot. Right now is the time his bones are being formed, his blood is being made and his senses are being developed. To him we cannot answer "Tomorrow". His name is "Today" (WHO, 2015).

Growth of Literature

The variations in the mass of literature over a specific period termed as growth literature. Gilbert (1978) has studied the existing literature on the indicators of growth of knowledge in scientific specialties, and has listed many ways of measuring it, noting their strength and limitations and commenting, at same time, on their use. Gupta, B.M (1977) suggests two approaches that have normally been considered in understanding knowledge growth: (i) Qualitative and (ii) Quantitative. Qualitative methodsrecommendedthe structural or descriptive models of knowledge growth, while descriptive model use social phenomenon to explain diffusion and formation of knowledge. Quantitative approach is trusted on summarization of statistics to elaborate the observed behavior, whereas others apply growth and technology diffusion models and bibliometric / Scientometric techniques.

More number of studies has been made on the growth of literature in the field of Medicine literature but a lesser amount ofstudies has been reported on growth of research literature on*Malnutrition in Children*. Therefore an attempt has been made to study the growth and dynamics of Malnutrition research literature.

Objectives

- To define the growth of 'Malnutrition in Children' literature by calculating relative growth rate and doubling time for publications;
- To fit both modified exponential curve and linear curve for the original publications data studying actual growth pattern.

Scope And Methodology

The Scientometric study is a statistical method of counting to evaluate and quantify the growth of a subject. The research trend during the said time span would be clearly understood from this study and a predictive projection may be made for an anticipatable future. There are several areas in science, social science and arts for which scientometric studies have been carried out.

The present study is confinedtoonly'Malnutrition in Children' literature as reflected in the PubMed database which were published during year from 1999 to 2014.

The data for this study was downloaded from the*PubMed database*, it is a free resource developed and maintained by the National Center for Biotechnology Information (NCBI) at the National Library of Medicine (NLM). Here we used Pubmed for downloading the data; the search term applied was "Malnutrition in Children". This may considered as central keyword of the topic discussed. A total of 8112 records spanning over the years 1999 to 2014 were downloaded from Pubmed on 15.02.2015. The downloaded data was analysed for source items to find the research trend. The articles were categorized chronologically and transported to spread sheet application (MS Excel) and evaluated the data as per objectives of the study.

Data Analysis

The articles were downloaded and classified chronologically. To investigate the nature and growth of articles, exponential, linear and logistic were tested. The exponential growth is define as:

$$F(t) = a\, e^{bt}$$

Where

a = the initial size of literature i.e. at time t=o and b, the continuous growth rate is related to the

percentage by which the size increases each year.

The logistic has a lower limit and an upper limit or a celling beyond which the size cannot grow and can be represented mathematically as $U_t = \frac{K}{1+\mu}$

Where,

U = expected size of literature

K and μ = constants and t = time.

Similarly, the linear growth is represented as $U_e = a + b_t$

Relative Growth Rate (RGR)

Relative Growth Rate (RGR) and Doubling Time (Dt) had been applied. RGR means the increase in the number of articles per unit of time. The mean RGR of articles over the exact period of interval is represented as:

Rt = Relative Growth Rate of articles over the specific period of time.

$\log_e p(0)$ = Logarithm of initial number of articles

$\log_e p(t)$ = Logarithm of final number of articles

Similarly, RGR of subject's articles has increased in number of articles per unit of time. The mean RGR of subject articles Rt(SA) over the period the specific period of time is determined as:

$$Rt(SA) = \frac{1}{t}\left[\log_e p(t) - \log_e p(0)\right]$$

Rt (SA) = Relative Growth Rate of articles over the specific period of time.

= Logarithm of initial number of articles

= Logarithm of final number of articles

Doubling Time (D_t)

Dt (Doubling Time) has been calculated using the following formula:

Doubling Time or D_t = 0.693/R

Dt (Doubling Time) is directly related to RGR and is defined as the time required for the articles to become double of the existing amount. In case the number of articles in subject doubles during a given period, then the difference between logarithms of number at the beginning and at the end of this period must be the logarithm of the number 2. We used Napier logarithm and the taken value of is 0.693. Therefore, as per this (0.693) and an average growth rate we calculated by what time interval does the Napier logarithm of numbers increase by 0.693. So the Doubling time is calculated as

$$Dt(SA) = \frac{\log_e 2}{Rt(SA)} = \frac{0.693}{Rt(SA)}$$

Here, Dt (SA) = average doubling time of the articles(Keshava, 2014).

Here Doubling time can give more intuitive sense of the long term impact of growth than simply viewing the percentage growth rate.

$$T_d = \frac{\log 2}{\log(1+\frac{r}{100})}$$

Where:

T_d= Doubling Time

r= Constant Growth rate.

Table 1: Relative Growth-rate (RGR) and doubling time (D_t) of articles in Malnutrition in Children from 1999 to 2014.

Year	No. of Articles	Cumulative	$Log_e 1^p$	$Log_e 2^p$	R_t (P)	Mean R_t (P)	D_t (P)	Mean D_t (P)
1999	344	344	5.84	5.84	0.00		0.00	
2000	394	738	5.98	6.60	0.63		1.26	
2001	353	1091	5.87	6.99	1.13		2.26	
2002	439	1530	6.08	7.33	1.25		2.50	
2003	421	1951	6.04	7.58	1.53		3.07	
2004	381	2332	5.94	7.75	1.81		3.62	
2005	460	2792	6.13	7.93	1.80		3.61	
2006	461	3253	6.13	8.09	1.95	1.26	3.91	2.53
2007	530	3783	6.27	8.24	1.97		3.93	
2008	546	4329	6.30	8.37	2.07		4.14	
2009	555	4884	6.32	8.49	2.17		4.35	
2010	598	5482	6.39	8.61	2.22		4.43	
2011	566	6048	6.34	8.71	2.37		4.74	
2012	649	6697	6.48	8.81	2.33		4.67	
2013	731	7428	6.59	8.91	2.32		4.64	
2014	684	8112	6.53	9.00	2.47	2.24	4.95	4.48
	8112							

R^2 (Linear trend for no. of articles)= 0.9187

R^2 (Exponential trend for no. of articles) =0.9262

R^2 (Exponential trend for cumulative no. of articles) = 0.9076

Fig. 1: Linear trend for no. of articles from 1999 -14

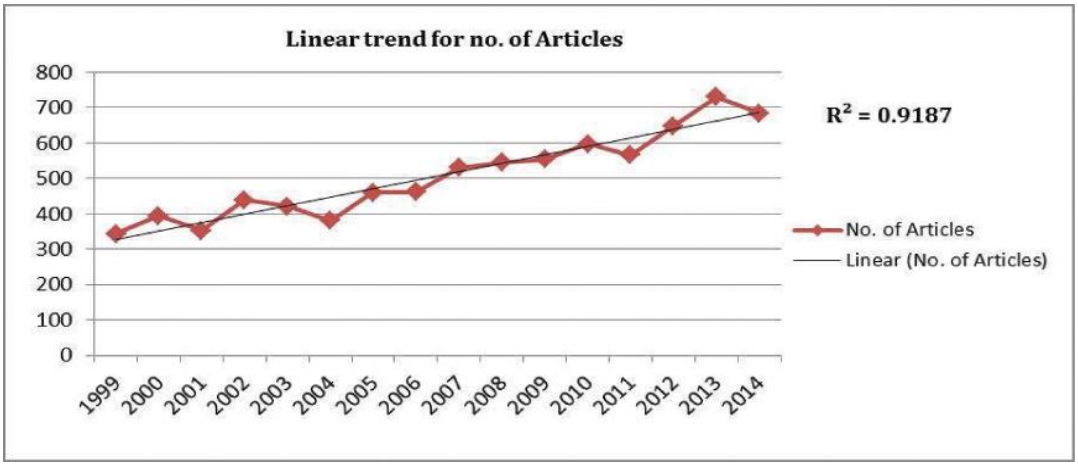


Fig. 2: Exponential trend for no. of articles from 1999-14

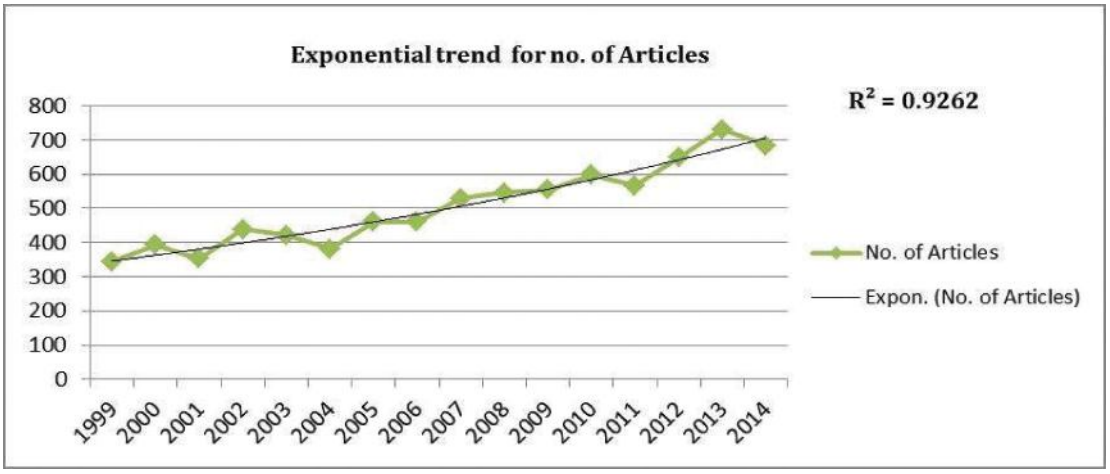
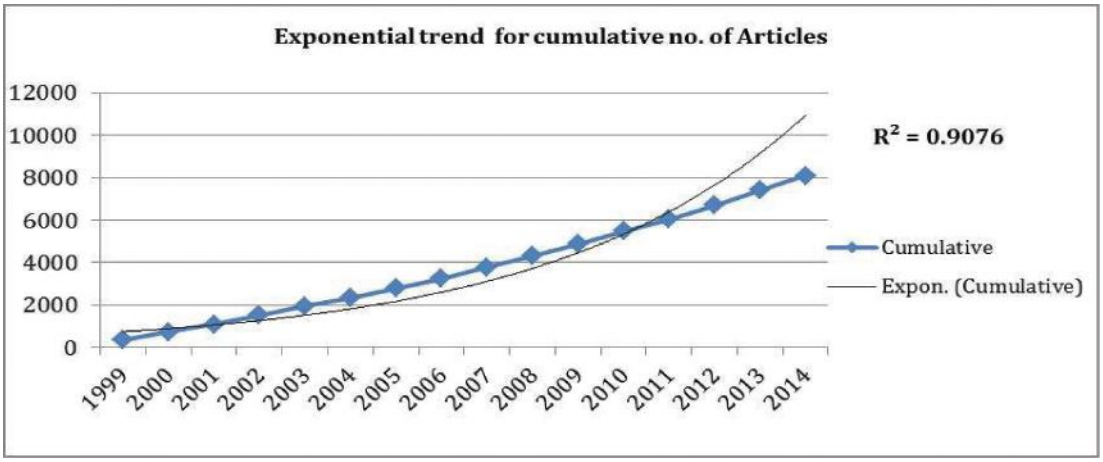


