International Conference of

University Librarians' Association of Sri Lanka

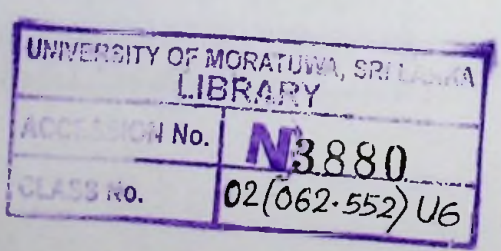
ICULA 2016

LIBRARIES AS PARTNERS OF KNOWLEDGE SUSTAINABILITY

PROCEEDINGS

University Librarians' Association (ULA)
Sri Lanka

09th & 10th March 2016
Jaffna Public Library



Dedication

This conference volume is dedicated to three Veteran Librarians who left us in tears

Late Prof. Russell Bowden
Honorary Fellow of IFLA
Fellow of SLLA
Honorary Fellow of CILIP
Honorary Librarian of the
Royal Asiatic Society of Sri Lanka

Late Mr. J. A. Amaraweera
Former Librarian, Buddhist and Pali University of Sri Lanka
Former Chief Librarian, the Science Education Centre, Male, Republic of Maldives
Former Editor of JULA & Sarasavi Puwath

Late Mrs. U.S. Millawithanachchi
Senior Assistant Librarian, Periodical Section, Main Library, University of Colombo
Former Acting Librarian,
University of Colombo

Preface

We cordially welcome you in Jaffna, Sri Lanka to the International Conference of University Librarians' Association of Sri Lanka (ICULA 2016), which is organized at the Jaffna Public Library, Sri Lanka. University Librarians' Association of Sri Lanka is a renowned professional body in the country and has been conducting various events to improve the professionalism and to promote knowledge-sharing.

Library and Information Science (LIS) is continuously evolving as a result of both theoretical and applied research in the field, which is being integrated into other disciplines. Ultimately, the knowledge sphere is expanding in library and information sciences.

The ICULA 2016 serves as a platform to bring together different research areas in LIS from professional librarians attached to various sectors in Sri Lanka and overseas. Their contributions add value and success to the ICULA 2016, and are believed to enrich the existing knowledge in LIS.

We are indebted to all members of ULA, and contributors and participants of this international conference. I sincerely record my special gratitude and appreciation to Mr. S. Santharooban and M.N. Ravikumar for their immense support to the editorial works. My acknowledgements are also extended to the Conference Organizing Committee that worked hard to make this event a great success.

T. Ramanan
Editor
ICULA 2016

Conference Committee

Conference Chair

Mrs. S. Arulanantham, Librarian, University of Jaffna

Advisory Committee

Dr.(Mrs) P Wijetunga, Librarian, University of Colombo
Mr.R.Mahesawaran Actg.Librarian, University of Peradeniya
Mr. L A Jayatissa, Librarian, University of Kelaniya
Mrs. RC Kodikara, Librarian, University of Moratuwa
Mrs. Nayana Wijayasundara, Librarian, University of Sri Jayawardenepura
Mr. Ananda Karunaratne, Librarian, University of Ruhuna
Dr. (Mrs) R.Amarasekara, Actg.Librarian, Open University of Sri Lanka
Mrs. T Arulnanthy, Librarian, Eastern University, Sri Lanka
Mr. MM Rifaudeen, Librarian, South Eastern University of Sri Lanka
Mrs. A.S. Siriwardana, Librarian, Rajarata University of Sri Lanka
Mrs. T.N. Neighsoorei, Librarian, Sabaragamuwa University of Sri Lanka
Mrs.W.M.ThusithaKumari, Actg.Librarian, Wayamba University of Sri Lanka
Mr. G.R. Padmasiri, Librarian, University of the Visual and Performing Arts
Ms. Thanuja C. Ranawella, Actg. Librarian, General Sir John Kotelawala Defense University
Mr.Prasanna Ranaweera, Director, National Institute of Library and Information Science

Conference Secretary

Mr.S.Navaneethakrishnan, Senior Assistant Librarian, University of Jaffna

Conference Steering Committee

Mrs. S. Arulanantham, President,ULA
Mrs. Shirani Dharmarathne Vice – President, ULA
Mr. S. Ketheeswaren Secretary, ULA
Mr. T Ramanan, Editor, ULA
Mr. Sunil Premarathne, Training Officer
Mr. S. Navaneethakrishnan, Treasurer
Mrs. U. Samanthi Millawithanachchi, Rep. University of Colombo
Mr. J.J.G.Arachchige, Immediate Past President
Mrs. K.W.A.M. Konpola, Rep. Uni. of Srijayawardhanapura
Mr. Girakaduwa Mudiyanselage Saman Kumara, Rep. Uni. of Visual and performing Arts
Ms. K.R.N. Harshani, Rep. Rajarata University of Sri Lanka
Mr. U.G.M.C Manori Samarakoon, Rep. Buddhist and Pali University of Sri Lanka

Mr. S.L.M Sajeer, Rep. South Eastern University
Mr. M.N Ravikumar, Assistant Secretary, ULA
Mr. P.G. Nishantha, Web-Editor, University of Ruhuna
Mrs. D.G.A.S. Malkanthi, Rep. Wayamba University of Sri Lanka
Mrs. D.N.T.Gunawardana, Rep. University of Moratuwa
Mrs. A.S. Rubasinghe, Rep. University of Kelaniya
Mrs. Damayanthi Gunasekara, Rep. Open University of Sri Lanka
Mr. P. K. C. M. Wijewickrema, Rep. Sabaragamuwa University of Sri Lanka

Conference Organising Committee:

Reception and Inaugural Function
Mrs.K.Murugathas, Senior Assistant Librarian, University of Jaffna
Mrs.L.Umashankar, Senior Assistant Librarian, University of Jaffna
Mrs.M.Visakarupan ,Senior Assistant Librarian, University of Jaffna

Conference Registration
Mrs.L.Umashankar, Senior Assistant Librarian, University of Jaffna
Mrs. S.Hoole, Senior Assistant Librarian, University of Jaffna

Cultural Programme
Dr. (Mrs.) M.Visakaruban, Senior Assistant Librarian, University of Jaffna
Mr.S.Navaneethakrishnan, Senior Assistant Librarian, University of Jaffna

Hospitality and Accommodation
Mr.S.Ketheeswaran Senior Assistant Librarian, University of Jaffna
Mrs. S. Arulanantham, Librarian, University of Jaffna

Website, Web casting, Multimedia
Mr.S.Ketheeswaran Senior Assistant Librarian, University of Jaffna
Mr. Nishantha, P.G. Assistant Librarian, University of Ruhuna

Exibition
Mrs. S. Arulanantham, Librarian, University of Jaffna
Mrs.K.Murugathas, Senior Assistant Librarian, University of Jaffna
Mrs.L.Umashankar, Senior Assistant Librarian, University of Jaffna
Mrs.M.Visakarupan ,Senior Assistant Librarian, University of Jaffna
Mr.S.Navaneethakrishnan, Senior Assistant Librarian, University of Jaffna

Theme Seminar
Mrs. S. Arulanantham, Librarian, University of Jaffna
Mr.S.Navaneethakrishnan, Senior Assistant Librarian, University of Jaffna

PROGRAMME SCHEDULE

DAY ONE

Technical Session 1

Social Responsibility of Libraries

Date & Time: 09-03-2016/12.00-1.00p.m

Venue: Public Library Library Auditorium

Co-Chairs

Prof.W.A.Weerasooriya and **Prof.Srinivasa ragavan**

1	A comparative analysis of social media and e-mail usage and communication preferences of the undergraduates	Pradeepa Wijetunge
2	The changing roles of Sri Lankan academic libraries: a case study at USJP library	Sampath Amaratunge& Nayana Wijayasundara
3	Open Access and Plagiarism: Issues and Concerns for India	A. L. Moorthy
4	Planning and Provision of Multi-Purpose Learning Spaces in a University Library: Experiences at the University of Kelaniya	L.A. Jayatissa

Technical Session 2

Scholarly communications

Date & Time: 09-03-2016/ 2.00-3.00p.m.

Venue: Public Library Auditorium

Co-Chair

L.A.Jayatissa and **T.M.Seniviratne**

1	Bibliometric Study on LIS Articles Published in Sri Lanka During 2010-2014	Ruwan Gamage
2	Research Performance of Organizations in Madurai Region: A Scientometric Point of View	A. Thirunavukkarasu, S. Raja& S. Kishore Kumar
3	SAARC Citation Index: A Proposal For The Tool And Measurement Of Scholarly Communication	R. Balasubramani, Rasiah Maheswaran & Ketheeswaran S
4	A Scientometric study of the physics professors in the Sri Lankan universities	Thuraiyappah Pratheepan& W. A. Weerasooriya

Technical Session 05

Information services

Date & Time: 10-03-2016/10.45- 11.45 a.m.

Venue: Public Library Auditorium

Co-Chairs

Mrs Komathy Murugathas and **Prof.K.Chinasamy**

1	Study to determine the extent to which undergraduates use library resources and services in an academic library setting	H.M. RohanaVijithaThushara Lionel R. Amarakoon
2	Increasing awareness programmes and use of the library's resources in Rajarata university library system in Sri Lanka	K.R.N.Harshani A.S.Siriwardana
3	Information Need Seeking Behavior of Theni Government Medical College Students: A Case Study	S.Ravikumar & K.Chinnasamy
3	Propriety Of The Dewey Decimal Classification (DDC) Scheme In Classifying Buddhist Literature: An Analytical View With Reference To 'Tripitaka'	Gallaba, G M P, Samaradiwakara, G D M N& Samaravickrama, P G R

Technical Session 06

Emerging trends in LIS

Date & Time: 10-03-2016/ 12.00-1.00p.m.

Venue: Public Library Auditorium

Co-Chairs

R. Maheswaran and **Dr. Kalpana Chandrasekar**

1	Role of Library to Enhance the Awareness of Right to Information Act in India	M. Nagarajan, M. Jayaprakash & R Kupeshan
2	School Libraries Influencing the Students: Findings Based on a Survey of 15 Higher Secondary School Libraries in Kolkata	Lopita Mukherjee
3	Understanding Present situation and future challenges of Library and Information sector in Sri Lanka	M S M Shiham & Iromi Menaka Wijesundara
4	Research to discover what factors influence the regular Newspaper reading habits of the public servants serving in the metro Jaffna region	U.Latha

Technical Session 07

Information Literacy

Date & Time: 10-03-2016/ 2.00-2.45pm

Venue: Public Library Auditorium

Co-Chairs

Mrs.Latha Umashankar and **Mr.Gallaba,G.M.P**

1	Information Seeking Behavior of Post Graduate Computer Science Students In Madurai Kamaraj University –A Study	K.Chinnasamy, S.Ravikumar& S.Aravind
2	A study on use of Internet by Faculty Members in two Aided Christian Autonomous Colleges in Tiruchirappalli, Tamil Nadu	J. Franklinn& G. Carmal
3	Communication problems in the classroom level teaching and learning -a study based on schools in the Nallur division of Jaffna educational zone	Rasanayakam, J. and Rajeswaran, P

Valedictory Session

Date & Time 2.45 p.m. to 3.45p.m.

Venue: Public Library Auditorium

Valedictory Address

Mrs.R.C.Kodokara

Librarian, University of Moratuwa

Dr.Wathmanel Seneviratna

Librarian, Open University of Sri Lanka

Concluding session Feedback of participants

Vote of Thanks & Closing remarks

Technical Session 3
Evolution of Librarianship
Date & Time: 09-03-2016/3.15-4.15p.m.
Venue: Public Library Auditorium
Co-Chairs
Dr (Mrs). Nayana Wijayasundara and **R.Thusithakumari**

1	Changing Role of Librarianship In Context of Change Management	P. Venkateshwar Rao & B. Kumar
2	Solutions for space problem in the PGIAR library: a case study	R.M Nadeeka Rathnabahu
3	The usage of ICT facility in the newly established university libraries: a case study of e-Zone at Main Library Wayamba University of Sri Lanka	W.M.Thusithakumari
4	The status at Library Automation in Sri Lankan University Libraries: A case study	DGAS Malkanthi& Nimal Hettiarachchi

Technical Session 04
Information System
Date & Time: 09-03-2016/ 4.15 to 5.00p.m
Venue: Public Library Auditorium
Co-Chairs
Dr.Ruwan Gamage and **Mr.S.Shanmugathasan**

1	Adoption of Open Source Integrated Library System: User's Perception among the Selected Libraries in India	T.K. Gireesh Kumar
2	Identifying Subject Thesauri as an educational tool for sustainable education	Navaneethakrishnan, S. & Arulanantham, S
3	Emerging Trends in Search Engines: Engineering Faculty and Students' Perception on Search Engines	J.Vivekavardhan, S.Yadagiri & B.Sudhakar

DAY TWO

Date & Time: 10-03-2016/ 9.00-9.30 a.m
Venue: Public Library Auditorium

Theme Seminar
Date & Time: 9.30-10.30 am
Venue: Jaffna Public Library Auditorium

Chair person's Address
Prof.M.Nadarajasundaram
Chairman, Management Committee, Ramananthan Academy of Fine Arts, University of Jaffna

Theme Speakers

Dr.Pradeepa Wijethunga,
Librarian,University of Colombo

Prof.Srinivasa Ragavan,
Head, Dept. of Library and Information Science,
Bharathidasan University, India

Prof.T.Velnampy
Dean, Faculty of Management and Commerce, University of Jaffna

Prof. Khaiser Nikam,
Dept. of Library and Information Science, University of Mysore, India

Address by the President, ULA

On behalf of the Organising committee, I am honoured and delighted to welcome you to the 8th International Conference of University Librarians' Association (ICULA 2016) at University of Jaffna. This Conference brings together a tremendous and rich diversity of authors and speakers from Universities and other higher educational institutions at national and International level to share their ideas on a wide range of LIS research and applications. It has been a real honour and privilege to serve as the General Chair of this conference.

Jaffna, the conference venue, is one of the historical cities of Sri Lanka which gives the highest priority to education even in the midst of the hard time. This is the first International event devoted to Library and Information Science for the people of Jaffna. Two historically important places ie Jaffna Public Library and the University Library - have been selected to host this event.

The theme of the Conference is 'Libraries as partners of knowledge sustainability' ; it will broadly cover LIS disciplines from fundamental research to social responsibility of libraries, highlight global interactions and collaborations, and feature the unique location, culture and tradition of Jaffna. The Conference focuses on a broad range of issues and challenges and weaves them through the Keynote Speech, Invited Talks, Theme seminar and exhibition.

Success of any conference heavily relies on team work. I would like to acknowledge the tremendous efforts of the Organising Committee for their hard work and commitment in planning and organizing technical program and social arrangements. Their substantive competence and tireless dedication to this conference are unparalleled. I greatly appreciate the work of the technical program committee who worked diligently in selecting the papers and thorough and timely reviewing of the papers carefully to meet the criteria of high quality and relevance to the main and sub theme of the Conference. My sincere thanks should go to the Local organizing committee for their hard work and dedication to make all social arrangements with the minimum existing facilities; I would like to extend my most sincere congratulations to the authors and speakers for their efforts and vision which provided the impetus to this

conference. The excellence and success of ICULA 2016 would not have been possible without the support of our sponsors. We greatly appreciated all our sponsors.

I hope that the ICULA 2016 organised at this special place will offer a venue for those who are coming from different corners of the world but sharing a common dream, which gives a platform to meet together, exchange ideas, strengthen their ties, discover novel opportunities, study the culture and tradition of the people and broaden their knowledge.

I wish that your stay in Jaffna for the ICULA 2016 will be stimulating and enjoyable.

S. Arulanantham
Conference Chair/ ICULA 2016
Librarian, University of Jaffna
President/ULA
29.02.2016

Message from the Minister of Higher Education

It is indeed a great pleasure to send this congratulatory message to the International Conference of University Librarians' Association (ICULA 2016) on the theme 'Libraries as Partners of Knowledge Sustainability' scheduled to be held at the University of Jaffna, during 9th-10th March 2016.

This conference provides a forum for academics, researchers, policy makers and other interested persons, not only from Sri Lanka but also from overseas, to share their views on mutually rewarding topics in a conducive academic environment.

In order to realize the objective, the Ministry has implemented various measures to assist and encourage the academics to carry out research. It is really encouraging to note that not only the academics of the University Librarians' Association but also from all other Departments, Universities and Higher Education Institutions in Sri Lanka are taking part in this conference. It is also encouraging to note that overseas academics and researchers are participating in the event making it truly international.

I sincerely hope that the outcomes of the Conference will be of national interest and its relevance. The Ministry of Higher Education is very much concerned with the research output of the university academics that will be reflected in the quality of their teaching, and most importantly, in their contribution to national development.

I wish to commend and congratulate the President of the University Librarians' Association and the organizing committee of the conference for holding the conference in Jaffna. I am sure the conference will be of a great success.

Lakshman Kiriella
Hon. Minister of Higher Education & Highways,
Democratic Socialist Republic of Sri Lanka

Message from the Chairman SCOLIS, University Grants Commission of Sri Lanka

It gives me great pleasure to pen this message on the occasion of the International Conference of University Librarians' Association 2016. I am happy that this prestigious event in the academic calendar of the Library and Information Services profession in Sri Lanka is being held in Jaffna for the first time in the history of your organization.

The holding of the event in Jaffna while been historic, also speaks volumes about the resilience of the northern region of Sri Lanka and its unfaltering desire to forge ahead in all aspects of life.

Your theme for the conference *Libraries as partners of knowledge sustainability* could not have been more appropriate for an international conference of your discipline being held in Jaffna. We as Sri Lankans are aware of the role the people and libraries of Jaffna played in preserving and sustaining knowledge in a variety of fields.

I congratulate the President and Council of the University Librarians' Association of Sri Lanka for having organized this international conference and wish the conference all the success it so richly deserves.

Dr Ruvaiz Haniffa
MBBS, DFM, PigDip, MSc, MD, FCGP, MRCGP
Member
University Grants Commission of Sri Lanka

Message from the Vice Chancellor of University of Jaffna

I am happy to give a message to ICULA-2016. I am happy that the members of the University Librarian's Association of Sri Lanka have decided to hold this even in Jaffna this year. Academics are expected to carryout research not only for their personal development, but also for the development of the institutions, where the library is situated and to upgrade the activities of the libraries with the current developments and modernized technologies.

The library was considered to be the most important place to develop knowledge until the information technology took an important place with most relevant materials came accessible to casual readers and to researchers at all levels. To all the academics and the students persuading higher studies, the libraries have to be updated, be able to provide essential information within negligible amount of time and relevant information from authentic sites and references. Unless the academics of the library work towards providing such information which a reader cannot get on his or her own, existence of a library becomes useless.

The research of the library academics should be focused on the development and sustainability of the functions and modernizing the working capacity of the library. If the outcome of the research work of the academics of the library is attractive and make the readers to visit the library frequently, the research activities carried out by the library academics will not be helpful to the academic world and the readers.

I congratulate the library staff of University of Jaffna for organizing this event.

Snr. Prof. Vasanthy Arasaratnam
Vice Chancellor, University of Jaffna

Message from the Guest of Honour

It is indeed with great pleasure to deliver this message on a great occasion in which Librarians are together organizing a conference with a theme of 'Libraries as partners of knowledge sustainability'. The importance of this Conference reveals its timely need to exhibit the power of the library in a wonderland, which had experienced a painful and intolerable incident of burning the biggest Library in Asia. Recollecting the memories of such sadness is not anyway the intention of this moment but to figure out the values of such source of knowledge that inspired and contributed immensely towards the advancement of education and development while protecting and preserving the culture and heritage of the people in this region and the nation as a whole. The Jaffna public library is the heart of the people in the North, emerged from the ashes and back to its original charming appearance but the lost valuable collections never replaceable and the pain erected among the people hardly curable.

On this context this conference of Librarians, steps forward to claim the Libraries as the partners of knowledge sustainability, sounds well to find the gap emerged and to fill it adequately with the novel ideas through deliberate discussions. Libraries are the Centers of knowledge pool through which the information is accessible to everyone. Transferring of such information is at the doorstep nowadays due to the easy accessibility of internet to all of us. The knowledge gap emerged along the advancement of science could be minimized with the fairly accessing system in the libraries. The libraries are the essential service sectors in the Universities which helps people to obtain any accurate and reliable information from any part of this world. This connectivity is required to any researcher or any reader to gather knowledge through an effective system of connectivity. This not only connects the access of documented materials both either in hard or soft forms but also provide an opportunity to link the researchers who are at different terminals.

Therefore the role of the libraries is immense in storing, curing, protecting and providing the resources and the importance of the Libraries needs special attention to be realized by everyone. International Federation of Library Association (IFLA) says that library and information services help people improve educational and social skills, indispensable in an information society and for sustained participation in democracy. As such we need to consider and

to give concern to equip the libraries with essential man power and infrastructure facilities to gather and experience the education and social skills through self-learning. Further this conference will discuss various issues currently faced by the librarians and libraries to provide ample service to the people and should also develop mechanisms to attract the people visiting to the libraries. Virtual libraries are providing immediate response to any contents available and such connectivity should evolve through the Universities to minimize plagiarism and malpractices. Transformation in the structure of the Library is expected on par with the advancement of science and information that could be readily available and accessible even from outside. This service provision will enhance the sustainability of the libraries and to extend their services without any barrier to any client looking for information.

I wish the conference a success and wish you all for joining here to strengthen the service provision of the Libraries and striving towards knowledge sustainability. At last I wish to thank the organizers for inviting me to grace this occasion and all the participants for their active involvement towards the development of Libraries and their invaluable service.

Prof. G. Mikunthan
Dean/Graduate studies

Message from Guest of Honour

As a member of the small group of university library professionals who formed the University Librarians' Association (ULA) to protect and maintain the professional status of academic librarians in University Libraries of Sri Lanka, it provides me immense pleasure to see the steady progress of the ULA during the last 36 years.

Right from the beginning the ULA has endeavoured not only to safeguard the rights and privileges of its members but also to promote the educational and professional advancement of its members enabling them to carry out their duties diligently, effectively and usefully making them an indispensable component in the library as well as in the university community.

Arrangements made for the 8th International Conference of University Librarians' Association of Sri Lanka scheduled to be held during 9th to 10th March 2016 in Jaffna clearly portrays the splendid quality of development the ULA has achieved in its nearly 4 decades of progress.

While conveying my warm greetings and best wishes for the success of this great academic event, I also wish to add that the ULA as our professional body will continue to pursue its valuable activities receiving inspiration from its four main objectives which have served as guiding lights in its long history.

N.T.S.A. Senadeera
Former Librarian,
University of Peradeniya
Sri Lanka

Message from Keynote Speaker

The adage Knowledge is Power is more applicable to twenty-first century. It is all pervasive. From its beginning till the eighteenth century, the civilization has been agrarian. The industrial and information technology revolutions have ushered in the present day knowledge society where knowledge and its strategic management have become the most important factor in deciding the wealth of organizations, corporates, societies and nations. Corporate Knowledge provides competitive edge and financial superiority for corporates over their competitors. The key factor here is the management of knowledge capital. The most important asset of Bill Gates, one of the world's wealthiest persons and philanthropist (for the cause of libraries) is Knowledge capital owned by his Company by patents, trademarks and human intellect. Knowledge is immune to natural calamities like quakes, floods, cyclones, draughts, etc.

Among the top 10 Technology firms that filed most patents in the USA, the computer giant IBM leads with 7,534 patents (at a rate of 20 patents per day), followed by Samsung (4952), Canon (4055), Sony (3,224), Microsoft (2,829), Toshiba (2,608), Qualcomm (2590), Google (2566), LG (2,122) and Panasonic (2,095). Their stand in corporate world is well known.

Globally, nations exploited knowledge to get transformed into Knowledge Economies. Many Developed Countries, and even Developing Countries, are thriving on enhanced GDPs based on Knowledge Economy. It is reported long back that in every dollar earned by USA, 48 cents come from information (knowledge) related activities. The knowledge haves strategically control the knowledge have nots. Just think if a country publishing scientific journals puts embargo on any developing country (it happened with Iraq in 1990s).

In the light of the foregoing, the theme of this Conference is highly deserves to be complemented. I am happy to be here at the International Conference, the first being organised by the University Librarians Association (ULA) is organizing an in Jaffna in more than a decade on the theme **Libraries as Partners of Knowledge Sustainability. I wish the Conference a Grand Success.**

Dr. A.L. Moorthy
Former Director-DESIDOC & Chief Consultant (Inf Sci)
BrahMos Aerospace, DRDL Campus, Hyderabad, India

Keynote Account from IFLA Chair of RSCAO

As Chair of the IFLA RSCAO (Regional Standing Committee on Asia and Oceania), it gives me great pleasure to introduce the proceedings of the International Conference of the University Librarians' Association of Sri Lanka. As you will see, a wide range of thought-provoking papers relating to the conference theme, are available here for your perusal. The Conference organisers have had the difficult task of selecting the best papers from a large number of abstracts received, each addressing the theme of *Libraries as partners of knowledge sustainability*, and its related sub-themes ranging from *Knowledge Management* to *Scholarly Communications* and *Emerging Trends in LIS.*

The papers in these proceedings will enable the Sri Lankan academic library community to ponder new issues, and share and exchange ideas with colleagues throughout the country and overseas. It is important that librarians as researchers and practitioners, demonstrate the many ways in which they can add value to their organizations, to the teaching, learning and research at their institutions, and beyond to the broader society in which they operate.

I hope this forum will serve as a cog in the wheel of driving change for the long-term goal of sustainable development in Sri Lanka. One of the key initiatives in the current IFLA strategic plan is to raise awareness of the UN Transforming our World 2030 Agenda for Sustainable Development. In this context the role of libraries is critical.

I take this opportunity to congratulate the Conference organizers for their efforts, and commend them for reinstating this Conference after a gap of a number of years; and for the first time, holding it in the northern part of the country.
May the ICULA 2016 be a successful and fulfilling event.
Best wishes

Jayshree Mamtora
Chair, IFLA RSCAO 2015-2017

Message by the President of the Sri Lanka Library Association

I am pleased to send this message on behalf of the Sri Lanka Library Association to the University Librarians' Association (ULA) on the occasion of its International Conference of University Librarians' Association 2016 under the theme 'Libraries as Partners of Knowledge Sustainability'.

ULA is a highly recognized professional organization in Sri Lanka that represents the interests of library practitioners of Sri Lankan university library sector having a diverse membership category within university libraries.

The theme of the conference is of significance to everyone, both local and international. Also sustainable development is a highly discussed subject at many a forum today. At the same time balancing right information and thus sustaining knowledge has become a challenge for the present day information users and the information providers. It is needed to face it with collaboration and with active and relevant partners. So it is laudable that the ULA has embarked on this timely theme to enhance the Library and Information Science (LIS) profession and thereby to provide such knowledge to the LIS professionals for them to serve the users in a most relevant manner.

A noteworthy feature that merits special mention is that for the first time in the history of LIS profession in Sri Lanka, this remarkable event is planned to be held in Jaffna during 9th to 10th March 2016.

It is my great pleasure that I send this message as the President of the Sri Lanka Library Association at this momentous occasion of the University Librarians' Association and congratulate Ms. Srikanthaluxmy Arulanantham, the Conference Chair of the International Conference of University Librarians' Association 2016 and the President of ULA and her team for organizing this conference. I wish the ULA all the very best in all its future endeavours.

Ms. Shivanthi Weerasinghe
Librarian, Bank of Ceylon, Sri Lanka
President, SLLA

Message from Secretary, ICULA 2016

University Librarians' Association of Sri Lanka (ULA) is organizing an International Conference (ICULA2016) which is scheduled to be held in Jaffna during 9th -10th March 2016 after the long war face. It will be a '3 in 1 event' consist technical sessions, exhibition, and theme seminar.

Preparations for this conference started during August 2015 and the last date for submission of these papers was 15th December 2015. The tremendous response received for this conference from LIS communities across the globe has been extremely satisfying and encouraging. ICULA 2016 received a number of submissions contributed by many authors mainly from Sri Lanka, India, China and Zimbabwe. This also places a huge responsibility on us to make the conference very successful and to live up to the expectations of the delegates. A total of 64 papers/abstracts were received. These papers were reviewed by members of the review panel at national and international level. A total of 39 papers were short-listed for presentation during the conference. Among them 28 papers contributed by more than 70 researchers and four theme seminar papers are going to be presented in different sessions in this conference.

On behalf of the ICULA Secretariat, I would like to take this opportunity to welcome you to ICULA-2016. Welcome too, to Jaffna city. I am very much thankful to ULA members and ICULA Organizing committee for giving me this opportunity and all of their efforts, energy and enthusiasm. I look forward to conference becoming an enriching learning experience.

With warm regards

Mr. S. Navaneethakrishnan
Conference Secretary/ICULA 2016

Table of Contents

Technical Session 06

Technical Session 07

Keynote Address

Role of Information Professionals in Knowledge Sustainability

A.L. Moorthy

Chief Consultant (InfSci), BrahMos Aerospace
DRDL Campus, Hyderabad
Former Director, Defence Scientific Information and Documentation Centre (DESIDOC),
DRDO, Metcalfe House, Delhi, India
Email: almoorthy52@gmail.com

Distinguished Guests, Invitees, Library Professionals, Delegates and Ladies and Gentlemen, a very hearty good morning to you all.

First of all, I would like to express my sincere thanks to the Conference Organisers for inviting me as Keynote Speaker. I am moved by the pristine environment in the country side and warmth in the people. I am happy to be with you all at the International Conference on *Libraries as Partners of Knowledge Sustainability*. I hope in the next two days we are going to discuss, deliberate, explain, elucidate, and critically apprise on various facets of the Theme and Sub-Themes of the Conference.

We are living in a world where Volatility, Uncertainty, Complexity and Ambiguity prevail dominantly. In addition, the depletion of essential natural resources is significantly affecting the way we live and work. The present economy is driven by knowledge and is popularly known as Knowledge Economy. The unique nature of knowledge in terms of a resource comes to the fore. Unlike other resources, when consumed this will not deplete; in fact it multiplies when shared. This multiplier effect is one of the biggest impediments to sustainability due to the exponential increase in volume of knowledge to be managed. Separating the 'grain from the chaff' is the key to knowledge sustainability. Nevertheless, sustaining this resource is as crucial as any other because of the sheer inevitability of our dependence on it for social, economic and strategic requirements.

Knowledge is what is known, what is unknown, what is conscious and what is unconscious. It is all pervasive. It is individual, societal, institutional, organizational, national and universal that can be applied in various

environments. A knowledge system brings data, information and knowledge inferred from these components besides adding expertise of the system to help decision makers gain a better understanding of the problem at hand. In the current century we need new perspective, new tools and new approaches using resources for using resources strategically for individual, societal and organisational benefits. Data and information assets are to be utilised for knowledge sustainability.

Sustainability has many definitions depending on the context we approach. In Ecological context sustainability is the capability to endure; it is the way the biological systems remain diverse and productive indefinitely. It is the ability or capacity of something to be maintained for a period of time or to sustain itself, that is, self-sustaining. Merriam-Webster provides a simple definition: able to be used without being completely used up or destroyed; and involving methods that do not completely use up or destroy natural resources; and able to last for a long time. Generally speaking, sustainability is endurance of systems and processes. It is characterized by the pursuit of common ideals or goals. If an activity is said to be sustainable, it should be able to continue forever.

Albert Einstein said "A new type of thinking is essential if mankind is to survive and move towards higher levels. It is necessary to break from old thinking process and move to the next higher level to solve the sustainability problem". This is true in the LIS field, especially for Knowledge Sustainability.

The Organisers have chosen an appropriate theme covering different facets. Besides current topics and emerging trends in LIS, it also covers the knowledge management and social responsibilities of libraries. In the good old days the indigenous people always strived to make the resources sustainable. They protected it, safeguarded it from exploitation. This is how the Traditional Knowledge (TK) and Traditional Medicines (TM) that are passed on from generation to generation have survived. The indigenous people use the TM and TK for their societal betterment. Whereas the Western world, especially by Developed Countries always have access, dissect mastered its production for creating wealth and resort to exploitation of TK and TM as a means to economic and corporate gains.

We the library professionals have to learn the way indigenous people use resources without depleting them. The indigenous information resources are to be nurtured, collated, preserved, shared and used for the benefit of the society.

institution, it is the library that faces the brunt first (ASRC in Hyderabad, India; Maywood Public library, Illinois, and New Public library in Georgia, USA, etc. were closed due to lack of funds). Further, due to inflation and exchange rates with US dollar, even at the level of previous year's budgetary support, it is difficult to maintain status quo. The inevitability is to cut foreign journals and books. This has to change. Further, in Developing Countries, education is highly subsidised and only recently this is changing, slowly. To have robust Knowledge Sustainability system in place, first the libraries have to be economically strong. For this libraries may have to generate financial resources from stake holders and philanthropists or crowd sourcing, to gain freedom from budgetary cuts.

Technology Sustainability: Due to the breath-taking developments in ICTs, the library enabling technologies change. And the only thing that is constant is change. So we too have to change. Steps are to be taken for migrating to the new technology environment, software, hardware, and library databases to the newer platforms. Also training needs of the library staff in the changed technology environment is also to be looked into. Through suitable technological means security of electronic resources, databases, and computer servers is to be ensured from hacking, and intentional or unintentional damage.

Library Atmosphere: Physical ambience and atmosphere in libraries should be such that they retain readers for longer periods. Thirst for knowledge is time bound. If the need is not fulfilled at that moment, it may wither away. A serious reader may wish to consult some of his colleagues to discuss certain issues or points. To cater to these readers, the library should have a separate Discussion Room or Conference Room or Meeting Room. Idea is to view the library as more of a collaborative space rather than a place for depositing books. A media and communication room with video conferencing facilities will go a long way in fulfilling learning requirements. With this facility, People can attend webinars, they can talk to their peers, collaborate across geographic boundaries, with the least effort and save time. The possibilities are endless. Our job is to create the facility and let the user's imagination take its own free run.

If natural sun light is falling inside the library through a fibre dome and adequate lighting comes through walls fitted with glasses, the ambience will have a multiplier effect.

Self-transactional systems using RFID are very instrumental in increasing the user satisfaction as they ensure 24x7 transactions and a degree of freedom to users. Maker spaces with 3D printers enable enthusiasts to 'come and build'. Imagine the library being a hub of projects! The point is: 'Make them want to visit the library again and again and treat it as their favourite joint'.

Adequacy of Resources: No library in the world is self-sufficient in acquiring all the published material in a given subject field, let alone all the subject areas. If this is true even in the case of R&D institutions which carry out research in confined areas, it is well neigh impossible for academic institutions. But the content is supreme, for it satisfies the reader's quest for knowledge. It implies that the libraries have to develop a balanced collection of resources for core areas and depend upon resource sharing with other libraries. Another way out is to have a Cooperative Acquisition Policy between domain-specific libraries. The 80/20 rule where 80% needs are met with own resources and depending upon others for the other 20%.

Library Consortia: For the last one decade many organizations are establishing Library Consortia throughout the world. In India we have a number of Library Consortia. INDEST Consortium covering IITs, IISc, ISM, IISERs, NITs, IIMs, NITIE, IIITs and NIFFT etc.; the UGC-Infonet Consortium for the academic community, the CSIR-DST E-Journal Consortium (now closed), DRDO E-Journal Consortium, the ICMR-ERMED consortium, the DelCon for bio-technology laboratories, the CeRA Consortium agricultural research institutions, HELLIS Network of Health Universities, and SpaceNet of ISRO are extending services to their respective communities. The consortia have negotiated with publishers for accessing online the journals and back volumes, at discounted rates for academic institutions and at mch larger the cash outflow for R&D institutions. INDEST and CSIR consortia have calculated the cost benefit analysis and found that there was increased productivity viz. the number of publications in peer-reviewed journals and filing of IPRs. This is also true for many other consortia. In a new type of consortial approach, the HELLIS network is passing the burden of budget to the beneficiary, i.e., to the medical and nursing students.

I read an interesting paper by Mr T Ramanan and Mrs S. Jayasuriya from web search and understand that efforts were made to evaluate benefits and issues to be sorted out for establishing a consortium of libraries of the 15 universities funded by the Sri Lankan University Grants Commission. I am also happy to know that the Standing Committee on Library and Information Sciences (SCOLIS) has recommended for the establishment of a National Digital Library

Consortium of libraries coming under the purview of the UGC. I wish this welcome effort fructifies in a very short time.

Resource Sharing among Libraries: Going by the previous point, this is an unavoidable necessity not only to satisfy readers but in the larger interest of optimal utilization of resources acquired through taxpayers money. Libraries utilize a number of ways to fulfil the requests from other libraries; by fax (rather old), email, sending digitised copy (without violating copyright), etc. Now a days, as libraries rely more and more on online information, sending digital copy has become a norm. In a cooperative acquisition or consortium environment, this is an accepted way to share resources.

Usage of Resources: It is not enough if the library has good information resources. It is equally important to have matching infrastructure for facilitating optimal utilisation of resources. Having a library website is a no-brainer, but having one is not enough. The interface should be clean and not cluttered and should have intuitive navigation. For example, instead of having a link called OPAC, placing a link saying 'Search for' and the dropdown saying 'books, journals' etc. will be more informative. The stress should not be on jargon but functionality. The library should possess adequate number of computers/ terminals, Internet connectivity with good band width preferably a leased line connectivity to access resources without hindrance; electrical supply with power back up.

Amenities play an important role on library patrons' mind. Providing water coolers and coffee vending machines would make the patron to unwind and relax for a while. As they say, a lot can happen over a cup of coffee. I believe such amenities will create an everlasting impression on the library patrons leading to the increased foot falls in to the library.

Mobile and Social Media: Technology is the most powerful enabler. It is not an exaggeration if I say that the Gen Y (or Gen Z?) prefer to be on social networks and hand held devices and spend a lot of time. Social Networking Sites became popular in the last decade. Most of the Generation Y students and also faculty, researchers have been found to be using one or the other social media; quite often, more than one. Many surveys among various colleges and universities have found that Facebook is the most popular social medium followed by LinkedIn, Google+, Twitter, MySpace, and so on in different orders. If this is exploited by the library staff then there would be all round success in library services and in usage of library materials. The Reference Librarian can use Chat, Instant Messaging, SMSs, and use Blogs, Facebook and Twitter to

inform about latest acquisitions, new journal issues received with their content pages, important news, information on conferences/ seminars, SDI service and so on. Remote access to resources is always on the top of wish-list of all users, so we need to be cognizant of this need and negotiate with publishers for the same. Social media presence and mobile websites are the way to go. The mantra is "Be there where your user is'.

Cloud Computing: According to the Pew Internet and American Life Project Report of 2010 by the year 2030 most people would not do their work with software running on a personal computers; instead they will work on Internet based applications such as Google Docs, and in applications run ion smart phones. Already there are quite a few number of SaaS (Software as a Service), PaaS (Platform as a Service), and IaaS (Infrastructure as a Service), applications are used by the scientific community. This trend will further increase. Future libraries will be working with App-based services.

Analytics: Usage statistics are not just numbers to be aware of. They can reveal the patterns of usage and help us in optimizing the services and resources. Think of the possibilities of leveraged usage data! For example, when you visit any ecommerce site you are given options like 'people who viewed this also viewed or bought this'. In the library environment the library website or catalogue, based on usage data should be able to say 'people who read this also read this or borrowed this'. Usage patterns also tell you which collection areas need to be strengthened, which are obsolete. They can also reveal which group of users (by discipline, age, ethnicity etc.) need information literacy support, research support, and learning support or Basic Information Technology skills training.

Innovation: There is no need to stress upon the fact that innovation is more than necessary to have a sustainable knowledge system. In a dynamic environment we need to keep our eyes open for newer means or ways of creating, delivering and archiving knowledge. Let me cite a few examples. Blogs are a chronological log. Library news clipping services are also a chronological list of news. Bingo! A match made in heaven or rather earth! Why to choose any other content management system or struggle with developing one in-house or, worse, having ungainly static html pages. Opt for one open source blog tool and you have a wonderful system. Or, we may host virtual book exhibitions for selection of books using Google Books, encourage and train researchers to use citation management tools like Zotero, Mendeley, etc. These small innovations go a long way in having a sustainable system.

Human Interface: Whatever the technology facilitates them, a sizeable number of readers still value face to face interaction with the library staff. It should be seen that a reference librarian or a senior library professional be available to attend to the library patrons as and when they need. He /she may also be entrusted with Virtual Reference Service (VRS) and document delivery services as many surveys have found that readers rely on email, VRS, and other social media facilities.

Service Culture: The library staff is to be trained in upholding high standards in providing services to the patrons. For service culture is a must for any service rendering institution; it is more so in libraries. For, the library staff may attend and provide service to 99 queries in time, and may fail in one case. But the 1% failure overshadows the 99% success with a sarcastic remark by the patron. Always we have to keep in mind that dissatisfied patrons may tell more friends than the satisfied patrons (see the book Satisfied Customers Tell Three Friends, Angry Customers Tell 3,000: Running a Business in Today's Consumer-Driven World by Pete Blackshaw, Tantor Media Inc., 2008). So commitment to service by library staff is of utmost important.

Scholarly Communication Support: All academic and R&D institutions have researchers and scholars. Many projects will be running concurrently. The findings may have to be communicated to the peers by way of research papers. In such cases, the libraries should provide necessary help such as providing journal selection tools for locating a suitable journal with good standing, management of references as per the style of the journal, and so on. One important activity would be using plagiarism checking by either subscribed software or free software available on Internet. It is most important to understand that at individual level plagiarism may not affect much; but at institutional level it matters a lot for institution is much more bigger than individual. Also the Librarian needs to explain the dos and don'ts of copyright; how to acknowledge the works used for writing research paper, getting copyright clearances of material including figures, tables and graphs taken from other sources as also, providing impact factor if required, citation analysis, and altimetrics. Last but not least is advocacy to publish research on Open Access journals and to include the papers in the Institutional Repository for long time archival of the knowledge Capital of the institution.

Friends the onus is on us. It's not just a question of our survival. We have a great power in hand and as they say 'with great power comes greater responsibility'. The greater good of having knowledge systems sustainable for perpetuity should be our aim and we all should rise to achieve this objective.

Ladies and Gentlemen, I wish the coming two days will lead to fruitful discussions and clarifications and solutions for some of the problems and issues the libraries are facing in the present scenario. Have a happy Conferencing!