Fig. 3: Exponential trend for cumulative no. of articles from 1999-14



Relative Growth Rate (RGR)

As the table1 clearly indicates, the value of an average RGR of articles $R_t(P)$ increased gradually from 0.63to 2.47 (1999 to 2013) and there is miniature decrease in the year 2012 (2.33). Therefore during year 2000 to 2013 there were much research has been done to eradicate this deadly disease. Majority of the countries of the world has given much importance to research to control and combat the disease , hence the RGR has been increased. It is due to most of the countries successfully eradicated the disease of malnutrition. Therefore, not much studies have not

been reported. For the first eight years i.e. 1999 to 2006 the RGR was 1.26 and in the next eight years i.e. from 2007 to 2014, it was increased to 2.24.interestingly it noted that, during the year 2013 (2.32) the $R_t(P)$ has been decreased slightly. whereas in the Year 2014their has been $R_t(P)$ growth was risedupto (2.47).Because of variations in Cumulative articles.Cumulativevalues of Doubling time of the publication of articles $D_t(P)$ increased gradually from 2000 (1.26 years) to 2013 (4.95).

The mean relative growth $R_t(P)$ for the first 8 years (1999 - 2006) indicates a growth rate of 2.53 years, whereas for the next 8 years (2007 - 2014) it was increased 4.48 years. It shows that the mean relative growth of malnutrition literature has shown an increasing trend. It may be due to interdisciplinary and multidisciplinary nature of research and the communication patterns of medical researchers. Therefore, it is inferred that majority of the countries have shown keen interest in research to eradicate Malnutrition. The linear growth trend is fit to number of articles and exponential growth trend fit to number of articles and number of cumulative articles for the years 1999 to 2014. The table 1 and Fig. 1, 2 & 3 reveals that the R^2 value for the linear trend (0.9187) is more than that of exponential trend (0.9262), which indicates that the exponential trend is more suitably fit to as compared to linear trend. Further, the exponential trend is fit to the cumulative number of articles from 1999 to 2014. The R^2 value for this trend is 0.9076, shows 91.38 % variation observed from the cumulative number of articles.

Major Findings

The year-wise analysis of the growth of literature output shows that the growth was asymmetrical from the year 1999 to 2009, and it was high during 2006 to 2007. Again decreased in the year 2008.Between the years 2009 to 2013 there was a exponential growth of research literature on malnutrition worldwide. The high productivity during these years may be due to their significance of the studies on Malnutrition, which may have got prominence in Research and subsequent literature as well. Therefore, it is evident from the study that there was an asymmetrical growth of literature on 'Malnutrition in Children'during a span of 16 year (1999 to 2014)

Conclusion

Many of the disciplinesaround the world, would be aimed at informed decision making, critical assessments of the amount of new knowledge contributed by the research output and so on. Therefore valid measures of knowledge growth may be obtained. It helps to provide exact, useful descriptions and estimatedgrowthof knowledge in the field of 'malnutrition amongthechildren.

References

1. Nalimov, V. V and Mulchenko, S. M. (1969). Naukometriya. LzuchenieRazvitiyaNaukikak InformatisionnogoProtsessa [Scientometrics Study of the Development of Science as an Information Process], Nauka, Moskow, (English translation: 1971, Washington, D.C: Foreign Technology Division. U.Z. Air Force Systems Command, Wright – Patterson AFB, Ohio. (http://www.jalis.in/pdf/pdf4/Jeyshankar.pdf).
2. Keshava. *Scientometric Analysis of Social Science Research in India.* Karnataka Un(Keshava, 2004)iversity , Department of Library and Information Science. Dharawad: Karnataka University (2004), p125-126.
3. ICN2(Second International Conference on Nutrition). United Nations System Standing Committee on Nutrition, Rome. (19-21 November 2014). Retrieved from http://www.unscn.org/en/international_conference_on_nutrition/. Accessed on 09.03.2014.
4. United Nations System Standing Committee on Nutrition. Retrieved from http://www.unscn.org/en/international_conference_on_nutrition/. Accessed on 09.03.2014.
5. JAMA (Journal of the American Medical Association). Malnutrition in Children. Retrieved from http://jama.jamanetwork.com/article.aspx?articleid=199199. Accessed on 09.03.2014.
6. WHO (World Health Organisation). Malnutrition. http://www.who.int/maternal_child_adolescent/topics/child/malnutrition/en/. Accessed on 10.03.2015).
7. WHO (World Health Organization) Retrieved from http://www.who.int/nutgrowthdb/en/. Accessed on 09.03.2015).
8. Keshava. (2004). *Scientometric Analysis of Social Science Research in India.* Karnataka University , Department of Library and Information Science. Dharawad: Karnataka University
9. Pubmed. Malnutrition in Children Statistical Data. Retrieved from http://www.nlm.nih.gov/pubs/factsheets/pubmed.htmlAccessed on 09.03.2014.

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://www.rfppl.co.in)

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

A Lal
Publication-in-Charge
Indian Journal of Library and Information Science
Red Flower Publication Pvt. Ltd.
48/41-42, DSIDC, Pocket-II
Mayur Vihar Phase-I
Delhi – 110 091
India
Phone: 91-11-22754205, 45796900, Fax: 91-11-22754205
E-mail: redflowerppl@gmail.com, redflowerppl@vsnl.net
Website: www.rfppl.co.in

Indian Journal of Library and Information Science
Volume 9 Number 2, May - August 2015

Original Article

Research Productivity of the Faculty of Education, Annamalai University: A study

S. Rajeswari*, K. Praveena, M. Nagarajan*****

Abstract

The paper presents the contribution of Education faculty members of Annamalai University, describes the year wise growth and form wise distribution of the research output. Studies the impact of research under different departments in the education faculty of the Annamalai University and analyses the strong and weak areas of university research, collaborative nature of research in terms of authorship pattern. The results show that there is significant growth of research productivity in the faculty of education during the period of study with less collaboration.

Keywords: Faculty of Education; Paper Publication; Research Output.

Introduction

Bibliometrics is the organization, classification and quantitative evaluation of publication patterns of macro and micro communications along with their authorship. It is a tool by which the state of science and technology can be observed through the traces of communication in science and technology system, most notably the published documents which comprise books, monographs, reports, papers in serials and periodicals and now-a-days also e-books and e-journals as well as in the broadest sense the WEB. Researchers in several disciplines have been interested in publication productivity as a means of assessing scholarly excellence of individual researchers within a field. Publication productivity as measured by the numbers of papers has also been regarded as one of the main indicators of reputation of institutions in general and academic institutions in particular. There is a growing awareness that the advantages of basing research and subsequent political choices, on criteria that lend themselves for more quantitative evaluation. The researchers of Library and Information Science extensively use the bibliometrics as a tool to identify the pattern of publication, authorship and secondary journal coverage with the objective of getting an insight into the dynamics growth of knowledge in the areas under consideration. This consequently leads to the better organization of information resources which is essential for its most effective and efficient use.

The Annamalai University is one of the largest residential universities in the country founded by Dr. Rajah Sir Annamali Chettiar. It was first started as the Meenakshi College in 1920 became University in 1929 and presently it has 48 department of study. It has strength of about 40000 students pursuing different regular programs of study. The university has 5 departments (table 1) under the faculty of education.

Objectives of the study

The main objectives of the present study are:

a. To analyze the year-wise distribution of the research output of the faculties of education of Annamalai University during 2007 to 2011.

b. To study the department-wise output of the faculties of education and to identify strong and weak disciplines of faculties of education with reference to the research output.

c. To analyze the form-wise distribution of research output.

d. To analyze the authorship pattern of the research output.

e. To study the collaborative efforts by the academics of Annamalai University.

Author's Affilation: *,**Assistant Professors, ***Professor and Head, Department of library and Information science, Annamalai University.

Reprint's Request: Dr. K. Praveena, Assistant Professors, Department of library and Information science, Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu-608002.

E-mail: praveenakrish07@yahoo.co.in

Table 1: Departments in Education faculty

Departments in Education Faculty	Year of Establishment
Department of Education	1953
Department of Psychology	1961
Department of Physical Education & Sports Science	1974
Department of Life Long Learning	1986

Methodology

The present study uses 5 years publication output data from 2007-2011 to understand the broad characteristics of the research output of the education faculties of the university. The data for the study was taken from the Annual report of the university from 2007-2011 which were then tabulated and analyzed.

Data Analysis

Year-wise Growth of research output

Table 2 shows that year-wise growth rate of research output by the education faculty of Annamalai University. It could be noted that during the five years of study, its publication out- put shows a steady rise, from 83 papers (16.84%) in 2007 to 95 papers (19.27%) in 2011. The highest being 162 papers in 2010.

Table 2: Year-wise Growth of research output

Year	Number of Research Output	Percentage	Cumulative total number of research output	Cumulative percentage
2007	83	16.84	83	16.84
2008	75	15.21	158	32.05
2009	78	15.82	236	47.87
2010	162	32.86	398	80.73
2011	95	19.27	493	100
Total	493	100		

Department-wise distribution of Research Output

There are 4 departments under the Education Faculty of the University. The publication output of the departments is given in table-3. The department of physical education top with 214 publication which is 43.41 percent of the total contribution. The second rank is to department of education with 199(40.37%) publications. The less number of publications are brought out by the department of psychology, i.e., 29(5.88%) publications. The reason is the faculty members in the topped departments is more in number than the other departments.

Table 3: Department-wise distribution of Research Output

S. No	Department	Number of Research Output	Percentage	Cumulative total number of research output	Cumulative Percentage
1.	Dept. of Education	199	40.37	199	40.37
2.	Dept. of Psychology	29	5.88	228	46.25
3.	Dept. of physical education & Sports science	214	43.41	442	89.66
4.	Dept. of Life Long Learning	51	10.34	493	100
	Total	493	100		

Form-wise distribution of research output

Table 4 presents the form-wise distribution of research output. The results of the study points out 163(33.06%) of the publication are journal articles, 107(21.70%) are articles in conference proceedings, 223(45.24%) are articles in seminar volumes.