Sources consulted:

- Naik, Nunsavath Rupsing (Ed). International Conference on Sustainability of Digital Libraries: Conference Proceedings. Hyderabad, BS Publications, 2015.
- Nath, Shashi. User 2.0: The empowered library patron. Invited lecture delivered at the Librarians' Day Celebrations on 22 August 2015 at ASL, Hyderabad.
- http://www.ifla.org/alp
- http://www.ifla.org/files/assets/wsis/statements/ifla-high-level-statement-to-the-wsis- forum.pdf
- http://www.lyondeclaration.org
- http://www.ugc.ac.lk/en/all-notices/1491-establishment-of-a-national-digital-library-consortium-under-the-auspices-of-the-ugc.html
- http://www.unesco.org/education/tlsf/mods/theme_c/mod11.html?panel=4#top

Theme Paper

Information Literacy as a Critical Success Factor in Achieving Sustainable Development Goals and the Social Responsibility of the Librarians

Pradeepa Wijetunge
Librarian, University of Colombo
Email: librarian@lib.cmb.ac.lk

Introduction

In this brief concept paper, I wish to draw attention of the readers to the Sustainable Development Goals of the United Nations, and Sri Lanka's position in working towards achieving them, the significance of media and information literacy in the development initiatives and how many libraries have contributed to achieve the development goals in their respective communities. It is the objective of this paper to enthuse the Sri Lankan librarians to make their due contributions to their communities, especially at provincial level despite numerous challenges.

Sustainable Development Goals

At the United Nations Sustainable Development Summit held on 25 September 2015, world leaders adopted the 2030 Agenda for Sustainable Development, which includes a set of 17 Sustainable Development Goals (SDGs) (Figure 1) to end poverty, fight inequality and injustice, and tackle climate change by 2030. These Sustainable Development Goals, expand the Millennium Development Goals (MDGs) adopted in 2000 to eradicate poverty, hunger, disease, gender inequality, and improve access to water and sanitation. The new SDGs, and a broader sustainability agenda, attempts to address the root causes of poverty and the universal need for development that works for all people (UNDP 2016).

Goal 1. End poverty in all its forms everywhere.
Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
Goal 3. Ensure healthy lives and promote well-being for all at all ages.
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
Goal 5. Achieve gender equality and empower all women and girls.
Goal 6. Ensure availability and sustainable management of water and sanitation for all.
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all.
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
Goal 9.Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
Goal 10. Reduce inequality within and among countries.
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable.
Goal 12. Ensure sustainable consumption and production patterns
Goal 13. Take urgent action to combat climate change and its impacts.
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.
Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development (United Nations 2015).

Figure 1: Sustainable Development Goals

Sri Lanka and SDGs

Sri Lanka achieved fourteen targets (two targets in poverty, two in universal primary education, three in gender, two in maternal health, one in diseases, and four in environment), of the Millennium Development Goals before the expected date. At the same time, Sri Lanka is on the track to achieve three targets by 2015 (reducing underweight children, HIV prevalence and TB incidence) but slow in achieving three targets (under-5 mortality, infant mortality and maternal mortality). However, Sri Lanka is regressing (or no progress) in two targets; primary enrolments and forest cover. Primary enrolments have been 99.80 percent in 2001 and forest cover has been 38.4 of the total land area in 1990 (UN-ESCAP, ADB, UNDP 2013, p.82). While many of the MDGs were achieved even before the target dates, Sri Lanka has not ignored the adoption of SGDs. HE The President, addressing the United Nations Sustainable Development Goals Conference in 2015 asserted that Sri Lanka fully supports the Post-2015 Sustainable Development Agenda and the Sustainable Development Goals and targets that have been adopted by this Assembly. HE further commented that,

> "Sustainable development encapsulates the equilibrium between social and economic development and environmental protection. The Government of Sri Lanka anticipates achieving these goals fully by 2030. In that respect, we will work towards the provision of basic needs of the people, progressive

> alleviation of poverty, elimination of all forms of discrimination and inequalities, and establish a society based on social justice and human security. Parallel to this, while emphasizing on the protection of natural resources, we will also formulate a state policy on resource consumption based on the sustainable capacity of the environment (Sirisena 2015)..."
>
> "We will ensure the participation in these efforts, not only of the State sector, but the civil society and the business sector, as well. Sustainable Development cannot be achieved by a single country alone. Our strategy will therefore envisage a framework for cooperation between the United Nations, regional organizations and other states...In conclusion, I wish to affirm that in the preparation of development policies for Sri Lanka as an aspiring upper middle income country, our special attention is focused on poverty alleviation (SDG 01), achieving food security (SDG 02), energy (SDG 07), education (SDG 04), minimizing income disparity (SDG 10) and urban development (SDG 11) (Sirisena 2015)".

Media and Information Literacy

Information literacy (IL) needs no introduction to the Sri Lankan LIS fraternity as this concept which originated in the early 1970s in the USA has gathered momentum in the national context with many librarians offering over 75 programs of various lengths and depths. Information Literacy can be defined as a set of abilities requiring of individuals and groups to recognize when information is needed in their unique contexts and have the ability to effectively and efficiently locate, **access**, evaluate and use **ethically and legally to create new knowledge**, and **have the ability to reflect on the process**[1].However, in the recent literature another component is added to this definition – the media. IFLA identifies that,

[1] This definition was developed by a group of 35 university librarians attended a workshop on IL (organized with the support of International Network for the Availability of Scientific Publications (INASP), UK in 2011. It is based on ACRL (2000) and Dorner and Gorman (2006) with highlighted elements added by the Sri Lankan participants.

> "In order to survive and develop, make decisions, and solve problems in every facet of life - personal, social, educational, and professional, individuals, communities, and nations need information about themselves as well as their physical and their social environments. This information is available via three processes: observation and experimentation, conversation (with other persons), and consultation (with memory institutions). The competence to do this effectively and efficiently is called Media and Information Literacy (MIL)."

> "Media and Information Literacy consists of the knowledge, the attitudes, and the sum of the skills needed to know when and what information is needed; where and how to obtain that information; how to evaluate it critically and organise it once it is found; and how to use it in an ethical way. The concept extends beyond communication and information technologies to encompass learning, critical thinking, and interpretative skills across and beyond professional and educational boundaries. Media and Information Literacy includes all types of information resources: oral, print, and digital (IFLA 2014)."

UNESCO, supporting the MIL in the global context, illustrated the relationship between information resources, purposes of information using, understanding the basic functions and the competences that citizens should possess to create and use information ethically (Figure 2). The innermost circle represents the information resources and the means by which information is communicated (radio, TV, newspapers, libraries, archives, museums, Internet and mobile devices etc. The second circle from the centre depicts the purposes why people use information for, i.e. entertainment, association, identification, surveillance and enlightenment. The third circle from the centre describes the basic knowledge that all citizens should have about the functions, nature, established professional and ethical standards of all forms of media and other information providers. The final circle communicates the various competences needed to effectively create and use information and media content ethically as well as engaging with media and other information providers in their social, economic, political and personal lives (UNESCO 2013, p.16-17).

As IFLA (2014) rationalizes, MIL can bridge the gap between the information rich and the information poor and it empowers and endows individuals with

knowledge of the functions of the media and information systems and the conditions under which these functions are performed. MIL is closely related to Lifelong Learning which enables individuals, communities, and nations to attain their goals and to take advantage of emerging opportunities in the evolving global environment for the shared benefit of all individuals, not just a few. It assists them and their institutions and organisations to meet their technological, economic, and social challenges, to redress disadvantages, and to advance every individual's well-being. Considering its significance IFLA as well as UNESCO supports all initiatives to promote MIL and Lifelong Learning for all since they provide the vital foundation for achieving the sustainable development Goals (IFLA 2014).

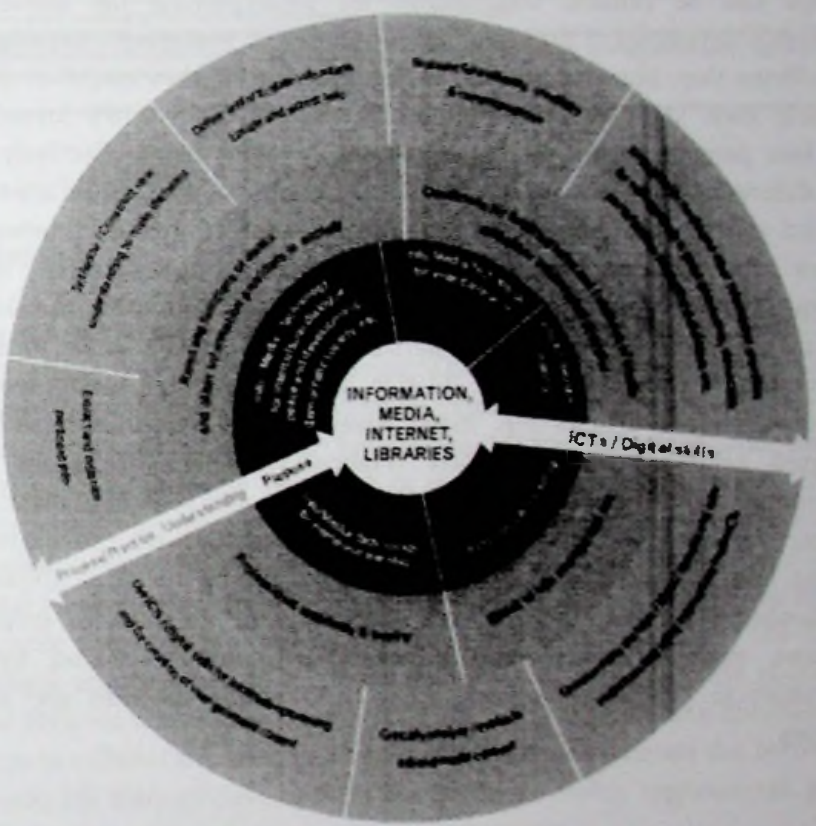


Figure 2: Proposed Media and Information Literacy Model (Source: Grizzle and Calvo, 2013 p.16)

Role of Libraries in achieving SDGs

Access to authentic information is a critical success factor in achieving the SDGs and the library, especially the public libraries which are considered as the University of the Public, is the only place in many communities where people can access information for their education, health, employment, livelihoods etc. conveniently and free of charge.

Their unique role makes libraries important development partners, both by providing access to information in all formats and by delivering services and **information literacy** programmes that meet the needs for information in a changing and increasingly complex society (IFLA 2013) and confirms that libraries can be reliable mechanisms for underpinning the delivery of sustainable development programmes. In relation to sustainable development IFLA affirms that; libraries provide opportunity for all, they empower people for their own self-development, offer access to the world's knowledge, Librarians provide expert guidance and the libraries work effectively with many different stakeholder groups. IFLA further affirms that, as libraries have a natural role in providing access to the information content and networked services that underpin sustainable development, policymakers should encourage the strengthening and provision of libraries and utilise the skills of librarians and other information workers to help solve development problems at community levels (IFLA 2013). IFLA in its Toolkit underpinning the post 2015 development agenda has listed several cases where libraries have supported achieving the 17 SDGs (Figure 3). There are many such contributions from the Sri Lankan libraries, though not recorded adequately, i.e. over 75 information literacy programmes offered by the university libraries, Education and training programmes offered by the NILIS, University of Colombo, SLLA and Dept. of LIS, University of Kelaniya to empower librarians, various training and outreach programmes offered by the universities in collaboration with school and public libraries are a few examples.

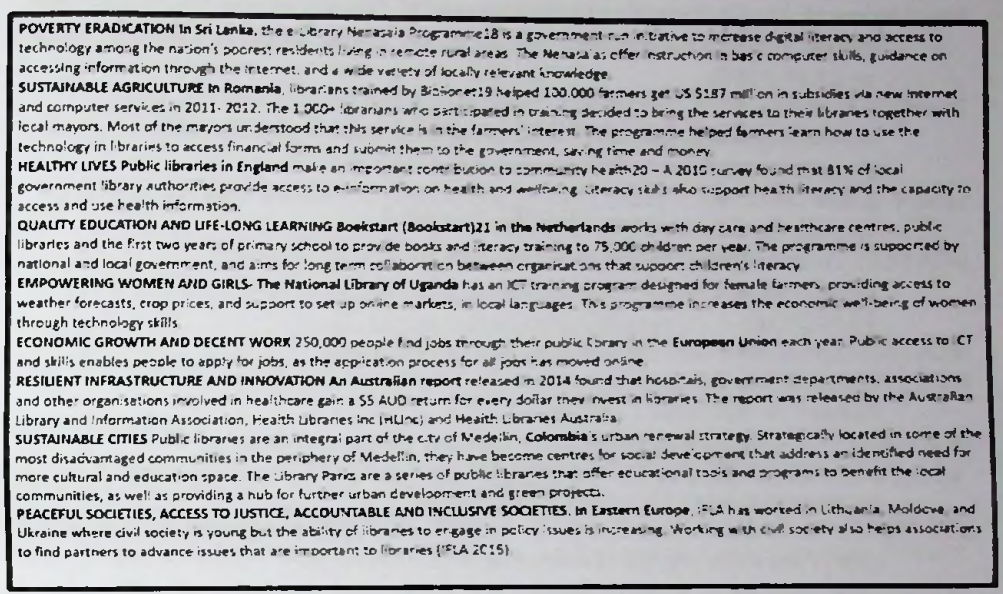


Figure 3: Library initiatives in support of SDGs

Conclusions

Sri Lanka has achieved many development targets within 2000-2015 and moving ahead with plans for achieving SDGs by 2030. In this endeavour, how can the libraries support these initiatives exploiting the already available skills, competences and professional knowledge of the librarians and the rich collections of information resources in the libraries underpinned by the ICT infrastructure? We have our own challenges, yet there is much we could do with what is available. It will be difficult for the Library Associations to launch national level activities, nevertheless, at provincial level it will not be difficult to identify the available human and other resources as well as the unique challenges encountered by the local communities. Especially the public and school libraries with a positive contribution from the university libraries must attempt to collaborate with the community leaders to support the betterment of human life through development of education, health, employment, gender equity through active information literacy programs.

References

ACRL. Association of College and Research Libraries (2000). Information literacy competency standards for higher education – introduction.

http://www.ala.org/Content/NavigationMenu/ACRL/Standards_and_Guidelines/Information_Literacy_Competency_Standards_for_Higher_Education.htm(Accessed on 23.09.2003).

Donner, G.D. and Gorman, G.E. (2006), "Information literacy education in Asian developing countries: cultural factors affecting curriculum development and programme delivery", *IFLA Journal*, Vol. 32, pp.281-93.

Grizzle, A. and Calvo, M.C.T. (Eds). (2013). Media and Information Literacy: policy and strategy guidelines. UNESCO. Paris.

IFLA (n.d). Contribution of Libraries to the SDGs https://sustainabledevelopment.un.org/partnership/?p=10909 (Accessed 20.02.2016).

IFLA (2013).IFLA Statement on Libraries and Development https://sustainabledevelopment.un.org/index.php?page=view&type=9502&menu=1565&nr=10 (Accessed 21.02.2016).

IFLA (2014). IFLA Media and Information Literacy Recommendations http://www.ifla.org/publications/ifla-media-and-information-literacy-recommendations. (Accessed 21.02.2016).

IFLA (2015). Toolkit: Libraries and the post-2015 development agenda. http://www.ifla.org/files/assets/hq/topics/libraries-development/documents/ifla-post-2015-a2i-libraries-toolkit-v2.pdf(Accessed 20.02.2016).

Sirisena, M. (2015) The Speech made by the President addressing the United Nations Sustainable Development Goals Conference. http://www.president.gov.lk/speeches/the-speech-made-by-the-president-addressing-the-united-nations-sustainable-development-goals-conference/ . (Accessed 21.02.2016).

UN-ESCAP, ADB and UNDP (2013). Asia-Pacific Aspirations: Perspectives for a Post-2015 Development Agenda. Asia-Pacific Regional MDGs Report 2012/13. http://www.unescap.org/sites/default/files/MDG-Report2012-2013%28lowres%29_0.pdf (Accessed on 17.02.2015).

UNDP. (2016). Sustainable Development Goals (SDGs) http://www.undp.org/content/undp/en/home/sdgoverview/post-2015-development-agenda.html (Accessed 20.02.2016).

United Nations (2015). Transforming our world: the 2030 agenda for sustainable development. United Nations. http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E (Accessed 20.02.2016).

Theme Paper

Effective Use of Social Media in Libraries

Khaiser Nikam
Professor, DOS in Library and Information Science
University of Mysore, Manasagangaothri, Mysore, India
Email: khaiser.nikam6@gmail.com

Introduction

Libraries are forever facing the Big Challenge of coping with the rapidly changing Information Technology and its use in libraries. Libraries are all the time trying to adapt to the new changes and provide contemporary library services. The present age is noticed with the facility of accessing information from anywhere any time, cutting across the barriers of space and time. Scientists and authors can share and publish material and research papers on their own portals or on the digital space provided by others. The web has provided unique opportunity for not only general but also scholarly communication. Communication has been the key for human existence from the days of the early civilizations. People have used different types of reading materials to record the events and historical facts. Communication of research on the web has avoided duplication of research and also has provided solutions to serious problems facing mankind. All this depends on the speed and the network with which people work. In this context, the newly found social media or social networks are playing an important role in the digital age.

What is Social Networking vs Social Media?

Social Networking is "the use of dedicated websites and applications to interact with other users or to find people with similar interests to one's own" (2). "Social networking also the use of internet-based social media programs to make connections with friends, family, classmates, customers and clients. (1) According to Merriam-Webster "Social Media means electronic communication through which users create online communities to share information, ideas, personal messages, and other content (3)".

Web 1.0 to Web 4.0

1st stage of internet growth is web 1.0. It is all about connecting information on the internet. Web 2.0 is about connecting people into webs of social participation. Website readers and users are now able to comment on and participate in the creation of sites. Web 3.0 is about representing meaning, connecting knowledge, and putting them to work in the ways that make our experience of internet more relevant, useful, and enjoyable (Semantic web). Web 4.0 will be about connecting intelligences on web where, both people and things can reason and communicate together.

Web 2.0: Terminology

The term "Web 2.0" was coined in 1999 by Darcy DiNucci, a consultant on electronic information design. The term Web 2.0 was first coined and conceptualized by Tim O'Reilly and Dale Dougherty in 2004 to describe the terms and business models that survived the technology sector market in the 1990s. In 2004, the term Web 2.0 began its rise in popularity when O'Reilly Media and Media Live hosted the first Web 2.0 conference which refers to a supposed second generation of Internet-based services - such as social networking sites, wikis, communication tools, and folksonomies - that emphasize online collaboration and sharing among users. The term Web 2.0 is commonly associated with web applications that facilitate interactive information sharing, interoperability, user-centred design and collaboration on the World Wide Web. World Wide Web inventor Tim Bernes-Lee, who called the term a "Piece of jargon"- because he intended the web in this vision as "a collaborative medium, a place where we all meet and read and write". He called it as 'Read/Write Web' (4)

User interaction and collaboration

A Web 2.0 site gives its users the free choice to interact or collaborate with each other in a social media dialogue as creators of user-generated content in a virtual community, in contrast to websites where users (consumer) are limited to the passive viewing of content that was created for them. Some of the characteristics are: Web 2.0 is individual production and user-generated content (UGC). UGC refers to self-publishing, personal publishing and self-expression. Second characteristics are its capacity for "harnessing the power of the crowd". Further characteristic is that of its architecture of participation and means that a service designation can improve and facilitate user participation another characteristic is "network effect", an economic term used to describe

in value to describe the increase in value to existing users of a service, as more people to start to use it. Final characteristic is openness. It suggests working with open standards, using open source software, making use of free data, reusing data and working in a spirit of openness. Web 2.0 websites allow users to do more than just retrieve information. They provide the user with more user-interface, software and storage facilities, all through their browser. This has been called "Network as platform" computing. Users can provide the data that is on a Web 2.0 site and exercise some control over the data. These sites may have an "Architecture for Participation" that encourages users to add value to the application as they use it.

Web 2.0: Impacts and Benefits

The use of Web 2.0 applications by archives and libraries is having several effects on the way their services and products are made available to the public, as well as on the way they operate. Such impacts vary and depend on the type of applications, their characteristics and functionalities, and the way they are used and kept. One of the immediate effects of the use of these applications is the growing number of public they reach. The growing number of visitors to the page (Face book), photo stream (Flickr) or channel (YouTube) represents an extremely significant quantitative element to cultural organizations seeking to enlarge and diversify their users and to raise their public recognition far beyond their current number of users.

Library 2.0

Library 2.0 means the incorporation of blogs, wikis, instant messaging, RSS, and social networking in library services. 'Library 2.0' is the term that emerged from Web 2.0 and is used to denote a shift in the way the libraries serve their users. Library 2.0 seeks to push information out to users and enables user participation in the organization of information. For example, social tagging, that is allowing users to add keywords, or 'tags' to items in the library catalogue, is one way in which library 2.0 is employed. Library 2.0 is involving users through interactive and collaborative activities such as adding tags, contributing comments and rating different library items. Library 2.o is user-centred virtual community and it improves the services to the users.

Librarian 2.0

These librarians understand the power of web 2.0 opportunities, and investigate and ultimately adopt their tools. Librarian 2.0 connects users to experts' discussions and to communities of practice; they develop social

networks and encourage users to develop content and metadata. Librarian 2.0 acts as a facilitator.

Benefits to Libraries

Chinese library and information professional Dongmei Cao listed eight benefits: Increased importance of the library to the user; improvement in the library's image; potential of new interactive services to raise the level and quality of the service provided; increased involvement of users and improved communication of the library with such users; improvement in communication among librarians; greater ability to find quick solutions to meet the needs of users; improvement in shared knowledge and collaboration.

Web 2.0 Applications in libraries

Some libraries use blogs which serve as excellent sources of information; a place where the librarians can express their opinions on issues at hand. Libraries' blogs can market the libraries to a variety of potential users. Librarians can use wikis or YouTube for the purpose of library instruction. They can also use wikis as a platform for book recommendation, cataloguing and tagging, all created by library users.

Benefits

In 2008 Kiara King (11) listed benefits that Web 2.0 tools can confer on archives: 'increased awareness of its collections; varied access of its collections; diversification of users; improved relationships & links in the sector; additional information about collections; new dynamic ways to engage.'

Impact of Web 2.0

Use of these applications by high-profile organizations seems to be a factor in encouraging other institutions to join and use such tools. For example, the presence of the Library of Congress on Flickr and its role in the launching of the Commons Project have definitely influenced other archives, libraries and museums to gain access to the project, independently of its reputation and pioneering characteristics. The institutional standing of the Library of Congress seemed to encourage and thus multiply the use of this application by other organizations.

Blogs

The word 'blog' derived from 'web log', is the term for an online journal that contains entries in reverse chronological order. The blogosphere can be viewed as a kind of global brain and a vital part of online culture. Blogs are primary sources and can contain some of the most current opinion on the web and are becoming a valid source to get the latest ideas about the subject. However, the task of selecting from the over 72 million blogs will require some assistance from librarians. Tools like Technorati and Blogpulse can be useful aids. Uses of blogs in libraries are: Blogs being used by academic libraries for various purposes : It enhances the library's web presence ; Provide opportunity for conversation and communication ; By establishing a blog about the conferences users attended, they were able to maintain contact with colleagues at home and keep them engaged with and involved in what was happening at the conference ; Use of blog as record for reference queries ; Blog as a medium as a library marketing tool ;Use of a blog to enhance performance in the Cataloguing department of an academic library. Other uses are: Blogs help to develop writing skills; Encourage community and reflection and thereby assist deep learning; with the support of academic staff they could be used in our teaching, with student content being collected into the teacher's aggregator. Students doing major pieces of research could be encouraged to keep a blog as a way of recording progress, managing their time and reflection. They could be used to build up evidence of their progress and to gather opinions form peers or instructors

Facebook

Facebook, founded in February 2004, is owned by Facebook, Inc. It is a social network that allows people to communicate and share information within a context of social interaction. 'Facebook's mission is to give people the power to share and make the world more open and connected.' Some archives opted to emphasize the Face book utilities to communicate with the public.

These organizations have groups of friends that include individual and group users; among these groups we find other archives and libraries, as well as projects, associations and bodies from all walks of life and from around the world. They have differing aims in their adoption of Facebook: they attach differing degrees of importance to the various facets of

To archives and libraries, the adoption of Facebook may generate a new type of relationship with real users and increase awareness of the archive among potential users or visitors. Engagement is closer, with more of an interaction

with many users rather than a simple contact. The communication established may not necessarily be based on the rendering of a service, but on the contact itself.

Flickr

Flickr, founded in 2004, is now the property of Yahoo Inc. It is a photograph- (and other image formats-) and video-hosting site, as well as a Web service suite. It is also an online community of professional and amateur photographers for users who wish to publish and share their images and videos on the Web. Its use is free of charge, but there is also the option of subscription offering an account with additional functionality. Flickr allows users to store, edit, organize, share, geo-reference, generate products with images, define forms of access to images, take part in discussion forums and maintain contact within an online photography community. Flickr is now the most popular storage repository on the web for photos. (5)

The use of Flicker may allow archives and libraries to generate new means of access to and interaction with their patrons, as well as broaden the knowledge of such heritage to a larger and more diverse audience (namely the photographic community). The Commons Project is an opportunity for these institutions to extend their presence on the Web and expose their archives and photography collections (and other image formats) to the world. Such 'broadcasting' is done within a platform that brings together several cultural organizations and a diverse public, with the opportunity of extending the knowledge of their users, their own standing, rationale and institutional profile. Photos of our library, staff and students, its presentations, classes and events can be stored quickly and efficiently. Easy access will be enabled and possibilities of sharing with others. Library groups are being formed and this photo sharing, along with general images under Creative Commons (CC) license gives use a huge bank of material for use in our presentations

YouTube

YouTube, founded in February 2005, is now owned by Google Inc. It is a free video-sharing community that offers access to and the sharing of videos, films, video clips and amateur material that, in turn, can be disseminated through blogs and other Web locations. At present YouTube receives 20 hours of video every minute, uploaded by individuals and bodies from all over the world. Videos can be uploaded in any format or through the YouTube site; this contributes to making more material more easily available. The absence of any

control or filter on the material submitted also contributes to the speed at which it becomes available. (6).

Use of YouTube

The use of YouTube by archives and libraries can represent a new type of exposure with a worldwide impact, at little cost and with wide access; it is also a powerful tool for raising the institutional profile worldwide and a promising channel when exploited in the marketing operations of such institutions. YouTube service, although limited to a ten minute format and of variable technical quality, can be used to create our own YouTube videos for promotional programmes. Some of the best examples have used students as presenters, and their involvement in planning is crucial. Librarians now also have an interesting teaching resource in material for use in our teaching to trigger discussion.

Instant Messaging

The OCLC Perception of libraries and Information Resources report of 2005 highlighted the use of instant messaging as a popular method of communication of students. This medium may appeal to reticent students who shy away from using desks and other help mechanisms. Experimentation with this form of communication may be attractive to some libraries.

LibraryThing

Librarians who want to trial social networking tools should first consider Library Thing. This enables the storage of details about books which have been read. i.e. Cataloguing. Brief descriptions, reviews and tags can be constructed. The information is then shared with others who have read the book. This may foster alternative and additional reading, based on their opinions and favourites. Rather like a book club, this could be used with groups of students to encourage reading, sharing of favourites and critically review.

Tagging

Tagging can become part of critical thinking, making links which involve evaluation, categorizing, and formulating keywords. They can assist understanding of subject headings and summarizing a topic. Tag clouds can be useful for browsing similar concepts, narrowing and widening terms. Some librarians are being critical of tagging and compare it unfavourably with tradition taxonomies as used in classification schemes. However, the

possibilities opened up by tagging may prove popular with our users and useful to develop and encourage student research.

Social Bookmarking

These services make bookmarking much easier and portable between PCs. Connotea, CiteULike and del.icio.us are the most well-known. Del.icio.us can be used as a research tool to help students to organise what they find and bookmark easily, accessible anywhere. It can assist referencing and encourages them to tag, which is central to the linking of ideas, and aids sharing of resources. Individuals will use different tags according to their own interests, but when these are shared with others, this tagging can expose new links, which in turn lead to discovery of further resources.

Podcasts

We need to teach ways of searching for podcasts e.g. http://podcasts.yahoo.com. Librarians are already using them for library instruction, especially for distance learners. Access can be via iTunes, allowing users to jump around chapters. Podcasts can be effective for academic performers with wonderful voices. They allow students to time-shift and can be used in a car, while jogging, anywhere.

Wikis

Wiki is a page or collection of web pages designed to enable anyone who accesses it to contribute or modify content (8).Wikis are often used to create collaborative websites and to power community websites. An encyclopaedia that can be edited by users.

RSS feeds

Really Simple Syndication helps various social media interact with each other. The authors use RSS professionally to track student blogs, as well as library and technology blogs. Some libraries use RSS to pull their Twitter feed onto their library website. The beauty of RSS is that one need not understand the technology of the tool to use it well. RSS means that we do not need to visit each website to track changes, but, rather, an RSS reader will alert us when one of our tracked blogs or sites has been updated (9).

RSS feeds provide the glue with link to the content which link us to the content which we want to read. The feeds can allow students and researchers to subscribe to regular content from news services, blogs and relevant content

from databases. They can create their own information world, choosing their content which then comes automatically to them, keeping up to date. They may choose to use an aggregating service like Blog lines which collects the feeds from all their sources into a common format for swift browsing. Promotion of these to advanced researchers facilitate access and regular update of

Conclusions

We should use Web 2.0 technologies in order to connect with the library users of the present era. The possible effects arising from the use of these applications are significant and have implications in areas crucial to the libraries. The adoption of Web 2.0 applications by archives and libraries are a landmark recognition of their potential: the 'immediacy' factor; the support of exchange of views and the creation of new means of communication with the public; the opportunity afforded users to add extra information to content (text, images, audio and video); access to primary sources over the Web; the broadening of their audience; the potential of new ways of providing access, and; raising the institutional profile within the user community.

Sources consulted

1. http://www.investopedia.com/terms/s/social-networking.asp Accessed on 21/2/16
2. https://www.google.co.in/?gfe_rd=cr&ei=djTJVtXABMuL8Qfku7igBg&gws_rd=ssl #q=What+is+Social+Networking%3F retrieved on 21.2.16
3. http://www.merriam-webster.com/ dictionary/SOCIAL%20MEDIA
4. https://no.wikipedia.org/wiki/Web_2.0
5. https://en.wikipedia.org/wiki/Flickr
6. https://en.wikipedia.org/wiki/YouTube
7. https://en.wikipedia.org/wiki/Instant_messaging
8. http://www.librarything.com/wiki/index.php/LibraryThing_for_Libraries_Wiki
9. https://simple.wikipedia.org/wiki/Really_Simple_Syndication
10. http://www.newworldencyclopedia.org/entry/Web_2.0
11. http://www.ariadne.ac.uk/issue63/nogueira

Theme Paper

Social Responsibility of the Libraries Access to Information

T. Velnampy
Professor, Faculty of Management Studies and Commerce,
University of Jaffna, Sri Lanka

Introduction

An attempt is made to discuss about the social responsibility of the library with a special focus on access to information. Before giving facts about access to information, it is better to define the term 'library' and 'social responsibility' and to discuss about the connection between these two.

A public library is an organization established, supported and funded by the community, either through local, regional or national government or through some other form of community organization. It provides access to knowledge, information and works of the imagination through a range of resources and services and is equally available to all members of the community regardless of race, nationality, age, gender, religion, language, disability, economic and employment status and educational attainment (IFLA/UNESCO guidelines for development : The public library service , 2001) .

The Strategic Advisory Group on Social Responsibility (SAG) recognizes that there is no single authoritative definition of the term "corporate/organizational social responsibility," and does not seek to provide one. However, it notes that most definitions emphasize the interrelationship between economic, environmental and social aspects and impacts of an organization's activities, and that SR "is taken to mean a balanced approach for organizations to address economic, social and environmental issues in a way that aims to benefit people, communities and society (Buschman, 2007)) . The UNESCO Public Library Manifesto defines the public library as an organization, which helps create a democratic, equal and peaceful society. This definition helps to justify the creation and cost of public libraries for societies around the world.

The main purpose of the (public) library is to provide services and resources in a variety of ways to meet the needs of individuals and groups for education, information and personal development including recreation and leisure. They have an important role in the development and maintenance of a democratic society by giving the individual access to a wide and varied range of knowledge, ideas and opinions. Therefore, importance is given to the library.

Social responsibility and information

Social responsibility is the idea that information professionals have an obligation to take stances on a variety of social or political ills in order to support their profession whether the issues themselves directly affect their profession or not. "It should be ensured that all persons have to be accessed to resources and e-resources, regardless of income, education, region, disability, age, race, or sex (Plumb 2007)." There should be an intellectual freedom to access to information (Berninghausen, 1993).

It is a basic human right to be able to have access to and an understanding of information. As a public service open to all, the public library has a key role in collecting, organizing and exploiting information, as well as providing access to a wide range of information sources. The (public) library has a particular responsibility to collect local information and make it readily available. It also acts as a memory of the past by collecting, conserving and providing access to material relating to the history of the community and of individuals. In providing a wide range of information the public library assists the community in informed debate and decision-making on key issues. In collecting and providing information the public library should co-operate with other agencies to make the best use of available resources. The rapid growth in the volume of available information and the continuing technological changes, which have radically affected the way information is accessed, have already made a significant effect on public libraries and their services. Information is very important to the development of the individual and of society, and information technology gives considerable power to those able to access and use it. Despite its rapid growth it is not available to the majority of the world's population, and the gap between the information rich and the information poor continues to widen. A vital role for the public library is to bridge that gap by providing public access to the Internet as well as providing information in traditional formats.

Library helps for personal development by accessing information. In order to develop personal creativity and pursue new interests, people need access to knowledge and works of the imagination. The (public) library can provide access, in a variety of different ways, to a rich and varied store of knowledge and creative achievement, which individuals cannot acquire on their own behalf. Providing access to major collections of the world's literature and knowledge, including the community's own literature, has been a unique contribution of the public library and is still a vitally important function. Access to works of the imagination and knowledge is an important contribution to personal education and meaningful recreational activity. The (public) library can also make a fundamental contribution to daily survival and social and economic development by being directly involved in providing information to people in developing communities.

A library can play a vital role to create and strengthening reading habits among children from their childhood. Even though a library helps to meet the needs of all groups of people in the community, it has a special responsibility to meet the needs of children and young people. If children can be inspired by the excitement of knowledge and by works of the imagination at an early age, they are likely to benefit from these vital elements of personal development throughout their lives, both enriching them and enhancing their contribution to society. Children can also encourage parents and other adults to make use of the library.

An important role of the (public) library is providing a focus for cultural and artistic development in the community and helping to shape and support the cultural identity of the community. This can be achieved by working in partnership with appropriate local and regional organizations, by providing space for cultural activity, organizing cultural programmes and by ensuring that cultural interests are represented in the library's materials. The library's contribution should reflect the variety of cultures represented in the community. It should provide materials in the languages spoken and read in the local community, and support cultural traditions. (Most of the facts are extracted from IFLA/UNESCO guidelines for development: The public library service, 2001).

Information to Access

It should be ensured that services are equally available to minority groups who for some reason are not able to use the mainstream services, for example,

linguistic minorities, people with physical and sensory disabilities or those living in remote communities who are unable to reach library buildings. The level of funding, development of services, the design of libraries and their opening hours should all be planned with the concept of universal access as a basic principle for it to meet its vital role in the community. Especially in our areas, we have to pay a special attention on this issue.

Importantly, the general development of the information society is pushing to re-evaluation of all the institutions which work with information, data, and knowledge - indirectly also with culture. Still, there is a clear need in the information society to maintain an institution which is concentrating in collecting and organizing information and offering general access to it. All citizens must be able to find and use information. The unique function of libraries is to acquire, organize, offer for use and preserve publicly available material irrespective of the form in which it is packaged (print, cassette, CD-ROM, network form) in such a way that, when it is needed, it can be found and put to use. No other institution carries out this long-term, systematic work (IFLA/UNESCO guidelines for development: The public library service, 2001).

Recommendations

Based on the facts that discussed above from the various sources, the following recommendations are given below.

- Access to information for all should be achieved. For this purpose there can be a representation from all members of the community.
- Information are accessed by several groups of people, may be people from rural area, ethnic minorities, the poor, elderly and disabled. Since much of the present information is available electronically, they are unable to access these information, because they don't have internet access, and even they have this facilities they don't have knowledge to access it. Therefore active and socially responsible librarian should ensure it as his/her duty to do everything within their power to make sure that these groups get the information access they need.
- Librarian should be aware and to understand the present social problems and the direction in which they are headed and to develop their capacities to provide services to the community as well as to guide their staff towards it.
- Library can organize a forum to have a fruitful discussion with all representatives from the society.

- Library should take in account to collect all national and country information, society strategies and respective budgets for the access of the users.
- Support to libraries was demanded from the Framework program of research and development, e.g. for networking, drafting standards, preserving, and transferring information
- The members should take care of digitizing their cultural heritage for future. And also there should be studies and concrete support to libraries in licensing matters, which are - will be the next big issue in library work.
- The country's cultural and information budget should be opened to libraries as well, libraries and their co-operation should be taken in account in planning new programs.
- Problems of legal deposit in international and multinational materials, especially in electronic materials should be solved.

References

Buschman, J. (2007). Democratic Theory in Library Information Science: Toward an Emendation. *Journal of the American Society for Information Science, 58*(10), 1483-1496.

Berninghausen, D. (1993). Social responsibility vs. the Library Bill of Rights. *Library Journal,* 118(15), S1. Retrieved from EBSCO*host.*

Carroll, A. B. (1999). Corporate social responsibility evolution of a definitional construct. *Business & society, 38*(3), 268-295.

IFLA/UNESCO guidelines for development: The public library service, 2001, International Federation of Library Associations and Institution.

Kuhlthau, C. C. (2004). *Seeking meaning: A process approach to library and information services.* Libraries Unltd Incorporated.

Rubin, R. E. (1998). *Foundations of Library and Information Science.* Neal-Schuman Publishers, Inc., 100 Varick St., New York, NY 10013.

UNESCO & IFLA (1994). UNESCO Public Library Manifesto. Retrieved February 2, 2008, from http://www.unesco.org/webworld/libraries/ manifestos/libraman.html

Theme Paper

Heritage Documentation

S. Srinivasaragavan
Professor
Bharathidasan University, Tamil Nadu, India

Introduction

Documentation is one of the prominent and foremost activities of civilized societies in their effort to preserve knowledge for posterity to the benefit of future generation. Documentation gives a standard framework of organizing knowledge input – experience, happenings, physical objects whether they may be movable or immovable, promoting dissemination of knowledge benefit to the stakeholders.

Library documentation

According to Dr. S.R. Ranganathan, 'documentation is defined as a component product of Current Awareness Service.' He further adds that, "documentation listing the documents appearing during the period covered, and without being selected to suit the requirements of a particular reader of a specific topic under investigation. This is nature of a general appetizer. It endeavors to keep the clientele informed promptly of all the nascent thought created in their fields of work and related fields" (Ranganathan, S.R., ed. Documentation and its Facets *1963)*. Indeed, Ranganathan, the father of Indian Librarianship had given a detailed and more objective frame work of documentation in the library environment that includes almost all facets of information and knowledge processing activities that impart the resources and its relevance to the user community. Documentation work as emphasized by Library and Information Science classics paved the ways and means towards delivery of a range of information services.

Documenting and preserving in most convenient and durable format with standardized description of the information/literature, Image, Multimedia and Physical Objecs – all form integrated functions of the Documentation in the context of library and Information service. Library is one of the social-service-production systems consisting of documents of all types that affect people aesthetically and emotionally with a focus on various aspects of Heritage.

Heritage Documentation Definition

According to the World Bank (2006), cultural heritage is concerned with movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. The World Bank (2006) recognizes further that physical cultural resources are important sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices. Cultural heritage is the value people have given to items and places through their association with those items and places. These values include those of significance to aboriginal people, places of social value to the community, and places of historic, architectural or scientific significance, and therefore encompass both aboriginal and historic heritage.

Scope and Relevance

Heritage, in simple terms, denotes that transmission, communication of the man-made knowledge and objects to be ever remembered and protected for the community as an evidence of civilization. It is the present effect today of the past. Heritage is what one inherits, what is received from predecessors, when they ceased to exist. A few of them may be usable and some may not and the challenge is to make the best use of it.

The role of cultural practices and knowledge play in transferring and preservation of cultural heritage cannot be over emphasized. It is a veritable medium by which people transfer their cultural heritage from one generation to the other. Due to the flexibility of the medium of exchange of cultural heritage, it stands the risk of being lost or forgotten. This situation therefore, made preservation and conservation of cultural heritage a very important task to librarians, archivists and information scientists in order to ascertain onward transfer of these traditions to future generations.

The social responsibilities of libraries at the regional and national level is to cater for the collection, preservation, conservation of cultural relics, antiquities, oral information, history and traditional practices.

South Asia has rich cultural heritage reflected in terms of languages, folk songs, music, traditional, religious practices, and folk tales, lore, chants, history, literature, and general worldview in a more diversified manner. As the

digitization and digital preservation gained momentum among the individuals, institutions across the globe particularly, after the emergence and use of social networking tools, libraries have assumed the role of main players of the scholarly information and communication. It is imminent to identify, collect, archive and exhibit the heritage evidences in particular geographical locality.

In this context, the paper aims at enumerating the methods, media and tools by which heritage documentation could be made possible and also suggest as to how the libraries join hands with archiving centres and museums to institute and maintain heritage collection of scientific, social, agricultural, religious, cultural, lingual, anthropological and historical collections of regional and local importance.

Generic methods of preservation and conservation of heritage resources (Physical objects)

- Ensuring air conditioned room for physical objects and documents;
- Controlling temperature and uninterrupted power supply
- Materials kept in special boxes to prevent mutilation, defacing or damage
- Time to time fumigation in order to prevent rodents and insects infestation of the resources.
- Transferring of the audio cassette into machine (modern device) - readable formats including web formats.
- Isolation method with continuous treatment
- Time to time dusting; Fumigation; Eating prohibition averting food crumbs and insects.