Authorship patterns

Table 5 shows the authorship patterns of the research productivity. It could be noted that out of 493 total publication 430(87.22%) are single authored, with two authors contributing 51(10.34%), papers, 10 (2.03%) are three authors, and more than three authors contributing 2 papers (0.41%).

Table 4: Form-wise distribution of research output

S. No	Forms	Number of research output	Percentage	Cumulative total number of research output	Cumulative percentage
1.	Journal articles	163	33.06	163	33.06q
2.	Conference proceedings	107	21.70	270	54.76
3.	Seminar volume	223	45.24	493	100
	Total	493	100		

Table 5: Authorship patterns

S.No	Author	Number of research output	Percentage	Cumulative total number of research output	Cumulative percentage
1.	One	430	87.22	430	87.22
2.	Two	51	10.34	481	97.56
3.	Three	10	2.03	491	99.59
4.	Above three	2	0.41	493	100
	Total	493	100		

Collaboration of the Research

As per the authorship pattern, there are 430 papers which are single authored and only 63 papers which are multiple authored (table 6) which points out that there is least collaboration in the research activities in the Education faculty of the Annamalai University. Extend of collaboration can be measured with the help of multi-authored papers. To measure the co-efficient is the ratio of the number of collaboration research papers during a certain period of time. As per the formula given by K.Subramanyan (1983), for determining the degree of collaboration in a discipline, the value of collaboration will be between 0 and 1.

To determine the degree of collaboration of publications, the number of single authored and multi-authored publications is calculated and is applied to the formula C = Nm / Nm+Ns

C = Degree of collaboration

Nm = Number of multi-authored works

Ns = Number of single-authored works

Here, C = 63 / 493

= 0.127

Hence, the Degree of Collaboration of Publications of the Education faculty of the Annamalai University is 0.127.

Findings and Suggestions

Table 6: Collaboration of the Research

S.No	Authorship Patterns	Number of research output	Percentage	Cumulative total number of research output	Cumulative percentage
1.	Single Author	430	87.22	430	87.22
2.	Multiple Author	63	12.78	493	100
	Total	493	100		

The research output shows a steady growth during the period of study which shows that the departments under the faculty of education are successful in carrying out research activities. Those departments which show a decrease in the output needs to be further encouraged. Most of the papers are published as seminar volume. There is also paper published in the journal articles and conference proceedings which indicates that faculties are getting enough opportunities to present their papers. The authorship pattern shows that there is more single-authored papers than multi-authored and also there is a decline in the degree of collaboration of research activities. To increase collaboration in research output, the participatory research activities need to be encouraged which will improve the quality of research.

More incentives, rewards and encouragement should be given to the faculty members for publishing in high impact journals. In addition, faculty should be encouraged to conduct participatory research projects with other university departments so that their interaction with the outside world can be increased. Also, the existing library and information facilities in the university should be strengthened and access to electronic resources should be provided.

References

1. Amritpal Kaur and Sangeeta Aggrawal, "Bibliometric Analysis of Research Publications of Department of Chemistry, Gurunanak Dev University, Amritsar", IASLIC Bulletin,Vol.55, No.1. pp.20-28,2010.
2. Gupta B.M. and S.M. Dhawan, "Growth and Impact of Research Output of University of Mysore, 1996-2006: A Case Study", Annals of Library and Information Studies, Vol.55, No. 3, pp. 185-195,2008.
3. Balu Maharana, Supreeti Das and Sabitri Majhi, "Research Productivity of Agricultural Scientists of Central Rice Research Institute (CRRI), Cuttack:A study" Indian Journal of Information Sources and Services, Vol.1,No.1, pp.60-65, 2011.
4. Subramanyan, K. "Bibliometric Studies of Research Collaboration: A Review", Journal of Information Science,Vol.6, No.1, pp.33-38,1983.

Indian Journal of Library and Information Science
Volume 9 Number 2, May - August 2015

Original Article

Use of Library Resources and Facilities in College of Fisheries Library, Mangalore: A Study

Lokaraja V. S.*, Purushothama Gowda**

Abstract

Information has been identified as one of the strategic resource required for information center. This paper examines the use of library resources and facilities provided in college of fisheries Mangalore. A survey conducted by selecting the students, research scholar and teaching staff to obtain their needs and opinions. Various research methods like questionnaire method, observation method and Interview method are used to analyses the various collections usage, frequency and purpose of library visits, user satisfaction of library facility etc.

Keywords: Resources; Facilities; Services; College Library; Fisheries.

Introduction

The library plays a pivotal role in any institution as it fulfills the needs of users. The main objective of any library is to cope with the challenge of providing its user community with increased access to knowledge in any for at any time distance. Special library consist of a balanced collection of material comprehensive in the main interests of the organization it serves. Special library is equipped with the essential bibliographical aids, reference works etc. It also serves the specialists by evaluating all incoming documents, and ensuring that they reach the right person. The reputation of any special library is judged not merely by the presence of a large number of appropriate titles and other materials, but by the efficiency of the methods used to serve and bring these to the notice of the readers.

At the first sight, one may think that the introduction of computer system will make the services of the library personnel completely redundant. But this is not the case; because, technically qualified personnel will be essential to provide access to databases and data banks. So far as the situation of the libraries in the electronic world is concerned, the libraries still have the important role to play to collect, catalogue, and index materials of purely for local interest.

It seems likely that libraries and other types of information personnel will still have vital role to perform in a paperless system. The information personnel who are familiar with the resources, available in machine readable form and with vocabularies, query languages, and search strategies will still be needed to exploit these resources most effectively and efficiently. Computer scientist holds the opinion that just after a decade the 21st century will be the "paperless society". Prof. P.N. Kuala has opined that it would be more correct to term the future as 'Balance Media Society', but not "paperless".

Research Institute Libraries

Agricultural Research Institutes in India are spread in almost all the states and union territories on the basis of crop and Research priorities. They are established and administered by the different agencies of central government. Majority of them are under the administrative control of ICAR, New Delhi., Some are under the Council of Scientific and Industrial Research (CSIR). New Delhi and some are under different departments of Government of India. Predominant among all is Indian Agricultural Research Institute (IARI). New Delhi is being a premier institution, conducting agricultural research, post graduate education and extension education IARI's library in one of the biggest libraries in Asia

Author's Affilation: *Research Scholar, Library and Information Science department, **Deputy Librarian, Mangalore University Mangalagangotri, Mangaluru, Karnataka 574199.

Reprint's Request: Lokaraja V. S., Research Scholar, Library and Information Science department, Mangalore University Mangalagangotri, Mangaluru, Karnataka 574199.

E-mail: lokrajvtl@gmail.com

Purpose of the study

It is possible for a library to meet most of the requirements of its clientele by way of material resources, personnel resources, service resources, etc. It must be realized that speed of the Research and Development (R and D) activity is dependent on the efficient library services.

Library service is a social service which aims at self development and improvement of skill and efficiency of the people of all walks of life. Obviously, the very purpose of library service will be defeated unless a minimum quality or standard is maintained. Though quality aspect is involved in every material that is acquired or every action that is undertaken in a library, the ultimate quality of the library is judged by the standard of the service that it provides to its users. The quality of library service is naturally influenced by the following factors:

- *Library Environment:* A cozy and inviting atmosphere in the library attracts the users and ensures better utilization of resources and services of the library.
- *Library Resources:* The Quality of library service depends on how for the resources are able to meet the information requirements of the researchers and how well they are organized.
- *Library aids:* By library aids are meant all those, materials that help in library work, such as catalogue, cabinets, kardex etc., and various mechanical devices employed in libraries.
- *Library staff:* Quality depends on various aspects such as adequate number, training, experience and attitude.

Hence, a detailed study is essential to see through that the library is functioning smoothly and efficiently. It is also essential to find out whether the users are satisfied with the quality service provided by the library, since users are the prime importance in any library. A library survey or a detailed study may help to a large extent in identifying the problems and thereby improving the quality of library service. A library survey may cover one or all the facets of a library, viz. stock, staff and services. It aims at identifying the lacunae and bottlenecks and sectors where inefficiency has set in. It brings out a clear picture of the real condition of a library and the effectiveness of its services. For the improvement of quality of library service and collection etc. conducting of user's survey or user's needs may also be very useful, through this, personal evaluation of the library services and collection by the users can be obtained.

Need of the study

All the luxuries of information-revolution and problems of information explosion are centered on the user and his / her convenience. Understanding the user is half the battle in providing information services. The user is not only the most important aspect, but is also, paradoxically, a dynamic component of information system. Hoadlynd Clark say that a library can achieve its goal," if the library is more precise about who its users are, this precision, coupled with more research into behavior and information gathering pattern of these user groups, will assist the library more effectively in developing programs and using its resources and limited finds to achieve desired goals".

Objective of the study

- To identify the areas of research among the scientists at college of Fisheries
- To examine the users' approaches to information in different types of information sources.
- To indentify the search strategy for an exhaustive information search on a specific topic.
- To examine the nature of research already done for current information.
- To understand the user awareness towards general as well as sophisticated services being provided by the college of fisheries library systems.
- To examine the behavior of researchers in gathering scientific information from external agencies.
- To ascertain the adequacy of sources of information for research according to users' point of view.
- To identify the most preferred abstracting and indexing journals among researchers in their respective field and extent of using them.
- To assess the overall picture of the library viz., its resources, service and facilities.
- To suggest ways and means for improving library facilities to ensure efficient, effective and fruitful organizational operation and services.

Review of literature

Susheela (2004), described the electronic publishing facilitated the research for quick and precise search

for scientific information. The paper gives stress on the various developments that have taken place to provide facilities to the researchers. The author says that the growth and developments of electronic journal is envisaged with electronic publishing, computer and web technology. Serial publications especially publishers of primary and secondary journals have been transforming their trends to the tune of current needs and priorities of scientific community, utilizing the latest technologies.

Khaiser and Pramodini (2007), the paper described the use of e-journals and databases subscribed by UGC-Infonet Consortium in University of Mysore. The objectives of the study were to determine the extent of use of electronic resources, and to identify the alternative sources used and the extent of awareness of UGC-Infonet Consortium resources among the users. The paper also examined the utilization and satisfaction levels of users with respect to the electronic resources.

Talija and Maula (2003), made a study with an aim to contribute to the development of a domain analytical approach for explaining the use and non-use of e-journals and databases. The authors identify and define factors to account for disciplinary differences in e-journal usage, outline hypotheses to be tested more rigorously in future research, and test them initially on a limited data set. The empirical data was gathered as a part of a wider qualitative study exploring scholars' use of networked resources in four different disciplines; nursing science, literature / cultural studies, history and ecological environmental science. The findings suggest that e-journals and databases are likely to be used most heavily in these fields.

Methodology for Research

The present study is restricted to seek opinion from selected group of users which includes the researchers, staffs and students belonging to different departments of College of fisheries Mangalore. The following methods were adopted to collect the data pertaining to the study:

Questionnaire Method

Necessary primary data are collected with the help of questionnaire. The college presently consists of the Directors, Scientific staff, Technical staff, Research scholars and Administrative staff at various levels who have professional qualification. For the study purpose, only the scientific staff and technical staff are considered as samples. A questionnaire (Appendix ll) was given to collect their responses with regard to their mode of library usage, approaches to document / information, modes of information gathering and awareness regarding the information services provided by the library. The details are given in the following table:

Table 1: showing the questionnaires distributed

Category	Total members	No. of Questionnaires	Response	Percentage
P.G. students & Research Scholars	42	30	30	100%
Undergraduate	95	50	50	100%
Teaching Staff	49	20	20	100%
Total	186	100	100	100%

Interview Method

The questionnaire method has been supplemented by interview method. Few discussions were also made with the library staff to clarify certain doubts.

Observational Method

The observational method gives all information about the working of library services, and also the arrangement of the documents etc. *Secondary Data:* A large number of records were consulted pertaining to the library, such as the Annual reports, Pamphlets Brochures, Newsletters and other records were referred to gather more information relating to library.

Profile of college of fisheries and its library Mangalore

The first Agricultural University, the University of Agricultural Sciences was established in 1963 through Mysore Act, No.22of 1963 of the State Legislature, for the development of agriculture, animal husbandry and allied science in Karnataka state (the erstwhile Mysore state). It was inaugurated on August21, 1964 by Dr. Zakir Hussein, the then vice president of India through Karnataka Act No.14

of two universities viz., the University of Agricultural Sciences, Dharwad While the former has territorial jurisdiction over Bangalore and Mysore revenue divisions (comprising the districts of Bangalore urban, Bangalore rural, Mysore,Tumkur, Kolar, Mandya, Kodagu, Dakshina Kannada, Hassan, Chickmaglur, Shimoga and Chitradurga) , the latter has territorial jurisdiction over Belgaum and Gulbarga revenue divisions (comprising the districts of Belgaum, Dharwad,Uttara Kannada,Gulbarga, Raichur, Bidar, Bijapur and Bellary). The College of Fisheries, Mangalore was established in 1969 by the University of Agricultural Sciences, Bangalore and is a constituent part of the university. It was first of its kind being established in the country.

The location of the college is such that it provides in one place the necessary facilities for academic, practical, field experience and research in marine, estuarine and fresh water fisheries, fish culture, fish processing technology, fishery engineering, marine biology, oceanography etc. The main campus of the college is located adjacent to Mangalore-Cochin Highway i.e., NH-17 on the outskirts of Mangalore. Out of a contiguous area of about 20 hectors of university land, about 8 hectors are occupied by the main campus, the rest constituting the agricultural research station of the university. An adjoining piece of land measuring about 9 hector has been acquired for constructing an extensive fish farm of earthen ponds. The technology wing occupies an area of 0.66 hectors. The fisheries department of the state has transferred to the college an adjoining plot of about 0.4 hectors to facilitate the construction of a by-product laboratory and oil pilot plant. The by-product laboratory has now been completed.

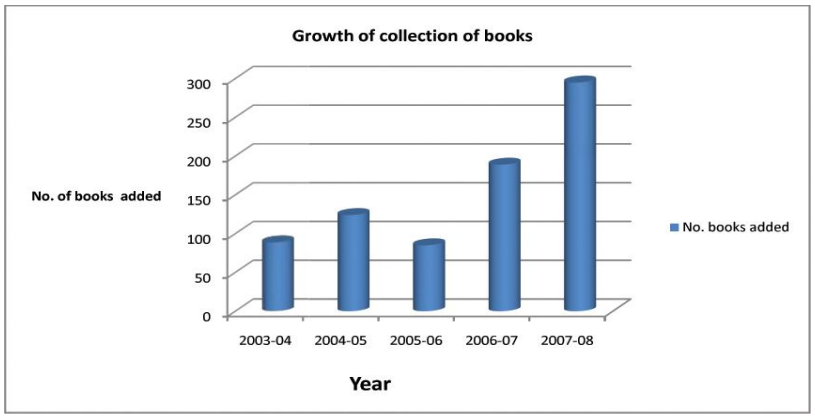
Table 2: showing different collections found in the library

Sl. No.	Sources	Copies
1	Books/Reference Books	13,557
2	Thesis/Dissertation	617
3	Standards and Reprints	4714
4	Maps	04
5	Pamphlets	821
6	Technical Reports	2795
7	Periodicals	147
8	Bound Volumes	4678
9	Microfiche	160
10	Audio /Video Cassettes	17

Table 3: showing the growth in the collection of books

Year	Number of Books added	Cumulative
2003-04	89	12864
2004-05	124	12988
2005-06	85	13073
2006-07	189	13262
2007-08	295	13557

Fig. 1: showing the growth in the collection of books



Library Collection

The Reference Collection

The term 'reference' means refers to a direction from one heading to another. The reference books like dictionaries, encyclopedias, gazetteers, yearbooks directories, etc., which are complied to supply definite pieces of information of varying extent and intended to be referred to rather than read.

Table 4: showing the collection of reference tools

Source	Copies
Dictionaries	26
Encyclopedia	38
Geographical source	13
Biological Source	07
TOTAL	**84**

Table 5: showing the total number of periodicals subscribed

Periodicals	Number
Indian	20
Foreign	15
Gratis	20
TOTAL	**55**

The Library under study has a very good reference collection comprising of encyclopedias, year books, directories, handbooks, geographical sources and so on.

The library under study subscribes for both foreign periodicals and Indian periodicals. The above table clearly reveals that the library subscribes for 55 periodicals of which 20 are Indian periodicals and 15 are foreign periodicals. Rests of the 20 periodicals are received as Gratis.

Library Building

The college of fisheries library building was shifted to its new building on 24-03-1980. it has sufficient space. The library building is constructed keeping in mind the future requirements of the library and its users. This building has three floors i.e., cellar, ground floor and first floor. The duplicate issues of periodicals and worn out books are kept in the cellar.

The circulation counter is at the entrance of the ground floor. A text book section is maintained in the same floor. Both multiple and single copies of books are arranged in this section. The reading facility is provided to the students in the same floor. About 40 readers can make use of this reading room at a time. The college subscribed about 3 newspapers for its readers and all these newspapers are kept in the reading room. Other than this there are two separate rooms in the library, one is used for technical processing of books and another by the librarian.

There are two different sections in the first floor. One is reference section and another one is periodical section. Dictionaries, encyclopedias and other reference materials are kept in the reference section. The current periodicals and the back volumes of periodicals are maintained in the periodical section. The current periodicals are displayed on the display racks. The reading facility is provided to the students in the same floor. About 30 readers can make use of this reading room at a time.

Location of the library building

Convenience of the location of the library is important in promoting the use of library materials.

Table 6: showing the location of the library building

Convenience	Teaching Staff and Senior research Fellows	%	PG Students, undergraduates & Research Scholars	%
Convenient	30	100%	70	100%
Manageable	-	-	-	-
In- Convenient	-	-	-	-

In order to know whether the location of the library is convenient, manageable or not convenient the questionnaires were distributed.

The analysis of user's response indicates that the location of the library building of the college is convenient for users.

Satisfaction regarding the working hours of the library

Since the college of fisheries is an apex centre imparting professional higher education, library parts its heart. The use of library could be measured in several ways. One such way is that gives an idea of the use of the library is by knowing the hours of the library as convenient or not to the users.

Table 7: showing the satisfaction regarding the working hours of the library

Convenience	Teaching Staff and Senior research Fellows	%	PG Students, undergraduates & Research Scholars	%
Convenient	26	87	58	83%
In- Convenient	4	13	12	17%

The survey says that majority of the respondents feel that the library working hour is convenient. 87% of teaching staff and 83% of PG students are supporting this claim.

Table 8: showing the frequency of visit to library

Frequency of visit	Teaching Staff and Senior research Fellows	%	PG Students, undergraduates & Research Scholars	%
Everyday	12	40	25	36%
Twice or Thrice a week	8	27	23	33%
Once a week	7	23	14	20%
Once in a month	3	10	8	11%
Rarely	-	-	-	

Frequency of visit to library

The effectiveness of any library will always depend on the regularity of the visitors. A library without the frequent visit by the readers is a negative element. So regularity is needed to be maintained.

It is clear from the above table that 27% of the teaching staff visits the library daily.40% of them visits twice or thrice a week. 23% visit once a week and 10% of them visit once in a month and none of them visit rarely.

Thus it is clear from the above table that the library is an important agency to support educational teaching and developmental activities. Majority of the users visit the library daily.

User visits the library for different purposes. It may be for reading newspapers, borrowing or returning books or reading books.

Table 9: showing the duration of stay in library

Duration of stay	Teaching Staff and Senior research Fellows	%	PG Students, undergraduates & Research Scholars	%
Less than one hour	2	7%	8	11%
One hour	3	10%	23	33%
Two to Three hour	15	50%	25	36%
More than three hours	10	30%	14	20%
Any other comments	-	-	-	-

Duration of stay in library

Using the library is nothing but holding the interest and holding the patience to read and make use of materials. The usage time is nothing but the time one stayed in the library will also indicates the effectiveness of one using the library.

It is clear from the table that more than 80% of the teaching staff and more than 56% of the students spend minimum 2 hours a day in the library in this college.

Table 10: showing the adequacies of library material (As revealed by teaching Staff and Senior Research Fellows)

Library Resources	Highly Adequate		Adequate		In Adequate	
Text Books	20	67%	8	27%	2	6%
Reference books	10	33%	11	37%	9	30%
Journal/Periodicals	6	20%	12	40%	12	40%
Question Papers	18	60%	8	27%	4	13%
Supplementary Reading	11	37%	10	33%	9	30%

Adequacies of library materials

The success of any library will also depend on the adequate availability of materials in it. The library should have text books, reference books, journals / periodicals, question papers, supplementary reading, etc. of the reputed publications in an adequate quantity.

Table 11: showing the rankings of the library materials (By teaching Staff and PG Students)

Type of materials	Rank given
Text books	I
Reference Books	II
Journal/ periodicals	III
General Books	IV
Question Papers	V
Supplementary Reading materials	VI

The above table shows that the text books are adequate to 94% of the faculty members. 70% of the faculties expressed that reference books are moderately adequate. The faculty feels that the journals are not that adequate since 40% of them claim this conclusion.40% are of the opinion that the periodicals are inadequate .30% of the faculty have expressed their dissatisfaction about the collection of audio visual materials.