In general the heritage materials in the following formats could be documented in libraries

Heritage Resources and Formats

There have been numerous resources in different forms being documented as follow:

- Films as documenting media
- Audio Cassettes (Containing recorded audio of the proceedings of various cultural practices such as ceremonies, deity worshiping, initiations, festivals, folklore, etc.)
- Books and journals on various cultural topics

- Pictures of various artistic works
- Project reports and dissertations relating to Peace and Cultural Heritage studies
- Newspapers and Magazines; Realia; Regalia; Masks
- Traditional Drums; Head Dress; Household Traditional Cooking Utensils
- Indigenous Box for Keeping Money
- Tobacco Pipes; Deities; Farm Tools; Palm scripts; Metal carvings; Sculptures; coins; Classical paintings; Old photographs of regional / local leaders.
- Audio Tapes of Recorded Traditional Practices for the Oral Archives or Oral Information
- Transcript of interviews; Aerial Photographs; Engineering and Industrial Structures
- Bridges; Linear resources; Watercraft; Cultural Landscapes

Standards and Guidelines on heritage documents

Some of the notable guidelines for preserving and document in heritage in a network environment are as follows:

I) UNESCO Guidelines for the preservation of digital heritage

1. UNESCO Guidelines for the preservation of digital heritage Available at: http://unesdoc.unesco.org/images/0013/001300/130071e.pdf
2. Risks Associated with the Use of Recordable CDs and DVDs as Reliable Storage Media in Archival Collections - Strategies and Alternatives Available at http://unesdoc.unesco.org/images/0014/001477/147782E.pdf

II IFLA- Guidelines for digitization projects

1. International Association of Sound and Audiovisual Archives (IASA) - IASA Standards, Recommended Practices and Strategies
2. Federal Agencies Digitization Guidelines Initiativehttp://www.digitizationguidelines.gov/
3. IFLA digitization guidelines (2002)http://archive.ifla.org/VII/s19/pubs/digit-guide.pdf
4. WIPO Guide on Managing Intellectual Property For Museums (an updated version is under preparation) Available at: http://www.wipo.int/copyright/en/museums_ip/

III British Library

1. Digitization policy Available at: http://www.bl.uk/aboutus/stratpolprog/digi/digitisation/index.html
2. Cornell University Library- Moving Theory into Practice: Digital Imaging Tutorial (In three languages: EN, FR, ESP)

Available at:
http://www.library.cornell.edu/preservation/tutorial/index.html

IV National Library of Australia - Digitisation Guidelines Available at: http:/www.nla.gov.au/standards/digitisation_guidelines

V Towards an open source repository and preservation system Available at:
http://unesdoc.unesco.org/images/0015/001547/154761e.pdf

VI WIPO Creative heritage project
Available at:http://www.wipo.int/tk/en/culturalheritage/

VII Swedish National Archives

Heritage documentation in India

India has the longest history of heritage that includes languages, religion, race, natural distinctions, and people with rich traditional customs and habits. Large collections of digital documentation of heritages have been tapped by the individuals, organizations and government institution as well. Beyond this, the archives, museums, and libraries strive forward towards documenting sources, organize as physical, digital and virtual collections by building semantic and syntactic digital collections with interoperable, multi-platform and user friendly retrieval systems with international metadata standards. The few of heritage documents for which access is provided to the public in India are given below:

Indian National Museum

The National Museum, New Delhi, has an interesting beginning. The blueprint for establishing the National Museum in Delhi was prepared by the Maurice Gwyer Committee in May 1946. An Exhibition of Indian Art, consisting of selected artifacts from various museums of India was organized by the Royal Academy, London with the cooperation of the Government of India and Britain. The Exhibition went on display in the galleries of Burlington House, London during the winter months of 1947-48. It was decided to display the same collection in Delhi, before the return of exhibits to their respective museums.

- Pictures of various artistic works
- Project reports and dissertations relating to Peace and Cultural Heritage studies
- Newspapers and Magazines; Realia; Regalia; Masks
- Traditional Drums; Head Dress; Household Traditional Cooking Utensils
- Indigenous Box for Keeping Money
- Tobacco Pipes; Deities; Farm Tools; Palm scripts; Metal carvings; Sculptures; coins; Classical paintings; Old photographs of regional / local leaders.
- Audio Tapes of Recorded Traditional Practices for the Oral Archives or Oral Information
- Transcript of interviews; Aerial Photographs; Engineering and Industrial Structures
- Bridges; Linear resources; Watercraft; Cultural Landscapes

Standards and Guidelines on heritage documents

Some of the notable guidelines for preserving and document in heritage in a network environment are as follows:

I) UNESCO Guidelines for the preservation of digital heritage

1. UNESCO Guidelines for the preservation of digital heritage Available at: http://unesdoc.unesco.org/images/0013/001300/130071e.pdf
2. Risks Associated with the Use of Recordable CDs and DVDs as Reliable Storage Media in Archival Collections - Strategies and Alternatives Available at http://unesdoc.unesco.org/images/0014/001477/147782E.pdf

II IFLA- Guidelines for digitization projects

1. International Association of Sound and Audiovisual Archives (IASA) - IASA Standards, Recommended Practices and Strategies
2. Federal Agencies Digitization Guidelines Initiativehttp://www.digitizationguidelines.gov/
3. IFLA digitization guidelines (2002)http://archive.ifla.org/VII/s19/pubs/digit-guide.pdf
4. WIPO Guide on Managing Intellectual Property For Museums (an updated version is under preparation) Available at: http://www.wipo.int/copyright/en/museums_ip/

III British Library

1. Digitization policy Available at: http://www.bl.uk/aboutus/stratpolprog/digi/digitisation/index.html
2. Cornell University Library- Moving Theory into Practice: Digital Imaging Tutorial (In three languages: EN, FR, ESP)

Available at:
http://www.library.cornell.edu/preservation/tutorial/index.html

IV National Library of Australia - Digitisation Guidelines Available at: http:/www.nla.gov.au/standards/digitisation_guidelines

V Towards an open source repository and preservation system Available at:
http://unesdoc.unesco.org/images/0015/001547/154761e.pdf

VI WIPO Creative heritage project

Available at:http://www.wipo.int/tk/en/culturalheritage/

VII Swedish National Archives

Heritage documentation in India

India has the longest history of heritage that includes languages, religion, race, natural distinctions, and people with rich traditional customs and habits. Large collections of digital documentation of heritages have been tapped by the individuals, organizations and government institution as well. Beyond this, the archives, museums, and libraries strive forward towards documenting sources, organize as physical, digital and virtual collections by building semantic and syntactic digital collections with interoperable, multi-platform and user friendly retrieval systems with international metadata standards. The few of heritage documents for which access is provided to the public in India are given below:

Indian National Museum

The National Museum, New Delhi, has an interesting beginning. The blueprint for establishing the National Museum in Delhi was prepared by the Maurice Gwyer Committee in May 1946. An Exhibition of Indian Art, consisting of selected artifacts from various museums of India was organized by the Royal Academy, London with the cooperation of the Government of India and Britain. The Exhibition went on display in the galleries of Burlington House, London during the winter months of 1947-48. It was decided to display the same collection in Delhi, before the return of exhibits to their respective museums.

An exhibition was organized in the Rashtrapati Bhawan (President's residence), New Delhi in 1949, which turned out to be a great success. This event proved responsible for the creation of the National Museum.

"Indian national museum collections consists documentation on heritage

- Harappan Civilisation; Archaeology; Buddhist Art; Indian Miniature Paintings
- Evolution of Indian Scripts and Coins; Central Asian Antiquity; Coins
- Indian Textiles; Pre-Columbian and Western Art; Wood Carving
- Musical Instruments; Tribal Lifestyle of North-East India
- Arms and Armor; Temple Chariot (near the entrance gate of the Museum)

Indian Council of Historical Research (ICHR)

The Indian Council for Historical Research (ICHR) is an autonomous body of the Ministry of Human Resource Development, which had been established by an Administrative Order of the then Ministry of Education and Social Welfare. It was registered as a Society with the Delhi Government. The body, over the past so many years has been providing financial assistance to the Historians and direction to the research scholars in their multifarious topics of Historical Research through established Historians and scholars of the Country (Wikipedia, Feb 19, 2016).

Indian Council for Cultural Relations (ICCR)

The Indian Council for Cultural Relations (ICCR) was founded in 1950 by Maulana Abul Kalam Azad, first Education Minister of independent India. Its objectives are to actively participate in the formulation and implementation of policies and programmes pertaining to India's external cultural relations; to foster and strengthen cultural relations and mutual understanding between India and other countries; to promote cultural exchanges with other countries and people; and to develop relations with nations.

Khuda Bakhsh Oriental Library

Khuda Bakhsh Oriental Library is one of the national libraries of India. It was opened to public in October, 1891 by Khan Bahadur Khuda Bakhsh with 4,000 manuscripts, of which he inherited 1,400 from his father Maulvi Mohammed Bakhsh. It is an autonomous organization under Ministry of Culture,

Government of India, and is known for its rare collection of Persian and Arabic manuscripts. It also hosts paintings made during the Rajput and Mughal eras of India. It is also a designated 'Manuscript Conservation Centre' (MCC) under the National Mission for Manuscripts.

The National Mission for Manuscripts

The National Mission for Manuscripts was established in February 2003, by the Ministry of Tourism and Culture, Government of India. A unique project in its programme and mandate, the Mission seeks to unearth and preserve the vast manuscript wealth of India. India possesses an estimate of five million manuscripts, probably the largest collection in the world.

Tanjore Maharaja Serfoji's Sarasvati Mahal Library

Saraswathi Mahal Library or Tanjore Maharaja Serfoji's Sarasvati Mahal Library is located in Thanjavur (Tanjore), Tamil Nadu, India. It is one of the oldest libraries in Asia, and has on display a rare collection of Palm leaf manuscripts and paper written in Tamil, Hindi, Telugu, Marathi, English and a few other languages indigenous to India. The collection comprises well over 60,000 volumes, though only a tiny fraction of these are on display. The library has a complete catalogue of holdings, which is being made available online. Some rare holdings can be viewed on site by prior arrangement with library authorities.

The bulk of the manuscripts (39,300) are in Sanskrit, written in scripts such as Grantha, Devanagari, Nandinagari, Telugu. Tamil manuscripts number over 35000, comprising titles in literature, music and medicine. The Library has a collection of 3076 Marathi manuscripts from the South Indian Maharastrian of the 17th, 18th, and 19th centuries. There are 846 Telugu manuscripts in the holdings, mostly on palm leaf. There are 22 Persian and Urdu manuscripts mostly of the 19th century also within the collection. The library also holds medical records of Ayurveda scholars, including patient case studies and interviews in the manuscripts classified under the Dhanvantari section.

Apart from these manuscripts there are 1342 bundles of Maratha Raj records available at the Library. The Raj records were written in the Modi script (fast script for Devanagari) of the Marathi language. These records encompass the information of the political, cultural and social administration of the Maratha kings of Thanjavur.

Bharathidasan University Digital Manuscripts Gallery

Bharathidasan University has involved in knowledge documentation by collecting, cleaning, digitising and organising digital manuscripts gallery and provide access through university website for the benefit of the general public. It is found that the palm scripts are belonging to various subjects available at temples and mutts were collected and archived in digital form with a total collection of palm leaves, palm scripts as of 26,121. The university library also maintains institutional repository of 108 Saiva temples literature with the images of sculptures.

Conclusions

As Dday (1997) suggested," access to the right information at the right time and in a user friendly and understandable format, together with the ability to communicate with appropriate organizations", should no longer be a privilege, but a basic right in today's information society. The impact that cultural heritage made in individual life is considerable but unfortunately, often neglected. Revealing cultural heritage of the community always motivate and encourage documentation. The learners enhance the perfection of learning and understanding as it is transmitted through genealogical approach. Dr.S.R.Ranganathan frequently used quotes and examples of Indian epics and traditional knowledge resources towards evolving principles of knowledge organization, classification, indexing of information dissemination. Libraries in the present era should not be a mere facilitating center to provide access to contemporary information but also focus on the acquisition, organization of both print and electronic resource of scholarly and recreational literature. Library remains also as the major stakeholder in documenting and exhibiting the heritage collections of classical literature, artifacts, paintings, pictures, captured images of regional landscape, recorded forms of localized performing and fine arts by joining hands with historical, archeological, religious, social and government institutions. As the social networking and internet could reveal a large number of students, free lance researchers and layman showing interest of documenting the heritages and traditional practices, it is the need of the hour that libraries need to evolve polices, towards actively engaging and updating heritage documentation particularly of the region where it is located and functioning.

References

Ranganathan, S.R., ed. Documentation and its Facets. Bombay: Asia, 1963: p.58

Library and Information Science: Information science, information technology and its application. (n.d.). Retrieved February 22, 2016, from https://books.google.co.in/books?id=JR9yKywcL1YC

World Bank. (2006). Operational policy 4.11, physical cultural resources. Retrieved from http://go.worldbank.org/IHM9G1FOO0

Cultural heritage collections, preservation and access: case of university of ibadan. (n.d.). Retrieved February 22, 2016, from https://www.researchgate.net/publication/291165799 Cultural Heritage Collections preservation and access case of university of Ibadan

Digital Libraries for Presentation and Preservation of East-Christian Heritage. (n.d.). Retrieved February 23, 2016, from https://www.researchgate.net/publication/232806495 _Digital_Librariesfor_Presentation_and_Preservation_of_East-Christian_Heritage

Fundamental principles of digitization of documentary heritage. (n.d.). Retrieved February22, 2016,from https://www.google.co.in/?gws_rd=ssl#q=www.unesco.org /new/fileadmin/.../ digitization guidelines_for_web.pdf

Indian National Museum (n.d.). Retrieved February 23, 2016, from http://www.nationalmuseumindia.gov.in/collections.asp

Indian Council for Cultural Relations. (n.d.). Retrieved February 22, 2016, from http://www.iccr.gov.in/content/about-library

Indian Council of Historical Research, New Delhi, India. (n.d.). Retrieved February 22, 2016, from http://ichr.ac.in/

KhudaBakhsh Oriental Public Library. (n.d.). Retrieved February 24, 2016, from http://kblibrary.bih.nic.in/

Saraswathi Mahal Library (n.d.). Retrieved February 24, 2016, from https://en.wikipedia.Org/wiki /Saraswathi_Mahal_Library.

Comparative Analysis of Social Media and Email Usage and Communication Preferences of Undergraduates in University of Colombo

Pradeepa Wijetunge
University of Colombo, Sri Lanka
Email: librarian@lib.cmb.ac.lk

Abstract

Irrespective of the geographic region, use of social media and electronic communication has become popular among the young adults and it is believed that this trend is not different in Sri Lanka too. However, empirical evidence on their preferences is not common, especially in the context of Sri Lankan university libraries, their preferences and experiences are not well known. Yet, a knowledge of their presence in the social networks, particularly among the new entrants to the university, can play a vital role in providing effective library services and instructions to them. In order to fill this gap in knowledge, a survey was carried out in the Faculties of Law (FL) and Management and Finance (FMF) of University of Colombo, Sri Lanka with three objectives; 1) to study the pattern of access to Face book (FB), Twitter, Skype and e-mail by the new entrants, 2) to investigate the willingness of the respondents to communicate with the university library through these media and 3) to explore whether there is a correlation between the degree program, gender or province from which they entered the universities, and their access to their access to the above mentioned accounts and communication preferences.

The sample included randomly selected 250 freshers each from FL and FMF, in the academic year 2014/2015. Data were gathered using a structured questionnaire, and SPSSv.22 was used to process and interpret data. Response rates were 92.4% in FL and 86.8 from FL and FMF. The majority from both faculties (83.1% in FL and 72.8% in FMF) were female and in the 21-22 years of age (55% in FL and 82% in FMF). There was a wide representation of the respondents in FL from all provinces with the majority (20%) from Western Province while the respondents from the FMF represented only some provinces and the majority (60%) were from the Western Province.

The study established that there was a significant difference in the percentages which has FB accounts (52.4% in FL and 83.4% in FMF), but only an insignificant percentage has Twitter accounts (14.3% and 10.6% from FL and FMF), while a moderate percentage has Skype accounts (29.9% and 41.5% from FL and FMF respectively). Comparatively larger percentages (78.4% in FL and 92.6% in FMF) have email accounts. Almost similar higher percentages expressed that they are willing to communicate with the university library (88.7% in FL and 95.4% in FMF) through these media and an equally higher percentages (91.8% in FL and 96.8% in FMF) are willing to receive SMSs from the library. Of the respondents, 74.9% from FL and 86.6% from FMF also confirmed that they possessed a smart phone. Further analysis of the findings using Cramer's V tests proved that there was no statistically significant correlation between the degree, gender or the Province from which they entered the university and the access to FB, Twitter, Skype and e-mail accounts and their communication preferences with the university library.

In planning the information services and information literacy programs for the new entrants to the FL and FMF, the library must take these findings into consideration and attempt to reach the students through their preferred modes rather than remaining within the limits of traditional paper-based and face-to-face service delivery methods.

Keywords: *Undergraduates, Facebook, Twitter, Email, Electronic Communication, Social Media, Sri Lanka*

Changing Roles of Sri Lankan Academic Libraries: A Case Study at USJP Library

Sampath Amaratunge
Vice Chancellor
University of Sri Jayewardenepura, Sri Lanka

Nayana Wijayasundara
University Librarian
University of Sri Jayewardenepura, Sri Lanka
Email: librarian@sjp.ac.lk

Abstract

The rapid change in technology, the speed with which the volume of information increases, the changes in information-seeking patterns and the changes in higher education have forced university authorities to rethink the traditional roles of libraries and to invest them with exiting new roles. The University of Sri Jayewardenepura (USJP), being one of the largest university in Sri Lanka in terms of student number, has taken the challenge of tackling the changing role of the library successfully. At the moment, the library caters to 5 main faculties: Humanities and Social Sciences; Applied Sciences; Management Studies and Commerce; Medical Sciences; and Graduate Studies. The library extends its services to two newly established faculties of Engineering and Technology. The user community consists of nearly 15,000 undergraduate and postgraduate students and nearly 1000 academic and non-academic staff. The changes made at the USJP library fall into two main areas: a) library services and products; and b) the physical environment. These areas were included in the "modernization project" of the library, which started in 2015 but some changes had happened before this project as well. For example, when considering the services and products of the library, the major achievement of the library in recent times was the migration of the integrated library management system from Windows for Alice, to the open source system, Koha, in 2014. This migration helped not only to have an efficient system, but to save money on annual maintenance charges. In order to support the emerging research culture in the university, the library established a research support unit in 2015. In view of streamlining the user education programmes, a separate unit was established in January 2016. The library's institutional repository named 'Scholar Bank', set up in early 2012, where the publications and academic work of staff and students are deposited, is very popular among

the user community. The number of electronic databases available to the university was increased from 1 to 7 with the consortium facilities provided by the University Grants Commission in 2014. The efficiency of the Inter Library Loan (ILL) service was increased by assigning a dedicated team separately for this in 2013. This service fulfills the needs of our own user community as well as the needs of outside libraries. With the introduction of the cash register in 2012, library fines are paid at the counter itself and users are not sent to the finance branch which is located in a separate building. Upon the request of the English Language Teaching Unit (ELTU), USJP, we designated a section of the library as the English Learning Zone (ELZ). This has very simple English story books and levelled readers and this is heavily used by the students during their first year where the staff of ELTU combines its programmes with the library. Radio Frequency Identification (RFID) tags were put in use with the new detection gates in 2015, as a precaution to minimize unauthorized movements of library property. Along with this, a security surveillance system, CCTV, will function soon to prevent thefts and mutilation of library material. The library started a laptop lending service to students in 2015 and students are allowed to bring in their own electronic equipment to the library. Wi-fi was provided to designated areas of the library in the mid of 2015 and these are now full of students using computers. With regard to the physical environment, improvements started with air conditioning provided to the areas used by students. The beautification of the library was done by having reading promotion posters and pots with foliage on appropriate locations. Specially designed furniture like the "READ" rack, gadget corners, triangular shaped movable computer tables, lobby sofas, multi-revolving racks have been placed at strategic corners to attract users. Kiosk type touch screen computers will be provided in the lobby for interactive searching of library items. Some more changes that have been implemented in the library are as follows: The library books which have not been used for the last 30 years or so and are not permitted to be withdrawn are kept as a separate collection named "Depository Collection". This process helps to give a fresh look to the existing collections. "Just-returned" books are kept for few hours before re-shelving in a rack on the same floor where the counter is located. A coin operated Nescafe machine was installed inside the library to provide refreshment facilities to patrons without them having to go out from the library. Though it is not common to have newspaper reading facilities in academic libraries, our library also provides this facility to fulfil user needs. It is proposed to have research commons, individual and group study areas for students in the future. More importantly, a library building renovation project is underway. It is hoped that

upon the completion of the renovation, a conducive environment will be created in the library to attract users. Librarians need to support the improvement of the learning experience of students. The USJP library staff has addressed this by developing information literacy modules for all levels of students which help students to improve their critical and analytical abilities. Our library has an updated attractive homepage which acts as an entry point to library resources. The library web was updated in 2015 with the assistance of the university web team. The USJP library has many areas of strengths on meeting these new roles successfully. Foremost in this, is the support extended by the university authorities to make the library improve in its many areas. A dedicated and skilled library staff is the driving force behind this and it is very much in evidence in the library at USJP. The support extended by other units is also vital: the IT centre, the web team of the university, the ELTU, the Staff Development Centre, the Supplies Division of the university deserve special mention. The strong collaboration between the library and the academics of the university is very important in providing quality library services and it is much in evidence. The relationships with colleagues in other libraries and institutions both locally and internationally are also helpful to receive inputs in innovative activities and the library of USLP is successfully placed within this vibrant network.

Keywords: *Role of Academic Libraries, Modernization of Library Services, University of Sri Jayewardenepura*

Open Access and Plagiarism: Issues and Concerns for India

A. L. Moorthy
Chief Consultant (InfSci), BrahMos Aerospace
DRDL Campus, Hyderabad
Former Director,
Defence Scientific Information and
Documentation Centre (DESIDOC), India
Email: almoorthy52@gmail.com

Abstract

Scholarly communication in its present form evolved over a period of millennia—from writings on rocks to birch, metal plates, paper, and now on World Wide Web. With humble beginnings of sharing the laboratory findings and innovations with friends and others pursuing such efforts, scholarly communication evolved to publish research findings to share with peers and claim primacy to inventions and innovations, thereby giving rise to intellectual property rights, especially copyright. Internet, the greatest leveler of communication, and by far the most important innovation of the second half of Twentieth Century, has made the scholarly communication both informal and formal. It offered great opportunities to break the shackles of copyright and monopoly of commercial publishers. Open Access (OA), started as a noble cause of providing access to research results sans local, national, geographic, religious, ethnic, socio-cultural barriers. It has succeeded to a great extent in achieving intended objectives. This led to positive as well as negative developments. The wily commercial publishers as also the ingenious and intelligent entrepreneurs started hijacking the movement. Plagiarism is thriving; hundreds of papers are retracted, and ironically the retracted articles are cited. This paper discusses the developments leading to explosion of OA literature on Internet, the unhealthy practice of publication of OA journals, India's dubious role in OA journals, the ill effects of the University Grants Commission's Author Productivity Index and publication of research papers in journals with ISSN, and mandatory presenting papers and/or attending conferences. These led to multiple publication/submission of papers in journals/conferences with marginal quality, and unhealthy practice of plagiarism. This paper also presents remedial steps to curb the maladies.

Introduction

Scholarly communication has evolved over three hundred and fifty years. The seventeenth and eighteenth centuries were an era of entrepreneurial inventors, innovators and investigators who made everlasting contributions to the science and technology. To encourage further investments during Industrial Revolution, the Intellectual Property (IP) associated with the industrial property was protected with patents, designs and trademarks. During this period, the professional societies like Royal Society, London, for improving the knowledge of society, provided a platform to encourage innovators, inventors and discoverers to share laboratory findings with others through scientific discourses. These communications started to appear periodically in print through scholarly journals which have followed rigorous procedures to ascertain the veracity or scientific reproducibility of "research" findings. A publication *Journal des Sçavans,* a twelve-page first academic journal, was published in Europe on 5 January 1665 followed by the *Philosophical Transactions of the Royal Society,* published on 6 March 1665 (Wikipedia).The *Philosophical Transactions, the oldest continuously publishing scholarly journal in the world,* established the practice of peer evaluation and claiming priority. Thus published scholarly communication became cumulative, self-corrective and self-regulatory and led to the healthy growth of scholarly periodicals in science, technology, humanities and social sciences. It depends upon earlier published research and acknowledging others in the field by way of references to their works. The aphorism "If I have seen further it is by standing on the shoulders of giants" written by Sir Isaac Newton in his letter in 1676 brings out this phenomenon of discovery of truth by building upon the previous discourses akin to brick laying for wall construction.

The slow growth of publications till the end of nineteenth century and steady growth of publications spurned the interests of commercial publishers who entered with a bang. The ever increasing societal requirements, human urge to make life more comfortable, and the race for research in frontier areas science and cutting edge technologies, lead to the explosive growth of scientific literature and publications. Twentieth century witnessed steady growth of S&T journals as well as commercial publishers. During the late twentieth century the number of scientific periodicals hovered around 25,000. With the emergence of new multi- and inter-disciplinary fields of research and the Open Access (OA) movement, this number increased disproportionately. For example, in 2009 IEEE/IEE Digital Library used to have 175 online journals which now has over 280 excluding periodicals of other associations.

Five large publishers, namely Elsevier, Springer, Wiley, Taylor & Francis and Sage together bring out more than 11,250 titles in Science, Technology, Engineering and Medicine (STEM) accounting for more than 50 percent of total market revenues. However, Elsevier, Springer and Wiley established their monopoly and dominate the STM journal market with nearly 45% share. In 2013 the ccommercial publishers produced over 60 per cent of all peer-reviewed literature. In general commercial publishers generate larger profits followed by society and university publishers with about 20 to 25 percent profits (The Economist, 2013).

According to Munroe (2013) "a new paper is published in every 20 seconds" and if "a bibliography is prepared with 140 citations per page and 1000 pages per volume [it will run] to 15 volumes per year". The rising costs of publishing, competition between commercial publishers and profitability issues in the latter half of the twentieth century resulted in mergers and acquisitions of small publishing houses by big players. Grcar (2013) estimated that, in the whole of nineteenth century about 2 million articles were published. After the 1980s, the number of papers published in the scientific journals has more than doubled and to over 2 million per year during recent years.

Open Access

Open Access movement is the result of many issues related with print journals, especially published by commercial publishers. Development is crucial for the progress of society as well as knowledge. For this scholars and investigators need access to already published scholarly literature which is not easily accessible and riddled with copyright and license restrictions. The following issues helped ushering in the OA era in scholarly communication.

Publishing industry neither supports research nor authors. In reality copyright is the only intellectual property where the authors do not get any monetary gains; instead at times they have to pay page charges (which again is borne by the institution or project). They have nothing to do with the content. Scholarly journals are priced high, especially those published by commercial publishers, rendering unaffordable for individuals and even to institutions with moderate budgets. Even in the case of online journals where printing related expenditure is next nil saving up to 15-23% of subscription value, their costs are not cheaper. Rather the publishers charge nearly same rates for print and online; sometimes they charge 10 to 15% additional as back volume access fee, even if the library has been subscribing the journal for that period. National Institute of Health made a study in 2012 on the increase in the number of printed

journals during 2007-2011 in the fields of biological & agricultural sciences, and medicine & health sciences and found it to be 15% and 19%, respectively for these fields. Ironically, during the same period, the average subscription costs were escalated by 26 and 23% for biology and medical journals, respectively (National Institute of Health (2012).

Scientific research is supported by taxpayers' money in the form of liberal grants by Government; institutions provide infrastructure and lab facilities; library provides information resources and the researcher after painstaking efforts writes and submits a paper to a journal. When the paper is accepted he is transferring the copyright to the publishers for getting it published to gain recognition among peers. After publication, the institution or even the author has to pay to buy the copy of the journal publishing the paper. With copyright restrictions publishers reap benefits and profit margins up to 30% (Moorthy and Ramaiah, 2014). The publishers never pay to editors and reviewers who do these activities for the love of profession and subject which otherwise would cost about US$500 to 1000 per paper.

As scientific journals are costly, they have limited circulation and so limited visibility leading to less usage of research. This in turn decreases the readership and access to most of the intellectual content. For example, Indian researchers publish in thousands of journals, throughout the world. Their work is not noticed by others working in the same field in India itself, let alone elsewhere in the world. With an annual per capita GDP (in 2014) of about US$ 5,700 (in terms of 2014 PPP), most Indian libraries cannot afford to subscribe to key journals needed by their users. Most scientists in India are forced to work in a situation of *information poverty*. This is also true for many developing countries as also for some developed counties. Also, it is impossible for any institution to subscribe or provide access to all scholarly journals in a subject field.

In 2010, Elsevier made a US$1.16 billion profit on its revenues; in 2011 it has made a net profit of US$786 million on revenues of US$2.1 billion, a margin of 36%; and in 2012, it had a margin of 38% on revenues of $3.2 billion while Springer, the second-biggest journal publisher, made 36% on sales of US$1.1billion in 2011. These profits are because of the huge difference in the costs incurred for publishing and the subscription cost of the journals *(The Economist,* 2012).

The open access movement helped overcome these and related problems. Openly accessible research publications had a higher frequency of getting cited

compared to research publications not openly accessible. A study undertaken by Stevan Harnad (2004) revealed an impact ratio increased from 1 to 18% and citations from 253 to 557% during 1991-2001.

The OA journals available on the web provide online access and downloading free of charge, devoid of any licensing and copyright restriction irrespective of economic, socio-cultural and geographical barriers. The consent of authors, publishers and the Internet facilitates the wider usage of content without infringement of intellectual property rights across the globe. Open access supports Clause 1(b) and (c) Article 15 of the International Covenant on Economic, Social and Cultural Rights adopted by the UN under the Universal Declaration of Human Rights viz. to enjoy the benefits of scientific progress and its applications; and to benefit from the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author. Open access clearly benefits the society and the tax payers who indirectly fund the scholarly research (Moorthy, 2011).

To sustain open access in its true sense, the publishers of such journals like Public Library of Science, in what is known as Author Pay model, charge a nominal fee to be paid by authors or their institutions (see Moorthy and Ramaiah, 2014 for a detailed discussion). .The payment is not mandatory; it is waived for authors who cannot pay with a rider that such papers published in a delayed schedule. After this, OA publishers started profiting from the Author Pay model. Outsell Inc. in 2011 estimated that the OA journals generated a profit of US$172million in in 2012; up by 34% from 2011.Once the OA journals became a success, commercial publishers joined the band wagon. Now all the major publishers are offering OA content regularly, with some like Nature Publishing Group starting many OA journals from their stables (Moorthy and Ramaiah, 2014).

However, OA started as a good cause is increasingly used for plagiarism and piracy. Many predatory publishers started fancy journals with titles starting with America, or European or International. Beall (2011) lists several predatory OA publishers though he was accused of altering the lists for pecuniary benefits. There are publishing houses with a number of OA journals. A casual search on ScholarlyOA website gives a lot of information like the Academic and Business Research Institute at a Jacksonville, Florida, USA publishes 19 OA journals and it is apparently a one-man operation headed by an Associate Professor of Management Information Systems in the Jacksonville University. Surprisingly though, due to its cheap labour and ingenuity entrepreneurs, many predatory publishers are from India. The website also

provides some examples of 99.9% plagiarism with a change of one word in the title and the byline. It also records how unethical authors and predatory publishers hoodwink detection of plagiarism by with tricks used in their writings and published articles. Several techniques are used including altering the unseen text layer in a pdf file to mojibake (incorrect unreadable characters); replacing spaces with foreign alphabet and making them white; using Latin or Greek letters resembling English letters, etc.

Plagiarism on the Rise

Taking text, words and ideas or thoughts of someone else and making it as one's own, without acknowledging them, is termed as Plagiarism. It is unethical and dishonest; it is same as misconduct tantamount to scientific misappropriation/fraud, and academic misconduct or scholarly dishonest. It is nothing but copying research papers, reports, figures, tables etc directly form Internet or already published material, sometime verbatim, and submitting them without acknowledging the original sources or their authors. It may be intentional or unintentional copying of published or unpublished works for personal benefits without acknowledging the original work. There have been instances where many research publications and even PhD theses are just copied, made minimal changes, and submitted as originals. The irony is all such theses were awarded PhDs.

A Google search on 12 February 2016 resulted in about 71,70,000 (a decrease from 90,00,000 on 11 July 2014) results for scientific fraudand2,84,00,000 (a three-fold increase from 91,50,000 on 11 July 2014) for plagiarism. Does it mean that scientific fraud has come down and plagiarism increased? Probably as more and more of open access literature is available on Internet.

Plagiarism of ideas or lifting portions of published or unpublished works is neither a new nor country-specific phenomenon. History provides a great many instances of plagiarism of ideas from many countries. For example, the controversy for inventing Telescope between Galileo Galilee, Hans Lippershey, the Dutch eyeglass maker (first applied for patent in 1608), another Dutch eyeglass maker Zacharias Jansen and a third Dutch man Jacob Metius. However, it is attributed to Galileo Galilee who developed it in 1609, improved on his own and is the first to turn it skywards. Other controversies include Sir Isaac Newton and Robert Hook for Celestial Mechanics and Sir Isaac Newton and Leibniz for Calculus.

In modern times the roots of plagiarism can be traced to Developed Countries where the Publish or Perish syndrome was at its peak in 1980s. Moorthy and

Ramaiah (2014) discussed many plagiarism cases from developed counties and India. These include the high profile personalities like Presidents, Prime Ministers, Ministers of countries; scientists, heads of institutions, professors. A search on Wikipedia provides a number of cases from many countries, more from India.

Plagiarism Controversies in India

A lot of literature is published on the scientific misconduct in India covering fabrication of data, falsification of results and lifting portions of others' works without acknowledging them. If one searches Internet one will come across several hits involving plagiarism. Wikipedia lists several plagiarism cases that were reported in the media. Of particular interest are the pieces by Neelakantan (2010), Pushkar (2015), and Devika (2014). These provide some interesting cases. Everyone—from post graduates to research scholars to professors to scientists of eminence—all are involved. It is painful to note that very senior persons like a former Director General, Department of Scientific and Industrial Research; a Director of NetajiS ubhas Institute of Technology, Delhi; a Director of a CSIR Lab in Lucknow; an eminent scientist and Scientific Adviser to the Prime Minister; ; Vice Chancellor of Pondicherry University; Vice Chancellor of Kumaun University, Vice Chancellor of Aligharh Muslim University, Himalayan blunder by a palaeontologist from Punjab University, Deans from Guru Gobind Singh Indraprastaha University, a professor of Chemistry from Sri Venkateswara University, famous author and motivational guru, etc. Some of these have been resigned (some removed) from their positions due to a serious views taken by the Society for Scientific Values (SSV), a watchdog created to look in to scientific misconduct set up in 1986 by an independent group of distinguished scientists with high national and international reputation under the leadership of Prof Avatar Singh Paintal, FRS. The major objective of SSV is to promote integrity, objectivity and ethical values in the pursuit of science. The society has no legal or administrative powers, but it enjoys high moral credibility. It has taken up cases from time to time, where values intrinsic to science, which are termed collectively as "scientific ethics" has been, compromised (SSV, 2016).

Plagiarism Checking Software

A recent development against plagiarism checking is the use of free online plagiarism checkers by writers, teachers, research scholars etc. Google+ also provides limited plagiarism check using the material hosted on Internet—web pages, newsletters, blogs, open access material, etc. Some of the academic and

research institutions in India are subscribing to plagiarism checking software like Turntin, iThenticate. Some Indian universities and institutions are insisting that all publications from them including PhD Theses and Dissertations to be plagiarism checked and a digital copy be submitted with thesis. Elvis Michael in a blog post discusses about seven free online plagiarism checking software for publishers He presented a brief about (a) Plagiarisma, one of the most popular free online plagiarism checking software supporting 190 languages available for Windows and Android; (b) Dupli Checker that provides clean interface displaying easy to understand results and devoid of advertisements allowing one to paste text or upload one's documents; (c) Small SEO Tools' Plagiarism Checker that providing many sample texts and option to exclude the URL where one's own material is hosted; (d) Copyleaks which is easy to use with limited checking ability; (e) Plagium, an advanced checking software which can analyze 5,000 characters of web content, news sources and social media networks; (f) PageScan with several options for uploading Word, HTML or text files up to 300 MB; and The Pensters, a software that supports English and Spanish (Michael, 2016).

Sometimes we may like to publish something and it is a routine for bloggers. In such cases, posting content copied from other sources leads to unintentional plagiarism. Benitez provides valuable tips including using free plagiarism checker worldessays.com for avoiding unintentional plagiarism of written words and images (Benitez, 2014).

Reasons for Misconduct

There may be many reasons for scientific misconduct of falsifying data. Some interesting cases that occurred during the time when the author was Editor and Editor-in-Chief of publications are recalled here. During 1993-94 the *Defence Science Journal,* a quarterly (bimonthly now) research, peer-reviewed periodical received 2 papers. The first was the verbatim reproduction (99.8%, with exception of a changed title, and author byline) of a paper published by Prof N Rudraiah in *Fluid Dynamics,* in the international journal in 1966; the author from Sri Venkateswara University from Tirupati, merely changed mathematical symbols and sent. The fraud was detected as the paper was sent to Prof Rudriah, an expert in the subject, then the Vice Chancellor of Gulbarga University. Second from Dayal Bagh Engineering College from Agra. Dr A.K. Gupta of IIT, Kharagpur sent the original paper published elsewhere; about 75% was plagiarized. In both the cases, the authors were warned and barred from sending papers to the Journal. In another case, the plagiarism check of a paper from an R&D establishment doing food research gave 88 instances of

verbatim reproduction. The author was advised and barred from submitting to the journal.

Yet another case of 99.9% plagiarism involves a paper submitted from the RTM Nagpur University. In March 2011, a special issue of *DESIDOC Journal of Library and Information Technology* on Ontology was brought out with Prof Pratibha A Gokhale as Guest Editor. Immediately after that issue we received a paper on Ontology authored by an Assistant Professor and research scholar, from RTM Nagpur University. When checked for plagiarism it was found that the paper was downloaded from the *International Journal of Ontology Research* published from Europe. Except for the Authors and their affiliation, the paper is a verbatim reproduction. When asked for explanation the Assistant Professor, the first author, blamed her scholar. The authors were warned and barred.

If a search is made on Information seeking behaviour, you will find at least 50 theses awarded PhDs. Similar questionnaires, similar findings, similar population, similar surveys; only the subjects differ from space scientists, lawyers, civil engineers, defence scientists, etc. A PhD was awarded for a thesis on Information seeking behaviour of Medical Practitioners in a small town! There are many reasons for resorting to plagiarism by senior researchers, faculty, research scholars, students and working professionals.

Easy Access to OA Literature: The availability of Internet and OA literature make it easy for wily authors to churn out papers. When these were not available, the author needed to type the paper. Now it is dead easy; search the web, download a couple of papers, change here and there, add byline and send. In the absence of strict peer reviews, these are published and get cited! If a paper is published or presented in a conference on the "impact of Internet in engineering colleges in a region", others follow suite changing the region, subject of population or paper (replace Internet with E-resources, ICT, User Perception, etc.). Same type of surveys, questionnaires, population, findings and conclusions and suggestions. No novelty in inferences or conclusions or suggestions. The papers are presented/written in a monotonous way.

As recently as December 2015, a review article *The Mystery of Reincarnation* published in volume 55, issue 6 (pp.171-176) in *Indian Journal of Psychiatry,* a peer-reviewed journal, was retracted after 2 years *due to the verbatim reproduction of an earlier version on Reincarnation from Wikipedia.* "It has been reported and found that the article contains overlapping text sections from Wikipedia. Therefore, on the grounds of duplicity of text, the article in concern is being retracted," says the retraction notice published by Editor of the

journal. An online plagiarism tool shows that at least one-fourth of the study matches with the paper (Rao, 2016). The reason? As the issue was a supplement, the article was neither checked for plagiarism nor subjected to peer-reviewing. Another paper retracted for plagiarism recently is an article published by from Kalasalingam University by the *Journal of Biotechnology Advances.*

Peer Pressure: A senior Editor of a journal believes that there is increasing pressure on researchers to publish papers for promotions and better opportunities leading to incidents of plagiarism. These persons go to extreme lengths in pursuing their interest to reach the goals. Naturally the single aim for them will be to publish and flourish. And it has been well documented in literature that Indian journals accept papers of inferior or dubious quality mastering cut and paste technology (Rao, 2016).

Quantity vs. Quality: As Editor and Editor-in-Chief of journals and a few conference volumes, I have seen a casual and complacent approach by authors and their research supervisors who are supposed to vet the paper before submission. A tendency to pad up papers to their CVs seems to be the main reason. In some cases, the authors use paper submission as a means to attend the conference through deputation by the institution. Otherwise, it is difficult to understand submission of 3 or 4 papers to a single Conference by a senior faculty member, one as primary author and the rest as last or co-author with same set of co-authors? Too many papers on Impact of Internet; use pattern of electronic resources, etc.

Academic Performance Indicators: The University Grants Commission (UGC), India issued regulatory guidelines in 2010 by way of Academic Performance Indicators (APIs) for maintaining transparency and to maintain high standards in appointments, promotions, and career advancement of teaching and non-teaching staff. A second Amendment for the regulations was issued on 13 June 2013. The API score is based on each of the sub-categories in the Category III (Research and Publications and Academic Contributions) with a cap to calculate the total API score claim for direct recruitment/career advancement scheme. The total score of 100% is distributed as weightage for publication of research papers in journals etc. (30%), research publications like books etc. (25%), research projects (20%), research guidance (10%), attending training courses and conference, seminar etc. (15%). This has resulted in a "rat race" leading to publishing research papers in journals and presenting in conferences. The UGC made a rider that the journals which publish research papers and books should have IISN and ISBN. This led many

universities and sundry institutes start journals with ISSN and bargain with small book publishers to provide an ISBN for monetary considerations. Thus the spurt in submission of multiple papers for the same conference by a single group can be directly linked to the API of UGC for career advancement. This in turn resulted in widespread plagiarism and poor quality recycled papers.