The above tables show that both the sections of the respondents give the first preference to the text books. The give second, third, fourth, fifth and the sixth ranks respectively to the journals / periodicals, general books, question papers, supplementary reading materials. Based on the finding of the study and keeping in view the suggestions given by the respondents, the investigators make the following suggestions.

1. In order to make profitable use of information contained in fishery literature it is suggested that the library and information professionals should act as intermediary between information sources and information users. Hence, it is suggested to make provision of recruiting adequate number of information professional possessing high academic qualification, experience, skill etc. for handling various function and operations in library and documentation centers.
2. In view of the changing context of library and information centers and their management, it is recommended that the professionals be provided with facilities for improving and acquiring additional knowledge and skills in various fields such as information analyses and consolidation, computerized handling of information and so on.
3. Increasing cost of publication, lack of space to store paper materials have increased the demand for non-book materials like microforms, CD-ROM etc., again the storage capacity and durability of such materials has made them essential storage tools in libraries. The library has very less collection of non-book materials and hence it is suggested to the library authority to give importance to the collection of non-book materials.
4. It is found that majority of the respondents are unfamiliar with non conventional services.

Hence, it is suggested that this service be more intensified. Further, the users must be made aware of the usefulness of these materials and also they should be trained to use non-book materials.

5. Since scientific information is being generated at a faster rate, it is hard for any scientist to read all the literature published in their field. Moreover, scientists being busy people are hard pressed of time and hence will not find sufficient time to sit in the library and read. It is therefore essential that they should create online database so that the scientist can have access the articles required by them thereby saving their time. It is, therefore, suggested to the library authority to take this matter into consideration.
6. For the effective management of library resources it is essential to adopt evolving and flexible tools and techniques, in short, have an amorphous information technology as a base.
7. In view of the rapid growth of published literature in various fields of knowledge, it is recommenced to the library to go in far online services.
8. In view of the rapidly diminishing cost of computer system and increasing versatility in handling varieties of information services, it is suggested that the library may seriously take up library automation in respect of acquisition of documents, circulation control, serial control, cataloguing and other information services.
9. It is suggested to subscribe to current content on CD-ROM and also other journals on CD-ROM.
10. Finally it is suggested to the library authority to install a LAN workstation in the library itself so that effective and sophisticated service is provided to the users.

Conclusion

The present study is intended to cover the overall opinion of the users regarding the use of library. Sources of information consulted, information gathering habits, information use pattern and awareness of information services provided by the library. The study is further extended to examine the library resources, the services provided and facility available to the users, so as to find out gaps is collection and services and thereby recommend suitable practical solutions for improvement.

References

1. WILSON, T.D. and STREAT FIELD, D. Structural observation in the investigation of information needs. Social Science Information Studies 1(3) April 1981.
2. WARD, Dederick and DICHTELER, Julie. Information seeking behavior of Geo-scientists. Special Libraries 80(3) 1989 : 169-174.
3. SRIDHAR, M.S. User participation in collection building in a special library: a case study. IASLIC Bulletin 28(3) Sept. 1983.
4. KHANNA, J.K. Advances in Librarianship. New Delhi, Ess Ess Publication, 1985.
5. KHANNA, J.K. Library and Society, Harayana, Research Publication, 1987.
6. BUCKLAND, Michael K. The role of collections and the scope of collection development. Journal of Documentation 45(3) Sept. 1989: 213-216.
7. SUSHEELA. V.J. (2004). "Academic use of electronic resources". Kelpro Bulletin.7. (1&2), 26-32.
8. KHAISER NIKAM AND PROMODINI, B. (2007). Use of e-journals and databases by the academic community of university of Mysore: a survey. Annals of Library and Information Studies 54(1)19-22.
9. TALIJA, SANNA AND MAULA, HANNI (2003). Reasons for the use and non-use of electronic journals and databases: a domain analytical study in four scholarly disciplines. Journal of Documentation. 50(6), 673-91.

Indian Journal of Library and Information Science
Volume 9 Number 2, May - August 2015

Review Article

Embedded Librarianship in Universities for Fostering Learning, Research and Extension

Bulu Maharana*, Bharati Pati, Sabitri Majhi*****

Abstract

Recent developments in the field of information technology particularly the emergence of search engines like "Google" and "Yahoo" have created a visible threat to the existence of witty and trained library professionals in this age of information explosion. The traditional practices of acquisition, processing and dissemination as a physical service point has become partially irrelevant in the present age. The present networked environment demands librarians to voluntarily attach or partner themselves in the projects and missions of the university, may it be as a member of the core group involved in curriculum based activities, research work, consultancy or the extension inventiveness. The new molded format of librarianship has been termed as "Embedded Librarianship". This paper introduces the new model of librarianship and discusses characteristic features and the areas where the librarians' services could be integrated in the universities.

Keywords: Embedded Librarianship; Academic Librarian; Modern Librarianship.

Introduction

It is really hard to accept, but the fact is that Librarianship has always been an underestimated profession. It took a long and rigorous time period, even centuries for the library professionals to gain their recognition and position in today's knowledge based society. Traditionally, librarians are considered as the caretakers of the library resources who actually deal with the housekeeping activities of the library such as procurement, organization and distribution of the books and materials to its users. However, recent developments in the field of information technology particularly emergence of search engines like "Google" and "Yahoo" have created a visible threat to the existence of a witty and trained library professional in this age of information explosion. Thus, few dedicated members of the LIS fraternity have identified this issue and working on its solution. In this process they have realized that in the age of abundant and ubiquitous information their role can be redefined as important as that of a "Knowledge Navigator". As a matter of fact, with a little more effort and innovation they can redefine their strategies and serve the society in a meaningful way. To get rid of the confusion of "what to follow and what to ignore" now the users need their guidance and help even more on the contrary. Being a service provider to almost every knowledge domain a library professional must have gathered more or less knowledge about all the trades. So by focusing a little more on the creativity aspect one can take initiatives to collaborate with the research and development units of a particular discipline and contribute through his/her skills, potential and expertise. This theory has given birth to the emergence of a new form of librarianship. Here a library professional voluntarily attach or partner himself in the projects and missions of the university, may it be as a member of the core group involved in curriculum based activities, research work, consultancy or the extension inventiveness. The new molded format of librarianship has been termed as "Embedded Librarianship".

Author's Affilation: *Reader & Head, **M.Phil Scholar, ***Lecturer, P. G. Department of Library & Information Science, Sambalpur University, Jyoti Vihar-768019 (Odisha).

Reprint's Request: Bulu Maharana, Reader & Head, P. G. Department of Library & Information Science, Sambalpur University, Jyoti Vihar-768019 (Odisha).

E-mail: bulumaharana@gmail.com

Concept of Embedded Librarianship

The term "embedded librarian" was coined by Barbara Dewey in 2004 (Godbey). This concept came to her mind from the practice of the embedding journalist in the military during Iraq war. As the journalists were integrating themselves into military units, the librarians could also integrate themselves into the pedagogical, research and extension activities of the university. The recent changes in the information landscape fostered by the emergence Internet and World Wide Web has forced the embedding nature of librarianship in academic campuses. A large amount of library resources are now available in electronic form over a mouse click with 24/7 access without any geographical barrier. As a result users have isolated themselves from the physical libraries. Now a general perception is emerging that "users do not require libraries but the libraries require users for their survival" (R.C. Gour 2014). This is mainly because traditional libraries have failed in coping up with the latest changes in the library and information environment. These hard core facts lead to the conception, planning and then execution of the very idea of 'Embedded Librarianship'.

Characteristics of Embedded Librarianship

Embedded librarianship is not a modern theory, but a modern approach when we are considering the libraries not as a parallel facility but as an interactive and collaborative unit in the university. The concept of integrating librarianship is expanding every single day in this 21st century. Therefore, while planning for any collaboration one must adapt few unique and specialized characteristics. The following are some of the observable general features of embedded librarianship.

Service Orientation

Conventional library services are based on some principles and rules but embedded librarianship is governed only by creativity. While in this case there are no limitations on time of service, place of service and amount of service that is being provided to the clients. The only thing that matters is the quality of service should be specialized, highly focused and much more concentrated.

Shifting of physical location

The purpose of embedding can be achieved absolutely when the librarian is available personally to the concerned team whenever his need is felt. That means being virtually available is not enough. The physical presence counts a lot in this analytical approach of librarianship.

Core group-centric

Instead of providing a superficial standard of service to a larger population, it is always beneficial to concentrate on a smaller target group. The queries of the core team should be answered in a top priority basis. This will result in an effective and productive quality of bonding.

Specialists instead of Generalists

When a librarian goes through the process of embedding he has to achieve certain level of specialization in the concerned field to confer his impact because the role he is playing in this regard is not supportive rather collaborative.

Depends on Trusted Guidance

The focus always revolves around the trust and reliability aspect in this context. Being the prime source of information to the team, authentication of the supplied content becomes highly necessary.

Scope for future amalgamation

Completion of the project does not necessarily mean the end of partnership. There is always a second time. Thus, the relationship with each team member should be far broader than just being professionals which leaves a scope for future partnerships in forth coming research activities.

Differentiation from the traditional counterpart

In spite of belonging to the same service providing organization and having a lot of similarities in the intent and nature of service, there are certain obvious differences among these two forms of librarianship. Those points can be listed as follows:

Traditional Librarian	Embedded Librarian
Generally funded from library budget	Often funded by sources other than library budget
Physically based in the library.	Relocation is the demand of the concept but mostly available virtually
General responsibility for all library users	Delivers specialized services to specific groups in addition to general library services
Generalist in nature during the service	Specialist, with high level of 'domain knowledge' acquired on the job
Nature of the service is responsive	Proactive in nature

Types of Embedded Librarians

The responsibilities of an embedded librarian are never predetermined and fixed. One has to go beyond the general expectations and speculations and perform his/her duties whenever the situation demands. Therefore, the level of involvement also varies from person to person and context to context. According to the extent of performance there are various categories of embedded librarianship those are tried and tested from time to time. Few of them are discussed below.

Virtual librarian

A virtual librarian is one who is available 24/7 to his clients through multiple communication medium such as e-mail, telephone, messaging, texting etc. That means he can be contacted at any point of time in his virtual desk in the cyberspace. One basic limitation of the virtual librarianship is that the participation is more or less passive in nature.

Roving librarian

In this case the roving librarian has to move to multiple locations for serving the purpose, for instance to various departments, to student's cafeteria, to common rooms of dormitories etc. There he interacts with the students and faculties. In this conversation process he tries to find their information needs and the required assistance that he could offer them. However in this model a lot of diffused energy is involved and the objective of the service is also not focused.