A former director of Indian Institute of Science, who was the editor of *Current Science* for nearly two decades, believes the blame lies in the quantity-over-quality approach of the University Grants Commission. "Plagiarism has been slowly increasing for some years now. Instead of evaluating teachers, we judge them through API (Academic Performance Indicators). By making everything into a number, there is no evaluation of quality. Many then plagiarise thinking they can get away with it," he said (Rao, 2016).

Rush in PhD Submission: In recent times, many universities are insisting that the research scholar should submit proof of publication of 3 to 5 papers at the time of submission. Only serious scholars publish and submit their theses as per the requirements. However a sizeable number of scholars, who are lazy and lethargic, submit papers just before submission and pressurise editors for speedy publication or at least issue a certificate to enable them submit the thesis. If it is also linked to the promotion of their research supervisors, then even the review of theses are done in faster way and soliciting the reviewers to clear thesis early. I have faced this as Editor-in-Chief and Editor many a time and as recently as October 2015. I politely refused and asked the scholars to be disciplined.

But there are a number of online open access journals managed by single persons having boisterous editorial advisory committees which are ready to publish in 15 or 10 or 7 days, but strictly on payment of a fee. What a speedy publishing! No refereeing. What you write is what is published. Many such journals are thriving in India and abroad (see Beall, 2011, and Scholarly OA website). I happened to see advertisements in Google search; one announces it publishes open access international journals, high citation, indexed journals, and assures you in bold letters **Publish articles in 1 day** (Novelty Journals, n d.), while another advertisement says **Publish Paper in 5 days,** and when visited the website, a statement submission and publication usually takes around 3-10 days (depending upon the formatting and errors in paper) (Finlogy). When there are so many journals to publish what anybody writes, why worry for quality?

Another problem is the language in research papers and theses. While a majority are written well, many are poorly written with a lot of grammar and syntax errors, poor sentence construction, non-agreement of verb and subject, verb with number. At least around 5 theses were riddled with a number of spelling mistakes making me wonder if these are draft copies sent for review. Perhaps the research scholar is busy not having time to go through the compuscript; but what about the research supervisor? If scholar is busy, can we expect guide to be not busy? This makes that there is a necessity to train both researchers and their guides in writing in English.

Lack of Action by Institution Management: The investigations take inordinately longer times. In academic environment Vice Chancellor is all powerful and autonomous. And most of these Vice Chancellors are political appointees with some god father somewhere in the corridors of power. So nothing would happen to the professor or dean who has resorted to scientific misconduct Rather, the whistle blowers receive the flake by way of dismissals, suspensions and victimization. It has been observed in many cases that if the scientist or academician is powerful, and when a junior colleague such as a project assistant or research scholar is associated with them, the blame always goes to the junior who are even punished as seniors go scot free due to the protection given by the institutions (Raj, 2002). In some cases like that of the *Himalayan blunder* which received to international flak, no action was taken on Dr V.J. Gupta; rather he was promoted.

In a classic case of plagiarism, instead of taking action on the persons committing plagiarism—99.9% verbatim reproduction of an earlier article by Prof Saroj Sharma, Dean of School of Education, and plagiarism of several portions by Prof Suman Gupta, Dean of Law and Legal Studies, the Vice Chancellor has rewarded the two Deans with yet another term of appointment. He has stated in a newspaper that plagiarism is not a crime and therefore does not warrant any action!

Lack of and Awareness of Plagiarism Checking Tools: In some of the studies undertaken at under-graduate to post-graduate levels, the findings are revealing. The students are not aware of copyright provisions, repercussions of infringement, plagiarism, plagiarism checking tools and necessity. What is more alarming is the ignorance of sizeable teaching faculty who just are not aware of or these provisions. This needs to be changed. The sooner the better.

After the outbreak of some of the sensational high profile plagiarism cases, some universities and research institutions started using plagiarism checking

tools. Inflibnet programme has made the software available for academic institutions at discounted rates. Many universities are now insisting submission of digital copy of thesis for plagiarism checking. If the percentage of plagiarism is more, say 15 to 20%, the scholar is asked to resubmit. However, I have known at least two PhD theses evaluated by me with suggestions major revisions and resubmission due to having 40% of compiled data from web, these have been awarded by the universities! The university goes by best of three reviews; that means in our profession there are some black sheep (at least I know some of them). There is also evidence of Mutual Admiration Societies who help each other students by giving good review reports and growing up together.

Conclusions

Surely what is covered here is just a tip of a big mountain. Due to casual approach, not many take scientific misconduct seriously. Where some whistle blower pursues a case vigorously, the system moves very slowly taking months—years in most cases—to submit fact finding reports. After that no further action is taken. It is also not uncommon that the whistle blower is targeted and punished.

Many countries (for example, Office of Scientific Integrity, later Office of Research Integrity, in USA) have in place some sort of system to see that scientific misconduct is investigated and suitable action is taken. Some funding agencies make it a condition to follow rules and avoid misconduct. There is no centralized agency vested with some authority to investigate scientific misconduct and plagiarism. It is only in 1986 SSV was established by scientists and academicians of highest integrity, some clean-up has occurred. However SSV has neither administrative nor legal powers to take action or enforce on proven cases. But its findings carry weightage and high credibility. However, things are changing with some of the central government institutions like CSIR, IITs and universities like Punjab University have established mechanism to take cognizance of plagiarism and award suitable punishments.

People tend to think that neither the government nor the institution's managements or is taking any concrete action on defaulters even after committees after committees found that plagiarism has been committed by the individual. This made Jayanta Chatterjee of Reliance Life Science to comments in *Nature* thus: "One more committee, some more meetings, conferences, lunches and dinners at taxpayers' money. Indian science hardly has any accountability these days. No wonder the quality of science education and

research in India is going down despite of increasing funding in recent past (according to many published reports). The disease lies deep in the society and the level of ability and honesty among scientific community in India (just like politicians and bureaucrats)."

The foregoing makes it clear that there is an urgent need to conduct awareness programmes for research students and faculty on copyright law (preferably at undergraduate level for students), especially with digital content and the repercussions of scientific misconduct and plagiarism. It is time to inculcate honesty, truthfulness in research for national development and to avoid negative image for the country. When misconduct is proved, stricter punishments are to be enforced through legislation without bias in the national interest. Alternately, SSV may be empowered though government notification. There is also a need to encourage and protect whistle blowers as they are doing yeoman service to the nation. This will ensure scientific honesty. Another urgent necessity is to have research evaluation committees in all research institutions headed by high integrity scientists and deans to scrutinize and recommend for submission to journals or conferences. It is the institution's image that gets a beating for poor quality publications. This necessitates making plagiarism checking software available to all research institutions. Last but not least is to black-list dishonest and fraudulent authors and the names to be prominently circulated to prevent them submission to other journals.

References

Beall, Jeffrey. Beall's List of Predatory, Open-Access Publishers, 1 December2011 Available at http://metadata.posterous.com/83235355

Benitez, Christopher Jan. How to Make Sure You don't Unintentionally Commit Plagiarism. Available at http://www.bloggingpro.com/archives/2014/11/18/how-to-avoid-plagiarism/, accessed 28 January 2016.

Devika. Academic Plagiarism Scores Hatrick in India!. Available at http://spicyip.com/2014/ 11/academic-plagiarism-scores-hatrick-in-india.html accessed on 28 January 2016

Eartthbytes. Plagiarism: Refuge of Imbecile. Available at http://earthbytes.blogspot.in/ 2008/03/plagiarism-refuge-of-imbecile.html, accessed 28 January 2016,

Finlogy. Publish Paper in 5 days. Available at http://www.onlinejournal.in/ submitpaperinternationalresearchjournal/?gclid=CPiznccD-coCFQ8kaAod1uUFGQ

Grcar, Josep. Comments and Corrigenda in Scientific Literature, *American Scientist,* No. 2, 2013; accessed on 11 May 2015 at http://www.americanscientist.org/issues/num2/2013/1/ comments-and-corrigenda-in-scientific-literature/1.

Harnad, Steven and Brody, Tim. Comparing the Impact of Open Access (OA) vs. Non-OA Articles in the Same Journals. *D-Lib Magazine*, **10**(6), (2004). Available at http://www.dlib. org /dlib/june04/harnad/06harnad.html)

Michael, Elvis. 7 Free Online Plagiarism Checkers for Publishers. Available at http://www. bloggingpro.com/archives/2016/01/21/7-free-online-plagiarism-checkers-for-publishers/,accessed 28 January 2016.

Moorthy, A.L. Open Access and Scholarly Communication. Dr PSG Kumar Oration Paper, oration delivered at the RTM Nagpur University, 21 January 2011.

Moorthy, A.L. and Ramaiah, Chennupati K. Copyright in Open Access Era: Dealing with Plagiarism. Paper presented in the National Conference on Scholarly Communication and Intellectual Property Rights (SCIPR-2014) at School of Planning and Architecture, Vijayawada, 4-5 August 2014.*In*Scholarly Communication and Intellectual Property Rights, edited by Y. Srinivasa Rao and A.L. Moorthy. Hyderabad, BS Publications, 2014. pp. 103-120.

Munroe, Randall, The Rise of Open Access, *Science*, **342**, 4 October 2013, accessed on 11 May 2015 at http://www.sciencemag.org).

National Institute of Health (2012). The NIH Public Access Policy. Retrieved 7 May 2012 from http://publicaccess.nih.gov/communi cations.htm).

Neelakantan, Shailaja. In India, plagiarism is on the rise. Available at http://www.globalpost. com/dispatch/india/090921/did-you-write-yaar-india-plagiarism-the-rise accessed on 28 January 2016

Novelty Journals. Publish articles in 1 day. Available at http://www.noveltyjournals.com/, accessed on 14 February 2016.

Pushkar. In India you can plagiarize and flourish. *The Wire*, 05 June 2015. Available at http://thewire.in/2015/06/05/in-india-you-can-plagiarize-and-flourish-3307/ accessed on 28 January 2016

Raj, N. Gopal. Scientific Misconduct. Available at http://www.thehindu.com/2002/10/11/stories/2002101100151000.htm. accessed on 28 January 2016.Scholarly OA. Available at http://scholarlyoa.com/2013/02/07/five-ways-to-defeat-automated-plagiarism-detection/#more-1271, accessed on 28 January 2016.

Rao, Mohit M. Article retracted after 'overlapping text' from Wikipedia found. The Hindu, 07 February, 2016; available at http:// www.thehindu.com/news/national/article-retracted-after-overlapping-text-from-wikipedia-found/article8203595.ece; accessed on 08 Feb 2016).

SSV. Society for Scientific Values. Available at http://www.scientificvalues. org/index.html, accessed on 28 January 2016.

The Economist. Academic Publishing: Free-For-All. *The Economist*, 14-20 May 2013, p.71.

The Economist (2012). Academic Publishing: Open Sesame. *The Economist*, 14-20 April, 17.

University Grants Commission. Minimum Qualifications for Appointment of Teachers and other Academic Staff in Universities and Colleges and other Measures for the Maintenance of Standards in Higher Education) Regulations, 2010. Available athttp://www.ugc.ac.in/ pdfnews/8539300_english.pdf; and http://www.tiss.edu/lefttop/jobs-tenders/faculty-positions-1/faculty-positions-attachments/teaching-and-non-teaching-positions-attachments/ guidelines

Wikipedia. https://en.wikipedia.org/wiki.

Planning and Provision of Multi-Purpose Learning Spaces in a University Library: Experiences at the University of Kelaniya

L.A. Jayatissa
University Librarian
University of Kelaniya, Sri Lanka
Email: librarian@kln.ac.lk

Abstract

The University of Kelaniya Library was moved into a purpose-built new library building in 1978. At the time of its design and construction, building materials were not locally avallable as it is today. Further, the building was designed with a "saw-tooth" type roof to harness natural lighting and "timbre-louvers" across its wall space for natural ventilation .However, it inherited a lot of problems due to its perpetually leaking rain water gutter system, built-in book shelves without any flexibility in organizing the book collection , presence of many blind reading areas which were difficult to monitor, and lack of flexibility caused by precast building construction method used. The undergraduate student population which was less than 2,000 at the time of its construction has risen to over 8,000 undergraduates subsequently, whereas the total library seating capacity was 800.

Due to above factors, there was a need for a new library building, yet the existing building could not be demolished due to its robust construction and due to the fact that it was just around thirty years old by then. Besides, if it is to be scrapped, its 5,000 square feet floor area would add up to the floor area of new building thus tremendously increasing the final cost which would come closer to one billion rupee price tag. There was also the need to provide diverse learning spaces to suit a variety of purposes which included group discussions and reading their own notes.

An additional new building was decided as the best option to answer these issues. This paper discusses the efforts taken to overcome problems associated with the old building and to provide a better learning space for its readers through the construction of a new wing meant for research oriented students and academic staff, a PC lab and a seminar room. It also discusses the important aspects to be dealt with in planning and constructing a new library

building. As the planning and construction of library buildings is a very rare experience, the primary aim of this paper is to share the experience gained during this whole exercise, which would be useful for LIS professionals if ever they are faced with similar situation, and to avoid possible pitfalls.

Keywords: *Library building construction; Learning spaces; Building construction project planning*

Bibliometric Study on LIS Articles Published in Sri Lanka during 2010-2014

Ruwan Gamage
National Institute of Library & Information Sciences
University of Colombo Sri Lanka
Email: ruwan@nilis.cmb.ac.lk

Extended Abstract

Library and Information Science (LIS) literature started flourishing in Sri Lanka in 1962 (then Ceylon) when the first LIS journal; Ceylon Library Review was started as an important academic activity of the Ceylon Library Association (Schweizer, 2005). Recently the volume and frequency of publishing of LIS research has had an exponential growth. Therefore, it is necessary to identify trends of publishing and gaps in literature for taking policy decisions on LIS research in Sri Lanka.

A bibliometric analysis of research articles can generate important information on citation patterns, selection of topics, frequency of topics, publishing behaviour of authors etc. The current study focusses on a descriptive analysis of subject coverage of articles published in selected sources from 2010 to 2014. Apart from the studies done by Gunasekara (2008) and Dambawinna (2013), there had been no other recent analysis on LIS literature in Sri Lanka. Results of Gunasekara's study (2008) are now outdated, while Dambawinna (2013) mainly focused on other aspects (e.g. Author profile, etc.) but not mainly on subject analysis. Therefore, the proposed study will pave the way for a new understanding on the popular and less popular topics among Sri Lankan LIS researchers.

Methodology

A collection of articles on LIS research in Sri Lanka was built (Library and Information Local Abstracts – LILA). Quality, consistency, research orientation, and subject alignment were the factors considered in selecting sources. Accordingly, two journals (Journal of the University Librarians Association of Sri Lanka, and the Sri Lanka Library Review) and proceedings of two conferences (National Conference in Library & Information Science - NACLIS, and the NILIS Symposium) were selected for review. Selection was limited to the articles published during 2010-2014.Two hundred and fifty (250) articles fall within this category.

Significance of the research

The subject analysis will help identify gaps in LIS research in Sri Lanka. In addition, it is the first time a foundation is built to study the Sri Lankan LIS publications in depth. Using the collected articles as the basis, more research can be carried out on this regard. The same can be replicated to other parts of the world of which LIS research is still hidden.

Future work

A detailed analysis of LIS research can be carried out after extending the abstracts to other LIS publications in the country.

The collection of articles will be included in a database, and will be made available via a free and open interface of a national Web site. In addition to the abstract & bibliographic details, unconventional fields for a catalogue such as author affiliation and contact details will also be included in the database. Thirty one (31) MARC fields (tags) for making journal and conference research papers available online have already been identified.

Some of the selected journals and conference proceedings are available online. Out of them, only a handful of resources are indexed by open indexes such as 'Google Scholar'. For example, JULA is accessible via Sri Lanka Journals Online (sljol.info), which is indexed by Google scholar. Others are either available in PDF format in publishers' Web sites or not available online, at all. Even though a few resources are available online in the correct format, they are part of a broader community. The proposed database enables 'vertical search', only among the selected Sri Lankan publications. This way, information on Sri Lankan LIS articles will be available globally.

Keywords: *Bibliometric study; Citation analysis; Subject analysis; Knowledge output*

References

Dambawinna, K.P.K (2013). Transmission and Storage of Information for Library Professionals in Sri Lanka: A Bibliometric Analysis. *International Journal of Information Technology and Business* Management. V9/1.

Gunasekera, C. (2008). Library and information sciences research literature in Sri Lanka: a bibliometric study. Journal of the University Librarians Association of Sri Lanka, 12, 17-46.

Schweizer, M. (Ed.). (2005). *World Guide to Library, Archive, and Information Science Associations: Second* (Vol. 112). Walter de Gruyter.

Research Performance of Organizations in Madurai Region: A Scientometric Point of View

A. Thirunavukkarasu
Central Library, Alagappa University, Karaikudi, Tamil Nadu, India

S. Raja
AUCBPL, Alagappa University, Karaikudi-630 003, Tamil Nadu, India

S. Kishore Kumar
Central Library, Alagappa University, Karaikudi, Tamil Nadu, India

Abstract

Research performance of organizations in and around Madurai has been studied using publications indexed in the Web of Science (WoS) database core collection. "Madurai" as a search term in the address tag fetched 6182 records and the period of coverage from 1989 to 2016. The downloaded data were analyzed using MS Excel, VOS Viewer, and HistCite software applications. The analysis revealed that there are 8588 authors from among 81 countries; 1501 journals; 15 types of documents; 2517 institutions; 122,257 times cited by local and global references. 87% of publications are scholarly articles. The highest productive year is 2014 (TGCS-1479) and lowest is 1990 (TGCS-873). Of the 81 countries, USA stands first, South Korea and UK in the second and third places respectively. "Acta Crystallographica Section E-Structure Reports Online", "Current Science", "Spectrochimica Acta Part A-Molecular and Biomolecular Spectroscopy" are the most productive journals involved in this study. Among the 8588 authors, "Perumal S" has earned the highest h- index value. "Madurai Kamaraj University" and "Thiagarajar College of Engineering" dominate other institutions in terms of number of records. 122257 cited references were measured from the data and most cited authors were "North Act", "Lowry Oh", and "Laemmli Uk"; most cited journals were "Acta Crystall A-Crys", "J Biol Chem", and "Nature".

Keywords: *Madurai, Bibliometrics, Scientometrics, Research Performance, Citation Analysis*

Introduction

The purpose of this study is to measure the research output of Madurai region based on the publications indexed in Web of Science (WoS) Core Collection. The WoS Core Collection consists of Science Citation Index (SCI), Social Science Citation Index (SSCI) and Arts and Humanities Citation Index (AHCI). Bibliometric parameters such as Relative Growth Rate (RGR), Doubling Time (DT), Author productivity, citation, and co-citation have been analyzed using MS Excel, VOS Viewer, and HistCite software applications.

Review of Literature

Sangam et al (2013) have studied 'Genetics', a subject discipline using PubMed database. Li et al (2014) have analyzed 'nanosafety research' as its theme and used the Web of Science database. Sangam, & Mogali (2014) have mapped the Social Science Literature in India. Social Science Citation Index (SSCI) a component of Web of Science was relied upon. Amudha & Sevukan (2014) have made a Scientometric Analysis on Indian Neuroscience Research, 1999-2013. It signifies India's global share in the field of neuroscience. Lakshmi and Raja (2015) have dealt with leukemia research of India. Lichtman and Oakes (2001) have compared the productivity of research grant applicants for scholarship from the Leukemia Society of America. Review of previous literature show that a comprehensive study of 'Madurai' city or region has not been done. Though certain aspects such as performance of organizations, scientists / researchers in Madurai have been analyzed previously, comprehensive bibliometric/scientometric study of Madurai region has not been done so far. This paper attempts to portray the publication output of Madurai region to the possible extent, using Web of Science database from 1989-2016.

Objectives of the Study

- The study has been designed with the following objectives:
- To study chronological growth of research publications in Madurai region.
- To measure and compare Relative Growth Rate and Doubling Time of publications
- To identify the countries involved in the above publications
- To identify the prolific contributors and their institutions

Methodology

The necessary data was collected from the database of Web of Science (WoS) Core Collection and the period of coverage is from the year 1989 to 2016. "Madurai" is the search term under Address field. A total of 6182 records have been downloaded and analyzed using the Histcite, VoS viewer and MS-Excel as per the objectives of the study.

Limitations

The data is limited to bibliographic records with the term "Madurai" in the Address field of the database – Web of Science – Core Collection downloaded on 30th November 2015, and the period of coverage is from 1989 to 2016.

Results and Discussion

Sample Data Details

Table 4.1(a): Detailed Information of Sample Data During 1989 To 2016 on Madurai Region Research Output

S.No	Details about sample	Observed Values
1	Duration	1989 to 2016
2	Time Span	28 years
3	Total records	6182
4	Total Number of Authors	8588
5	Total Number of Journals	1501
6	Frequently occurring words	12040
7	Document types	15
8	Languages	2
9	Contributing countries	81
10	Contributing Institutions	2517
11	Institutions with subdivisions	4902
12	Total Local Citation Scores-Mean	1.14
13	Total Global Citation Scores-Mean	8.20
14	Total Local Citation Scores	7074
15	Total Global Citation Scores	50690
16	Total Cited References	122256

The table 4.1(a) reveals the details of downloaded records of Web of Science database; such that, time span is 1989 to 2016, totally 28 years output of

Madurai region; downloaded sample is 6182 records; total number of contributing authors 8588; total number of journals 1501; frequently occurring words is 12040; 15 types of documents; 2 types of languages; 81 countries were from various continents; 2517 institutions' from 4902 countries; 7074 Total Local citation scores; 50690 total Global citation score; and totally 122256 were cited reference of the whole sample records.

Table 4.1(b): Contributions of major cities in Tamilnadu in publication output as seen in WoS (as on 02-02-2016)

S.No	Name	No of Record	No of Years (1989-2016)
1	Madras / Chennai	52699	28
2	Coimbatore	11196	28
3	Tiruchchirappalli	7458	28
4	Madurai	6310	28

The table 4.1(b) has revealed that Madurai has the lowest number of output among the four major cities of Tamil Nadu.

Year-wise Output of Madurai Region Research

This analysis shows a gradually increasing trend in the year wise output.

Table 4.2: Year Wise Distribution of Madurai Region Research Productivity During 1989 to 2016

S. No	Publication Year	Record	Percent	TLCS	TGCS
1	1989	98	1.6	110	555
2	1990	82	1.3	183	873
3	1991	113	1.8	171	961
4	1992	94	1.5	165	782
5	1993	106	1.7	183	995
6	1994	106	1.7	158	714
7	1995	122	2.0	205	1536
8	1996	122	2.0	183	1124
9	1997	100	1.6	255	1394
10	1998	121	2.0	218	1874
11	1999	148	2.4	238	1689

Methodology

The necessary data was collected from the database of Web of Science (WoS) Core Collection and the period of coverage is from the year 1989 to 2016. "Madurai" is the search term under Address field. A total of 6182 records have been downloaded and analyzed using the Histcite, VoS viewer and MS-Excel as per the objectives of the study.

Limitations

The data is limited to bibliographic records with the term "Madurai" in the Address field of the database – Web of Science – Core Collection downloaded on 30th November 2015, and the period of coverage is from 1989 to 2016.

Results and Discussion

Sample Data Details

Table 4.1(a): Detailed Information of Sample Data During 1989 To 2016 on Madurai Region Research Output

S.No	Details about sample	Observed Values
1	Duration	1989 to 2016
2	Time Span	28 years
3	Total records	6182
4	Total Number of Authors	8588
5	Total Number of Journals	1501
6	Frequently occurring words	12040
7	Document types	15
8	Languages	2
9	Contributing countries	81
10	Contributing Institutions	2517
11	Institutions with subdivisions	4902
12	Total Local Citation Scores-Mean	1.14
13	Total Global Citation Scores-Mean	8.20
14	Total Local Citation Scores	7074
15	Total Global Citation Scores	50690
16	Total Cited References	122256

The table 4.1(a) reveals the details of downloaded records of Web of Science database; such that, time span is 1989 to 2016, totally 28 years output of

Madurai region; downloaded sample is 6182 records; total number of contributing authors 8588; total number of journals 1501; frequently occurring words is 12040; 15 types of documents; 2 types of languages; 81 countries were from various continents; 2517 institutions' from 4902 countries; 7074 Total Local citation scores; 50690 total Global citation score; and totally 122256 were cited reference of the whole sample records.

Table 4.1(b): Contributions of major cities in Tamilnadu in publication output as seen in WoS (as on 02-02-2016)

S.No	Name	No of Record	No of Years (1989-2016)
1	Madras / Chennai	52699	28
2	Coimbatore	11196	28
3	Tiruchchirappalli	7458	28
4	Madurai	6310	28

The table 4.1(b) has revealed that Madurai has the lowest number of output among the four major cities of Tamil Nadu.

Year-wise Output of Madurai Region Research

This analysis shows a gradually increasing trend in the year wise output.

Table 4.2: Year Wise Distribution of Madurai Region Research Productivity During 1989 to 2016

S. No	Publication Year	Record	Percent	TLCS	TGCS
1	1989	98	1.6	110	555
2	1990	82	1.3	183	873
3	1991	113	1.8	171	961
4	1992	94	1.5	165	782
5	1993	106	1.7	183	995
6	1994	106	1.7	158	714
7	1995	122	2.0	205	1536
8	1996	122	2.0	183	1124
9	1997	100	1.6	255	1394
10	1998	121	2.0	218	1874
11	1999	148	2.4	238	1689

12	2000	110	1.8	162	1100
13	2001	150	2.4	319	2538
14	2002	181	2.9	244	2103
15	2003	207	3.3	366	3522
16	2004	213	3.4	294	2995
17	2005	213	3.4	274	2818
18	2006	219	3.5	278	2053
19	2007	280	4.5	430	3011
20	2008	316	5.1	369	3181
21	2009	320	5.2	344	3024
22	2010	323	5.2	348	2614
23	2011	450	7.3	469	3274
24	2012	442	7.1	436	2453
25	2013	468	7.6	344	1773
26	2014	540	8.7	269	1479
27	2015	533	8.6	59	255
28	2016	5	0.1	0	0

Note: TLCS – Total Local Citation Scores; TGCS – Total Global Citation Scores

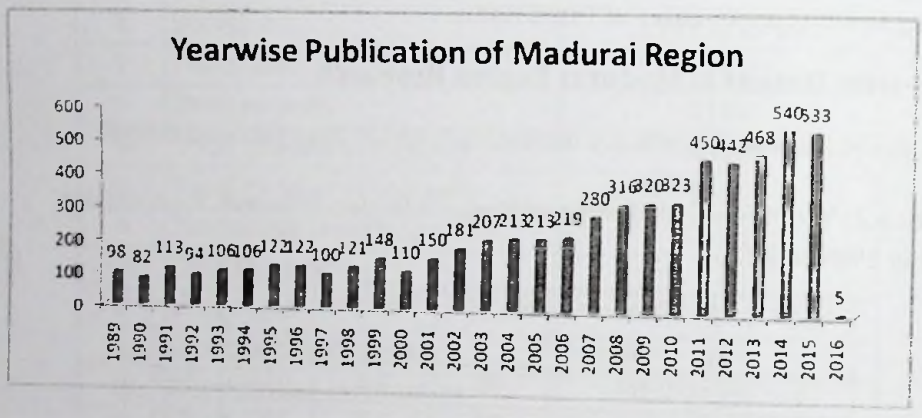


Figure - 4.1

According to the table 4.2 and figure 4.1, year 2014 has the highest number of publications 533 (8.6 %) with 269 TLCS and 1479 TGCS values. The year 1990 has the lowest with 82 (1.3 %) records, 183 TLCS and 873 TGCS.

Table 4.3: Relative Growth Rate (RGR) and Doubling Time (DT)

Year	No. of Records	Cumulative	W1	W2	RGR	Doubling Time
1989	98	98	0.00	4.58	4.58	0.15
1990	82	180	4.58	5.19	0.61	1.14
1991	113	293	5.19	5.68	0.49	1.42
1992	94	387	5.68	5.96	0.28	2.49
1993	106	493	5.96	6.20	0.24	2.86
1994	106	599	6.20	6.40	0.19	3.56
1995	122	721	6.40	6.58	0.19	3.74
1996	122	843	6.58	6.74	0.16	4.43
1997	100	943	6.74	6.85	0.11	6.18
1998	121	1064	6.85	6.97	0.12	5.74
1999	148	1212	6.97	7.10	0.13	5.32
2000	110	1322	7.10	7.19	0.09	7.98
2001	150	1472	7.19	7.29	0.11	6.45
2002	181	1653	7.29	7.41	0.12	5.98
2003	207	1860	7.41	7.53	0.12	5.87
2004	213	2073	7.53	7.64	0.11	6.39
2005	213	2286	7.64	7.73	0.10	7.09
2006	219	2505	7.73	7.83	0.09	7.57
2007	280	2785	7.83	7.93	0.11	6.54
2008	316	3101	7.93	8.04	0.11	6.45
2009	320	3421	8.04	8.14	0.10	7.06
2010	323	3744	8.14	8.23	0.09	7.68
2011	450	4194	8.23	8.34	0.11	6.11
2012	442	4636	8.34	8.44	0.10	6.92
2013	468	5104	8.44	8.54	0.10	7.21
2014	540	5644	8.54	8.64	0.10	6.89
2015	533	6177	8.64	8.73	0.09	7.68
2016	5	6182	8.73	8.73	0.00	856.48

Table 4.3 & figure 4.2 shows the relative growth rate and doubling time for total research output on Madurai region.

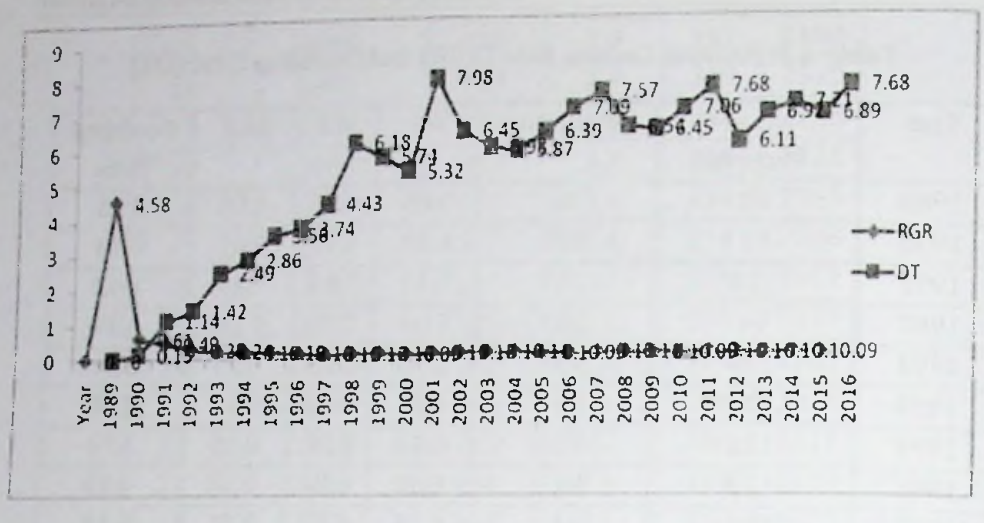


Figure - 4.2

It is observed that its Relative Growth Rates have contracted gradually from 0.61 in the year 1990 to 0.09 in the year 2015. The Mean Relative Growth rate is 0.3125 for the total sample. Contrary to this, the Doubling Time for publication of all sources in Madurai region research output has increased from 0.15 in the year 1989 to 7.68 in the year 2015. The Relative Growth Rate has shown a declining trend, which means the rate of increase is low in terms of segment. Doubling time for publications is more than the Relative Growth Rate.

Table 4.4: Author-wise document distribution (Top 20)

S.No	Author	Record	Percent	TLCS	TLCS/t	TLCSx	TGCS	TGCS/t	TLCR	TLCSh	TLCSa
1	Perumal S	193	3.1	812	106.11	37	2265	298.71	758	366	4
2	Natarajan S	192	3.1	313	24.25	14	1207	103.71	337	205	0
3	Muthusubramanian S	164	2.7	271	35.31	2	675	96.33	313	122	0
4	Ramakrishnan V	152	2.5	232	20.31	21	1124	119.59	238	87	0
5	Pitchumani K	149	2.4	416	50.91	23	1776	223.84	383	114	1
6	Gunasekaran P	137	2.2	191	24.71	12	1444	157.36	216	39	0
7	Ramaraj R	122	2.0	340	36.96	13	1774	173.26	308	76	10
8	Peter AJ	111	1.8	74	9.14	3	552	76.37	104	16	0
9	Ramachandran K	107	1.7	106	13.36	3	546	72.01	97	42	0
10	Srinivasan M	107	1.7	293	33.77	26	1910	171.87	203	48	0
11	Rajagopal S	105	1.7	528	47.76	18	1799	162.02	503	100	46
12	Srinivasan C	93	1.5	298	14.14	13	913	50.69	144	64	20
13	Iyakutti K	92	1.5	153	19.77	17	382	55.52	137	50	0
14	Rajaram RK	88	1.4	227	15.03	33	674	46.31	154	112	3
15	Krishnakumar RV	84	1.4	205	14.83	5	544	40.06	176	157	0
16	Saravanan R	79	1.3	106	8.64	0	334	31.81	112	18	0
17	Murugesan R	72	1.2	106	6.63	13	901	66.47	94	28	0
18	Marimuthu G	67	1.1	94	6.08	12	544	36.83	98	27	0
19	Prajna NV	66	1.1	121	15.50	9	760	90.62	157	27	0
20	Selvaraj S	65	1.1	140	8.49	16	699	43.51	92	44	1

The most productive author is Perumal S with 193 papers. His share is 3.10% with TLCS 812, TGCS 2265, TLCR 758. Natarajan S 192 (3.1%), TLCS 313, TGCS 1207, TLCR 337 and Muthusubramanian S 164 (2.7%), TLCS 271, TGCS 675, TLCR 313 stand rank 2 and rank 3 respectively. This is evident from Table 4.4 & Figure 4.3

Figure - 4.3

The most productive author is Perumal S with 193 papers. His share is 3.10% with TLCS 812, TGCS 2265, TLCR 758. Natarajan S 192 (3.1%), TLCS 313, TGCS 1207, TLCR 337 and Muthusubramanian S 164 (2.7%), TLCS 271, TGCS 675, TLCR 313 stand rank 2 and rank 3 respectively. This is evident from Table 4.4 & Figure 4.3.

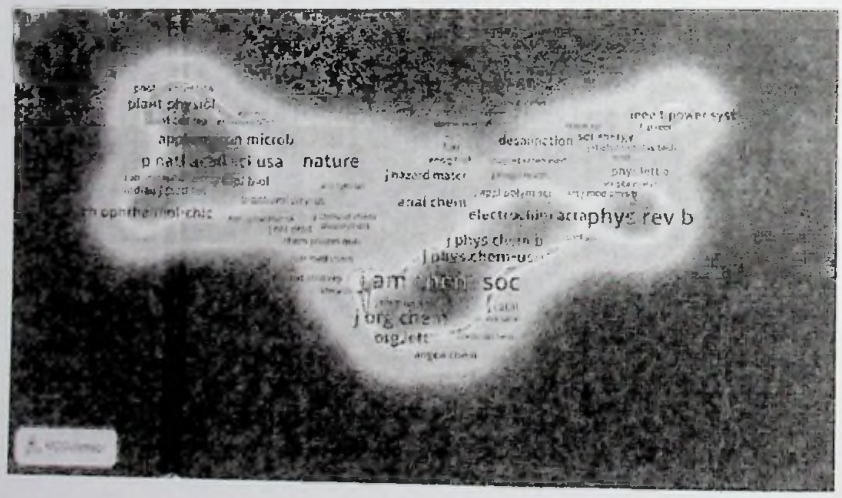


Figure – 4.4

Table 4.5: Journal wise document distribution (Top 20)

S. No	Journal	Record	Percent	TLCS	TLCS/T	TGCS	TGCS/T	TLCR
1	Acta crystallographica section e-structure reports online	247	4.0	320	24.76	880	69.81	338
2	Current science	196	3.2	131	9.04	774	63.33	155
3	Spectrochimica acta part a-molecular and biomolecular spectroscopy	101	1.6	141	19.39	832	108.35	188
4	Rsc advances	68	1.1	96	28.32	330	95.73	192
5	Indian journal of chemistry section b-organic chemistry including medicinal chemistry	63	1.0	55	3.07	162	12.08	62
6	Investigative ophthalmology & visual science	58	0.9	26	2.69	288	29.13	46
7	Tetrahedron letters	58	0.9	232	38.44	692	114.39	256
8	British journal of ophthalmology	54	0.9	131	9.55	1074	75.45	93
9	Crystal research and technology	52	0.8	85	6.34	443	39.70	75
10	Tetrahedron	52	0.8	358	31.53	914	80.82	200
11	Indian journal of ophthalmology	50	0.8	6	0.90	80	11.79	33
12	Indian journal of chemistry section a-inorganic bio-inorganic physical theoretical & analytical chemistry	48	0.8	46	2.26	292	12.40	33
13	Photosynthetica	42	0.7	75	3.35	361	20.36	97
14	Eye	41	0.7	15	1.33	239	18.00	20
15	Journal of biosciences	40	0.6	56	3.15	237	18.03	40
16	Indian veterinary journal	39	0.6	1	0.07	28	1.70	1
17	Physica status solidi b-basic research	34	0.5	74	3.38	133	6.14	46
18	American journal of ophthalmology	33	0.5	60	5.06	576	48.92	54
19	Bioresource technology	33	0.5	16	2.65	314	34.80	19
20	Solid state communications	32	0.5	66	4.37	308	20.92	43

In this analytical period, scientists / researchers have published research papers (6182 records) dispersed over 1501 journals. Table 4.5 and Figure 4.4 show that out of 1501 journals, the journal of "ACTA CRYSTALLOGRAPHICA SECTION E-STRUCTURE REPORTS ONLINE" has published the highest number of articles 247 (4.0 %); 320 TLCS; 880 TGCS; 338 TLCR. The journal "CURRENT SCIENCE" has 196 (3.2 %) articles; 131 TLCS with 774 TGCS and the 155 TLCR and "SPECTROCHIMICA ACTA PART A-MOLECULAR AND BIOMOLECULAR SPECTROSCOPY" 101 (1.6 %) articles; 141 TLCS with 832 TGCS and the 188 TLCR occupy the second and third positions.

Word occurrence analysis

Word occurrence have been presented in the following visuals figure 4.5 (density view) and figure 4.6 (network view). The words at least with a minimum occurrence of 10 times from the 6182 documents under study find a place in the visual. Only 1826 words belong to this category. 'Patient', 'complex', 'algorithms', 'electrode ... are first four words occurring more than 10 times arranged in the descending order.

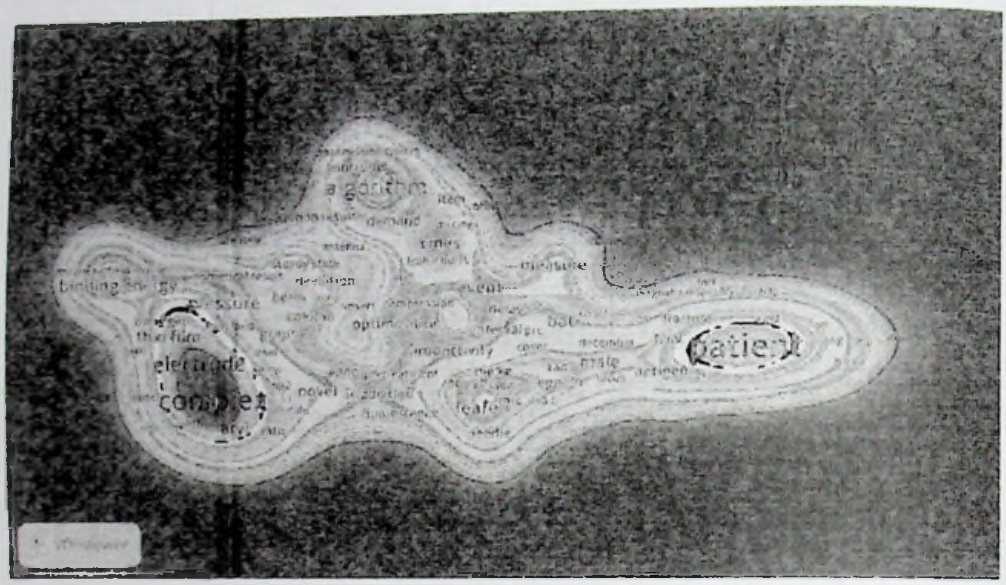


Figure – 4.5

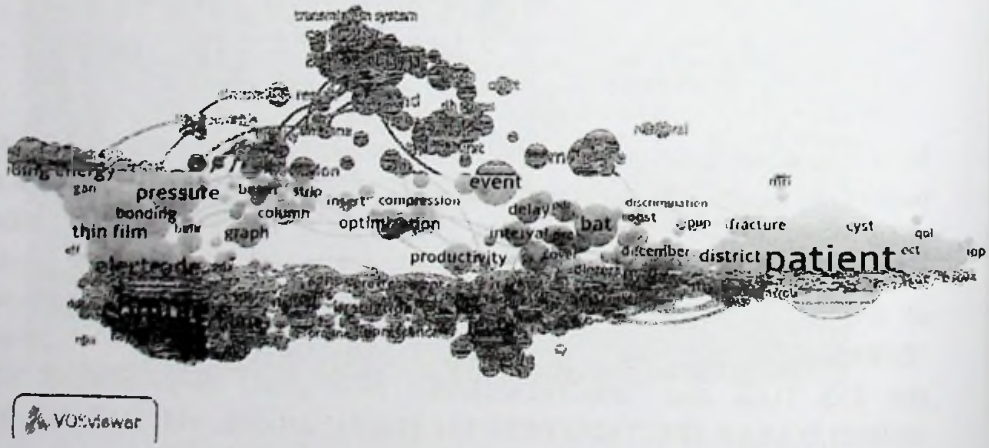


Figure – 4.6

Table 4.6: Document wise document distribution

N0	Document Type	Record	Percent	TLCS	TGCS
1	Article	5381	87.0	6633	45503
2	Letter	204	3.3	48	347
3	Meeting Abstract	179	2.9	0	11
4	Note	115	1.9	113	483
5	Review	103	1.7	168	3091
6	Article; Proceedings Paper	87	1.4	78	1000
7	Editorial Material	73	1.2	34	234
8	Correction	16	0.3	0	2
9	Book Review	8	0.1	0	0
10	News Item	7	0.1	0	10
11	Item About an Individual	3	0.0	0	0
12	Article; Book Chapter	2	0.0	0	3
13	Biographical-Item	2	0.0	0	0
14	Correction, Addition	1	0.0	0	0
15	Reprint	1	0.0	0	6

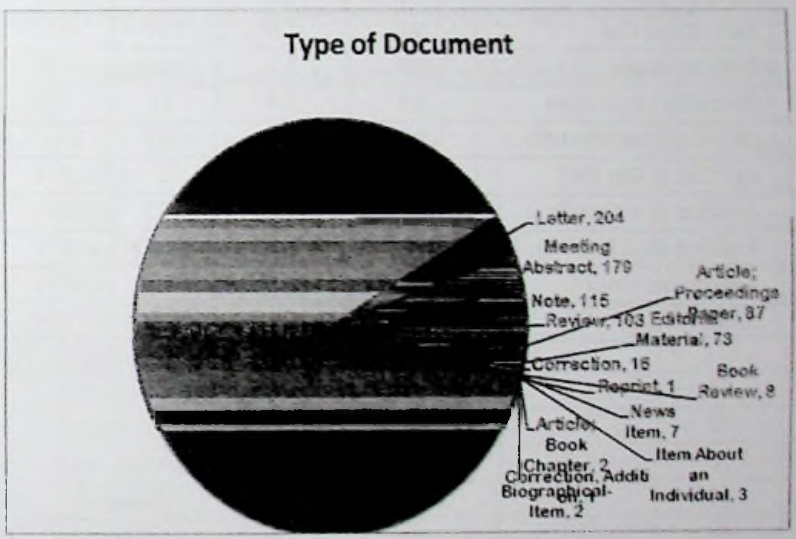


Figure -4.7

The data under study consists of 15 types of documents, and are given in table 4.6 and Figure 4.7. Articles from journal source occupy the first position with

5381 (87.0 %) records, 6633 TLCS and 45503 TGCS. It signifies that the journals are the major medium of scientific communication than any other form of publication. It confirms that Madurai region scientists/researchers publish research papers in journals like any other region / part. Materials such as letter, Meeting Abstract Note and Review have moderate priority and other types are least preferred.