Personal librarian

The personal librarian model is moreover inspired by the financial organizations where the high net worth customers are supplied with personalized services. Likewise, whenever the user requires any assistance or help the personal librarian has to be there to satisfy his information needs. For instance, as a project fellow, the librarians can support in documentation, developing digital content and repositories, content management and organization, etc. on demand.

Consulting librarian

As the name clarifies the consulting librarians are having unique expertise in a particular domain. Whenever his guidance is solicited he is being contacted by the individual client or the research team. Here, the librarian has a specialized role as he diagnose the real cause and hence the solution accordingly.

Procedural features

As the concept of embedded librarianship comprises of innovations, creativity and commitment a particular methodology is difficult to ascertain. It might vary in each and every context. Today, the librarians can embed their services to all their users via the Internet and World Wide Web. The highly collaborative and personalized social tools of Web 2.0 such as Face book, Blogs, Wiki, Tweeter, etc. have simplified the task to much more practicable and effective practice. One can keep a watch on the happening in and around and again advertise or market the services both at a single point of time on a single web screen. Thus, the following figure shows few steps that can be followed while planning for any collaboration.

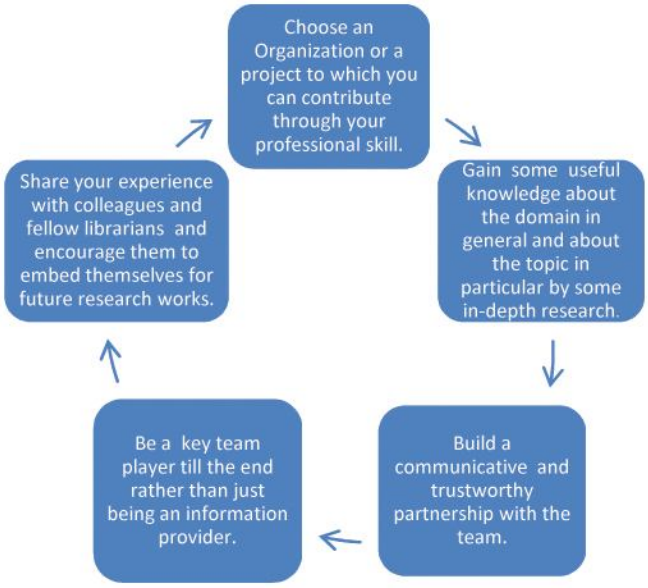
Areas of Embedding in the University Context

Conventionally, the academic librarians of the universities have been following the stereotypes that have fixed the profession for more than a century. Patricia Glass Schuman has very appropriately observed,

"*The image we seem to worry about most that of the middle aged spinster librarian is basically irrelevant and unimportant. What is important is the view of the librarian and the library as foreboding, boring, complicated, largely inaccessible, or worse, irrelevant. Our focus should not be on how attractive people think we are or even how smart, but how useful, necessary, and important we are to their education, research, and everyday lives and work.*" (Schuman; 1990; p. 86).

This statement portrays that, the relevance of a librarian to its clients does not stand only in strict

Fig. 1: Embedded Librarianship Job Cycle



observance of his professional knowledge and skill but in the contextual integration of these skills for problem solving. In accordance with the basic goals of embedded librarianship observed in the above lines, the academic librarians in universities embed their services in the following three important sectors:

Teaching

An academic librarian always faces a diversification when his work is being compared with that of the teaching faculties. However, the contributions of a sincere librarian cannot be ignored when "pedagogy" is taken into consideration. He can play an important role in educating students to become information literate. Here we are talking about program based information literacy. Librarians should give some thought to their own discourses, and identify entrenched or established ways of thinking that actually involves their own efforts to understand and work with the faculty. Also, librarians should start to identify and listen to the faculty pedagogical discourses on their particular campus. Finally, librarians have an important role to play by supporting faculty in developing and broadening their own information literacy, and by assisting faculty who then feel comfortable incorporating information literacy into their teaching (G. Leckie and A. Fullerton, 1999). The academic librarians in universities could integrate their services in the following manner:

- Designing of curriculum
- E-Learning
- Development of open courseware systems and question banks
- Indentifying and delivering highly valued information sources

Research

Increasingly, librarians at research-based institutions are applying the embedded librarian model in working directly with the faculty they serve as collaborators on research projects or as an integral part of a research team. But in the academic level especially in the universities this kind of partnerships are very rare to see. As an embedded librarian in the research context, a librarian works with researchers more inclusive manner in the research process rather than just with the products produced at the end of the research lifecycle may it be a book, a journal article or any kind of proceeding.

Unfortunately in the Indian university level there is no such collaborations are being carried out where the librarian gets a chance to contribute wholesomely. But a systematic process can be proposed where the librarians can integrate their services as a nominated member in the Nodal Centers and Research Counseling centers. In this manner, the librarian could collaborate with the following research activities.

- Selection of research projects
- Forming research networks for researchers

- Data collection
- Research disclosure and publication
- Fostering information access for researchers

Extension

The library extension services can be defined as the activities that are being carried out by a university other than the basic responsibilities towards its bona fide clienteles. Here, the role of an embedded librarian is probably most vital. Because it involves directly educative or recreational, lead also to publicity as an important secondary product. The key responsibilities of a librarian involved in extension services can be listed as follows:

- Promotion of information literacy drives
- Community information services
- Promoting reading habit of the common people
- Documenting university-society interaction
- Job information services to community

Suggestions for augmenting embedded librarianship

Be a key team member

Being a dedicated professional the embedded librarian need to be an important part of the research team to whom he is collaborating with. This includes a clear understanding of not only his key duties but also that of fellow team members. Because to support and being supported is very vital in such team works.

Seek support from your organization and colleagues

Embedding yourself to some other project does not mean that your basic duties could be ignored. One thing must be kept in mind that these are additional responsibilities on you. Therefore, the daily work schedule has to be followed with the help and support of the administration and colleagues so that the hierarchy would not suffer in your absence.

Have a mindset that of an Entrepreneur

An entrepreneur is a person who advertises, markets and finally sales his product to the targeted customers. In this scenario an embedded librarian must follow the same procedure. You must convince the targeted individual or the team that your presence could be effective and not replaceable.

Be prepared to take risk

Being an entrepreneur does not necessarily mean that it would always be a profitable endeavor. Like in other businesses it involves a lot of risk factors. It might work, it might not. Unfortunately, here the risk is not only for the embedded librarian himself but to the collaborated members as well. The whole undertaken project could be at a threat. However, we must not forget that "Risk is necessary for change".

Build a compatible and trustworthy relationship

As you work in a team it becomes very important to interact and communicate. Here we are not talking about the technical and virtual, rather the verbal mode of communication. The whole team including the librarian himself must build an understanding about each other's strengths and capabilities and trust them too. And this interdependence and reliability can be achieved by showing dedication, commitment and sincerity towards the team.

Move outside of your comfort zone

Whenever a fresh endeavor is initiated it seems hassled and impractical. The person associated feels very uncomfortable in the new platform. An embedded librarian too cannot escape from this fear of being unfamiliar while working with people from entirely different trades and territory. Because for a long time he is used to a particular environment and workflow, confusion is obvious at certain levels. Here he could ask for guidance and help from fellow workers without any hesitation or embarrassment.

Conclusion

From the above subjective study on Embedded Librarianship we can conclude that it is not a new concept rather a very old one. Collaboration has always been an effective tool in any project, so as in the academic level. Contemporarily many university libraries are using latest technologies to provide new services to their user group. Specialized services have existed in academic branch libraries since their inception. But the success of this collaborative activity depends not only on the understanding and dedication of the librarian but also on the support from the faculty members and the organization. Embedded Librarianship in the university context can be a very important endeavor for the future challenges. The proactive initiatives of the librarian along with a handy support from the administration

might ensure continuous and effective partnerships. These initiatives combined with modern socialization opportunities, will encourage librarians to provide specialized programs for their research oriented user groups in the university level.

References

1. Carlson, J. & Kneale, R. (2011). Embedded Librarianship in the Research Context: Navigating new waters. *College & Research Libraries News*: 72(3), 167-170.
2. Shumaker, D., & Talley, M. (2009). Models of Embedded Librarianship Final Report, p. 195 [Online] www.sla.org/pdfs/EmbeddedLibrarianshipFinalRptRev.pdf.
3. Riccio, Holly M. (2012). Embedded librarianship: The library as a service, not a space. The New Librarian. AALL and ILTA digital white paper. [Online] http://www.aallnet.org/main-menu/Publications/products/aall-ilta-white-paper/embedded.pdf.
4. Sharma, P., Kumar, K & Babbar P. (2014). Embedded librarianship: Librarian faculty collaboration. *DESIDOC Journal of Library & Information Technology*, 34 (6), 455-460.
5. Leckie, G. & Anne Fullerton, A. (1999). The Roles of Academic Librarians in Fostering Pedagogy for Information Literacy. ACRL Ninth National Conference. http://www.ala.org/acrl/sites/ala.org.acrl/files/content/conferences/pdf/leckie99.pdf.
6. Gaur R.C. (2014). Embedded Librarianship: Guest Editorial. *DESIDOC Journal of Library & Information Technology*, 34 (6), 447-448.
7. Drewes, K. & Hoffman, N. (2010). Academic Embedded Librarianship: An Introduction. *Public Services Quarterly*, 6: 75–82.
8. Kvenild,C.(2012). The Future of Embedded Librarianship: Best Practices and Opportunities. [Online] http://www.cclibinstruction.org/wp-content/uploads/2012/02/CCLI2012proceedings_Kvenild.pdf.
9. Shumaker, D. (2012). The Embedded Librarian: Innovative Strategies for Taking Knowledge Where It's Needed. *InformationToday*. [Online].
10. http://books.infotoday.com/books/Embedded-Librarian.shtml.
11. Godbey, S. (2015) Embedding with Google: Using Google to optimize embedded librarian involvement. *In* The Complete Guide to using Google in libraries, Vol. 1, Carol Smallwood, ed. London; Rowman & Little field, pp. 223-234

Indian Journal of Library and Information Science
Volume 9 Number 2, May - August 2015

Review Article

Management of Libraries in Modern Era: An Overview

R. Padmavathi

Abstract

This paper is discussed about the new technology for information storage and its retrieval systems. An attempt has been made to define the goals, sets policies, new concept of management craftsmanship, scientific management, objectives, functions and the development of human resources, manpower planning. It discloses various methods adopted in the automation comprising information communication, software programs, packages, data collection, consortium based data management CD-ROM, E-database management / online information and networking of networks and its objectives and goals of new era.

Keywords: Automation; Software Programs; Packages; CR-ROM; E-Database Management.

Introduction

The information explosion in science and technology has become a challenging task for library management for its storage and retrieval. In modern times library management plays a vital role in the promotion of education and research. A well equipped and well managed library is the foundation of education and research program. The main function of library is the collection, preservation of knowledge for its dissemination to all through its various methods and techniques.

Library management is other function concerned to the execution and the employment of organization for the particular objects. It is an important for the prosperity and welfare of our society. According to ALA Glossary of library and information science *"Library* management is defined as the process of co-coordinating the desired goals through planning, organizing, staffing, directing and controlling".

Management directs the active operations within the enterprise and combines the work of the employees with the available capital, equipment's and the material. There are three levels of library management: Top management (Administration), Middle management (Operation), and Lower management (Rank and file).

Modern Developments

A library cannot survive and function properly until it provides and maintains its information activities with modern techniques. The information scientist should be well versed with the latest techniques of this subjects and provide pin points services very quickly in the best manner possible for the benefit of scientist and students engaged in research and education. Thus there is a pressing demand and need for the total Quality of management in the procurement of documents and its retrieval to meet the present situation. Principles of scientific management are the powerful tools in the hands of administration and management. The basic principle of scientific management is the "distribution of responsibility or its decentralization". The principles give us some practical guidance for the work and activities as follows: (i) Division of work (ii) Authority and responsibility (iii) Discipline (iv) Unity of command (v) Unity of direction (vi) Subordination (vii) Remuneration of personal (viii) Centralization (ix) Scalar chain (x) Order (xi) Equity (xii) stability of tenure of personal (xiii) Initiative (xiv) Esprite de corps.

Objectives

Objectives (or) goals are statements of purpose towards which organizing and controlling are aimed

Author's Affilation: Library I/C, Alagappa University College of Physical Education, Alagappa University; Alagappapuram. Post; Karaikudi 630 003;Tamilnadu; India.

Reprint's Request: Dr. R. Padmavathi, Library I/C, Alagappa University College of Physical Education, Alagappa University; Alagappapuram. Post; Karaikudi 630 003;Tamilnadu; India.

E.mail: drponnusethuraj@yahoo.co.in

and changed with the change of conditions or circumstances. A library might include among its overall objectives a certain rate of service, emphasizing research and education to develop library facilities improving library cooperation, achieving key position among other libraries. It serves a basis for coordinating staff work and it provides the basis for control. An academic library has objectives to provide reading material and reading facilities to faculty members and students. Objectives may be group goals, intermediate, limited and unlimited, elastic and inelastic, external and internal, long range and short range objectives. If it is the library of medical colleges, engineering colleges, and other special libraries its objectives will be limited to the concerned material as needed for them. Henceforth the objectives of library may change according to the need and demand of the society for which the library is established. Without the proper objectives it is very difficult to fulfill the demand and to set a goal for research and education.

Scientific management is directly concerned with control, planning and execution of all organized human activities in different process of library management and its main function is the coordination of human activities. The management is the quite dynamic and flexible and responsive to change in the social concept and economic conditions. It is essential to plan the management pattern on scientific lines. A dynamic library enterprise needs top execution as foresightedness and resource fullness. The manager can plan, organizes, directs and controls the activities of other persons subordinate to him. There are two types of functions of library consisting: *Managerial:* General principles of management studies and applied, *Professional:* cataloguing and classification. It depends upon a set of rules and a technical job.

Consortium based data management

The documents are available in electronic form and can be shared in a group among the institutions. Now-a-days researchers and scientists have less time to search their information and they require e-resources to fulfill their goal. In this method the information is retrieved by the users from a broad resource. The consortia can fulfill user's needs in a lesser time and save the time of users. Generally the organizations use this type of consortia for user's interest, increasing efficiency, lesser space, easy to retrieve information and marketing purposes. Most of traditional libraries are converted in digital form (or) in a processed form having automation for better library management. They provide its information in digital form like CDs, microfilms and solve their quarries by mail. In the present era libraries are converted in the form of virtual library and we can access information anywhere at any time (24X7) through web. In the area of research and education, scientists and students have no time to trace out the vital printed material and they want to get their exact research material in shortest time. The consortium is a good platform for achieving their goals. The archives consisting the old material in printed forms can't be preserved physically for a longer time and required in a digital form for research and education. It is very helpful to provide quick service to the users through web in an electronic form.

Marketing of consortia

Marketing consortia also includes selling, advertising, physical distributing, sales promotions etc. Selling aspects of marketing is an exchange of goods (or) services. It also concerns to non-profit organizations as libraries, archives and information / documentation centers. Marketing is totally management function as supply and demand.

Future of e-consortia

Most of digital libraries provide web OPAC and IP address based portal where we can search its collection. The future of e-consortia is very broad and in coming years users might use e-resources at high level. It is very difficult to pronounce whether the www (internet) facility will replace to another technology in future. In addition to this most of e-consortia is based on IP address and provides its collection online. So far the preservation of the material pertains to documents in any form and the e-environment is safer than preserving in physical form. It is found in e-form and there is no any question of its missing. The member library can use it on a normal charge (or) free of charges.

On account of e-publishing of information the demand of e-resources is overtaken on printing and digital materials. Most of the networks use resource-sharing on different portals but the knowledge society wants a specific types of knowledge at a specific portal like UGC-Info Net, INDEST, FORSA (Forum for Resource Sharing in Astronomy and Astrophysics), LISA, CSIR consortia, HELINET (Health Science Library and Information Network). Most of above consortia is a group of organizations where they can share its resources on a portal with its mutual understanding and rules. Mostly e-consortia provide abstract, full text as well as bibliographic details.

Online information

In modern age, research scholars, scientists, information analysts, economists, and other consumers use online information resources with the help of Cybrarian (Library Manager) through web technology. The online information is fully dependent on web technology and very helpful to collect information scattered on World Wide Web. Users can access their information through the web server with the help of web browsers like Mozilla Firefox, Google Chrome, Apple safari, Internet explorer, Epic etc. and search engines like Yahoo, Google, and MSN. In the 21st century the number of internet users is increasing in abundance as they get the information through web tool (internet). In new era various organizations provide their web page with hyperlink of many departments and we get the information immediately. Online information consisting web conferencing, video chat and search e-material is possible through web. The *online information* may be abstract, bibliographic database, full text database including audio, video, multimedia, hyperlink and hypertext. We can access the information either free of charge (or) pay according to the rules and regulation of the organization. It is a new technique of collection management of information and professionals must be aware about the knowledge of online information and thus they can provide better information service to the user.

Online Database

1. *AGRICAT:* It is online bibliographic databases of Indian agriculture universities and research institutes. These organizations are shared their database on this portal. It is an union catalogue of agriculture universities and research institutes under ICAR.
2. WORLDCAT is developed by OCLC, Ohio, and Dublin. It is a worldwide largest online bibliographic database where records are displayed on the MARC 21 format with organizations holdings.
3. *ISID* is an online database of periodical covering the area of industrial studies, social sciences, economics and technology providing bibliographic records.
4. *VIDYANIDHI* is an online web portal through which we get the information about thesis.
5. *UGC-INFONET* is an online consortium of UGC and INFLIBNET. It has a lot of details about online publisher, journals, books, full text and-other bibliographic details of reading and research materials. After getting user authentication of this consortium we can access its databases connected with hyperlinks. Consortia also provide open access journals link.
6. *J-GATE* is online full text database in the field of Basic Sciences, Humanities, Biomedical Sciences, Social Sciences, Agriculture and Technology and user authentication is necessary for access.

E-resource

In the new era e-data resource management is a part of library management and the work profile of library professionals[1] has been changed as they provide information to the user in the form of e-data. E-data are presented in the electronic form with multimedia application like videos and sound. The e-data resources have bibliographic details with links, full text and abstract. The invention of digital storage device like CDs, DVDs is easy to store information in digital form as the printing and digital version is replaced with electronic version. The electronic version pertaining to publications search with its hyperlink and its retrievals, downloading is easier than digital version. In an electronic environment the large number of databases is easy to search access within a short time. Many publishers, organizations and institutes are providing the information in an electronic form as well as most of our libraries pertaining to research and education under UGC program have been connecting towards new technology. The e-resources consisting publications, patents, conferences etc. are available in an e-form used through web on a specific portal and may be offline (CD-ROM, DVD-ROM) or online.

Types of electronic resources

1. *Books* are available in an electronic form with its bibliographic details and user can read these e-books in electronic environment through the computer / e-reader.
2. *Online journals* are provided with full text articles with the help of web & in the open access system articles are available on the web freely.
3. The *consortia* are provider of databases in the electronic form.
4. The *e-citation* and abstract are provided by various libraries, research institutions and other organizations and these are searched out very easily.
5. Now-a-days the craze of *e-newspapers* has been increased and these can be read in an electronic version on web.

6. In the new era of science and technology the dissertation, thesis and abstract are available in e-form and various research institutes and organizations are providing its research material at a very low cost through *E-DDS.*
7. *CD-ROM and DVD-ROM* databases are a highly flammable database in which the information is available in the digital form online and offline.

CD Rom Database

The major attraction of the CD ROM is a huge storage capacity. It reduces the space of printing material as well as other problems of library replacing them on CD ROM for example index medicus, chemical abstract, biological abstract etc. In this method the preservation of the material is very safe and can't be affected / damaged by climate, moisture, and germ. The information on database pertains to bibliography, indexing, abstracting, full text, numerical etc. The networking of CD ROM database is successful beneficially if it is used to retrieve services frequently by our library CD ROM technology provides a powerful access of database with Boolean search and creates our local data. In the new era the CD ROM database is most suitable for our libraries so far research and education, science and technology is concerned. This system is very approachable to the pin pointed service to the users.

Networking of networks

Networking of networks provide articles, different union catalogues, e-DDS, Software, training resources, full text databases, domain registration, different types of publications, video and teleconferences etc. The network is a wide range of resource management. There are many different networks for different users in the globe. In Indian scenario, there are lots of educational and library networks which are used for research and education, database collection and resource sharing. These networks are promoted / supported by some promoting agencies, institutes and other organization playing a wide role in the field of research and education as (i) INFLIBNT (II) DELNET (III) NICNET (IV) INLN (V) APIN (VI) UNAL (VII) OCLC (VIII) UNISIST. The information explosion, networks provide accessibility of documents very easily and sharing their resources over a network in electronic form. Networks are provided to multiple users' accessibility from different locations and faster service to working groups having membership of the various institutions and organizations.

Types of networks

1. *LAN*: The personal computers are connected locally.
2. *MAN*: These types of networks are located in a city, metropolitan area like Delhi, Bangalore, Kolkata, Chennai etc.
3. *WAN*: Geographically distributed areas are connected with this type of network. Resources are transmitted by all over world through www.