Table 4.7: Institution wise document distribution (Top 20)

S. No	Institution	Record	Percent	TLCS	TGCS
1	Madurai Kamaraj Univ	3220	52.1	5344	29550
2	Thiagarajar Coll Engn	829	13.4	659	5111
3	Aravind Eye Hosp	355	5.7	292	4296
4	Madura Coll	194	3.1	177	554
5	Madurai Med Coll	151	2.4	38	1069
6	Anna Univ	130	2.1	34	729
7	Tamil Nadu Agr Univ	123	2.0	26	578
8	Amer Coll	117	1.9	151	834
9	Alagappa Univ	102	1.6	87	812
10	Postgrad Inst Ophthalmol	95	1.5	106	1052
11	Govt Arts Coll	91	1.5	41	358
12	Lady Doak Coll	91	1.5	104	932
13	Univ Madras	90	1.5	126	728
14	Bharathidasan Univ	88	1.4	22	325
15	Univ Calif San Francisco	80	1.3	207	1415
16	Agr Coll & Res Inst	77	1.2	2	244
17	Aravind Eye Care Syst	77	1.2	135	894
18	Aravind Med Res Fdn	72	1.2	70	879
19	Kyung Hee Univ	70	1.1	30	251
20	NMSSVN Coll	70	1.1	28	194

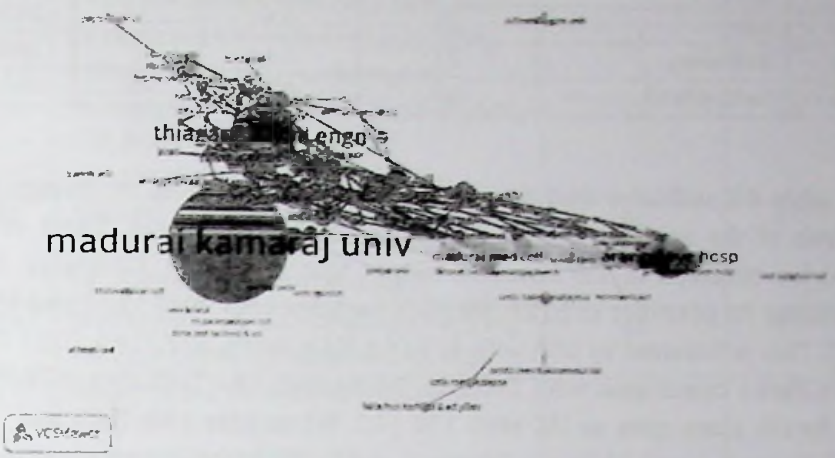


Figure 4.8

There are 1501 institutions involved in research output pertaining to Madurai region and Table 4.7 and Figure 4.8 ranks top 20 institutions based on the publications. Madurai Kamaraj University stands first in the list with 3220 publications (52.1 %, TLCS 5344, TGCS 29550) followed by Thiagarajar College of Engineering with 829 publications (13.4 %, TLCS 659, TGCS 5111).

Table 4.8: Countries involved in the publications (Top 20)

S. No	Country	Record	Percent	TLCS	TGCS
1	India	6121	99.0	7017	49861
2	USA	418	6.8	527	7327
3	South Korea	190	3.1	122	1470
4	UK	130	2.1	166	2482
5	Taiwan	98	1.6	154	1178
6	Japan	97	1.6	126	1057
7	Malaysia	67	1.1	53	444
8	Germany	59	1.0	69	1594
9	Saudi Arabia	51	0.8	69	355
10	Canada	45	0.7	26	756
11	France	45	0.7	88	610
12	Spain	44	0.7	178	812
13	Norway	42	0.7	76	170
14	Singapore	35	0.6	15	436
15	Peoples R China	32	0.5	17	203
16	Sri Lanka	32	0.5	12	110

17	Australia	25	0.4	9	502
18	Italy	23	0.4	15	259
19	Unknown	22	0.4	7	102
20	Switzerland	20	0.3	45	464

The table 4.8 indicates that the publishing status according to country wise analysis of the research output pertaining to Madurai region. There are 81 countries involved in the research output that is studied. Obviously, India dominates its presence in 6121 (99.00 %) articles with 7017 TLCS and 49861 TGCS. This is followed by USA with 418 (6.8 %) records, 527 TLCS; 7327 TGCS. South Korea comes next with 190 (3.1 %) records, 122 TLCS and 1470 TGCS. The fourth place goes to UK with 130 (2.1 %) records 166 TLCS and 2482 TGCS. Taiwan, Japan, Malaysia, Germany, and Saudi Arabia have their presence with above 50 but less than 100 records.

S. No	Author / Year / Journal	Record	Percent
1	North act, 1968, acta crystall a-crys, va 24, p351, doi 10.1107/s0567739468000707	175	2.8
2	Lowry oh, 1951, j biol chem, v193, p265	144	2.3
3	LAEMMLI UK, 1970, NATURE, V227, P680, DOI 10.1038/227680a0	117	1.9
4	Spek AL, 2003, J APPL CRYSTALLOGR, V36, P7, DOI 10.1107/S0021889802022112	106	1.7
5	Sheldrick GM, 2008, ACTA CRYSTALLOGR A, V64, P112, DOI 10.1107/S0108767307043930	98	1.6
6	Sheldrick G. M., 1997, SHELXL97	87	1.4
7	Sheldrick gm, 1990, acta crystallogr a, v46, p467, doi 10.1107/s0108767390000277	75	1.2
8	Spek A. L., 1999, PLATON WINDOWS	75	1.2
9	Sambrook J., 1989, MOL CLONING LAB MANU	72	1.2
10	Harms K, 1995, XCAD4	70	1.1
11	Spek AL, 2009, ACTA CRYSTALLOGR D, V65, P148, DOI 10.1107/S090744490804362X	67	1.1
12	BRADFORD MM, 1976, ANAL BIOCHEM,	62	1.0

	V72, P248, DOI 10.1006/abio.1976.9999		
13	CREMER D, 1975, J AM CHEM SOC, V97, P1354, DOI 10.1021/ja00839a011	61	1.0
14	Farrugia L. J., 1997, J APPL CRYSTALLOGR, V30, P565, DOI DOI 10.1107/S0021889897003117	53	0.9
15	Allen FH, 2002, ACTA CRYSTALLOGR B, V58, P380, DOI 10.1107/S0108768102003890	44	0.7
16	MONKHORST HJ, 1976, PHYS REV B, V13, P5188, DOI 10.1103/physrevb.13.5188	43	0.7
17	BERNSTEIN J, 1995, ANGEW CHEM INT EDIT, V34, P1555, DOI 10.1002/anie.199515551	41	0.7
18	Harms K., 1996, XCAD4	41	0.7
19	Jeffrey G. A., 1991, HYDROGEN BONDING BIO	41	0.7
20	MURASHIGE T, 1962, PHYSIOL PLANTARUM, V15, P473, DOI 10.1111/j.1399-3054.1962.tb08052.x	40	0.6

Table 4.9: Cited reference wise document distribution (Top 20)

Figure 4.9

According to Table 4.9 and Figure 4.9, the most cited reference is "North Act, 1968, Acta Crystall A-Crys, Va 24, P351, Doi 10.1107/S0567739468000707" with 175 papers and 2.8 % of all papers covered in this study. Second and third

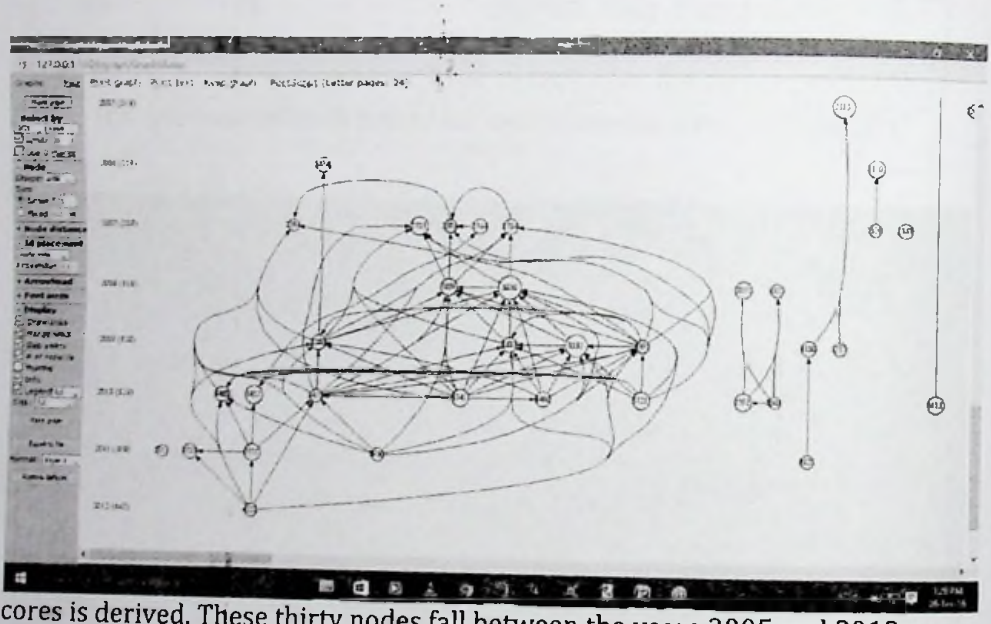
places are occupied by "Lowry Oh, 1951, J Biol Chem, V193, P265" and "Spek AL, 2003, J Appl Crystallogr, V36, P7, Doi 10.1107/S0021889802022112" respectively. Co-citation wise cited references of research analysis is given in the visual where a reference is cited at least a minimum of 20 times. There are 122095 cited reference in all in the 6182 records that we study.

Analysis of LCS Map

Local Citation Score map for the data, 6182 documents (nodes) is seen in Fig 4.10. The top publication (top 30) number (49) of links, and to have a clear graph a minimum of 16 local citation scores to maximum 37 local citation scores is derived. These thirty nodes fall between the years 2006 and 2012.

Analysis of GCS Map

Global Citation Score map for the data, 6182 documents (nodes) is seen in Fig 4.11. The top publication (top 30) number (273) of links, and to have a clear graph a minimum of 30 Global Citation Scores to maximum 383 Global Citation



scores is derived. These thirty nodes fall between the years 2005 and 2012.

Figure 4.10

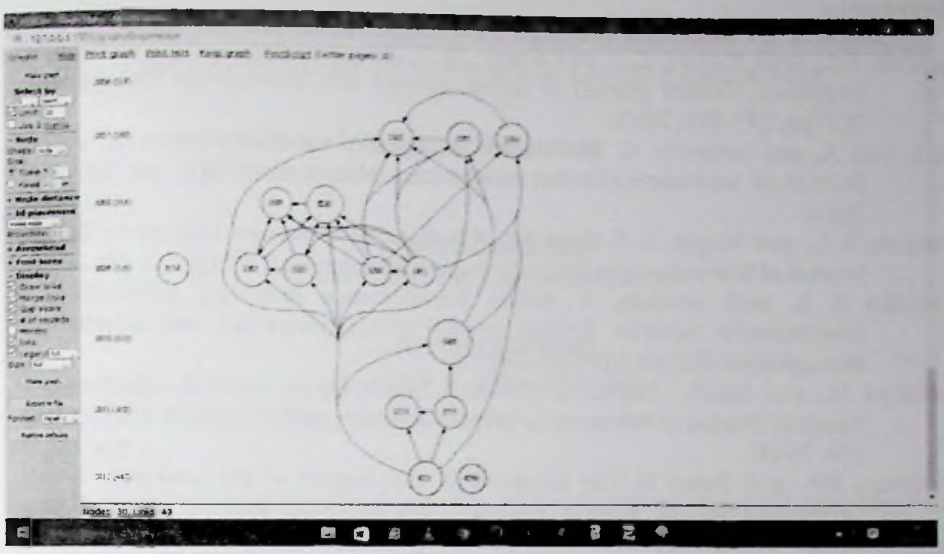


Figure 4.11

Conclusions

This paper has analyzed 6182 publications indexed in the WoS database during 1989-2016, totally 28 years of output of Madurai region; total number of contributing authors 8588; total number of journals 1501; frequently occurring words are 12040; 15 types of documents; 2 types of languages; 81 countries from various continents; 2517 institutions; 7074 Total Local Citation Scores; 50690 Total Global Citation Scores; and totally 122256 were cited reference of the whole sample records, the year of 2014 has highest number of publications 533(8.6 %) with 269 TLCS and 1479 TGCS values. It is observed that its relative growth rates have contracted gradually from 0.61 in the year 1990 to 0.09 in the year 2015. The whole study period sample mean relative growth rate is 0.3125. The most productive author is Perumal S with 193 papers (3.10%), TLCS 812, TGCS 2265, TLCR 758. The journal of "ACTA CRYSTALLOGRAPHICA SECTION E-STRUCTURE REPORTS ONLINE" has published the highest number of articles 247 (4.0 %); 320 TLCS; 880 TGCS; 338 TLCR. 'Journal articles' dominate the type of documents with 5381 (87.0 %) records, 6633 TLCS and 45503 TGCS. The most cited reference is "North Act, 1968, Acta Crystall A-Crys, Va 24, P351, Doi 10.1107/S0567739468000707" with 175 papers, 2.8 % of all papers covered in this study. Madurai stands last in the publication productivity among the four major cities of Tamil Nadu as per WoS database during 1989-2016.

Reference

Sangam, S. L., Arali, U., Patil, C. G., and Megeri, M. N. Scientometrics analysis of Genetics Literature. Collnet Journal of Scientometrics and Information Management, 7(2) pp. 173-190, 2013.

Li, J., Guo, X., and Jovanovic, A. Bibliometric analysis of nanosafety research. Collnet Journal of Scientometrics and Information Management, 8(2) pp. 437-455, 2014.

Sangam, S. L., and Mogali, S. S. Mapping of Indian Social Science Literature. Collnet Journal of Scientometrics and Information Management, 8(1) pp. 61-80, 2014.

Amudha S, S., and Sevukan, R. Indian Neuroscience Research, 1999-2013: A Scientometric Analysis. Collnet Journal of Scientometrics and Information Management, 8(2) pp.329-340, 2014.

Lakshmi M., and Raja.S. Leukemia Research Literature in India: A Scientometric Analysis. Journal of Advances in Library and Information Science, 4(2) pp.182-186, 2015.

Lichtman MA., and Oakes D. The productivity and impact of the Leukemia & Lymphoma Society Scholar Program: the apparent positive effect of peer review. Blood cells, molecules & diseases. 27(6) pp. 1020-7, 2001.

Nees Jan van Eck, and Ludo Waltman. VOSviewer: A Computer Program for Bibliometric Mapping. Erim Report Series Research In Management, pp.19, 2009.

Sheeba Jebaseeli Jasmine, Alex, D., and Pricilla Rani, P. Research potential of Madurai Kamaraj University – A Scientometric view International Journal of Educational Research and Technology. 2(2) pp. 62 – 66, 2011.

Padma, P., and Ramasamy, K. Scientometric Portrait of Dr.S.Perumal, Department of Chemistry, Madurai Kamaraj University, Madurai. Asian Journal of Library and Information. 5(3-4) pp. 48-62, 2013.

Baby, K., and Kumaravel, J.P.S. Bio-Bibliometrics Analysis of Literature Output of Prof. M. Lakshmanan in the Subject of Nonlinear Dynamics. Asia Pacific Journal of Library and Information Science. 2(2) pp. 02-10, 2012.

Mandhirasalam M. Research publication output of Thiagarajar College of engineering, Madurai: A Scientometric study. Indian Journal of Science. 21(74) pp. 490-498, 2015.

Srimurugan, A., and Nattar, S. Dr. K. Veluthambi: A Bibliometric study. IJISS. 2(1) pp. 23-30, 2008.

SAARC Citation Index: A Proposal for the Tool and Measurement of Scholarly Communication

R. Balasubramani
Bharathidasan University, Trichy, India,

R. Maheswaran
University of Peradeniya, Sri Lanka

S. Ketheeswaran
University of Jaffna, Sri Lanka

Abstract

In this paper we explore the feasibility and suitability of the SAARC Citation Index. SAARC Countries have seen an exponential growth of Scholarly Communication across all major disciplines. There is also large number of research journals to disseminate results of research carried out in SAARC Countries. This paper aims to briefly describe a future feasibility, the SAARC Citation Index, which is a based on Citation Database of SAARC Countries based on research journals. The SAARC Citation Index proposed plan to create citation database covers a whole range of disciplines, i.e., Science, Social Science, Humanities, Technologies, Medicine. This paper also identifies similar initiatives in the past, which was failed due to the absence of web technologies and web-based business models.

Keywords: SAARC Citation Index, Bibliometric Analysis,

Introduction

The process whereby the impact or "quality" of an article is assessed by counting the number of times other authors mention it in their work. Citation symbolizes association of ideas. Therefore, citation indexing is considered as one of the most important tools for tracing ideas across a multitude of disciplines and for evaluating R&D output of an individual, institution, country, or region. Many citation and bibliometric studies are based on the analyses of data extracted from science citation Index (SCI), Social Science Citation Index (SSCI) and Arts and Humanities Citation Index (A&HCI). These databases offered by ISI are no qualm very useful for the evaluation of research performance from an international perspective. At present, more than 20000 scholarly literature are published by the SAARC countries every year. Although, several International databases covering these journals, their visibility remains

quite bleak. Moreover, Every international database has its own selection criteria as well as limitations in terms of coverage. To overcome this limitation and to measure the impact of research activities in SAARC Countries, SAARC Citation Index should be implemented.

SAARC countries

SAARC is an organization of eight countries located in the South Asia and it stands for the South Asian Association for Regional Corporation. The Secretariat of this organization is located in the Kathmandu which is capital of Nepal. 3% of the area of the world is represented by SAARC countries. It is around 1.7 billion of the people and it is 21% of the world population. All six member countries share boarders with the big brother of the SAARC nations India. Only exception is Afghanistan. Late President of Bangladesh Ziaur Rahman first raised the necessity of regional and political and economic cooperation in the South Asia on the 2nd May 1980. Subsequently on the 8th of December 1985 first SAARC countries summit was held in Dhaka, Capital of Bangladesh. Initial members of the SAARC countries were India, Bangladesh, Pakistan, Bhutan, Nepal , Maldives and Sri Lanka. Later another country Afghanistan was awarded the full membership and there are several other countries were given observer memberships.

Review of literature

Negishi, M., Sun, Y., & Shigi, K. (2004) in their paper on Citation database for Japanese Papers: A new bibliometric tool for Japanese academic society described the importance for the need of Japan citation index for the assessment of research activities and policy making from a national perspective.

Giri, R., & Das, A. K. (2011) analyzed the need and various attributes of Indian Citation Index as a platform for measuring Indian research periodicals and also stated that it will help the policymakers and planners in India to reorient and restructure their policies and priorities.

Xinning Su et.al (2014) expounded the idea of designing Chinese Social Science Citation Indexing system, its features and application. They also elaborate that how the CSSCI data can be used in analyzing discipline features, exploring research hotspot and constructing academic network.

Sohyeong Kim et.al (2013) in their study on Korea Citation Index and Its Macro Bibliometrics found out that papers had the major reference in majority of the

disciplines and also impact factor indicates an increasing trend. Further, they also stated that NSE journals listed in both KCI and JCR, however, are not clear in terms of impact factor, but clear in terms of the numbers of papers

Carpenter, M. P., & Narin, F. (1981) in their study on the adequacy of the Science Citation Index (SCI) as an indicator of international scientific activity observed that SCI there still are significant differences between the SCI and other sources in national coverage of fields with a more dispersed literature, especially in the case of journals from countries with non-Roman alphabets and further SCI coverage of the Soviet literature appears incomplete, especially in the biological and medical sciences.

Objectives of SAARC citation index

- To ensure access to articles published in SAARC countries at global level.
- To reflect and represent true picture of the contribution of scholarly content of Subcontinent countries at the global level.
- To have an authentic tool/ground for effective, & rigorous evaluation of SAARC Countries scholarly works.

Need for SAARC citation index

Quantitative studies of science and technology is swiftly mounting and its growth is personally associated to a number of common tendencies in the global scholarly environment. Citation analysis involves counting the number of times an article is cited by other works to measure the impact of a publication or author. The caveat however, there is no single citation analysis tools that collects all publications and their cited references. SAARC Countries are contributing good amount of knowledge but there is no tool for evaluation and measurement of its knowledge. At international level few tools/databases are available but coverage of SAARC Countries knowledge contents particularly published in local national journals are negligible. Therefore, these tools/databases are not adequate to evaluate/analyze SAARC Countries knowledge contents. To resolve similar limitation, few of the countries, like China, Korea, Japan etc. have already brought out their own citation indexes. However, for the assessment of research activities for science policy making from a SAARC perspective, these international databases cannot be sufficient. Hence, we need a new own citation index covering SAARC journals with analyzing their impact and visibility.

Benefits of SAARC Citation Index

- Apparently endless numbers of data sources are making it increasingly difficult to find and utilize the specific, quality information that leads to breakthroughs. That's about to change with the availability of SAARC Citation Index as abstracts and citation database. This would enable more comprehensive result for discovery and R&D explorations.
- It would facilitate collaboration among researchers to find potential developers and share ideas for furtherance of their R&D interests and work.
- It would provide faster, easier, and tailored information particularly on indigenous applications and relevance that you need and the way you need it.
- A comprehensive research & evaluation tool to map SAARC literature.
- It would facilitate comprehensive scientometric and bibliometric studies on SAARC literature.
- It would help to measure & analyze individuals, institutional, regional, and national R&D output for strategic planning. It would be an authentic tool to generate complete and comprehensive analytic reports on the health of Indian R&D.
- It would help decision makers to arrive at some conclusive point to decide the superiority of competitor (s) for some awards, fellowships, recruitments etc.
- Low quality stigma of SAARC publications as propagated by foreign publishers on account of various grounds may start vanishing.
- Impact Factor (IF) of SAARC journals will be close to realistic value.
- It would help to maximize ROI on R&D information/knowledge resources through scrutiny based collection management.
- Enhances the image & visibility of Indian publications and publishers

Content Selection Criteria for SAARC Citation Index

SAARC Citation Index should be developed as a scholarly community to map the knowledge published in SAARC Countries based journals/periodicals etc. The following criteria's should be adopted by the SAARC Citation Index to include journals/periodicals.

- Indian Journals
- Editorial board consisting of international repute experts

- Coverage – all disciplines (including Science, Engineering, Medical, Social Science, Arts and Humanities)
- Journals with ISSN
- English language documents, at least it carries an English language title and abstract of all research articles. The full text article may be in any SAARC Country own language.
- Journal with minimum two issues per year.
- Journals with ISSN English language documents, at least it carries an English language title and abstract of all research articles. The full text article may be in any language Overall quality should be high Documents or journal with minimum one issue per year

Document types:

The following types of document should not cover SAARC Citation Index

- Advertisement
- Abstracts of dissertations or articles
- Bibliography only
- Digests
- Book reviews
- News and views
- Announcements

Conclusions

SAARC Citation Index will be a knowledge base for the scholarly content of SAARC countries and also serve as the most authentic tool to map and evaluate the research output of SAARC countries. SAARC Citation Index is important initiative in the world of SAARC Countries research and development. It will help to increase the visibility of SAARC Research and knowledge products to global research communities and collaborative networks which will attract more publications, citations to SAARC Countries research outputs. SAARC Citations Index has to be developed as a user friendly database with reasonable response time. These analyses will be certainly helpful for the policymakers and planners to reorient and restructure their policies and priorities.

References

Chand, P. (2011). Indian Citation Index (ICI): a dream of Indian research community comes true. Library Herald, 49(1), 34-47.

Giri, R., & Das, A. K. (2011). Indian Citation Index: a new web platform for measuring performance of Indian research periodicals. Library Hi Tech News, 28(3), 33-35.

Negishi, M., Sun, Y., & Shigi, K. (2004). Citation database for Japanese Papers: A new bibliometric tool for Japanese academic society. Scientometrics, 60(3), 333-351.

Bharti Yadav, Meera Yadav. 2014. Resources, facilities and services of the Indian citation index (ICI). Library Hi Tech News 31:4,

Xinning Su, Sanhong Deng, Si Shen. 2014. The design and application value of the Chinese Social Science Citation Index.

Sohyeong Kim, Taejin Choi, Aeran Yoon, Sung-Soo Seol. 2013. Korea Citation Index and Its Macro Bibliometrics. Asian Journal

G. Mahesh, N. K. Wadhwa. 2012. Web of Science based ranking of Indian library and information science journals. Collnet

Carpenter, M. P., & Narin, F. (1981). The adequacy of the Science Citation Index (SCI) as an indicator of international scientific activity. Journal of the American Society for Information Science, 32(6), 430-439.

http://www.indiancitationindex.com/publisher.aspx

http://researchguides.uic.edu/c.php?g=252299&p=1683205

Scientometric Study of the Physics Professors in the Sri Lankan Universities

Thuraiyappah Pratheepan,
Uva Wellassa University of Sri Lanka
Email: pratheepan12345@gmail.com

W. A. Weerasooriya
Department of Library and Information Science
University of Kelaniya
Email: sooria29@yahoo.com

Abstract

In keeping with the requirements of globalization, meaningful steps are being contemplated to raise the standard of academics working in the Sri Lankan universities. To cope with the modern challenges an academician should be an outstanding researcher. So, it is the bounden duty of all universities of Sri Lanka to encourage potential researchers by evaluating their performance using recognized yardstick. Scientometrics become key drivers in evaluating research performance of scientists. The objective of this study is to provide an integrated scientometric profile of the scholarly productivity of professors working at the department of physics in the Sri Lankan universities. The analysis covered the entire professors of physics working in the university system as on August, 2015. Twenty eight professors from seven universities of Sri Lanka were included. For each professor, custom search was performed using Publish or Perish *(PoP)* open source software. The scientometric database outputs of the number of publications (N_p), citations (N_c) and h-index were tabulated. Overall, mean h-index was 7 [95% confidence interval (CI),4.82 – 9.18]. For number of publication, the range was 2-135, mean was 32.86 (95% CI, 21-44.54). For citation, the range was 00 -1832, mean was 401.5 (95% CI, 182 – 620.64). In terms of collaboration profile, the professors show preference for "mega – authored" papers. There are 920 papers written by 28 professors. Of these 73.26% of papers are collaborated with three or more authors called "mega authored" papers. Only 8.01% of papers have been written by single authors. The values of Co-authorship Index (CAI) for mega – authored papers of professors (54%) are higher than the average level (CAI>100) of 28 professors. For comparative purpose, the results are benchmarked against the findings from seven affiliated universities of professors.

Keywords: *Scientometrics, Sri Lankan universities, Citation analysis, h-index, Co - authorship Index.*

Introduction

Scientometric analysis has become established as a widely used method for the assessment of the scientific output of researchers. There is an increasing interest in the evaluation of researchers using some important parameters, particularly research output and citations received for their publications. It was observed that Scientometrics indicators have become an important tool to monitor the progress of research groups in recent decades (Fakhree, and Jouyban 2011). The analysis of publication output, citation impact and co-authorship has a long-standing tradition in the field of information science, and these three indicators have been employed in many disciplines to measure research success in terms of output. Academic fields differ in publication performances at many levels. In general, the Sri Lanka's physics research base is performing strongly. The contribution of research output of physicists towards the science and technological development of a country has progressed. Universities are the most predominant contributors in the R&D activity in Sri Lanka. Senaratne,(2015) noted that technology has become the prime mover of development, it needs to be emphasized that university academics must continue and enhance their cutting-edge research relating to high priority national concerns and issues. Rørstad and Aksnes (2015) found that professors are the most prolific personnel while people in lower academic positions tend to publish fewer publications. It is well accepted fact that there are large differences in the publication output between academics. Comparatively, small group of academics contributes to the majority of the publications in the academic institutions. According to Wickremasinghe (2008), measuring research output of the scientific community is important because it gives an insight to the research and development (R&D) of a particular country in a filed.

The present study focuses on the evaluation of the publication output of physics professors working in the Sri Lankan universities as on Auguest,2015, through application of scientometric indicators and techniques. There are number of related studies have been made by Wickremasinghe (2008), Mehbuba and Rousseau (2010), Pratheepan (2011) Gupta (2012), Navaneethakrishnan (2014), Pratheepan &Weerasooriya (2015).

Despite the studies indicated above, no studies have systematically analyzed the publication output of research groups working in Sri Lanka except the study

conducted by Pratheepan & Weerasooriya (2015). This study fills this gap and analyzing the citation impact, authorship and productivity of physics professors working in the Sri Lankan universities.

This paper is also trying to explore the answers for previous study conducted by Pratheepan and Weerasooriya (2015). There was a question in their study that is there any particular factors influencing in receiving citation/h-index for publications of professors? Two answer might be that professors where did their PhD. in terms of country and types of collaboration preferred by scientists.

This study does not include the informal publications and others that are not covered by Google scholar. It should not be forgotten that the total output and citations/h-index counted in this study based on the Google Scholar has to be taken as a reliable estimate of output, rather than precise values.

Objectives

This study attempts to:

- assess the efficiency and effectiveness of professors working at the department of physics in the Sri Lankan universities using scientometric indicators.
- identify the collaboration profile of physics professors on the basis of Co-Authorship Index (CAI).
- explore the determinant of research output and impact in terms of country of PhD.
- investigate the influence of collaborative papers of professors working at the department of physics in the university system of Sri Lanka.
- identify the top 10 highly cited papers written by physics professors of Sri Lankan universities.

Methodology

This research involved collecting and analyzing publications, citations, h-indices and types of collaborations of professors working at the department of physics in the Sri Lankan universities. This covers a wide range of publications spanning 1980-2014. Sample of this study covers all professors (associate professors, professors and senior professors) of physics working at the Sri Lankan universities as on January 2015; university websites were individually accessed for listing of professors working in physics departments. If university websites were inaccurately reflected current active professors and their names, the data of

this study, would be consequently inaccurate to a certain degree. In this connection, study only considers the universities that have physics professors. Twenty eight professors from seven universities of Sri Lanka {*University of Colombo (CBO), University of Kelaniya (KLN), Open University of Sri Lanka (OUSL), University of Peradeniya (PDN), University of Sri Jayewardenepura (SJP), University of Ruhuna (RUH), and University of Jaffna (UJA)*} were included for analysis.

The data for this study were collected from the Google Scholar using Publish or Perish open source software for each professors separately Harzing, (2007). Searching the names of the professors with single initial was a problem because of homonyms among names. To eliminate ambiguities, maximum initials for the name of professors as available in the official websites of the universities were used as guide. To complete the entire data collection process for a professor took about 10 minutes in most cases. However, authors of papers required a bit more time for professors with namesakes.

The publication output and impact of professors have been evaluated individually on the basis of the following indicators; 1.Number of papers (N_p) , 2.Number of citations ($N_{c)}$, 3.Citation per paper N_{pp}), 4.h-index, 5.Co Authorship Index (CAI), 6.Publication Efficiency Index (PEI).

Further, a descriptive statistical analysis was performed to calculate the mean, median for the N_p, N_c and h-index of individual physics professors. A numeric ranking was performed of all included h-indices and with stratification by academic position (associate professors *vs.* professors vs. senior professors).

Results and Discussion

H-index based ranking & quantitative indicators

The scientometric indicators are the valid and useful tools in the assessment of research performance. Firstly, study focus on the counts of publications published by the 28 professors; citations, citation per paper received for their publications; and ranking of professors on the basis of h-index is given in the Table 1. The *h-index* is defined as follows: "A scientist has index *h* if h of his/her *Np* papers have at least h citations each, and the other *(Np – h)* papers have no more than h citations each" (Hirsch 2005). For example, the highest *h* among physics professors is 22. Thus, this professor has written 22 papers with ≥22 citations each. Of the 28 academics working in the physics department 18% were associate professors; 50% were full professors and 32% were senior professors. There were no women academics in the categories of senior professor and professor. Only 02 were working as associate professors in the physics

department of Sri Lankan universities. According to ranking list, senior professor K. Premaratne associated with *University of Peradeniya* is ranked first among the professors of physics in the Sri Lankan universities on the basis of publications, citations and h-index followed by senior professors U.Sonnadara associated with University of Colombo, and professor VPS. Perera associated with Open University of Sri Lanka. According to citation per paper professor P.Ravirajan is found to be the predominant scientist among the physics professors with 68.16 citations per paper. He is associated with University of Jaffna. Among the professors only one professor had no citation. The h-index range was 0-22, Overall, mean h-index was 7 [95% confidence interval (CI),4.82 – 9.18]. For number of publication, the range was 2-135, mean was 32.86 (95% CI, 21-44.54). For citation, the range was 00 -1832, mean was 401.5 (95% CI, 182 – 620.64). Table 2 lists the number of publication output, citations and h-index for each group. Senior professors had statistically higher mean h-index of 9 (95% CI, (4.6-14.29). H-index for associate professors was markedly lower than for professors

Table 1.Metrics profile & ranking of professors based on h-indices

Rank	Gender	Position	Professors	University	h-index	Articles	Citations	Cites_Paper
1	Male	Senior Professor	Premaratne,K	PDN	22	135	1832	13.57
2	Male	Senior Professor	Sonnadara,U	CBO	21	81	1791	22.11
3	Male	Professor	Perera,VPS	OUSL	19	93	1685	18.12
4	Male	Senior Professor	Siripala,WP	KLN	15	89	1063	11.94
5	Male	Professor	Kandasamy,K	UJA	14	48	510	10.63
6	Male	Professor	Ravirajan,P	UJA	10	25	1704	68.16
6	Male	Professor	Jayakody,JRP	KLN	10	21	444	21.14
7	Male	Senior Professor	Jayasuriya,KD	KLN	8	41	398	9.71
8	Male	Professor	Sumathipala,HH	KLN	7	13	101	7.7
8	Male	Professor	Wijesundera,RP	KLN	7	49	263	5.37
9	Male	Professor	Perera,PAA	KLN	6	21	163	7.76
9	Male	Professor	Hewageegana,Prabath	KLN	6	22	171	7.77
10	Male	Senior Professor	Tantrigoda,DA	SJP	5	32	59	1.84
10	Male	Senior Professor	Kumaravadivel,R	UJA	5	8	179	22.5
10	Male	Associate Professor	Daya,DDNB	CBO	5	13	157	12.08
10	Male	Professor	Jayanetti,JKDS	CBO	5	28	160	5.71
11	Male	Professor	Kalinganudali,SRD	KLN	4	28	29	1.04
11	Male	Professor	Fernando,GWAR	OUSL	4	54	92	1.7
11	Male	Senior Professor	Ariyaratne,TR	CBO	4	36	117	3.25
11	Male	Senior Professor	Kunaratnam,K	UJA	4	11	76	6.91
11	Male	Associate Professor	Punyasena,MA	KLN	4	10	84	8.4
12	Female	Associate Professor	Wijewardena,KAIL	CBO	3	25	18	0.72
13	Male	Professor	Jayaratne,Chandana	CBO	2	2	51	25.5
13	Male	Professor	Rajendra,JCN	OUSL	2	9	33	3.67
13	Female	Associate Professor	Abayaratne,Chula	SJP	2	7	22	3.14
14	Male	Senior Professor	Dharmaratne,WGD	RUH	1	2	25	12.1
14	Male	Professor	Yapa,KKAS	RUH	1	8	15	2.25
15	Male	Associate Professor	Rosa,SRD	CBO	0	9	0	0

CBO: University of Colombo, *KLN*: University of Kelaniya ,*OUSL* Open University of Sri Lanka
PDN: University of Pemdeniya, *SJP* University of Sri Jayewardenepura,*RUH* University of Ruhuna,*UJA* University of Jaffna

(mean, 2.8 vs 6.9). There was a marked difference in distributions between associate professors and senior professors (mean,2.8 vs 9). In term of publications and citations, senior professors had greater number of publications and citations than other professors category, differences were not statistically significant between professors and senior professors (mean, 30.7 vs 48.33 and 387.21 vs 615.55 respectively). There is a high degree of correlation between the three metrics. Principal component analysis of h-index, number of output and citations yielded a single a highly related domain.

Collaboration Profile

The complex and interdisciplinary nature of science encourages scholars and scientists to cooperate with one another to gain more advantages through collaboration (Gazni and Didegah, 2011).

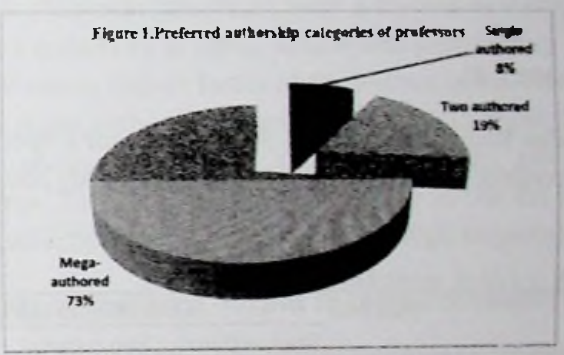
The present study aims to examine the association between the number of citations and the collaboration category involved in the publications of professors of physics working in the Sri Lankan universities. Different categories of collaboration considered in this study consist of three types such as no collaboration, collaboration between two authors and collaboration between three and more authors called mega collaboration. According to Wagner-Doebler (2001), at the beginning of the 20th century, co-authorships accounted for less than 10% of all publications, while at the end of the 20th century, this percentage had gone up to account for over 50% of all publications.

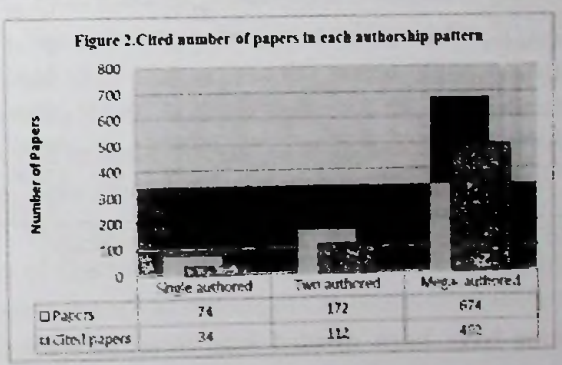
Table 2.Distribution of publication metrics by position

Position	N	(%)	Mean	(95 % CI)	Median	(Range)
Associate Professor	5	(18)				
h-index			2.8	(1.29-4.31)	3	(0-5)
Npubs			12.8	(7.19-18.41)	10	(7-25)
N Cites			56.2	(5.51-106.89)	22	(0-157)
Professor	14	(50)				
h-index			6.9	(4.42-9.44)	6	(1-19)
Npubs			30.07	(17.96-42.18)	23.5	(2-93)
N Cites			387.21	(97.76-676.67)	161.5	(15-1,704)
Senior Professor	9	(32)				
h-index			9	(4.6-14.29)	5	(1-22)
Npubs			48.33	(20.89-75.77)	36	(2-135)
N Cites			615.55	(153.7 - 1077.41)	179	(25-1,832)

CI confidence interval.

Generally speaking, research collaboration enhances the quality of research, which leads papers with more authors to be cited more often (Katz and Martin 1997). It is characterized by the proportion of mega authored papers accelerating steadily. In this analysis Co – authorship Index will used to describe the co authorship characteristics of professors. Figure 1 shows the percentage of professors involved in each types of collaboration or co authorship pattern. Total research output of 28 professors is 920. Of these 73% of papers are written by 03 or more authors. Only 8% of papers are written by single author. Overall, 92% of papers are collaborative papers. So, professors of physics are mainly focusing to publish their article in collaboration with other. There was a question that is there any influence by collaboration for articles in receiving citation? Figure 2 has given answer for that question. 674 papers were mega authored. Of these, 73% of papers have been cited at least one time. Only 27% of papers have not been cited. There are 172 papers are written by two authors. Among them, 65% have been cited; while; only 45% were cited in the category of single authored papers. So, this might be an answer for the question that collaboration has been influencing in receiving citations.





Co-authorship Characteristics

Co-authorship Index (CAI) has been suggested by Garg & Padhi, (2001), and firstly elaborated by Schubert & Braun, (1986). It is obtained by calculating the proportion of single, two, and mega-authored papers of scientist. Co-authorship Index (CAI) can be expressed mathematically as follows:

$$CAI = \{(N_{ij} / N_{i0}) / (N_{0j} / N_{00})\} x100$$

where:

N_{jj} : number of publications co-authored by j authors in the university during the period in a field.

N_{i0} : total research output of professor working in the university during the period.

N_{0j} : number of publications co-authored by all authors from all universities during the period,

N_{00} : total publications published by all authors from all universities during the period.

j = 1, 2, and (>3).

CAI=100 indicates that the number of publications for a specific type authorship corresponds precisely to the average of all authors. CAI>100 reflects higher than the average, and CAI<100 indicates lower than the average.

Table 3.Profile of CAI of universities

Indicators	Co-Authorship Index (CAI)		
University	Single authored	Two authored	Mega- authored
University of Colombo	83.31	90.99	104.13
University of Kelaniya	71.89	89.15	105.86
Open University of Sri Lanka	63.76	96.00	105.00
University of Peradeniya	55.26	95.09	106.17
University of Ruhuna	372.97	160.47	54.60
University of Sri Jayewardenepura	446.29	274.30	17.50
University of Jaffna	175.68	87.21	94.96

Here, publications have been divided into three categories according to the number of authors, namely single authored papers, two authored papers, and mega-authored papers. Papers completed by three or more authors are called as

mega authored papers. Table 3 indicates the profiles of CAI for the compared universities. As shown in Table 3, for three Universities (University of Sri Jayewardenepura, University of Ruhuna , and University of Jaffna) the value of CAI for the single authored papers are all above 100, higher than the average number of the seven universities. On the other hand, University of Colombo, University of Kelaniya, Open university of Sri Lanka and University of Peradeniya the value for CAI for the mega authored papers are all above 100, higher than the average number of the seven university professors. In other words, they are more likely to work in big groups. With regard to professors of Sri Jayewardenepura prefer "single authored papers" and "Two authored papers".

Top ten highly cited papers

To get better understanding of how articles are cited, and in particularly the high impact articles. Table 4 shows the top ten highly cited articles among 920 articles. This table includes rank, title of the article, author(s), citation count, name of the source, impact factor of the journal. Top the list is the article "Hybrid Polymer/Zinc Oxide Photovoltaic Devices with Vertically Oriented ZnO Nanorods and an Amphiphilic Molecular Interface Layer" authored by P Ravirajan et al. who was associated with university of Jaffna; Article was published in J. Phys. Chem. B , has been cited 480 times; impact factor of the journal is 3.3. No article ranked in the list written by single author. It is a good indication to show the importance of collaboration in receiving citation. All these highly cited papers were collaborative papers. There are four article ranked in the list are written by P Ravirajan. Almost all articles were published in the high impact journals.

The determinants of research output in terms of country of PhD.

Table 5 shows that determinants of publication output of professors on the basis of country of PhD. The physics professors working in the Sri Lankan universities have been completed their PhD across the world. Here, countries divided in to four continents such as North America, Europe & UK, Australia and Asia. Sri Lanka has not been included in these categories. High percentage of professors did their PhD.in North American Universities; followed by Europe and Sri Lanka. Only three professors have been completed their PhD in Sri Lankan universities. 02 were in university of Colombo, one were in the University of Peradeniya. In order to evaluate the performance of professors in terms of country of PhD; there are 04 indicator were used.

Table 4. Top ten highly cited articles by physics professors of the Sri Lankan universities

Rank	Article	C_N	Author (S)	Journal	IF
1	Hybrid Polymer/Zinc Oxide Photovoltaic Devices with Vertically Oriented ZnO Nanorods and an Amphiphilic Molecular Interface Layer	480	P Ravirajan et al.	*J. Phys. Chem. B*	3.3
2	The characterization of x-ray photocathodes in the 0.1–10-keV photon energy region	381	K. Premaratne et al.	*J. Appl. Phys.*	2.18
3	Proton and pion production relative to the reaction plane in Au + Au collisions at 11A GeV/c	344	U Sonnadara et al.	*Physical Review C*	3.73
4	A Cu2O/TiO2 heterojunction thin film cathode for photoelectrocatalysis	288	W Siripala et al.	*Solar Energy Materials and Solar Cells*	5.33
5	Hybrid polymer–metal oxide thin films for photovoltaic applications	286	P Ravirajan et al.	*Journal of Materials Chemistry*	6.62
6	An efficient dye-sensitized photoelectrochemical solar cell made from oxides of tin and zinc	256	VPS Perera et al.	*Chemical Communications*	6.83
7	Hybrid polymer/metal oxide solar cells based on ZnO columnar structures	239	P Ravirajan et al.	*Journal of Materials Chemistry*	6.62
8	A solid-state photovoltaic cell sensitized with a ruthenium bipyridyl complex	231	V.P Sustra Perera et al.	*Journal of Physics D: Applied Physics*	2.72
9	Observation of Anisotropic Event Shapes and Transverse Flow in Ultrarelativistic Au + Au Collisions	229	U Sonnadara et al.	*Physical Review Letters*	7.51
10	Factors limiting the efficiency of molecular photovoltaic devices	180	P Ravirajan et al.	*Physical Review B*	3.73

C_N : Number of Citations, IF : Impact Factor

Publication Efficiency Index (PEI) is one most important indicator. It indicates whether the impact of publications in a given field is commensurate with the publication efforts devoted to it. The value PEI>1 for a country indicates that the impact of publications exceeds the research efforts devoted to it for that particular country. and vice versa. Mathematically, it can be defined as follows:

$$PEI = \frac{TNCi/TNCt}{TNPi/TNPt}$$

where,

TNCi : total citations of the country i for a given field,
TNCt : total citations of all countries for a given field,
TNPi: total publications of the country i for a given field,
TNPt: total publications of all countries for a given field.

Table 5 presents the corresponding values of PEI on the compared 04 continents and a country. Table shows that the value of PEI for Europe, Australia and Asia are all less than 1. Analysis of PEI suggests that the impact of publications of professors in relation with those three countries are not commensurable to their research effort, On the contrary, in the case North America and Sri Lanka, the values of PEI are all greater than 1. It is worth to note that the values of PEI for Sri Lankan products are higher among the 05. That is, Sri Lanka has achieved most remarkable impact of publication when compared to research effort devoted

Table 5.The determinants of publication output in terms of country of PhD.

No	Country/continents	Professors	PEI	Mean NP	Mean NC	Mean h-index
1	Sri Lanka	3	1.34	39.6	647.6	10
2	North America	11	1.09	39.18	522.3	8
3	Europe & UK	10	0.92	25.3	285	5
4	Australia	2	0.51	33	208	5
5	Asia	2	0.46	25.5	144	4

Np Number of Publications, Nc Number of citation
PEI Publication Efficiency Index

amongst the professors as product of different countries.

Conclusions and Recommendations

There are several internationally renowned physics professors with an impressive research profile, i.e. H-Index ranging from 10 to 22. The study has identified them with great dedication and passionate commitment amid manifold constraints. Many of them have developed strategic academic partnerships with world class universities in many parts of the world, improving the global visibility of the Sri Lankan universities. In addition, there are promising post-docs with an impressive research profile of international stature. They need to be recognized and rewarded. Their creative energies and relentless passion for research could be harnessed through appropriate programmes to establish high profile research fora in order to enhance the research and intellectual atmosphere in Sri Lankan universities (Senaratne, 2015).

In the 21st century, universities, as providers of intellectual capital, crucibles of R&D, fountainheads of innovation and seedbed of new enterprises, have to play a crucial role in transforming Sri Lanka into a knowledge-based economy. As they account for around 60% of the R&D personnel in the country, it is of paramount importance that a conducive environment for research and innovation is created and sustained in the universities so that they could contribute effectively towards

the above goal. In this connection, several factors including right institutional leadership and policies, increased funding for research, strengthening research capabilities and analytical facilities, introduction of research-friendly rules and regulations, and forging strategic partnership with industry and reputed foreign universities assume prime importance.

Results of such studies may be very useful in decision making in research administration and planning, in collection development and use in libraries. These results further enable policy makers in different organisations and funding agencies such as National Science Foundation, National Research Council etc. to evaluate their decisions on the awarding of grants to individuals and institutions.

References

Fakhree, M., & Jouyban, A. (2011) Scientometric analysis of the major Iranian medical universities. Scientometrics, 87 (1): 205-220.

Garg, K. C., Padhi, P. (2001), A study of collaboration in laser science and technology, Scientometrics, 50 (2) : 415–427.

Gazni,A., & Didegah, F.(2011). Investigating different types of research collaboration and citation impact: a case study of Harvard University's publications. Scientometrics, 87:251–265.

Gupta,B.(2012) Sri Lanka S &T output during 2001- 2010: A scientometric assessment. Malaysian Journal of Library & Information Science, 17(3):49-65.

Harzing,A.W.(2007). Publish or Perish, available from hhttp://www.harzing.com/pop.htm.

Hirsch, J.E. (2005) An index to quantify an individual's scientific research output. Proceedings of the National Academy of Science USA 102: 16569–16572

Katz, J. S., & Martin, B. R. (1997). What is research collaboration? Research Policy, 26(1) :1–18.

Mehbuba, D.,& Rousseau, R. (2010) Scientific research in the Indian subcontinent: selected trends and indicators 1973-2007 comparing Bangladesh, Pakistan and Sri Lanka with India, the local giant. Scientometrics, 84 (2): 403-420.

Navaneethakrishnan, S.,(2014), Authorship patterns and degree of collaboration of Sri Lankan scientific publications in Social sciences and Humanities – a picture from SCOPUS, Retrieved on December,2015 from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2966&context=libphilprac

Pratheepan, T. (2011) Research Productivity of Sri Lankan Universities during 1999-2010 based on the ISI Web of Science database: a Scientometric study. Proceeding of the University Librarians Association Sri Lanka: 288 – 295.

Pratheepan,T.,& W. A. Weerasooriya,W.A., (2015) The publication output and impact of various faculties in Sri Lankan universities: a Scientometrics assessment and policy implications. Journal of the University Librarians Association of Sri Lanka 19 (1): 54-70.

Ranjith Senaratne, R.,(2015) Creating vibrant research culture and rich intellectual ambience in SL universities, Retrieved on November,2015 from http://www.island.lk/index.php?page_cat=article-details&page=article-details&code_title=121146

Rørstad,K., & Aksnes,D.W.(2015) Publication rate expressed by age, gender and academicposition – A large-scale analysis of Norwegian academic staff. Journal of Informetrics, 9 : 317–333.

Schubert, A., Braun, T. (1986), Relative indicators and relational charts for comparative assessment of publication output and citation impact, Scientometrics, 9 : 281–291.

Wagner-Doebler, R. (2001). Continuity and discontinuity of collaboration behaviour since 1800 from a bibliometric point of view. Scientometrics, 52 :503–517.

Wickremasinghe,S.I., (2008).Evaluating research productivity: a case study of the rice scientists in India and Sri Lanka. Journal of the National Science Foundation of Sri Lanka,36(1):59-68.

Changing Role of Librarianship Context of Change Management

P. Venkateshwar Rao
Univ. College of science
Osmania University
Email: venkatesh9pitla@yahoo.com

B. Kumar
Univ. College of engineering
Osmania University
Email: boyakumar123@yahoo.com

Abstract

The role of the Librarians changes their identity, like Cybrarians, Information Processors, Information Consultants, etc. To cope with the rapid changes of the technologies and to control the ephemeral rate of information generation, Librarians should have to equip themselves as per the requirements of the electronic / digital information society. Further the powerful features of the World Wide Web has revolutionized the way people access information, and has opened up new possibilities in areas such as digital libraries, virtual libraries and scientific information retrieval & dissemination. Not only the world is becoming interconnected but also the use of new technologies has changed the fundamental roles, paradigms, and organizational culture of libraries and librarianship.

In order to survive and meet the needs of potential customers, traditional libraries should be transformed into hybrid libraries focused on providing information collected not only in books but also in all available electronic/digital sources.

This paper explains the concept of change and change management. It examines how change management in Librarianship, libraries and in Digital Libraries; merits and demerits; perspective and why library staff resist change?, highlights various leadership competencies needed to manage change in libraries, as well as underlines a few challenges and opportunities in the context of change management. Finally conclude that every library needs to change with time.

Keywords: *Change management in libraries, Librarianship competencies, Generational change in librarianship, Nature of change, Motivation and change.*

Introduction

Information age changed today's librarianship, where information plays a very important role in creating wealth, power and technological innovation. This technology development affected every area of library operations. The ICT altered the information needs of the user community; hence the competitive advantage is shifting from traditional natural resource base to knowledge and information base. This led to growth in the role of librarianship with a shift from the document management perspective to information management perspectives. To handle or manage the modern libraries and information centres qualified and professionally trained librarian is required.

Librarianship

The qualities for the librarianship in the context change management are to take initiatives for making required changes for better services to the user community, to be confident and highly optimistic in handling day to day activities, to take-up calculated risks to get correct results, effectively handle challenges, to have overall knowledge of the library profession, to be independent thinker after listening and observing the issues, to also be an energetic and efficient all time so that it will give inspiration to the coordinate and subordinate staff, to be creative thinking in providing better services to the user community and in satisfying the goals of the parent organization, to be a dynamic professional leader, to be responsive to suggestions and criticism given by the superiors for better change, to be resourceful person in all ways, to be perceptive and foresight, to be hardworking every time, as it is a good reflection on the remaining library professional in the library, to have desire to high achievement, be a good organizer, to be innovative and a good communicator, to have risk taking ability and be a good trainer, in giving training to the subordinating staff

Gaur (2015) said that "the 21st Century Librarianship is 70% technology and 30% traditional librarianship, in the knowledge society of the 21st century, information and communication technology (ICT) is one of the most emerging factors and having high impact on library organization land institutions. The current emerging technologies such as mobile technology, could computing, social media networking and Web 3.0 have forced Librarians to redesign their strategies in 21st century. Emergence of various library networks has connected libraries globally".

By stating the above Gaur (2015) has also added the following:

1. Search engines like Google have emerged as an opportunity as well as challenge to the Librarians
2. The Librarians have to play an important role as knowledge navigators to clear the confusion of the users in getting the correct and authentic information from the huge information explosion on the web.
3. The emerging technologies can help Librarians in serving their users in a more effective manner and the Librarians need to change their role from a inward technical expert to Client Centric Decision Enabler, need to be multi-skilled, proactive and need to redesign their strategies, programmes, and policies.
4. The Librarians should understand the user profile, their needs in more systematic and analytical manner to serve them better and also need to develop partnership with them to design different instructional programmes, strategies and services which suits their information needs.
5. Embedded Librarians need to demonstrate their expertise, specialization and skills to help researcher s in achieving their various research and information objectives.

The use of social Networking sites like Facebook in the libraries is a new phenomenon where the librarians can register their libraries in Facebook and have an account. There are 100 libraries worldwide using Facebook to provide information to their client / users in India there are two (2) kibraries using Facebook for users benefit they are Jaypee University Salon (HP) http://www.facebook.com/lrc.juit and KKHOS University, Guwhati http://www.facebook.com/kkhwou.india

Librarians' Skill Building in Change Management Context

The skills of Librarians require the following skills in changing their role in the context of change management as follows:

1. **Managerial skills** – The Librarians as information managers should have conceptual skills (creative & Problem solving), Administrative skills, Hyman Relationship skills, Knowledge Management skills, Time Management skills
2. **ICT & Knowledge skills** – As computer and communication specialists the librarians should have knowledge of (OS-Windo0ws, Unix, Linux), (Web Development-HTML, ASP, PHP, XML), Programming Language – Java, C++, VB), Scripting Language – PHP, Perl, ASP), (Open Source Software – Dspace, /Greenstone, E-Prints), Use of Web OPAC, CD-ROM Searching, Internet Searching,)Interface – Navigation, Multimedia), (Suggestions and storage –

Indexing, Abstracting, Content Conversion. E-Publishing, Image Processing, Online Archive).

3. **Information skills** -As information specialists the librarians should have knowledge of Information Collection Management, Information Retrieval Skills, Information Organisational skills.
4. **Professional skills** – As the Library professionals the librarians should have a sound work habits, Good Listener, Leadership skills, Teamwork, Negotiating, Communication skills.
5. **Computer networking skills**.
6. **Teaching and Training skills** – To provide effective user education for a large group of users or small group of users, to understand how students organize their studies and how they go about the libraries – In this way Library programmes may be tailored to majority needs and styles of learning, To help academic staff to design and develop course materials.
7. **Innovation skills** – The Librarians should have innovation skills for their very survival in the change management.
8. **Professional Development Skills:** In context of development of profession possessing research qualification like Ph.D is must and attending `` short term sources, Acquiring membership in professional bodies (like SALIS, NISCAIR, IASLIC, CGLA, etc...), Attending conferences, seminars and professional meetings, Writing articles, presenting and publishing, Going through Web-Tutorial, Engaging in different Research and Project Development works
9. **Competent Librarian Skills:** In the present scenario, the users and researchers are wasting their valuable time in searching for correct and authentic information on internet for their use. The librarians have obligations to advise the users and researchers on the best resources to access, how to access, how to formulate their queries for search and retrieval of relevant information. This implies that the Librarians need to learn a lot about Information Technology to serve as Competent Librarian in the present digital era.

Change

People live with change constantly. Everyone goes through personal transformation from infancy to old age. Organizations /m institutions also mature and evolve with major changes in many levels in policy and practice. Organizations are required to maintain harmony with their ever changing environments. They have to maintain compatibility with the environmental

changes for their survival growth and prosperity. Otherwise, the organizations or individuals may fall back in the changing scenario of the world.

Change Management

Change management in general it is the changes made in the management of any organization. If the management of an organization if it fails to change from time to time in accordance to the society, it is sure that it will fail. The Libraries and Information Centers are also not exempted in the change management. Change by definition requires creating a new system. Managing change therefore requires managers to think about the organization from a new perspective.

Duck (1998) argues that this demands from the manager, something beyond mere breaking change into small pieces – total quality management, process reengineering, employee empowerment and managing each as operating machine, akin to treating the human body of one ailment at a time. Change management appears to be influenced by three paradigms viz: deeply held, unconscious set of assumptions and values, things taken for granted, and expectations

Hieller says "one can deal with the change in three ways by resisting, following or leading. A resisting tries to stay out, which is impossible in changing situations. The majority of people and organizations, who start by resisting, eventually find they have to follow, trying to catch, if that fails, they face competitive disadvantage. Seeking to anticipate and lead change is safer as well as more, adventurous"

Change Management in Libraries

For the libraries, change can come from one of two sources: internal or external. Internal changes are changes initiated within the libraries and relate to how to do things, when to do things or what new things to do. Thus, the issue of participation, manipulation and resistance become of some significance in the management of internal change. External change or changes in the environment in which the librarians has to function that are often the more crucial ones. Changes in the environment tend to be of tremendous import and often tax the creative ability of the libraries. Changes in the environment of an organization tend to arise from one or more of four sources: technological, economic, social and political.

Technology development has been the most effective factor making for dramatic changes in the information world. Changes can lead to turbulent or traumatic situations within any library.

Librarianship and Management of change

Librarians and information specialists are approaching a decision point. They must decide whether they will create changes in libraries that parallel the changing needs for information in society, and thus thrive in the electronic age, or whether they will continue to serve their traditional role as the custodians of books and other information media.

The role of librarians today is to increase access to information. New skills therefore need to be learned. The process of changing libraries has started. It is time for the librarians to tackle the task systematically.

Librarians have always served as guides to information resources. If the philosophy of service is to find the vehicle carrying the information, it needs to be expanded. If the librarian's concern is for supplying the information, regardless of the container, one has already made major progress towards the electronic library. Whereas

Conclusions

The rapid development of Information technology and the constant emergence of new kind of information services, libraries are facing more and more challenges and issues. This new scenario puts more and more requirements upon librarians. It is imperative to improve the quality of library staff and to train more qualified librarians. The future librarians should not only have profound knowledge of the management of libraries, but also be skilled in the operation of advanced information technologies.

It should be borne in mind that the management of change in the library is always a measure of the ability of those at the helm of affairs of such organizations to plan against the uncertainties of the future. Often, we need to remember that the present situation in any organization is to a large extent the results of decisions made in the past. For this reason, it is vital that present librarians and information professionals must not allow themselves to become totally captive to past decisions. The imperative of innovation, of the systematic and effective abandonment of obsolete practices of yesterday is a key factor in the renewal and growth of the library.

References

1. Dowlin, K.E. (1984). *The Electronic Library*, Neal-Schuman Publishers, New York. 199p.
2. Duck, J.D. (1998). *Managing Change: The Art of Balancing*. Boston, Harvard Business School Publisher.
3. Ramesh C. Gaur, (2015). Challenges in 21st Century Librarianship, CTBC's International Research Journal, Vol.2 Issue. 1 pp. 1-10.
4. http://unllib.unl.edu/LPP/
5. http://www.mattanderson.org/blog/2013/01/31/100-libraries-tofollow-on-facebook/

Solutions for Space Problem in the PGIAR Library: A Case Study

R.M Nadeeka Rathnabahu
Postgraduate Institute of Archaeology
University of Kelaniya
Email: rathnabahu@kln.ac.lk

Abstract

It is hard to deny that in almost all modern libraries over the world face a dilemma with a problem of lack of space for printed & electronic collections, users, staff and workstations etc. Therefore, modern libraries encounter many difficulties due to insufficient space in order create a friendly environment for library users and staff .The Postgraduate Institute of Archaeology (PGIAR) library also faces such problems. This study is an attempt to find solutions to mitigate the said space problem. A 3 root cause analysis method was used to analyse the space problem. Accommodating space for library collections, user & gathering spaces, personal office & workstations and support spaces have been identified as lack of space problem areas. It is very difficult to provide sufficient space for above needs within the 2148 square feet area. Using modern technologies, re-structuring library space, adding extra space, weeding out the collection, creating repository for withdrawal materials, working with collaborative repositories are some of the few suggestions that have to be addressed to overcome the space problem in the PGIAR library.

Keywords: *Space problem, PGIAR library, A3 Analysis, Sri Lanka*

Usage of ICT Facility in the Newly Established University Libraries: A Case Study of e-Zone at Main Library Wayamba University of Sri Lanka

W.M. Thusithakumari
Wayamba University of Sri Lanka
Email: thusithak@wyb.ac.lk

Abstract

The ICT based product, services and their properties have been shifted to ICT for intended library automation and also to provide library service and facilities in e-Zone. An attempt has been made in this paper to highlight the innovative practices adopted in the delivery of the services at main library, Wayamba University of Sri Lanka. The objectives of this study were, to find out the usage of the e- Zone, to search the usage of the e-resources in e-Zone and to make aware of the purposes of using e-Zone of the main library Wayamba University of Sri Lanka. A case study was carried out gathering data on the recorded statistics of the usage of ICT facilities and statistics of the usage of e-zone. Though the application of ICT into library services has a short period the data were collected for the period from 2010-2014. Considering the usage of e-Zone in the library it looks that the library could be able to achieve targets successfully. The usage of e-Zone in 2013 (80%) has gone up more than that of the year 2014 (60%). Generally in December to January 2010 to 2014 the usage of e-Zone of the library has increased significantly to the highest rate due to research works of the final year students and also the second semester examinations of the students. Usage of the e-Zone has been increasing regularly from the past 5 years despite the sufficient printed books and periodical collection. The usage of the library has recognized ICT as it is a fast information generated source. Therefore the library professionals have a challenge in promoting use of ICT in the library for users' information seeking process with the limited space. Hence, the space should be expanded and increased number of PCs with infrastructure facilities for activating expected targets as well as cooperate with the vision and mission of the university. Further, the library accessions, visible index and clerical works should be automated within a short period.

Keywords: *Academic Libraries, Dissemination of information, Electronic Information Resources, Information Services, Information & Communication Technology, Innovative Practices, Library Services*

The Status of Library Automation in Sri Lankan University Libraries: With Reference to Wayamba University Library

DGAS Malkanthi
Wayamaba University of Sri Lanka
Email: shyamalim@wyb.ac.lk

Nimal Hettiarachchi
University of Ruhuna, Sri Lanka
Email: nimal@lib.ruh.ac.lk

Abstract

This study was conducted with the objectives at study and identification of Library automated operating system in state universities at Sri Lanka. Identification of problems associated with current automation systems and providing effective suggestions to overcome the existing problems are aimed further. Thirty three University libraries actually function as separate branches were selected. Questionnaire was used as a method of data collection, through e mail and direct communication. It was found that (22%) of libraries operated successfully on automatized system. (26%) of libraries had considerably appropriate automated system. Moderately acceptable level of operation seen among 37% of the libraries. Fifteen percentage of libraries were poor in automated system. According to the currant Statistics, it is observed that majority of University Libraries are operation on an automated system appropriately. Several obstacles were identified in this study such as insufficient fund allocations infrastructure facilities, luck at expertise and commitments, and post-sale services. Because of these obstacles some university libraries are for behind from leading universities. To overcome the issues and challenges, the government should endorse providing financial aid and other facilities. Universities also should have executed plans with a proper vision to achieve realistic goals in future.

Keywords: *Library Automation, University Libraries, Automation Software, Sri Lanka*

Adoption of Open Source Integrated Library System: User's Perception among the Selected Libraries in India

T.K. Gireesh Kumar
Central University of Kerala, Tejaswini Hills Campus, India
Email: gireesharci@gmail.com

Abstract

Open Source Integrated Library Systems (OSILS) are gaining widespread adoption in Indian libraries during the last two decades. The study intended to assess the development and rate of adoption of OSILS and identify the major factors that influenced the adoption of OSILS in Indian libraries. The study also measures the activities performed by the OSILS users to sustain it and propose possible solutions to the problems if any they faced which contributed to the popularity of OSILS in Indian libraries. A survey with structured questionnaire was used to collect primary data from users of OSILS across the country through Google doc. Study was limited to libraries in India using OSILS. It was found that, in spite of a drastic enhancement in the rate of adoption of OSILS in Indian libraries, lack of technical support and shortage of skilled manpower to execute installation, maintenance and customization stands as hindrance to its extensive use.

Keywords: *Open Source, Integrated Library System, OSILS, ILS, Library Automation, India, Software*

Introduction

The tasks of libraries have become more challenging and complex due to knowledge explosion and revolutions in the field of Information Technology. There are enormous numbers of new developments both in application and pure thought that results in flooding of knowledge. As per statics collected two decades back 'The world production of books is around 60 million per year. There are more than 200 000 journals. Over ten Million research papers are published every year in specialized journals besides those in popular magazines' (Raman, 1995). Now all these can be ten times higher. Without automating libraries management of the document resources and extracting their optimum utility is impossible.

But even though the library functions in the developed countries are getting

fully automated and transforming themselves from mere systems for rendering traditional services using books journals, audio files video files etc. to innovative functions which pool knowledge recorded in different formats located at different places canalized in the context of requirement to the user countries like India could not even automate their housekeeping operations at least. Today's live library systems are facilities which harness power of ICT for knowledge management and dissemination. Library professionals now have to offer more sophisticated and user-friendly services to its users exploiting advanced, adaptable and easily configurable technologies over the web. As the demands of users for more efficient, effective and specialized services go on increasing, the role of library professionals also gets elevated from custodians of resources or service providers to knowledge managers. Automation is one of the most important factors that enable efficient services from the library, which requires adequate planning as well as continuous support from technical staff to utilize computers and related technologies efficiently. Automation enhances the use of information products and services in a larger approach and improves the quality and effectiveness of library services and extends services even for remote users.

Till the end of the last century only commercial library software were available for automating integrated library systems. Of them good solutions were developed in foreign countries by multinational companies were not affordable to Indian libraries except a few. A few cheap solutions that were available lacked many facilities. UNESCO's CDS/ISIS promoted by UNESCO was a very powerful package but it has modules only for bibliographical/ or other database management. But developing other modules using that and integrating them was not an easy job. So even though it popularized computers, DBMS and automation among library professionals and broke the psychological barrier, it could not support libraries with an integrated library automation system solution which has to cover all library housekeeping activities in addition to catalogues and indexes (Raman, 1992). But once through ISIS computers and DBMS were introduced it made it easy for librarians to go to other sophisticated integrated library automation packages. This helped many manufacturers of Commercial packages to market their products. LibSys, OASIS, Alice for Windows, TULIPS and Libris found a wide market. But many problems were inherent in commercial products and in the last three decades libraries faced numerous problems related to maintenance, upgradation, data export etc which made the professionals to turn to Open

Source packages.

Open Source Software (OSS) is the outcome of collaborative work of a group of people or institutions and the service oriented participation and discussions to develop the packages considerably reduce the unnecessary features and complexity of the software. OSS is gaining immense importance in libraries especially as an Integrated Library System (ILS) for automating the activities of library primarily as a measure of cost efficiency. The selection and implementation of a suitable ILS is one of the most significant tasks for any library. So the selection of an apt system should be undertaken by proper care, knowledge and skills. For libraries from developing countries where the budgetary restrictions hinder providing quality information services Open Source Integrated Library System (OSILS) is an apt choice that can help to modernizes services of the library and extend libraries multidimensional functionality with limited cost. OSILS offers significant benefits compared to its commercial counterparts as a scalable library automation tool in general and as a cost effective solution in particular. OSILS is an alternative solution for many libraries in India who have insufficient budget to allocate for purchasing proprietary software for library automation. OSILS have opened opportunities for librarians to provide more innovative approaches and services to their clients with less financial obligations. As library professionals are increasingly recognizing the advantages of OSILS, many libraries in India successfully implemented it as a cost effective and easy to use solution for automation. Existing proprietary users are now preferring OSILS as the cost of up-gradation and maintenance of propriety ILS are far less for OSILS. OSILS are stable and secure and provide greater control over the data. In the recent years OSILS have revolutionized the Indian information sector with its advantages of having flexibility and customizability options in a greater way. There are number of OSILS from libraries can choose according to the nature of library and staff available to manage their library retaining their individuality.

Literature Review

Many comparative studies have been conducted pertaining to the advantages and facilities of open and proprietary ILS with special reference to Indian scenario. OSILS is an economical alternative to costly proprietary packages and does not require the expense towards initial cost involved in the commercial one such as software development, license and maintenance etc. In a study conducted by Riewe, it was found that OSILS were perceived to be less costly, more cost effective and affordable when compared to the proprietary ones

(Riewe, 2008). Another study by Nagy et al disclosed that the market potential of OSS seems to be quite promising and could pose major challenges to the dominant position of proprietary software (Nagy et al, 2010). The flexibility, cost effectiveness and availability of source code etc are the major reasons which make libraries to adopt OSILS when compared to commercial packages. OSILS provides technological freedom to the libraries and also help the library professionals to provide services at lost cost or free of cost (Kamble, 2012). Breeding in his automation marketplace survey, found that many libraries continued to opt for open source ILS rather than a proprietary product (Breeding, 2012). OSILS has undergone frequent revisions and updations and provide specialized services to libraries to incorporate the emerging technologies. The next generation ILS is steered by the rapid advancements in the area of computer science and is adapting itself to the state-of-the-art hardware architectures and software technologies getting developed (Tyagi & Senthil, 2015).

Studies revealed that there was a drastic uplift in the rate of adoption of OSILS in Indian libraries during the last few years. However the rate of adoption of OSILS among Indian libraries needs to be enhanced further as most of the public and school libraries in India have not implemented any OSILS. According to a survey conducted recently the primary reasons of libraries not implementing open source solutions for their automation purposes; are lack of awareness, training and absence of encouraging government policies (Jasimudeen and et.al, 2014). Library professional are now aware of the accessibility of OSILS than ever, and in India. Libraries are increasingly recognizing the role of OSILS focusing its advantages particularly on cost saving and customization options it provide to automate their activities. However majority of the professional still continue to depend on proprietary software for library automation. Kumar and Abraham (2011) found that the adoption of open source library management system is restricted in India by the lack of awareness and knowledge in open source technology among library professionals. Another relevant study conducted by Gireesh Kumar and Jayapradeep revealed that though LIS professionals are oriented, insufficient technical support and inadequate training and opportunities are the main barriers in adoption and introduction of OSILS in Indian libraries (Gireesh Kumar and Jayapradeep, 2015). Libraries having staff with the necessary skills and experience to implement and customize the software can be highly benefitted with its vast potential. Satpathy and Maharana suggest cooperative

and participatory organizational system, positive attitude of authorities and LIS professionals, and proper training provision for LIS professionals for the widespread use of OSS in libraries (Satpathy and Maharana, 2012). In OSILS, library staff members are required to acquire minimum technical skills to handle the issues and up keep of the software. Professionals should be able to understand the features and facilities of different ILS and choose them according to their requirement.

Indian libraries which have not automated their systems hitherto with any of the software should consider and look forward to adopt OSILS packages. Reddy suggests that in spite of the challenges, libraries should consider the capabilities of OSILS and evaluate their merits of the features, reliability and support (Reddy, 2004). Study of Hanumappa and others revealed that the Indian ILS space seems to be rich with a variety of solutions and OSS solutions may have a promising future, going by the fact that they have had a recent entry into the Indian markets compared to the proprietary solutions (Hanumappa, 2014). Use of OSILS is to be promoted as they pave the way for collaborative research and this can be achieved with the confluence of professionals. The study of Kamila concludes that it is better to use OSILS because of its many useful features such as importing of data directly from Library of Congress and other large databases which minimizes the processing work of library, main library and branch library automation facilities, MARC21, Z39.50 etc. as well as its freedom to change the source code as and when necessary which can solve the local problems of every institution (Kamila, 2008). OSILS provides technological freedom to the libraries and also help the library professionals to provide services at lost cost or free of cost (Kamble, 2012). However selection of a suitable OSILS depends on various factors such as sustainability, availability of functionalities to meet specific requirements, consortia supports, quality documentations, community participation etc.

Objectives of the study

The main objective of the study is confined to the perception of the library professionals in India practicing any of the OSILS. The specific objectives of the study are:-

- To examine the growth in adoption of OSILS in Indian libraries
- To identify the major reasons which influences the adoption of OSILS in Indian libraries

- To assess the activities executed by the users to promote the adoption of OSILS in Indian libraries

- To recommend some potential resolutions to enhance the rate of adoption of OSILS in Indian libraries.

Methodology

The paper provides a detailed analysis of OSILS user's perception on its adoption. The online survey method was adopted for the study by designing a structured questionnaire keeping in view of the stated objectives and scope of the study. The questionnaire consisted of open and closed ended questions with multiple options to answer and also questions to mark rating and opinions. Questionnaires were used to comprehend the attitude of OSILS users towards its adoption. Total questions were included in the online questionnaire under two major sections. Online questionnaires were sent to various libraries using any OSILS through personal email and responses were received from one hundred and thirty three libraries including university, college, school, special and research libraries. The responses were organized under respective segments. The analysis of tabulated information was carried out for all the responses to identify the factors persuading the users to prefer OSILS. Analyzed data were represented in tabular and graphical formats.

Scope of the Study

Open Source Software technology can be used in libraries for different applications like creating digital library, institutional repositories, portals, subject gateways, content management, learning management and automating house-keeping operations. Though there are many ILS in both proprietary and open source stream, present study uses the responses of only those who use any of the open source solutions to perform basic housekeeping operations. The questionnaire is designed to comprehend the awareness and observation of OSILS among library professionals in India. Study considered all the libraries using OSILS package regardless of kind of libraries such as academic, research or corporate. The scope of the study was further confined to libraries in India using the OSILS.

Analysis and Discussions

There were 133 responses received for the survey and among the respondents 120 (90%) were male and 13(10%) were female respondents. To calculate the age of the respondents, different segments on age group was made. Out of 133 respondents 50% (66) professionals were in the age group of 31-40 years where as the ratio of 41-50 years and 21-30 years were 26% (35) and 20% (26) orderly (Fig. 1). The senior respondents segmented as beyond 51 years stood last at 5% (06).

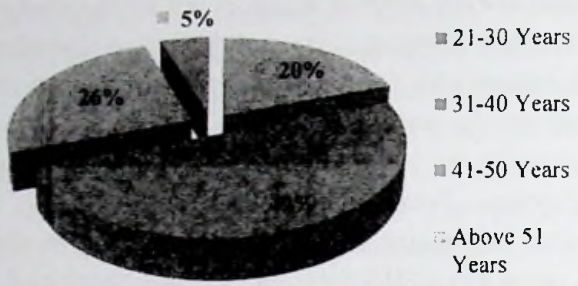


Figure 1: Respondent's age group

Type of the library

Respondents were asked to indicate their library type as academic, special or research, public and corporate and were given as default options to choose. Due to its flexibility, adaptability in customizing to local requirement and an opportunity for innovation, OSILS is being adopted by different kinds of libraries. OSILS is a cost effective solution for any type of libraries as the initial cost for purchasing an OSILS is almost nil. From the responses it is found that higher majority at 47% of libraries from colleges have adopted OSILS followed by University libraries at 27% (Fig.2). Though the rate of adoption in nonprofit institutes and school libraries are found to be minimal of 4%, the proportion of Special and Research libraries are fairly convincing at 17% compared to them. Corporate libraries stood last with a low rate of adoption at 2% only.

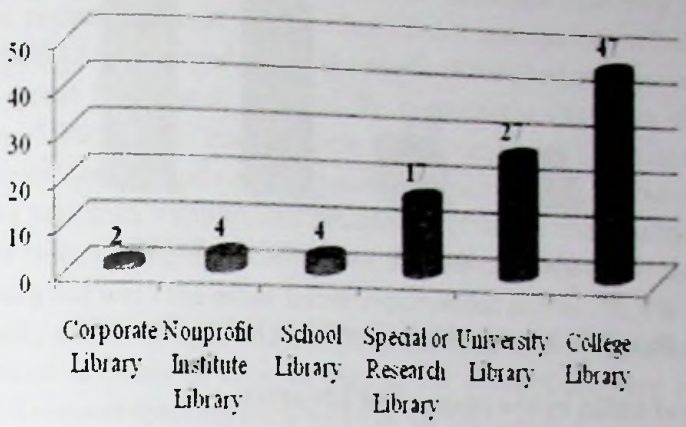


Figure 2: Type of library

Progression of OSILS adoption in Indian libraries

OSILS has been a very successful solution in its kind to manage the activities of a library. The extensive adoption and the promotional activities are influencing the other libraries to implement OSILS for smooth running of their library functions. Implementing an OSILS indirectly creates opportunities for library professionals and in-house technical personnel to explore and contribute to the development process. Over a period of time drastic enhancements in OSILS adoption can be noticed in Indian libraries. From the year 2009 to 2011 and 2012 to 2014 there have been a higher elevation in the adoption rate. The trends of OSILS adoption have been highly progressive and were 47% in 2012-2014 compared to its margin of 37% during the year 2009-2011. The percentage of adoption during 2006-2008 and prior to the year 2005 was marked 10% and 6% respectively (Fig 3). One of the respondents of the survey remarked that "OSILS, if adopted properly, has lot of potential to convert the entire gamut of library services into an automated one, and has shown plethora of opportunities to the libraries in developing countries who struggle with financial constraints to make their libraries automated".

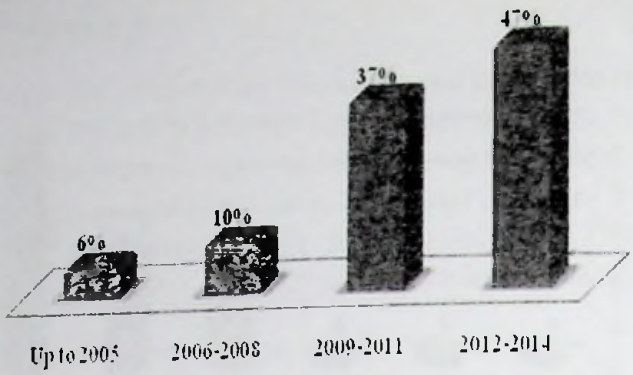


Figure 3: Rate of OSILS adoption in Indian libraries

Distribution of OSILS by the responded libraries

Respondents were asked to indicate the software being used in their library. Koha software received the higher number of responses at 56% followed by NewGenLib (27%) and e-Granthalaya at 14%. Emerging software applications like ABCD and GenISISWEB etc received few responses. Evergreen, the OSILS which is deployed in worldwide in large number has not been much attracted by Indian library professionals (Table 1).

Table 1: Libraries using open source ILS (n-133)

Software	Number of Libraries	Percentage (%)
Koha	75	56
NewGenLib	36	27
e- Granthalaya	19	14
ABCD	01	01
Evergreen	01	01
GenIsisWeb	01	01

Result of the survey shows that majority of the Indian libraries have adopted Koha as their preferred software followed by NewGenLib and e-Granthalaya. The analysis of response rate indicated that Indian libraries have recognized the capabilities of Koha software.

Adoption of OSILS in Indian libraries

The study found that majority of the respondents support the adoption of OSILS in Indian libraries hence they were asked to select the reasons to choose

or the factors influenced in their selection of OSILS. From the responses received, the majority at equal rate (14%) indicated that they have chosen OSILS to reduce the cost of adopting library automation software and the ability of OSILS to customize to fit the needs of the library. Other concerns that were of great importance and equally represented (11%) in the means of selection of OSILS were freedom from maintenance and licensing fee, freedom from vendor Lock-in and easy to install, maintain and modify the software and the wider adoption, support and availability of online community. Availability of source code, quality documentations and the concerns about the supplier of proprietary ILS were the other issues represented as 8%, 7%, 5% respectively. Uncertainty due to merges and outside ownership of proprietary software and the libraries decision to become part of the consortium were equally (4%) prompted some responded libraries to go for OSILS (Fig. 4)

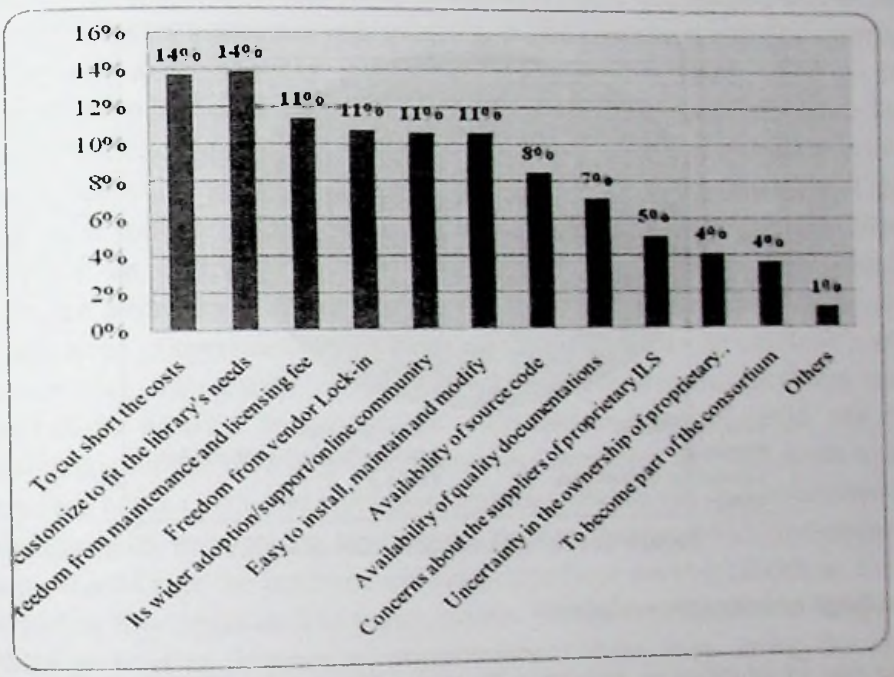


Figure 4: Factors for adopting OSILS

Promotional activities

Literature revealed that lack of promotional activities is one of the major issues encountered in OSILS adoption in Indian libraries. Respondents were asked to indicate the activities they have extended to promote the use of OSILS further.