Information Communication

So far information communication is concerned we use high speed internet / e-ma videotext, teletext, teleconference / voice mail for e-data interchange and space communication. Modern libraries are familiar with this technology and manage their data communication for e-document delivery, solve the users-query, organize vide conference and other concerned activities. In data communication the information transmitted by IP messenger through LAN but so far remote area is concerned it transmitted through the www. The basic of data communication consists: (i) Source sender of information (ii) Medium: means of data communications (iii) Information receiver.

Table 1: Networks and their resources

Networks	Promoted Agency	Services	Type
Inflibnet	UGC	Union catalogue, DDS, UGC-INFONET consortium, SOUL availability.	WAN
Delnet	NISSAT&NIC	Resource sharing, software providing, DELNET consortium, Bibliographic catalogue publications.	WAN
Nicnet	Planning commission, Govt. Of India	Geographical information, training, video conferencing, teleconferencing	WAN
Ernet	Department of Electronic and UNDP for finance.	E-mail, web hosting, Domain registration, Educational portal, Training.	WAN
Adinet	NISSAT, INFLIBNET & DSIR	Scientific, educational and technical information provider, regional library cooperation, developing database, ILL and DDS.	LAN
Desinet	DESIDOC, Delhi	Scientific database creation	LAN
Sirnet	CSIR	Database for the scientific communication, medicine, food and technology and research.	LAN

The phenomenon of networking of networks depends fully upon IT and increases the collection strength, providing library software, supporting to information scientist and provides better training and communication facility to the professionals. In addition, networks provide important services as to retrieve databases online / offline, e-mail services, e-mail delivery, queries solution, solving software problems, data availability 24 X 7.

Software

Software consists of language programming system software, application software and middleware. Software comprises three types: (i) system software (ii) programming software / middleware and (iii) application software. Main features of software are run on various computers and multiple platforms, standard date format, users' friendly and flexibility. The library software packages consist of data instructions for technical work. So far library and information is concerned the computer software can be categorized for library management as acquisition, classification, cataloguing, serial control, circulation control, stock taking, information retrieval service (i) Selective Dissemination of Information (ii) Current Awareness Services (iii) Bibliographic Service (iv) Retrospective Search (v) Indexing (vi) OPAC and Web OPAC. The main objectives of library software packages are to carry the library digital, time saving, user friendly, exact retrieval of databases, less human work and economically.

H. R. D.

The human Resource is the process that helps organizations to provide adequate human resources to achieve their current and future organizational objectives. The library staff should be professionally qualified, competent and ready to share the literature searching as an aid to their client for research and education. They should be competent persons to serve as a public relation officer between readers and publications. They have to ultimate responsibility for acquiring organizing the resources of the library and making these available to all those concerned people who want to use them. The staffing includes the training of the staff and maintenance of the favorable condition of the work of them as salary and status. It increases the efficiency of library work as well as the future prospects of the employees and satisfaction of the work. In common it is the process that helps the library to provide adequate human resources to achieve their current and future objectives are manpower planning in human resource such as Recruitment and selection, Wages and salary, Job re-arrangement, Personal training and managerial development, and Health & safety.

In-service training

Oriental programs and other refresher courses should be conducted in the department time to time. We should also depute some professionals for training programs pertaining to computer techniques etc. as provided in NISCAIR, DRTC and MM etc. We should also be liberal for deputing professionals for attending workshops, seminars, conferences and other oriental programs conducted by various organizations as aided by UGC etc at national and international level. Thus it will increase professional technical knowledge, communicated skills and efficiency to the professionals. The salary scales and status of our professional should be on par with professors, readers and lecturers as per the norms of *UGC.* We should also frame wages policies and some incentives for promoting library staff. The management should take care to initiate and implement staff development in addition to take care of their personal interest in terms of financial and other benefits to them.

Conclusion

Now-a-days most of libraries and information centers are diverting towards paperless collection. These facilities are providing many resources to research workers and scientists to fulfill their goals. CD ROM databases are also used by the research scholars and scientists and every digital library provides the collection information in digital form of bibliographic databases, encyclopedia, Index medicos, chemical and biological abstract and research material in CD form which is cheap and provides limited information but user search wide range of information on web server quickly according to their need. Electronic facilities assist knowledge and technical improvement and it is very important that our staff should be technical sound for providing better computerized information service.

References

1. *Sahu Mukesh K.* Library Management: New Trends, (SHREE Publishers and distributors; New Delhi), 2008.

2. *Mallaiah TY*, Management of employee expectations, performance and satisfaction in university: and empirical study, *Annals of Library am Information Studies,* 56(1) (2009) 13-21.

3. *Moorthy AL*, DRDO E-journals consortium, *DESIDOC Journal of Libray and Information Technology,* 29(5) (2009) 18-23.

4. *Ratnakar KV*,Prerna and Satyanarayana K,Consortia to promote access to medical information: some experiences of the Indian Councial of Medical Research, *DESIDOC Journal of Library and Information Technology,* 29(5) (2009) 7-11.

5. *Vishal BK* and Bhandi MK, Availability of library and information science electronic journals through UGC-INFONET project, *Annals of Library and Information Studies,* 53(2) (2006) 65-69.

6. *Gowda Purushothama M*, UGC Info-net: an India consortium model for higher education, *Indian Journal of Library and Information Science,* 1(2) (2007) 47-55.

7. *Bhat Veena R* and Kumar B T Sampath, Use of web based sources in scholarly electronic journals in the field of library and information science: a citation analysis, *Annual of Library and Information.*

8. *Mishra R, Kumar Rajesh* and Tripathi D P, CD-ROM collection management and development of a web interface by using WINISIS / GENISIS at PK Kelkar library NT Kanpur, Annual *of Library and Information Studies,* 55(4) (2008) 265-274.

9. *Kaul H K*, Library Resource Sharing and Networks, (Virgo Publications; New Delhi), 2013.

10. *Sharma J N*, Computer application in libraries, *Lucknow Librarian,* 21(1) (1989) 34-39.

11. *Gowda Purushothama M*, Satisfaction levels related to management issues among LIS professionals, *Annals of Library and Information Studies,* 56(4) (2009) 227-235.

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.

Original 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: / / www.rfppl.com (currently send your articles through e-mail attachments).

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 figures / 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: 91-11-22754205, 45796900, Fax: 91-11-22754205, E-mail: redflowerppl@vsnl.net. Website: www.rfppl.co.in**

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, Figures, Figure 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, which should be concise, but 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;
7) 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
l0) 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 Material, 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/l 7-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, Källeståll 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 fiber-reinforced 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.

Number tables, 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: *, ¶, †, ‡‡,

Illustrations (Figures)

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 figure instead of to the side.

Original color figures 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.

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 l0 spelt out
- Numerals at the beginning of the sentence spelt out

Tables and figures

- No repetition of data in tables and graphs and in text.
- Actual numbers from which graphs drawn, provided.
- Figures necessary and of good quality (color)
- Table and figure numbers in Arabic letters (not Roman).
- Labels pasted on back of the photographs (no names written)
- Figure legends provided (not more than 40 words)
- Patients' privacy maintained, (if not permission taken)
- Credit note for borrowed figures / tables provided
- Manuscript provided on a CDROM (with double spacing)

Submitting the Manuscript

- Is the journal editor's contact information current?
- Is a 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)

Revised Rates for 2015 (Institutional)

Title	Freequency	Rate (Rs): India	Rate ($):ROW
Dermatology International	2	4500	280
Gastroenterology International	2	5000	360
Indian Journal of Agriculture Business	2	4500	300
Indian Journal of Anatomy	2	6000	260
Indian Journal of Ancient Medicine and Yoga	4	7000	330
Indian Journal of Anesthesia and Analgesia	2	5000	600
Indian Journal of Anthropology	2	10500	500
Indian Journal of Applied Physics	2	3500	400
Indian Journal of Biology	2	3000	170
Indian Journal of Cancer Education and Research	2	6500	500
Indian Journal of Communicable Diseases	2	7500	58
Indian Journal of Dental Education	4	4000	288
Indian Journal of Forensic Medicine and Pathology	4	14000	576
Indian Journal of Forensic Odontology	4	4000	288
Indian Journal of Genetics and Molecular Research	2	6000	262
Indian Journal of Law and Human Behavior	2	5000	500
Indian Journal of Library and Information Science	3	8000	600
Indian Journal of Maternal-Fetal & Neonatal Medicine	2	8000	400
Indian Journal of Mathematics and Statistics	2	5000	200
Indian Journal of Medical & Health Sciences	2	6000	120
Indian Journal of Obstetrics and Gynecology	2	5000	200
Indian Journal of Pathology: Research and Practice	2	10000	915
Indian Journal of Plant and Soil	2	5000	1700
Indian Journal of Preventive Medicine	2	6000	250
Indian Journal of Reproductive Science and Medicine	4	3000	180
Indian Journal of Scientific Computing and Engineering	2	4000	280
Indian Journal of Surgical Nursing	3	3000	70
Indian Journal of Trauma & Emergency Pediatrics	4	8500	302
International Journal of Agricultural & Forest Meteorology	2	8000	800
International Journal of Food, Nutrition & Dietetics	2	4000	900
International Journal of History	2	6000	500
International Journal of Neurology and Neurosurgery	2	9000	276
International Journal of Political Science	2	5000	400
International Journal of Practical Nursing	3	3000	70
International Physiology	2	6500	240
Journal of Animal Feed Science and Technology	2	4000	280
Journal of Cardiovascular Medicine and Surgery	2	9000	238
Journal of Orthopaedic Education	2	4500	190
Journal of Pharmaceutical and Medicinal Chemistry	2	15000	350
Journal of Psychiatric Nursing	3	3000	70
Journal of Social Welfare and Management	4	7000	276
Meat Science International	2	5000	500
Microbiology and Related Research	2	6000	150
New Indian Journal of Surgery	4	7000	360
Ophthalmology and Allied Sciences	2	5000	150
Otolaryngology International	2	4500	300
Pediatric Education and Research	4	6500	150
Physiotherapy and Occupational Therapy Journal	4	8000	360
Urology, Nephrology and Andrology International	2	6500	350

Terms of Supply:

1. Advance payment required by Demand Draft payable to Red Flower Publicaion Pvt. Ltd. payable at Delhi.
2. Cancellation not allowed except for duplicate payment.
3. Agents allowed 10% discount.
4. Claim must be made within six months from issue date.

Order from

Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110 091 (India), Tel: 91-11-22754205, 45796900, Fax: 91-11-22754205. E-mail: redflowerppl@vsnl.net, redflowerppl@gmail.com, Website: www.rfppl.co.in