Analysis indicated that a higher majority at equal numbers (24%) have promoted the adoption of OSILS in other libraries by conducting workshops and training programs. Further 13% of the respondents have provided lectures on OSILS and 13% have organized conferences and seminars. 9% of the respondents have created user groups and forums to share their expertise and experiences where as few (3%) could influence including the subject in the curriculum. However 15% of the OSILS users were agreed their effort to promote the adoption of Koha software is nil (Fig: 4.). Training is one of the major technical issues associated with the adoption of OSILS. Study indicates that there is an expansion of the number of workshops, training programs, conferences, seminars and creation of user groups and forums to promote the awareness on OSILS in Indian libraries, which motivates the professionals to adopt or migrate to OSILS. However intensive training programs for both the library professionals and the users' needs to be conducted.

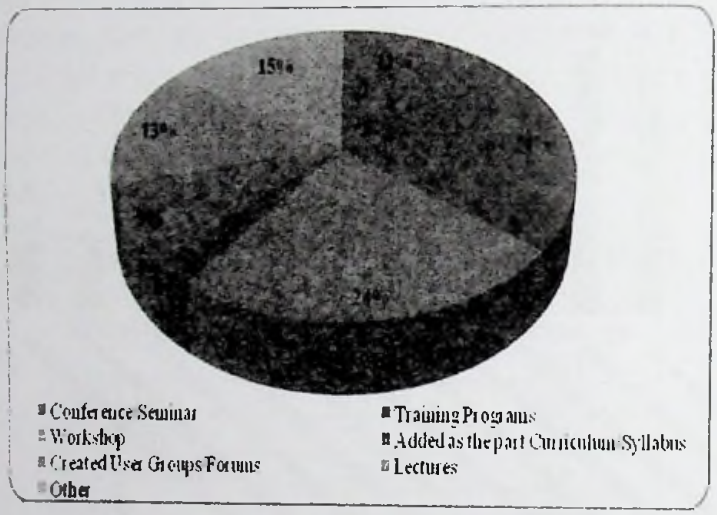


Figure 5: Promotional activities of OSILS

Findings and recommendations

The rate of adoption or migration by many libraries to OSILS in India was drastic during the last two decades. The survey found the growing interest and acceptance among the professionals in adopting and popularizing OSILS in Indian libraries. Among the selected OSILS, Koha software was found to be the most popular and preferred OSILS among the Indian libraries and it indicate that many libraries in India would continue to opt for OSILS rather than a proprietary ILS package in future. Study found that different libraries are attracted to different OSILS for different reasons. The main reasons for this

switch over identified are advantageous features of OSILS, viz. their cost effectiveness, software control, research development behind them, ease of use, ability for customization, and community support from all over the world. Among them the ability of OSILS to cut short the costs and the customization options to fit the local requirement of a particular library stood the major reasons made them to choose OSILS. Wider adoption, support, and online community of OSILS along with its availability of source code being the reasons for some libraries to adopt OSILS whereas capability of OSILS in its easy installation, maintenance and modification compelled many libraries to shift to choose OSILS.

OSILS gives opportunity to collaborate for customization and makes library community innovative and more active. OSILS is more reliable as every step of installation and maintenance involves the library staff who actually carries out the work. Issues associated with reliability of OSILS can be avoided by creating awareness and educating the counterparts. Various issues need to be considered when contemplating a move to adopt OSILS especially when the availability of open and commercial software is large. The factors such as active user community, availability of quality documentations, sustainability of the developer, release of updates etc should be weighed when deciding when choosing an OSILS. LIS professional experts of OSILS themselves should organize promotional activities for the benefit of the new entrants in library profession. Government organizations, educational institutions and universities etc should frequently conduct conferences, seminars and workshops to train and make LIS professionals aware of OSILS and its customization and data migration processes. Awareness on OSILS needs to be inducted in the LIS Course curriculum and the professionals shall be enabled to acquaint with these at the beginning of their profession. OSILS development team should take the feedback and suggestion from working Librarians while releasing new updates. The policy makers should recommend the usage of OSILS at least in Government organizations. Collaboration among the user libraries helps to develop standardization in customizations. Consortium mode of installation, maintenance and modification may lessen the financial burden and bring more affordability to the participating libraries. Better and widely available documentations should be made available to suit needs of all type of Library professionals. Availability of online tutorials and step by step demonstration regarding the installation process and customization in regional languages may enhance the adoption of OSILS. There should be technical

supports from the experts to improve the quality of OSILS according to the individual requirements at a minimal cost and the parent organization is expected to provide such support by deploying minimum required in-house technical experts to its library. Availability of live CD/DVD of OSILS with easy installation and implementation procedures without need for Internet access to download, registration etc. would be better solution for popularizing OSILS packages. But switching over to cloud computing to host OSILS would substantially reduce the cost for its server, maintenance and providing uninterrupted access.

Conclusions

The success of adopting an OSILS basically depends upon the attitude of the library professionals and adequacy of technical manpower. Considering the economic feasibility and need for functional developments it is necessary for Indian libraries to adopt OSILS. Lack of confidence, knowledge and proficiency in the application of OSILS and lack of taking initiatives and attaining self-reliance are the common reasons among professionals for their continuing with the legacy proprietary systems. OSILS comes into focus as an alternative tool for libraries to automate their libraries in a cost effective manner, when libraries experience dissatisfaction with their legacy proprietary system due to poor support from the vendors, expensive maintenance charges, difficulties for customization inefficiency, and inflexibility. Adoption of OSILS in libraries offers significant benefits compared to its commercial counterparts. OSILS provides flexibility and adaptability to keep pace with advances in technology. There is a drastic uplift in the rate of OSILS adoption recently which shows the sustainability of OSILS among Indian libraries. Due to the availability of powerful modules to perform all the major house-keeping operations and the features having advanced web2.0, Koha OSILS has become more popular among the Indian libraries. It is essential to provide frequent hands on training on installation and maintenance to get the professionals skilled and confident in OSILS. A raising trend for supporting adoption of OSILS is self-evident from the study. The open source environment is opening up more opportunities by providing source code to diversified open source applications and this practice adds more value to OSILS in the coming years.

References

Breeding, M. (2012). Automation marketplace 2012: Agents of change - The digital shift. Retrieved January 30, 2016 from http://www.thedigitalshift.com/2012/03/ils/automation-marketplace-2012-

agents-ofchange/

Gireesh Kumar, T. K. & Jayapradeep, M. (2015). Perceptions of LIS professionals on open source integrated library system and adoptability of Koha over LibSys in India. International Journal of Information Dissemination and Technology. 5, 100-105.

Hanumappa, A; Dora, M. & Navik, V. (2014). Open source software solutions in Indian libraries. Library Hi Tech. 32, 409-422

Kamble, V.T.; Raj, H. & Sangeeta. (2012). Open source library management and digital library software. DESIDOC Journal of Library & Information Technology. 32, 388-392.

Kamila, K. (2008). Koha: How open it is? In proceedings of PLANNER on "Open Access, Open Source and Open Libraries (03)". (PLANNER 2008). 286-304. Nagaland: Nagaland University.

Kumar V. & Abraham, T. (2011). Development of library automation systems in open source software mode: opportunities and challenges for libraries in India. In Dineshan K. & T.M. Vasudevan (Eds.). Library 2.0 and information management. New Delhi: Atlantic Publishers.

Raman Nair, R. (1992). Computer application to library and information services. New Delhi: Ess Ess Publications.

Raman Nair, R, Ed. (1995). Preface to 'academic library automation'. New Delhi: Ess Ess Publilcations.

Nagy, D., Yassin, A.M & Bhattacherjee, A. (2010). Organizational adoption of open source software: barriers and remedies. Communication of the AMC. 53. 148-151

Riewe, L. M. (2008). Survey of open source integrated library systems. Retrieved February 03, 2016 from http://scholarworks.sjsu.edu/cgi/viewcontent.cgi?article=4477&context=etd_theses

S., Jasimudeen, Vimal Kumar V., & Biju V.V. (2014). Open source software usage in Indian libraries: a survey. In proceedings of National Conference on "Innovative Library Professionals". (NCLC 2014). Andhra Pradesh: Dravidian University

Satpathy, S. K. & Maharana, R. K. (2012). Awareness and adoption of open source software among LIS professionals of engineering colleges of Odisha. DESIDOC Journal of Library & Information Technology. 32, 421-426.

Tyagi, A. K. & Senthil, V. (2015). Library automation in India: assessment of library services platforms. DESIDOC Journal of Library & Information Technology. 35, 408-416

Identifying Subject Thesauri as an Educational Tool for Sustainable Education

S. Navaneethakrishnan
University of Jaffna
Email: ksnavan@yahoo.com

S. Arulanantham
University of Jaffna
Email: sriarul91@gmail.com

Abstract

In a rapidly changing world that is dominated and driven by knowledge, educational reforms occur at global and national level. Impacts of these reforms on the developing countries particularly on Sri Lanka have made an attention on the necessity of reconsideration and reformation of the education sector according to the current trend. In education, the skills and ideas are usually formed by means of the concepts to provide solutions of professional problems within an appropriate knowledge field. Education has to focus on teaching students 'how to learn' rather than emphasizing occupation specific knowledge. This study concentrates more on this specific scope with different level of education system. Accordingly, objective of this research is to propose the Subject thesauri as an appropriate educational tool for educational development in teaching and/or learning environment. The International Standard Organization (ISO) defines a thesaurus is a controlled and dynamic vocabulary of semantically and generically related terms which covers a specific domain of knowledge. In order to examine the thesauri concept at various levels with past experiences, current practices and predicts future trends of it, this study employed descriptive method with some theoretical analysis technique. Further datasheets and questionnaires were used for analysis of views of educational planners and students related with research scope. This study emphasis suitability of the basic elements of the thesauri concept for educational development and justify appropriateness of thesauri concepts to manage the educational reforms. Further this study supports policy makers by suggesting some educational models with thesauri concept to ease the forum. Findings of this study identified thesaurus as an appropriate educational tool for current education system. It plays various roles in a subject field. It is identified as a vocabulary tool which provides a standard

vocabulary for the subject; as a Teaching tool which helps teachers to introduce the scope of their subject for new students with a tree structure; as a Learning tool which promotes learning and ultimately students' progress and achievement; as a Research tool which guides researchers with classified hierarchies so that a literature search can be broadened or narrowed systematically; as a Retrieval tool which satisfies browsing and retrieval needs of a user community; and as a Literacy tool which increases literacy of users in various aspects such as information, language and media. As a summary it could be used to enable us to overcome the barrier between the practical application and the theoretical knowledge. Finally this study proposes the subject thesauri as an appropriate educational tool suitable for numerous educational structures to be developed for different levels of learners in South Asian context.

Keywords: *Education, Information Literacy, Subject Thesauri, Sustainable Education*

Emerging Trends in Search Engines: Engineering Faculty and Students' Perception on Search Engines

J. Vivekavardhan
Department of Library and Information Science
Osmania University, Hyderabad, India
Email: jvk_dn@yahoo.com

S. Yadagiri
Osmania University Library,
Osmania University, Hyderabad, India

B. Sudhakar
Mahatma Gandhi Institute of Technology (MGIT)
Hyderabad, India

Abstract

Internet has become the world's panacea for information transfer and exchange. World Wide Web is considered as the world's largest library with billions of information resources. Search engine is designed to facilitate search for information on the World Wide Web. The study examines the perception of engineering faculty and students' on search engines at Hyderabad, India. The study reveals that respondents' perception on search engine Google as number one search engine (73.83%). Majority of the respondents use 'general search option' (70.60%). 65.56% of respondents use search engine for 'general information'. Considerable number (71.60%) of respondents search with "AND" Boolean operator. Majority (66.29%) of the respondent's rank "easy to use feature" in the given search engines as number one feature. The study also reveals that majority (79.0%) of respondents used the search element as 'Title'. The majority (71.60%) of the respondents 'need training' on search engines to optimize the usage of search engines.

Keywords: *Internet, Search Engine, World Wide Web, Information Retrieval*

Introduction

A search engine is an information retrieval tool. It facilitates searches of web resources as per the keywords given by the individual user. A Search engine

retrieves web resources from its database by matching the keywords entered by the user. Every search engine has its own algorithm or search technique to collect and retrieve the information, for example Google search engine is using PageRank algorithm for displaying the search results. There are several search engines like Yahoo, Lycos, Bing, Rediff, etc. These search engines are using their own retrieval techniques to display the results.

Search Engine works on the four main principles:

i. Web crawling
ii. Indexing web pages
iii. Ranking the results and
iv. Search and display the results

The web server sends the query to the index servers. The content inside the index servers is similar to the index in the back of a book, it tells which pages contain the words that match the query. The query travels to the doc servers, which actually retrieve the stored documents. Snippets are generated to describe each search result. The search results are returned to the user in a fraction of a second. Search Engines differ in their search speed, design of the search interface and the way in which they display the results. The main objective of any search engine is to provide the most relevant results first and the least relevant results later, in the shortest possible time.

Search Engine Definition(s)

According to oxford dictionaries.com "Search Engine is a program that searches for and identifies items in a database that correspond to keywords specified by the user, used especially for finding particular sites on the World Wide Web."

Search Engine Trends and Technologies

In the beginning search engines were very primitive and they had rudimentary general search options, from general search options there was a trend of developing advanced search features and thus evolved meta search engines, subject directories, etc. and they did not stop there. Presently the trend proceeds towards federated search and semantic web search engines. The search engine technologies are sophisticated technologies and the

sophistication is increasing day-by-day. There is a considerable trend in the technologies that are related to search engines.

The idea of search engine has started with Gerard Salton's SMART information retrieval system. "Magic Automatic Retriever of Text" developed in 1960. The first ever search engine named "Archives", was developed in 1990 by Allan Emtage a student of Mc Gill University. Since the advent of the WWW in 1993, the need and the passion for developing indexing and searching techniques have grown, giving way to the emergence of the present day search engines. Eventually, this trend seemed to be profitable and the demand for better search engines has resulted into a big business. Commercial search engines like Excite (1993), Galaxy (1994), Yahoo (1994), Lycos (1994), Alta Vista (1995), Inktomi (1996), Ask Jeeves (1997), Google (1998), MSN (1998), All The Web (1999), Info.com (2003), Amazon launches A9 search engine (2004), MSN Search (2005), Wikiseek (2006), Cuil search (2008) Microsoft launched "Bing" search engine (2009) "Yandex" Russian search engine (2010), "Halal Googling" Islamic search engine (2013) etc. are emerged as major player in the web economy. In this way there is continuous progress in search engines as well as their search features. The improvements in the feature of the search engines indicates that these search engines are playing a vital role in information retrieval from the World Wide Web.

Significance of the study

The study is a significant one, as it endeavours to reveal the impact of the engineering faculty and students that would be very much useful for designing and redesigning web search engines. This study helps to find out the various search features that users use in finding out the relevant information effectively and efficiently.

Review of Literature

There are some studies carried out so far across the world on web search engines, but a very little research has been conducted on the usage and search features of web search engines. The following review of the literature gives an idea of the gap in the field.

The study carried out by Egri and Bayrak (2014) states that 93% of internet traffic is managed by search engines; it shows the critical role of search engines on routing users to the right websites. Ding and Ma (2013) found that a lot of students are unable to search the web with efficiency, authors concluded that

information literacy education is vital to teach students comprehensive web searching competency, which includes knowledge and techniques for both academic and daily-life search tasks. The study carried out by Kristen Purcell and others (2012) on the usage of web search engines from 2002 to 2012 by Americans shows a dramatic increase in the usage from 52% to 73%, the rate of increase is 21%. And 91% of Americans find information when they use search engines. 73% of users find that search engines are accurate and trustworthy. The study also found that the overall view of search engine performance is very positive. Begs (2005) study dealt with web search quality and reveals that the quality of search depends on the search algorithm, indexing technique used in the different search engines. It also revealed that the algorithm differs from search engine to search engine considerably. The study also compared the performance of popular search engines. Fazil (2004) found that information retrieval effectiveness of web search engines based on mostly human relevance judgments. The study presents the automatic web search engines evaluation method and compared with human based evaluation. Chowdhury and Soboroff (2002) study found a method for comparing Search Engine performance automatically. They found how search engine ranks for a query document pairs. Brin and Page (1998) study dealt with PageRank algorithm. It shows that every page in the World Wide Web has its own single number named as PageRank. Page Rank suggests the structure of web graph, and it is very much useful in information retrieval. The review of the literature indicates that there is a need for the study as there is a gap in the field.

Objectives of the study

The Primary objective of the study is to find out the perception of engineering faculty and students on information retrieval features of search engines at Hyderabad, India.

The secondary objectives are:

a. To find out the perception of the faculty and students on the usefulness of search engines.
b. To find out what purpose search engines are use by the faculty and students.
c. To find out the type of search users conduct by using search engines.

d. To find out what type of search elements search by the faculty and students.
e. To find out the need for training on how to use search engines.
f. To suggest improvements in the Information Retrieval Features of search engines.

Methodology

The study was carried out by applying exploratory survey method. Questionnaire has been used as a tool for data collection. The questionnaires administered among 550 respondents of engineering faculty and students in Hyderabad. The sample of faculty and students is selected by accidental stratified sampling technique. Out of the total respondents 500 questionnaires were returned. Out of which 299 (59.8%) respondents are male, 201 (40.2%) respondents are female. The study was conducted in the year 2015. The findings of the presents study are based purely on the data collected through the questionnaire from the respondents.

Limitations of the Study

Search Engines are available globally but the present study is confined to the use of search engines by the engineering faculty and students in select engineering colleges of Hyderabad, in the state of Telangana, India.

Results and Discussion

Distribution of Sample by Educational Status

The distribution of sample of engineering faculty and students branch wise and year wise i.e., B.Tech. first year 22 (4.4%), B.Tech. second year 55 (11.0%), B.Tech. third year 124 (24.8%), B.Tech. fourth year 87 (17.4%), M.Tech. first year 51 (10.2%), M.Tech. second year 111 (22.2%), Doctoral Degree Ph.D. awarded 11 (2.2%), Doctoral degree Ph.D. pursuing 37 (7.4%). The total sample size is 500 (100%).

Table 1: Distribution of Sample by Educational Status

Educational Status	Frequency	Percent	Cumulative Percent
B.TECH 1st year	22	4.4	4.4
B.TECH 2nd year	55	11.0	15.4
B.TECH 3rd year	124	24.8	40.2

B.TECH 4th year	87	17.4	57.6
M.TECH 1st year	51	10.2	67.8
M.TECH 2nd year	111	22.2	90.0
Doctoral Degree Ph.D. Awarded	11	2.20	92.2
Doctoral Degree Pursuing	37	7.40	99.6
Ph.D. Specialization	2	0.40	100.0
Total	**500**	**100.0**	

Most Preferred Search Engines

The most preferred general search engines by the respondents as per their perception. Out of 500 respondents the majority of the respondents indicated that Google is user friendly (73.835) Google gets 1st rank followed by Yahoo (54.14%) 2nd rank, Bing (31.04%) 3rd rank and Lycos (21.82%) 4th rank chosen by the respondents. The respondents opted Google as first preferred search engine.

Type of search conduct

General search is 353 (70.6%), advance search is 147 (29.4%), therefore majority of the respondents are using general search features of the search engines. This indicates that the users are not utilizing the full search features of the search engines.

Purpose of use of Search Engines

Purpose of use of search engines by respondents according to the rank order, first general information (I) 65.56, next follows Academic Information (II) 64.57, for news current information (III) 54.81, to update the knowledge (IV) 54.14, Research work (V) 53.59, to solve day to day problems at work (VI) 50.81, for entertainment (VII) 46.84, for sports (VIII) 44.1, and Learn new things around the world (IX) 38.08.

Table 2: Purpose of use of Search Engines

Purpose of use of Search Engines	Mean of Garret Ranks	Ranks
General Information	65.56	I
Academic Information	64.57	II

For news/current information	54.81	III
To update the knowledge	54.14	IV
Research Work	53.59	V
To solve day to day problems at work	50.81	VI
For entertainment(ex. Music/video's etc)	46.84	VII
For sports	44.10	VIII
Learn new things around the world	38.08	IX

Use of Boolean operators and other Search Features

The search with 'AND' operator assumes the first rank (71.60), followed by search with 'OR' operator, (68.2). The search with 'NOT' operator is in the third rank (64.49).Phrase searching is in fourth rank (62.39), next follows Proximity searches (60.72). Truncation/Wild card searches occupy the last rank (54.58).

Table 3: Use of Boolean operators and other Search Features

Boolean operators/other search features/strategies	Mean of Garret ranks	Ranks
Search with AND operator	71.60	I
Search with OR operator	68.12	II
Search with NOT operator	64.49	III
Phrase searching	62.39	IV
Proximity Searches	60.72	V
Truncation/Wild cards searches	54.58	VI

Usefulness of Search Engines

The perception of the respondents on the usefulness of search engines rank-wise is as follows Out of the 500 respondents the mean of Garret score for "Easy to use" is 66.29 (1st rank), Getting latest information 56.17 (2nd rank) Advanced Search 55.41 (3rd rank), Relevancy of output 54.71 (4th rank) Time saving 52.56 (5th rank) Ranking output 49.77 (6th rank), Database coverage 49.55 (7th rank), High rate of retrieval of precise information 49.53 (8th rank) and other 37.66 (9th rank). Majority of the respondents chose the usefulness of web search engines is "Easy to use".

Table 4: Usefulness of search engines

Usefulness of Web search engines	Mean of Garret ranks	Ranks
Easy to use	66.29	I
Getting latest information	56.17	II

Advanced search	55.41	III
Relevancy of output	54.71	IV
Time saving	52.56	V
Ranking of output	49.77	VI
Database coverage	49.55	VII
High rate of retrieval of precise information	49.53	VIII
Others	37.66	IX

Type of Search elements Used

The search elements used such as title (79%), keywords (59.0%), and author (57.4%). On the other hand, subject headings (44.8%), Phrases (25%) and publisher's name (23.2%) are relatively less used search elements.

Table 6: Type of Search Elements used

Search Element	Number of Respondents		
	Yes	No	Total
Title	395 (79.0)	105 (21.0)	500
Keyword	295 (59.0)	205 (41.0)	500
Author	287 (57.4)	213 (42.6)	500
Subject Heading	224 (44.8)	276 (55.2)	500
Phrase	125 (25.0)	375 (75.0)	500
Publishers Name	116 (23.2)	383 (76.6)	500

Findings of the study

The study finds that respondents opted first rank for Google search engine i.e (73.83%), the majority of the respondents search general search feature (70.6.1%), the usefulness of search engines is easy to use (66.29%) (1strank). Majority (65.56%) of respondents use search engine for "general information". Majority (71.60%) of respondents search with "AND" Boolean operator. The study also reveals that majority (79.0%) of respondents used the search element as "title". The majority (71.60%) of the respondents need training on search engines to optimize the usage of the search engines.

Suggestions

As per the findings, it is suggested that faculty and students should be well trained on the importance and use of search engines for their academic success. The study suggests that there is a need to create awareness on the part of the faculty and students about various search features for precise

information retrieval. The librarians should provide a serious publicity via media like notice board, face book, twitter, bulletins, seminars and in various social media to attract faculty and students' patronage to the academic library.

Conclusion and Future Research

The Human society has experienced unprecedented explosion of information with the advent of digital technologies. The millions of users search for information resources on the World Wide Web. Search Engines are developed with wonderful search features. Currently no search engine covers the entire World Wide Web or Internet. Search across several search engines is more successful than a searching a single search engine. Exponential growth of search engines, everyday millions of pages are added, updated, deleted. The librarian should be competent with skills and abilities and also well versed with the information searching and retrieval tools.

Search Engines are going to play a very crucial role in information retrieval on the emerging Semantic Web. It is not merely retrieval efficiency that is going to be considerable in future, but also the future search engines are going to acquire many more dynamic features such as Speech Recognition, Thought Recognition and many more. The trend is going to be more of Federated searching, it is because integration of search tools is very much imperative to ensure exhaustive search. The future search engines will be more interactive; they will be talking and thinking search engines to facilitate information retrieval by the knowledge workers of tomorrow. The future trend in search engines technology is very dynamic one. Google Glass and Flying Drones are the emerging players in search engines technology. The possible extension of this work is an urgent need to dig deep web to develop a new ranking method or new search mechanism that can potentially identify high quality pages and exact search results as per the users query in the web.

References

Brin, S. & Page, L. (1998) The anatomy of a large-scale hyper textual Web search engine, *Computer Networks and Isdn Systems*, 30 (1-7), 107-117.

Chowdhury, A. & Soboroff, I. (2002) Automatic evaluation of World Wide Web search services. In proceedings of the ACM SIGIR conference, 25, 421-422.

Ding, W. & Marchionini, G. (2013). A Comparative Study of Web Search Service Performance. In: Hardin, S. ed., Proceedings of the 59th Annual Meeting of the American Society for Information Science. Baltimore, MD, 136-142.

Egri, G. & Bayrak, C. (2014). The Role of Search Engine Optimization on Keeping the User on the Site, *Procedia Computer Science*, 36, 335 – 342.

Fazil, (2004) Automatic Performance Evaluation of Web Search Engines. *Information Processing and Management*, 495-514.

Kim, K. & Tse, E.T.S. (2014). Search engine competition with a knowledge-sharing service, *Decision Support Systems*, 66; 180–195.

Mowshowitz, A., & Kawaguchi, A. (2002) Assessing bias in search engines. *Information Processing and Management*, 35(2), 141-156.

Purcell, K, Brenner, J. and Rainie, L.(2012) Search engine use, Pew Research Internet Project. Retrieved from www.pewinternet.org/2012/03/09/search-engine-use-2012/.

Ravi Kumar Jain, B. (2007) *Dynamics of Search Engines: An Introduction*. Hyderabad: ICFAI University press.

Sangeeta, K. & Shivarajadhanavel, P. (2007) Google's Growth: a Success Story. Hyderabad: ICFAI University Press.

Search Engine (2015) retrieved from http://www.oxforddictionaries.com/definition/english/search-engine.

Sufyan, B. (2005) A subjective Measure of Web Search Quality. *Information Sciences*, 365-381.

Uyar A, (2009) Investigation of the accuracy of search engine hit counts, *Journal of Information Science*, 35 (4) 469-480.

Vivekanand, J. (2011) *Search engines utility and efficiency*. New Delhi: Shree publishers and distributors, 1-10.

White, A. (2013). Search engines: Left side quality versus right side profits. *International Journal of Industrial Organization*, 31(6), 690–701.

Study to Determine the Extent to which Undergraduates Use the Library Resources and Services in an Academic Library Setting

H.M. Rohana Vijitha Thushara
Library of CA Sri Lanka,
Email: thusharaherath325@gmail.com

Lionel R. Amarakoon
[Ex] Librarian – University of Bolton, WCMT Campus, Sri Lanka
Email: lionel.amarakoon@gmail.com

Abstract

Registered undergraduates with Chartered Accountants of Sri Lanka (CA Sri Lanka) BSc (Applied Accounting) degree program are expected to use the CA Sri Lanka academic library fully, which is their major source of information. It has been observed by the staff of the library, that the students do not use library resources and services in an effective manner. Reasons for this situation were investigated by the researchers.

Total of 18 undergraduates were selected as the study population and population was small total number of students were used as the sample, from whom the data were collected through a structured postal questionnaire.

Out of the total number of respondents, 91.6% (11) of the undergraduates were satisfied with the services offered by the library. However, majority of students 83.3% (10) had not used the website of the library and another 58.3% (7) did not use online services offered by the library. Another 25% (3) found that arrangement of library resources on library shelves are not in proper order. Usefulness and the currency of the library materials, according to 41.7% (5) are average. Several useful recommendations have been made to rectify these anomalies.

Keywords: *Academic Libraries, Library Resources and Services, Library Usage, Evaluation, CA Sri Lanka Library*

Increasing Awareness Programmes and Use of the Library's Resources in Rajarata University Library System in Sri Lanka

K.R.N. Harshani
Rajarata University of Sri Lanka
Email: wimukasi@yahoo.com

A.S. Siriwardana
Rajarata University of Sri Lanka
Email: ssasoka@gmail.com

Abstract

Information is one of the important and vital gradients in modern days. This paper discusses library awareness and use of library information services in Rajarata University's library system. Servicing the right information to the right user at the right time is the goal of every library and information centre. In this regard, the library has started awareness programme to educate the student and staff on how to use the library and its resources and also to upkeep their knowledge by providing information in various sources available in the library. To increasing the awareness programme among the students, library organizes various programs such as internet access facilities, browsing internet, accessing e-journals, databases, institutional repository, OPAC and accessing other libraries. The library has been arranging e-resources awareness and training programmes by inviting resource persons being expert in the field. In this direction, the university library is conducting continuous training programmes about e-resources, digital repository and use of internet and other applications. Main objective is to emphasize the significance, elements and introduce the current status of awareness programme of Rajarata University library system. In conclusion, more awareness programmes should be created in the library system to enable the undergraduate students to be fully aware of the available resources and services. According to that libraries have to modify their awareness programme to encourage more and more creative uses of information resources. For effective usage of resources for right information in right time it is necessary to train all academic staff, students and administration staff. Library staff should be friendlier and collaborate with the library users so that they can guide and direct them to use the library resources and services. Library must give main concern to make available excellent customer service to improve its image in the institutes.

Keywords: *Academic Library, Information Sources and Services, Library Services, User Awareness*

Information Need and Seeking Behavior of Theni Government Medical College Students - A Case Study

S. Ravikumar
Department of Library and Information Science,
Madurai Kamaraj University, India.

K.Chinnasamy
Department of Library and Information Science,
Madurai Kamaraj University, India.

Abstract

This case study investigated information need and seeking behaviour of Theni Government Medical College students. The main objective of study seeking behaviour of medical college students to the information literacy and study the purpose and motives of the students seeking information. Data was collected through a pre-tested questionnaire, using the snowball sampling technique. So only 150 respondents are used for in data analysis and interpretation. It was found that 55.33% respondents are using the library for Preparing for the examination, 38% respondents are suing the print copy, 81.33% respondents are using the pen drive. Libraries have always welcomed new changes for enhancing their services and satisfactory clientele's needs. It's a high time for traditional libraries that they change their approach as the availability of the digital resources is growing day by day. The paper suggests certain measures for improving information need skills of students to make them more competent information users.

Key words: *Information need and Seeking Behaviour, User Study, Information Sources, Analysis and Conclusion.*

Propriety of Dewey Decimal Classification (DDC) Scheme in Classifying Buddhist Literature: an analytical view with Reference to '*Tripitaka*'

G.M.P. Gallaba
University of Sri Jayewardenepura, Sri Lanka
Email: punchi@sjp.ac.lk

G.D.M.N. Samaradiwakara
University of Sri Jayewardenepura, Sri Lanka
Email: manojakumara@gmail.com

P.G.R. Samaravickrama
University of Sri Jayewardenepura, Sri Lanka
Email: pgrasali@gmail.com

Abstract

Enumerative classification involves hierarchical, systematically ordered, mutually exclusive, jointly exhaustive, and fixed ordering of concepts. Classification of Lord Buddha's teachings has been prevailing for centuries in the form of three main Pitakas (baskets of knowledge) called 'Tripitaka'. Those divisions have been adapted to some extent in the modern enumerative classification systems like Dewey Decimal Classification (DDC) and Universal Decimal Classification (UDC) supplying enumeration or hierarchy for Buddhist knowledge. However, it is observable that the DDC has not been adapted the proper division of Buddhist knowledge for the literature on Tripitaka as not including sub-divisions of all Pitakas, though many revisions of DDC regularly formed. This situation makes problems for the users in navigating shelves in the libraries with rich collections on Tripitaka as their uniform title is also being as Tripitaka which leads the same call number that use to browse the shelves. Therefore, this study explores the adequacy of the DDC system in classifying literature on Tripitaka across an analytical view using content analysis technique as the research method. It was found that there exist serious gaps in the divisions and sub-divisions of literature on Tripitaka in the DDC system which should be addressed through an extended classification system that supports for vastly predominating Buddhist literature. Further, it was revealed if it includes all the divisions and sub-divisions under the existing class ranges of the DDC, the classification number becomes too long. Therefore,

it is recommended to expand the class Buddhism of the DDC including all the divisions and sub-divisions of Tripitaka literature and making options to shorten the classification numbers.

Keywords: *Dewey Decimal Classification (DDC), Tripitaka, Buddhist Literature, Library Classification*

Role of Library to Enhance the Awareness of Right to Information Act in India

M. Nagarajan,
Department of Library and Information,
Annamalai University, Chidambaram

M. Jayaprakash,
Department of Library and Information,
Periyar University, Salem

R. Kupeshan
Library, University of Jaffna

Abstract

Right to Information Act is a high priority need to overcome most of the problems in India. RTI placed at the pinnacle of all the priorities to create a prosperous country. But it's really RTI is used only by a minor portion of our society and it has failed to reach each and every citizen of the nation which is the need to realize the vision of the RTI. If the same situation continues, the vision of RTI would always remain as a dream. Now it is the responsibility of government concerned agencies to create awareness across the whole nation in a feasible manner. Today it is the responsibility of library professionals to design an awareness programme of Right to Information Act in India model which can educate all sections of society about the RTI Act. In this paper we have made an attempt to discuss the role of library to enhance awareness of RTI in Indian society, reasons for its poor usage, information literacy and its role towards boosting the usage of RTI Act.

Keywords: *Right To Information Act, Libraries, India*

Introduction

"The real 'Swaraj' will come not by the acquisition of authority by a five but by the acquisition of capacity by all to resist authority when abused."
The above statement of Mahatma Gandhi echoes that, the realization of Swaraj and meaningful Democracy depends on capable citizens not by few rulers. But if we look at the capacity of citizens to resist against the exploitation, to fight for their rights and to participate in the developmental activities of the nation

it is very poor and sounds the need of capacity building. This situation seems to be leading our nation towards disempowerment. The considerable reason behind this situation is lack of information and awareness among citizens. Lack of information is one of the major obstacles of good governance and democracy. Considering this obstacle government of India took a daring step by enacting the Right to Information Act in 2005. The RTI 2005 was really a great step towards improving the capacity of citizens by providing access to public information to public with a right.

The practical knowledge and understanding of RTI should reach to every Gully from Delhi then only we can dream for a transparent and corruption free nation which can lead to real Swaraj.

Because of unawareness and lack of education about RTI Act, it has not contributed as we expected while implementing. Without educating the people about RTI Act this will always remain as a paper tiger. Now it is time to think towards improving the use and competency of RTI Act through awareness and education. Information literacy is critical life skill which educates people towards making use of information in a potential and productive way. By educating the citizens about how to make use of RTI information literacy can contribute significantly towards creating democracy with all types of dignities.

Right to Information Act 2005

Indian Constitution ensured the dignified life to its citizens through fundamental rights, directive principles, freedoms and many other legal provisions. Even then citizen had no legal right to have access to public information which vital to understand most of the government activities. The year 2005 is a significant year in Indian constitutional history opened the lock of public information by providing a legal right to its citizens to access the public information under the provisions of Act. RTI Act is courageous step towards Democratization of information and knowledge to realize a transparent, corrupt free and participatory democracy.

Enactment of RTI Act

It has taken India 82 years to transition from an opaque system of governance, legitimized by the colonial Official Secrets Act (1923), to one where citizens can demand the right to information. The Right to Information Act 2005 came

into force for its enactment from 12 October 2005 to promote transparency and accountability in the working of every public authority in India. Right to Information Act 2005 marks a significant shift for Indian democracy, for the greater the access of citizens to information, the greater will be the responsiveness of government to community needs.

Basic Features of RTI

RTI is based on the key concepts: i) The right of the public to access the information and the corresponding duty of the Government to meet the request, unless specifically defined exemptions apply; (ii) The duty of the Government to proactively provide certain key information even in absence of a request.

The Act promises to make the right to information more progressive, participatory and meaningful, as it encourages the common citizen to enthusiastically participate in the whole process of governance.

The citizens are not only free to ask for information from the Government, but also have the right to get it. The scope of the Act extends to all authorities and bodies under the Constitution or any other law, and inter alia includes all authorities under the Central Government, State Governments and Local Bodies. The non-governmental organizations (NGOs) substantially funded, directly or indirectly, by the public funds also fall within the ambit of this Act.

Objectives of RTI Act

Right To Information (RTI) is derived from our fundamental right of freedom of speech and expression under Article 19 of our Constitution. If we do not have information on how our Government and Public Institutions function, we cannot express any informed opinion on it. Democracy revolves around the basic idea of Citizens being at the center of governance. Considering the role of informed citizen for the success of democracy RTI came into force with following objectives.

- Promote transparency and accountability
- Eradicate corruption
- Hold government and their instrumentalities accountable
- Establish a regime where citizen are provided with information easily.

Need for RTI Act in Indian Society

Revolutions don't take long to happen if the people are well informed to claim their fundamental right to good governance. The right to information is a fundamental democratic principle for transparency, accountability and to eradicate poverty in the Indian society. Effective anti-poverty programmes implemented by Government of India require accurate information on problems hindering development to be in the public domain. Meaningful debates also need to take place on the policies designed to tackle the problems of poverty. Information can empower poor communities to battle the circumstances in which they find themselves and help balance the unequal power dynamic that exists between people marginalized through poverty and poor governance. The need for the RTI in India can be expressed by following points:

- Greater Transparency
- Citizen-Centric Approach to Development
- Citizen-Centric Approach to Development
- Reduction in Corruption
- Promotion of Citizen-Government Partnership
- Greater Accountability
- Democratization of Information and Knowledge

According to Mr. P.B. Sawant, "the barrier to information is the single most cause responsible for corruption in society. Sawants' statement can be justified with todays' Indian situation that, India is severely buttered to buy ironically by its own. The high rate of corruption at every level of our society mocks citizens' right to life- a life with self-respect. India ranks 87th out of 178 countries in the transparency International Corruption index for 2010. To overcome this situation Soli Sorabjee stressing on the need of Right to Information aim at bringing transparency in administration and public life, says, "Lack of transparency was one of the main causes for all pervading corruption and Right to Information would lead to openness, accountability and integrity".

Where is RTI lacking?

RTI Act 2005 in India enacted with very high priority needs and motives of establishing a open society. After even five years of enactment RTI has not became a well-known right to every citizen. After enactment no significant steps have been taken to literate each section of society. Now the situation

elicit that RTI became the passion of some activists which is not an expectable phenomena for the success of RTI. For success of RTI it should become common right of each and every citizen in practice. RTI given equal rights to all but in practice it is not yet. When we look at structure of Indian society there is a big gap between literate and illiterate in enjoying the intelligent rights like RTI. In India more than 50% of the population is not able to understand and apply rights like RTI because of illiteracy lack of awareness and education. With this situation how come a right can realize its motives? Only the answer we can give is first we should literate the citizens for successful understanding and application of law then only we can realize the objectives of the RTI otherwise corruption became the most popular world in India every year which is the award for India for the year 2010.

Agencies to Literate the people in RTI Act

There are various categories of people in society. It is complex to a single agency or mode to educate and literate all section of people. Following are the some agencies which are generally playing important role in all walks of social life. These agencies have a crucial role in providing information literacy to people with special focus to RTI Act.

Universities

Universities are the knowledge centres of the society. Every university must take initiation to include RTI Literacy as a mandatory part of every course. RTI literacy for university graduates is very crucial as most of them are involving in nation building more directly than others. RTI literacy in universities increases the impact and scope of it in a very practical way as university graduates play role in various facets of society.

Library

Being an Education and Information Centre in its all forms like public, academic, research and special, national libraries can play a very influential role in creating awareness and imparting knowledge of RTI literacy among their different category of users with different strategies.

Academic Library

India has a vast population of students who are studying in thousands of schools and colleges. These students can play a very significant role in the re-building and reconstruction of our nation. This can only happen if they are aware of social problems and if their energies are properly channelized.

"A good academic library is a place, where the lofty spirits nation meets."

-Samuel Niger

By above quotation we can understand the responsibility a library in creating the spirit of a nation. Here library have greater chance to contribute significantly towards building a transparent and corrupt free nation through RTI Information literacy. Academic libraries should take active initiation to educate the student community about RTI. Improving Information Literacy with the focus of RTI will enhance the usage of RTI in a potential way. RTI literacy programme must become a mandatory extension activity of all kinds of academic libraries.

Public Library

"No place affords a more striking conviction of the vanity of human hopes than a public library" -'Samuel Johnson'

Above statement articulates the importance of public library in human life. The progress of India where more than 60% of the population resides at village depends a lot on public library. Most of the targeted people are not aware of the programmes including RTI and their functioning, with this problem how can we realize the mottos of all these programmes? Only a effective answer is educating rural people through public libraries. Without educating rural people in RTI literacy its success is always remains partial.

Public libraries should take initiation to educate the people in RTI. RTI literacy programme should become a mandatory agenda of every public library. Public libraries can utilize various medias to literate the mass according to the flexibility and needs of various communities to make learning more flexible.

NGOs

NGOs are the greater centres of empowerment. NGOs have a long history of its significance in improving the social life. There many NGOs working to educate people about RTI. When we look at the force behind the need of information literacy for the success of RTI NGOs still have a lot to do as the major agencies of social change. NGOs should give higher priority to RTI literacy. RTI Literacy

should become a primary agenda of all types of NGOs. This initiation not only help to educate the people in RTI also will contribute significantly towards the success of other initiations taken by NGOs by creating awareness among the targeted people.

Media Library

The media is the most powerful entity on earth because they control the minds of the masses. Having such a power, media can play a crucial role in educating the people in RTI Act. Medias should take initiations to educate people in RTI. Media should make RTI literacy as a mandatory part of its activities. Media should teach information literacy skills with special focus to RTI. Being an educator of large, mass media can be placed at the top of all the agencies to literate the people.

Government

Government of every nation plays very important role in every walks of citizen's life. What we are discussing of RTI Act 2005 is a great ignition of our government to realize transparent and efficient society. But when we look at the realization of the government's motto answer is both almost no partially yes. Without education and awareness of any programmes initiated by government its success is always partial. To overcome this problem government should inculcate a strategy of educating people about all laws and programmes initiated by government with high priority which is the need of the day.

Government should take serious initiation to literate people in RTI Act. It will really help in achieving the goal of RTI Act. If possible government should establish a separate agency to educate people in RTI, which can play a major role in the success of RTI usage.

Conclusions

Right to Information is a human right with immense power to transform the nation. On its foundation rest the cornerstones of freedom, democracy and sustainable human development. This foundation becomes strong only when every citizen can use this without any constraints. In true sense today the spirit of RTI suffering with crack of unawareness and lack of information literacy, which is always a threat to the nation. Information literacy which is a

crucial skill of this knowledge society can bridge the threatening crack of RTI that is unawareness and lack of education.

Today when we were completing this paper we have seen a news stating the applicant of RTI should apply his application only in 250 words, does this a simple task for a common man? There are many such complexities to use the RTI. To overcome this complexity Understanding the significance of information literacy in educating the people to use RTI in an efficient manner is the need of the day.

Reference

ALA (1989) Presidential Committee on Information Literacy: Final Report. Chicago. Retrieved 2009,fromhttp://www.ala.org/ala/acrl/acrlpubs/whitepapers/presidential.htm

Retrieved 2009, from http://www.informationliteracy.org.uk/information-literacy-definitions/

Retrieved 2009, from http://www.informationliteracy.org.uk/information-literacy/

Information Literacy: the 21st Century Skils by Corazon M. Nera, Director of Libraries, Lyceum of the Philippines University Member, Board for Librarians, PRC available at Retrieved 2009,from http://www.slideshare.net/plaistrlc/information-literacy-the-21stcentury-skills

Information Literacy Competencies and Programmes in India by Pranali B. Gedam and Ajay T. Agashe, available at Retrieved 2009,from http://crl.du.ac.in/ical09/papers/index_files/ical-88_100_227_2_RV.pdf

Retrieved 2009,fromhttp://www.cenlib.iitm.ac.in/docs/library/index.php?page=infolit

Retrieved 2009, from http://skil.stanford.edu/intro/research.html

Retrieved 2009, from http://www.rrtd.nic.in/RIGHT%20TO%20INFORMATION.html

School Libraries Influencing Students: A Survey of 15 Higher Secondary School Libraries in Kolkata

Lopita Mukherjee
St. John's Diocesan Girls' Higher Secondary School
Kolkata, India
Email: lopitamukherjee2011@gmail.com

Abstract

A library is an organic adjunct to the society. It can serve every human being from a child to an aged person, from the research scholars to semi-literate person. An academic library is an integral part of an academic institution. The importance and the utility of school libraries have been felt by every person linked with education. A survey conducted in 2015 in 15 English medium schools in Kolkata shows the types of library resources frequently used by the teachers and students. It also gives an idea of the library materials provided by the school. It is seen that the students use printed books and do not have access to internet. It is concluded that schools libraries must equip themselves with digital resources and must train the students to use them.

Keywords: *School Library, Reading Habit, Character Building, National Development, Information Communication Technology*

Introduction

A library is an organic adjunct to the society. It can serve every human being from a child to an aged person, from the research scholars to semi literate person. It can take very active part in literacy movement. An academic library is a library which is attached to an academic institution university, college or school. It caters to the needs of different groups of academic community students, teachers and research workers. It is an integral part of an academic institution, and it contributes to the attainment of the objectives for which the institution has been established. There are different grades of academic institutions. There are universities, deemed universities and other institutions of higher education. Similarly, there are intermediate colleges and degree colleges. We have primary schools, secondary schools and higher secondary schools. Each standard academic institution has to maintain a library (Kent, 1980).

School Library Influencing the Students

The importance and the utility of school libraries have been felt by education commissions, educationists and every person linked with education. S. R. Ranganathan the acclaimed father of modern Library Science in India and himself a noted educationist wrote: "The school library is a field of global experience of many students: it should have the hum of a beehive with the difference of its being not characterized by monotony of work of repetitive kind. For students growing day by day physically, mentally and spiritually – there will always be a fresh work to do in the school library"(Ranganathan, 1973).

The students are the builders of the nation and development of a country depends largely on the educational development of the students. A school library has a very major role to play in this field. In order to satisfy the thirst for knowledge and to establish the foundation in each subject the school library is very much essential. A school library may influence the students in the following ways:

School Library Developing Reading Habits

A school library develops independent reading habit of the student. . Since the number of students in a class room is increasing day by day the classroom teaching may not be sufficient for a student; moreover an intelligent student may want to complete his lesson with several books of the same subject in addition to class room teaching. This leads to independent reference work which is achieved by successful use of school library.

A paper presented at the UNESCO'FCDA (Educational Department) seminar / workshop on Libraries and Promotion of a Reading Culture, August, 2000, named "The Role of the School Library in Promoting a Reading Culture" written by E. Adeche Apeji, Deputy Director of Research & Head, Library and Informatics Centre, Nigerian Educational Research and Development Council, published in Library Herald says that the school library plays a leading role in learning process – a process that emphasizes inquiry - discovery methods. A clear point that has emerged from this method is that students must necessarily develop a love for voluntary reading culminating in a reading culture (Apeji, 2001).

School Library and Character Building

School going age is a very tender age. For the children of lower classes the stories with morals or the biographies of great leaders will inculcate the necessity of values in them and will thus help in character building. The classics will develop

their writing skills and strengthen their knowledge in the language. The mere storybooks of adventures and fairy tales will develop their imagination skill and will help them to be good writer in future. The dictionary and encyclopedia will teach them to do reference work. Thus, school libraries can have a very positive impact on its clients from a very tender age.

School Library in Increasing General Knowledge

A school library helps to increase the General Knowledge of the student. It contains newspapers, magazines along with various encyclopedias and General Knowledge books, which help the student, expand the horizon of knowledge and understanding.

A school library familiarizing the students with the e resources of a Modern Library

Information and Communication Technologies (ICT) have affected every sphere of our life. The concept of e-services changed traditional manual services into electronic services. The internet has played a major role in information storage, processing and dissemination- the major activities of library and provides global access. The e-book, e-journal, e-news, e-marketing, etc. make millions of users throughout the world. A school library is a place for the students to get used to these facilities and to get the training to use these resources.

School Library – a Stepping Stone to Other Libraries

A school library develops library-going habit and inculcates library civics in the students. A student attracted to a library at a very early age will remain attracted to libraries throughout the life. Moreover library-going habit makes them acquainted with the library civics – how to behave in the library, how to search a book by author, title or by subject, how to gather information from encyclopedia and many more. It helps them to learn to use the catalogue cards (presently to use computerized systems) and the art of selecting the required book from many other books. Thus a school library acts as a stepping-stone to other libraries. These social and academic functions of a school library are summarized below as goals of a school library.

Goals of School Library

1. School library creates library habits and a sense of library civics in students.
2. School library work influences the classroom work and vice versa.
3. It develops recreational and inspirational reading habit among the students.
4. It teaches the art of note taking and bibliography building.
5. A school library attracts all students to itself based on every possible stimulus.
6. It helps in character building.
7. It acts as stepping-stone for using other libraries.

The school library develops independent reading habits of the students, improves the quality of teaching, makes the students acquainted with different library materials like dictionary, encyclopedia, catalogue cards etc. It also trains the students to a life-long self-learning skill through utilization of library resources in any situation. It helps the students to be a good citizen, which ultimately supports towards national development. (Mukherjee, 2009)

Objective

The objective of this paper is to find out the resources of school libraries in Kolkata and the frequency of their use by the teachers and students. An attempt has been made to find out the application of ICT in the libraries. This will reflect the awareness of the users about current developments in the field of Library and Information Science in Digital field.

Methodology

Students as many as possible of 15 higher secondary (10 + 2 years), English Medium schools of Kolkata and some teachers have been approached and surveyed through a questionnaire. The questionnaire was semi-structured enquiring the various needs and uses of the library. 124 students and 34 teachers are approached. Both questionnaire and interview methods have been adopted in juxtaposition. The students of class IX, X, XI and XII are approached. English medium schools are approached because usually they have comparatively better libraries with moderate stock. The data thus obtained are organized and presented in a tabular form. Inferences were also drawn.

Resources of a School Library

Books

In India books are the major resource of the school library. An adequate number of text books and non-textbooks along with the reference books are main components of the libraries. A school library should have adequate number of all types of books. Useless books or old and outdated books should not be included for just increasing the number. The books that will leave some impact on the gentle mind of the students must be selected. Latest Story books written by eminent writers, classics, quiz books, dictionaries, encyclopedias, year book, quiz book, travel books and text books on various subjects must be kept in the school library. Biographies and speeches of eminent personalities are very essential as they help in character building. The surveyed schools have fair collection of books ranging from 5000 TO 10000. The number of students ranges from 1000 to 3000.

ICT in Libraries

Information and Communication Technologies (ICT) has affected the libraries. With the arrival of ICT libraries are changing in terms of everything whether it is in terms of functions, resources, or services, as a result of which the traditional libraries are shifted to automated libraries and finally to Digital Libraries. To keep pace with the rising digital environment the libraries are responding optimistically. They are combining their traditional services with internet based services. The academic libraries are responding to these changes. The academic libraries consist of university libraries, school libraries and college libraries. Though the universities and the colleges are remodeling their libraries the schools are rather slow to respond. A survey conducted in the year 2000 of 134 schools and a resurvey in the year 2006 show lack of digital resources (Mukherjee, 2009).

Use of Libraries in 15 English Medium Schools

The surveyed schools have good collection of print resources. Computer and internet is present in most school libraries expect one or two but in most schools the students do not have access. E books are present in only one school, e journal, e encyclopedia in none of the schools. In this scenario we have tried to find out the use of the library.

Purposes of Library Visit by Students

The reason for which students visit the library are identified and presented in tabular form. The students use the library to read story books, to read several subject books which would help them to increase the basic knowledge of a subject, to read biographies specially before the birth anniversary of some eminent personalities for participating in special programme organized by school, to take books, to write script for cultural programnme, to use internet (very less students use internet as they can use it after taking special permission and in front of a teacher only), to photocopy some useful documents and to prepare themselves before participating in Quiz Competition, in fact they spend hours and hours in the library before any interschool Quiz Competition.

Table 1 and Figure 1 show that out of 124 students 103 or 83.06% come to read story books, 72 or 58.06% come to library to consult subject books, 30 or 24.1%% students come to library when they take part in Quiz it is seen that among 124 students 83.06% or 103 take story books, 58.06% or 72 text books on various subjects, 24.1% or 30 take quiz books, 54 or 43.5% to get biographies, 19 or15.32 % to write scripts to organize cultural programme, 8 or 6.45%come to use internet, 29 or 23.38% students avail photocopying facility from the library, 2 or 1.62% come for other purposes which includes preparation for project works and construction of models.

Table 1: The purposes of library visit by Students

Purpose	Number	Percentage
Reading story books	103	83.06
To consult several books on a particular subject	72	58.06
To participate in Quiz Competition	30	24.1
To take biographies	54	43.5
To organize cultural programme	19	15.32
Using internet	8	6.45
To get photocopy services	29	23.38
Any other	2	1.62
Total Number	124	--

Remarks

Almost all the students come to the library to read story books that we all know will help to develop imagination skills, improve the command on the language,

and will improve the spellings. More than fifty percent use the library for subject books which implies almost fifty percent students prefer ready notes from either school or tuition teachers, very few come to complete the project work as the syllabus is framed in such a way there is little room for project works. But the students consulting subject books will surely be benefitted as consulting several books in a subject will strengthen their basic knowledge in that subject. Only those who have talents take part in cultural programme, and Quiz Competition hence the percentage of students involved in these activities is less. But as we see the percentage is little higher in case of quiz since they are becoming more and more interested in this activity. But here also if the quiz books are used frequently the general knowledge of the students will increase. Another remarkable observation is that very few students come to use internet. This is because this facility is not provided to the students in most of the school. It is also seen that there is a demand for biographies as 54 students or 43.5% students take biographies. Biographies have very positive impact on young minds. The life of eminent personalities helps very much in character building.

Purpose of Library Visit by Teachers

The teachers use the library mainly to read story books, to read several subject books which would help them in classroom teaching, to get photocopies of documents, to write scripts or to organize any cultural programme or to organize Quiz Competition or, to prepare speeches when they take morning assembly and to direct the students to the library resources. It is to be noted that morning assembly means prayer and speech with moral given by a teachers before the beginning of the classes. This duty is allotted to few teachers in turns say twice a month. In or before any special day like Netaji's birthday or Independence Day special assemblies are taken. Students also participate in special assemblies. Table 1 show that out of 34 teachers 22 or 64.8% come to library to prepare themselves for classroom teaching, 14 or 41.2% direct the students to library resources, 7 or 26.5% seek libraries help to organize cultural programme, 9 or 26.5% prepare themselves to take morning assembly, 14 or 41.2% for photocopy, 29 or 85.2% come to read story books and only 1 or 2.9% for other purpose.

Table 1: The Purpose of Library Use by Teachers

Purpose	Number	Percentage
To get help in class room teaching	22	64.8
To direct students to books	14	41.2

To organize cultural programme	7	20.6
To take morning assembly	9	26.5
To take photocopy	14	41.2
Reading story books	29	85.2
Any other	1	2.9
Total Number	34	--

Remarks

It is seen most of the teachers use library to read story books, many use it to aid in class room teaching, Very few use the library to organize cultural programme or to take morning assembly. This may be due to the reason that handful of teachers, who have this capability, are assigned these duties. But it is also seen that very few teachers direct the students to the library books. This is very disappointing as the teachers are role model of the students and their inspiration and guidance can do a lot to increase the reading habit of the students. They can direct the students to biographies of eminent personalities which would help them in character building, classics and other story books which will develop their imaginary capabilities, subject books to strengthen their basic knowledge in the subject and so on.

Conclusions

It is seen that school library is used by the teachers and students widely as far as print resources are concerned. Digital resources are lacking in most of the libraries. The students are denied the access of computer and internet. This policy should be changed. The school libraries must equip themselves with the digital resources and they must train the students to use them. A school library influences a student to become user of libraries throughout life. It must develop their expectations and much train them accordingly.

References

Apeji E, Adeche.(2001). The role of the school library in promoting reading culture. *Library Herald,* 39(4).

Kent. Allen et. al. (1980). *Encyclopedia of Library and Information Science.* Volume 28. New York : Marcel Dekker.

Mukherjee, Lopita. (2009). An Evaluative study of School Libraries in and around Kolkata. PhD thesis. Kolkata: Calcutta University.

Ranganathan, S R. (1973). *New education and school library: experience of a half century.* Delhi: Vikas Publishing House.

Trehan. G.L. & Malhan, M.L.V. (1980) *School Library Management.* New Delhi: Sterling Publishing Limited.

Understanding Present Situation and Future Challenges of Library and Information Sector in Sri Lanka

M S M Shiham
National Library of Sri Lanka,
shifahem@gmail.com

Iromi Menaka Wijesundara
National Library of Sri Lanka.
iromiwi@yahoo.com

Abstract

The library history of Sri Lanka begins with writings of Buddhist theologies at Buddhist temples such as Mahavihara, Abhayagiriya and Jethavana vihara at the Anuradhapura period from 250 BC to 1017 AD. Mahavihara records first known monastic library called 'Pothgula' causing tremendous impact in traditional library system in Sri Lanka. Although Sri Lanka has a long library history from ancient times, modern library system started during British period in nineteenth century as 'Subscription libraries' provide documents to the British administrative body in major cities. Sri Lanka's modern library system establishes gradually along with other LIS related factors with this point.

Basic elements required to survive a library system in a country was established during first half of the twentieth century in Sri Lanka such as library services, legislations and documentation systems etc. Nevertheless most important steps have been taken place in the second half of the twentieth century paying high impact in the Sri Lanka's library development. During this period, LIS related Institutions established, formal LIS education was introduced, eminent LIS professionals produced and also some contemporary library trends was adopted to libraries.

Life pattern of human being have changed gradually with civilizational and cultural changes in various era. Places where books were kept called as 'as book store' in the ancient period, and those who kept books also were called as 'Book keeper' or so on. Later on name book store changed as information centers as well as knowledge centers with the relevance of ICT factors in this information

era. LIS field is getting change with new trends and innovation in this modern world. Library building & furniture, Library users, Library resources, Library tools and technologies, Library services and skills etc are noticed as present new trends in the world, and these trends and innovations caused to change in various dimensions at the library background. According to the factors, future libraries will have to be called as cultural centers in order to serve as a partner of a person's life with considering its capacity and role at the society. "Center for the Future of Libraries" at ALA of United State of America working to identify new trends relevance to libraries and librarianship. According to their study trends will be organized into seven categories - Society, Technology, Education, the Environment, Politics (and Government), Economics, and Demographics (STEEPED) in future.

What is Sri Lanka's present situation? Though satisfied some sort of factors in new trends and innovations captured by some libraries at present, situations points out that most of libraries are not much absorbed new trends and innovations with their library activities so far.

A question arise here that "Why contemporary trends and innovations have not seen in most of Sri Lanka's libraries and their activities?" So what's next? Are these changes threat for survive of Sri Lanka's future of LIS services and profession? Are we capable and ready to adapt and go forward with the world? Then how to prepare for bridging the gap to reach contemporary library development and future role of libraries in the world and cater library services for development of our nation?

This paper is a literary survey of present situation of Sri Lanka's LIS sector comparing the contemporary global trends and innovations. The role of libraries seems to be changed from stage of information centers to participatory centers in most of the countries. This research reveals to think about future role of Sri Lanka's library sector. This paper concern only general indicators of whole library sector in Sri Lanka, not the wide and deep research with each library type in order to point out where we are now at present and how to prepare for the future.

Keywords: *Sri Lanka Library History, Modern Library Trends, Future libraries*

Introduction

Present global trends and innovation in libraries

Global library system transformed in to various dimensions. Traditional libraries changed with the relevance of ICT factors in this information era. Today libraries called as Information centers as well as knowledge centers. Library has become a central hub for gathering, learning, exploring, dreaming, informing, inspiring and discussing. In addition, modern technology has forced the inclusion of electronic devices everywhere and therefore, has changed the form of yesterday's library into a new progressive modern environment. According to the factors, future libraries will have to be called as cultural centers in order to serve as a partner of a person's life with considering its capacity and role at the society beyond today's library service methods.

When study within present LIS sector, could be able to find out several of new trends and innovations in various types of library sector at the world. This study is been extended considering following six most common factors that affecting today's library's changing face.

1. Library building & furniture
2. Library Users
3. Library Resources
4. Library tools and technologies
5. Library services
6. Library professional's skills

However these six factors have been adopted from presentation by Veerangana Singh Negi.

Library building and furniture

Traditionally libraries hanged boards as "Please be Silent" but today's libraries are not a place to be silent but to work as group with having a coffee. Physical features of library building and furniture has transformed from traditional systems at contemporary libraries. Interior and exterior designing are created in different models by professionally trained furniture makers. New features added to the library such as café's and food corners, group study accommodations, open

meeting places, extensive seating and a large study area with many public access computers and also constructed with designed to provide maximum energy independence without neglecting the environmental impact. Features of modern libraries mentioned by K.J Mateckis, L. Kostinaite and J. Pupeliene

Conceptual Principles of the Planning of Modern Public Libraries

1. The modern public library has to be multifunctional
2. The modern public library has to be comfortable
3. The modern library has to exist in harmony with its natural and urban environment
4. The modern library as an open, democratic and intellectual communication institution
5. Planning of the building has to be flexible and simple
6. An internal garden in the middle of a building
7. Locate the storages on the underground floors "

Furniture is one of the most important factors in an effective modern library; as a result it needs to be functional, attractive and flexible. Tables, Shelving, Book trolleys, Displays, End panels & canopy tops, Booths & Banquettes, Counters, Pods, Displays, Signage, Office & Meeting Hubs, Seating, Displays, Service desks, Floor covers, Computer workstations, Technology solutions, Lighting systems, Children furniture and Teen furniture are some examples of modern library furniture. Some new features are seen in Reading Hideaways, Reading Towers, Reading Nooks, Book Pods, Rocket Pods, Board Book Display Units, Reading Scheme Boxes, Acrylic Counter-top, Desktop Unit, Flat-backed Table-topper, Counter-top Units etc.

Important features noticed at contemporary library furniture's are,

Creative minded, highly skilled designers seen in the industry to work with modern design techniques.

Mobile shelving system, lockable casters and reading tables and lounge chairs, white boards, pedestals, partitions and large screen monitors mounted on mobile carts can be moved and/or reconfigured to create space for any type of program or function being held in the library.

Specialized furniture vendors keen in working in collaboration with libraries consisting professional designers and market research activities.

Space planning and modern interior designs patterns used in libraries to modernize old one into new look with trendy furniture.

Library Users

User's attitude seems to be changed from traditional reading systems & materials. Traditional readers visited libraries and spend their times for their studies, researches and other needs. Traditionally they used printed materials and received copies of those according to their need. Present situation defers from traditional readers pattern, they like to use digital publications an online resources in libraries. Hence readers seem to become to deal with digital devices in working places, on their travelling or their homes. So **e-devices** like Laptops, i-pads & Tabloids, Kindles, Nooks, smart phones used for e-reading and online searching process noticed to be increased.

Library Resources

Traditional libraries transformed as Digital libraries. The demand of traditional library materials diverted from printed to non-print. **E-resources** have become unavoidable sources in libraries. CD-ROMs., DVDs, Blu-rays, Electronic Journals, Electronic Databases, Electronic Books, ETD's (Electronic Theses and Dissertations), Digital Libraries, Internet Resources, Electronic Mail Data, OPAC and Institutional Repository System are used in libraries. Usage of e-resources is increased than printed resources at present. E-books, e-journals & full text articles are very popular among contemporary readers. They feel convenience in using e-resources on their learning activities. So libraries make facilities to their user's to use e-resources in on line or off line modes.

Library Tools & Technologies in Libraries

Modern libraries use new tools & technologies to serve their readers to utmost satisfaction. Ellyssa Kroski point out in 10 Great Technology Initiatives for Libraries

- Host a cloud-based collection
- Create a basic mobile website
- Start a location-based photo stream with Instagram
- Integrate LibGuides into Drupal
- Balance the library voice with the personal in social media
- Use crowdsourcing to create a collection
- Make a quick screencast
- Create personas before you design your website

- Use Google Voice to implement text reference
- Visualize Twitter relationships with Mentionmapp"

Some other new trends and technology usage in libraries could be discovered around the globe. Semantic Web & Cloud Storage, Cloud Apps and Services, Mobile (Computing) Technology, QR Code system, RFID system, open source usage, Automated Circulation System, Self Check-in/Check-out System, Library Touchscreen OPAC Station are some examples on new technology usages. GPS-navigation apps to search books from shelves, "Redbox"-style lending machines or kiosks located system for find books, "Amazon"-style customized book/audio/video recommendation schemes that are based on patrons' (users') prior library behavior are some examples for present trendy tools & technologies that for libraries adopted from new ICT.

Library services

Every library based on its services for their readers and engages in many traditional services for their users. Apart from that contemporary libraries bind to provide services with adoption of modern technologies in their services list. Institutional repositories, Meta search, E-learning and course management systems, Exposing library collections to search engines, Data mining, Library 2.0 service, Digitization Services, Ask A Librarian, Link to library website, e-resources, databases, Home Library Service, Online book clubs, Disability Services, Services for researchers, Contact your Subject Librarian Borrowing, Interlibrary Loan, Access to Other Libraries, Reserve Readings/ e-reserves, Classroom and Teaching Support, Research, Scholarly Communication and Publishing Support, Help / Contact Us. These are some examples of services are designed by various types of libraries deliver at present.

Library Professionals' Skills

As to S.R. Ranganathan's theory "library is a developing organization". Library management and survival depend on librarian's skills. So new knowledge & skills needed to serve readers are should be acquired by librarians. Some librarian's skills are pointed out by professionals are as followed.

Personal skills

1. Analytical
2. Creative
3. Technical
4. Flexible

5. Reflective
6. Able to deal with a range of users
7. Detective
8. Adaptable
9. Responsive to others'
10. Enthusiastic
11. Self -motivated

Basic Technology Competency skills

1. Ability to embrace change
2. Comfort in the online medium
3. Ability to troubleshoot new technologies
4. Ability to easily learn new technologies
5. Ability to keep up with new ideas in technology and librarianship (enthusiasm for learning)

Higher Level Competencies skills

1. Project management skills
2. Ability to question and evaluate library services
3. Vision to translate traditional library services into the online medium: Critical of technologies and ability to compare technologies
4. Ability to sell ideas/library services

Current Library Situation in Sri Lanka

Most of Sri Lanka's libraries face lack of financial facilities from their administrative entities to enhance their libraries services. Most of libraries are not aware and implement of proper library standards as like UNESCO and IFLA guidelines and recommendations or other office standards like ISO. However University libraries, some special libraries and national library have to be seen adopted and using satisfactory international guidelines.

Most of libraries accommodated in traditional buildings and contemporary building plans for libraries in Sri Lanka are not reflect with considering the new trends. Traditional patterns expired interior and exterior designs, old types of buildings only seen at present. Professional library building designers and builders are lack with comparing the need.

Library furniture belong to libraries are demonstrate a value for library services. According to present trends Sri Lanka's library-furnishings are not much demonstrate that manner. Fascinating, trendy, suitable furniture should be added for our libraries are very important.

Library users increased at libraries, usage of traditional and digital resources increased. Reader's attitude towards using library sources gradually increasing. Academic readers interested in using digital resources in virtual or on line. Lack of digital resources and online resources cause problem in delivering good service to readers. Library resources belongs to Sri Lanka's libraries are mostly printed. Digitization projects are being carried out and digitizing units are established in libraries from recent times.

Library professionals should acquire many kinds of skills and qual8ifications as mentioned above. According to present situation skills needed to serve in modern libraries are developing gradually. Institutions related to LIS, training programmes, motivation sessions and other skill oriented programmes make aware on increasing professional state.

According to present situation commonly libraries transformed from traditional in to new trends at present. Most Libraries has increased their capacity to create and provide to access of digital and online resources than earlier. Library professionals are able to use new technology and to create digital resources as well as library application software at present. The rate of using social media is increased on their library communication activities. ICT, communication and managerial skills noticed to be increased.

Finally Sri Lanka's LIS sector is moving from traditional to modern library trends.

Future of LIS sector in the globe

Center for the Future of Libraries" at ALA of United State of America states that future library trends will be organized into seven categories - Society, Technology, Education, the Environment, Politics (and Government), Economics, and Demographics (STEEPED). This center works to identify future trends in LIS field.

What are the challenges for Sri Lanka's LIS sector?

Environment will always be changed time to time and these changes will affect librarians and information professionals on their role, job opportunities, self-

image, motivation and even their survival. Librarians therefore need to find timely solutions to remain in the developing world with other sectors.

Comparing with above factors can imagine that Sri Lanka still on moving stage on global library trends and innovations at present. On the other hand still Sri Lanka's remains with traditional LIS factors those are common to third world countries. But world is moving for another direction with ICT and other new trends. Hence this study reveals that present and future trends and innovations mentioned in this study would have make challenges for Sri Lanka's LIS sector.

Conclusion

There is a large space to fill the gap remain in Sri Lanka at present in LIS sector with comparing global trends and innovations. These challenges would have to be taken in to a research to meet an effective changes in Sri Lanka. LIS professionals, LIS related institutions and the Sri Lanka government should think twice to beet this battle.

Reference

Barkovika, M. Redbox Makes Progress in DVD
http://www.dailytech.com/Redbox+Makes+Progress+in+DVD+Rental+Business/article11922.htm

Brain, Lavoie. Henry, Geneva. Dempsy, Larcan. The service framework of libraries.
http://www.dlib.org/dlib/july06/lavoie/07lavoie.htm

Centre for the future libraries. http://www.ala.org/transforminglibraries/future

Children's fiction. http://www.openingthebook.com/library-furniture/childrens-fiction

Clever creative modern library architecture
http://weburbanist.com/2008/12/10/clever-creative-modern-library-architecture-designs/

Dowlin, Kenneth E.(1984). *The Electronic Library*.New York. Ncal Schuman Publication

Farkas ,Meredith. Skills for the 21st century librarian
http://meredith.wolfwater.com/wordpress/2006/07/17/skills-for-the-21st-century-librarian/

Figueroa Miguel .Forecasting the future of Libraries
http://americanlibrariesmagazine.org/2015/02/26/forecasting-the-future-of-libraries-2015/

FG library product. http://www.fglibrary.co.uk/products

The-future-of-libraries/http://www.davinciinstitute.com/papers/the-future-of-libraries/

Games B Hunt Jr. Academic Library Building . http://www.ala.org/acrl/academic-library-building-design-resources-planning

Howard,Besser. The past, present and future of digital libraries
rhttp://digitalhumanities.org/companion/viewdocId=blackwell/9781405103213/9781405103213.xml&chunk.id=ss1-5 -
&toc.id=0&brand=9781405103213_brand

Kroski, Ellyssa. 10 Great Technology Initiatives for Libraries. Americanlibrariesmagazine[onlineissue].February 27.2013. http://americanlibrariesmagazine.org/2013/02/27/10-great-technology-initiatives-for-your-library/

Library furnishing .http://creativelibraryconcepts.com/library-furnishings/

Library Services for faculty .http://library.nyu.edu/services/for_faculty.html

Library touch screen provide many features http://creativelibraryconcepts.com/library-touchscreen-provides-many-features/

Major trends library design .http://www.bdcnetwork.com/12-major-trends-library-design

Mateckis,K.J ,Kostinaitė.L and Pupelienė,J. (2004).Conceptual Principles of the Planning of Modern Public Libraries. *Liber Quarterly*. Vol 14, No 2

Modern library around the world .http://ebookfriendly.com/modern-libraries/

Negi,V.S (2013).Trendy libraries and their trendy services an international perspective.http://www.slideshare.net/VSNegi/trendy-libraries-and-their-trendy-services-an-international-perspective?related=1)

Nkanu, W.o.,Okon, H.I. Digital divide bridging the gap through ICT. Library Philosophy and practice.http://www.webpages.uidaho.edu/~mbolin/nkanu-okon.htm

Nonthacumjane, Pussadee. Key skills and competencies of a new generation of LIS professional .http://conference.ifla.org/past-wlic/2011/97-nonthacumjane-en.pdf

Piyadasa, T.G.(1985).*Libraries in Sri Lanka :origin and history*. Delhi. Sri Sathguru Publication

Ranaweera, *RAAS Early public libraries in Sri Lanka during the British period.12 th Annual Research Symposium*. Kelaniya. University of kelaniya

Steffen , Warwa. Technology Trends in Focus: Innovations in Libraries http://www.goethe.de/ins/pk/en/kar/kul/bib/sbi/12084408.html

Top five skills required for librarians today tomorrow/http://lac-group.com/blog/2013/08/06/top-five-skills-required-for-librarians-today-tomorrow/

Veerangana, Singh Negl. Trendy libraries and their trendy services an international perspective. http://www.slideshare.net/VSNegi/trendy-libraries-and-their-trendy-services-an-international-perspective

Wijethunga, Pradeepa (2011) Fifty years if LIS education in Sri Lanka. a retrospective examination. *Sri Lanka Library Review*. Vol. 25 (P. 1-14)

Wimalarathna, K.D.G.(1980) History of the archive keeping in Sri Lanka. *Sri Lanka Library Review*. Vol. 5.No.1 (57-66)

වීරසිංහ, ඩබ්ලිව් .කේ.එම්.එම්.කේ.(2000) පුස්තකාල ඉතිහාසය.දළගම.කර්තෘ සමරු කලාපය. කොළඹ මහජන පුස්තකාලය විවෘත කිරීම (1980).කොළඹ. කොළඹ මහජන පුස්තකාලය

Research to Discover What Factors Influence the Regular Newspaper Reading Habits of the Public Servants Serving in the Metro Jaffna Region

U. Latha
University of Jaffna
Email: lathavara2002@yahoo.com

Abstract

Endeavour to promote and popularize the newspaper reading habit, among public servants, by researching talents, individually and collectively. Reading is a basic human skill involving the reader's eyes, his mind and the matter being read. General reading gives an individual, wide perspective of the world and its peoples. One of the major goals of the research is to inspire a knack for reading and to promote a reading culture among its users. The present study aims to investigate the reading habits of the public servants and their gender variability. To this end, 320 public servants were randomly interviewed, who are serving in the Jaffna Metro region to assess their reading habit and to size up how exactly this particular exercise can be honed and improved. Out of the 320 interviewed a 150werefemales and the balance 170 were males. A structured questionnaire had three features. One being open ended; the second was open ended with prequalifying statements and the third Dichotomous choice. The data was analyzed under the Probit model. The model was statistically significant at 1% α level (LR Chi sqr 5.52, Prob> Chi sqr 0.0009, Log likelihood-82.4357 & Pseudo Rsqr 0.088). The model revealed the following factors such as age of the respondent, education, household size, parental educational level, being accessible to social media network and attitude towards knowledge gathering significant for Newspaper reading at 5% α level. It was also found that being a member of a social media network and having large family size affect the Newspaper reading habit negatively. Meanwhile the socio economic factors of the family such as age, parental education, income level and educational level of respondents have great positively significant impact on Newspaper reading habit of public servants. Gender was treated as a dummy variable in the model, but was not found to be significantly influencing the paper reading habit. Besides, the general statistics revealed that among the samples examined about 60% read papers regularly and 90% of these prefer reading in the early mornings. Further the majority prefer Newspaper reading at home as the first option and as the

second they prefer to read at the offices. About 78% of the total numbers of officers have access to social media network. About 56% of these are regular readers of the dailies. The remaining 44% believe that regular Newspaper reading is not essential as they have access to social media network. The main conclusion drawn is that, electronic media networking are spellbinding public officers slowly and sooner or later the Newspaper reading habit may become obsolete.

Keywords: *Jaffna, Newspaper reading habit, Public servants, Probit model, Social Media Network*

Information Seeking Behavior of Post Graduate Computer Science Students in Madurai Kamaraj University: A Study

K.Chinnasamy
Department of Library and Information Science,
Madurai Kamaraj University, Madurai, Tamilnadu, India.
Email: drkchinna@yahoo.co.in,

S.Ravikumar
Department of Library and Information Science,
Madurai Kamaraj University, Madurai, Tamilnadu, India.
Email: raviselvam333@gmail.com

S.Aravind
G.T.N. Arts College,
Dindigul, Tamilnadu, India.
Email: aravind2601@yahoo.co.in

Abstract

This paper is an attempt to comparative study the Information Seeking Behavior of Computer Science Students in Madurai Kamaraj University. The main objective of study the type of books, journals, Magazine, Newspaper and digital resources that students prefer more and to identify the information need have surveyed respondents. A total number of 60 were selected both two Department (Computer Science and Computer Application) students and their response was obtained with help of questionnaire. Major Fining to study the male respondents are visiting the library more than the female respondents. The satisfaction level of seeking information M.C.A students are 53.3% and M.Sc., students 41.7% very good. Purposes of seeking information M.C.A respondents 55% are developing knowledge more than the M.Sc., respondents 50%. It was found that respondents used a variety of information sources for teaching and research. Books, reports and statutes were considered more important.

Keywords: *Information, Seeking Behavior, Information Gathering and Information Seeking Behavior.*

Introduction

Information is an indispensable raw material for right decision making from the government and institution level to the personal level. Information is very basic of human existence. Information is the essential element for the progress of higher education. The information such as knowledge, facts, data, News, Massage, etc., the word information is used in the context of user studies research, to denote a physical entity or phenomenon. The 21st century can best be described as an era of information revolution, with the presence of information bearing materials in diverse formats. Libraries and information centers are not only equipped with materials in traditional formats but also in electronic formats offering users a vast selection.

The terms information seeking behavior are all used in different within the context of user studies information has been used to denote factual data or advice or opinion a physical objective such as a book or journal or the channel through which a message is conveyed for example oral or written communication within library and information science information has been defined as "any stimulus that reduces uncertainty" (krikelas,1983, p.6)

Information Seeking Behavior

David Ellis in the International Encyclopedia of Information and Library Science defines information seeking behavior as the complex patterns of actions and interactions that people engage. In when seeking information of whatever kind for whatever purpose (Ellis, 2003).

According to Girja Kumar information seeking behavior is mainly concerned with who needs what kind of information for what reasons; how information is found, evaluated and used (Girja Kumar, 1990).

According to Wilson (2000:1), "Information seeking behavior is the purposive seeking for information [sic] as a consequence of a need to satisfy some goal. In the course of seeking, the individual may interact with manual information systems (such as a newspaper or a library), or with computer-based systems (such as the World Wide Web)."

Information seeking behavior which results from the recognition of some need (Wilson 1981) is defined by krikelas (1983, p.6-7)"as any activity of an individual that is undertaken to identify a message that satisfies a perceived need. in other

words information seeking begins when someone perceives that the current state of possessed knowledge is less than that needed to deal with some issue (or problem).the process ends when that perception no longer exists" that is the information seeking process ends when the perceived need has been satisfied.

Information seeking refers to process of collecting and receiving information by different means. The means may include published or unpublished materials, textual or images, communicating with colleagues, communicating with peers, communicating with librarians etc. Kari defines information seeking as a purposeful process in which the individual attempts to find information through information sources in order to satisfy his information need (Kari, 1998).

The item-by-item comparison of two or more comparable alternatives, processes, products, qualifications, sets of data, systems, or the like. In accounting, for example, changes in a financial statement's items over several accounting periods may be presented together to detect the emerging trends in the company's operations and results. See also comparability analysis.

Comparative Research Defined

Comparative research, simply put, is the act of comparing two or more things with a view to discovering something about one or all of the things being compared. This technique often utilizes multiple disciplines in one study. When it comes to method, the majority agreement is that there is no methodology peculiar to comparative research. The multidisciplinary approach is good for the flexibility it offers, yet comparative programs do have a case to answer against the call that their research lacks a "seamless whole".

There are certainly methods that are far more common than others in comparative studies, however. Quantitative analysis is much more frequently pursued than qualitative, and this is seen by the majority of comparative studies which use quantitative data. The general method of comparing things is the same for comparative research as it is in our everyday practice of comparison. Like cases are treated alike, and different cases are treated differently; the extent of difference determines how differently cases are to be treated. If one is able to sufficiently distinguish two carry the research conclusions will not be very helpful.

Secondary analysis of quantitative data is relatively widespread in comparative research, undoubtedly in part because of the cost of obtaining primary data for such large things as a country's policy environment. This study is generally aggregate data analysis. Comparing large quantities of data (especially government sourced) is prevalent. A typical method of comparing welfare states is to take balance of their levels of spending on social welfare.

Comparative research can take many forms. Two key factors are space and time. Spatially, cross-national comparisons are by far the most common, although comparisons within countries, contrasting different areas, cultures or governments also subsist and are very constructive, especially in a country like New Zealand, where policy often changes depending on which race it pertains to. Recurrent interregional studies include comparing similar or different countries or sets of countries, comparing one's own country to others or to the whole world.

Review of Literature

The ISB of Biology students attending doctoral school at the University of Parma in Italy the study was carried out with the objective to understand their needs and also to suggest improvements in the library facilities. Data for the study was collected through semi structured interviews. Eighteen doctoral students participated in the study. Nearly all the doctoral students reported that the internet is their first and favorite point of access to any type of information and majority of them are using scirus and science direct for their information needs.

A comparison of the information seeking patterns of researchers in the physical and social science was carried out by Data for the study was collected by means of interview with eighteen physicists at Manchester University and fourteen chemists at the University of Sheffield. The information seeking patterns of researchers were analyzed and then compared with the findings of the previous study of ISB of Social scientists. The impact of ICT on the information seeking patterns was also considered. Study found some minor variations in the awareness level of facilities extend of source usage etc and did not point out any major difference in the information seeking patterns of researchers.

Mendes compared the personal information acquisition policy, use of libraries and information resources of four groups of health professionals working in three hospitals in Brazil and three hospitals in the U.K. Questionnaire and interview

method were adopted for collecting data. Two hundred and seven (40%) responded to the questionnaire and thirty two interviews were carried out. Study demonstrated that information activities of health professionals in Brazil and in U.K. follow a generally similar pattern. Study also indicated that the information activities of different categories of health professionals follow similar pattern.

Siatri compared the SB of academic computer scientists in British and Greek universities in an electronic environment. The study investigated how electronic information resources and information communication facilities especially those located in the internet have affected the computer scientists in terms of exchange of knowledge and information seeking behavior. A combination of quantitative and qualitative method was used to collect data. The data analysis and comparison of findings were ongoing.

Methodology

The study is based on both primary and secondary data. The sources of primary data are the questionnaire which is the main tool for the present study. The study is carried out personally issued the questionnaires to the students of M.C.A and M.Sc(computer sciences) in Madurai Kamaraj University. Each department 60 questionnaires were collected from students out of 75 questionnaires.

Objectives

- To study the information seeking behavior of students in MKU Dr.TPM Library
- To study the purpose of the students for seeking information.
- To study the types of resources that students prefer more.
- To study the type of books, journals/ Magazine, Newspaper and digital resources that students prefer more.
- To compare the information seeking level for MCA and MSC (computer) students.
- To find out the level of satisfaction on the availability of books, Journals Magazines, Newspaper and Digital resources.
- To identify the information need of surveyed respondents.
- To find out the frequency of visit by the surveyed respondents.
- To identify the channels of information used by the respondents.
- To identify the use behavior pattern of surveyed respondents.

- To identify the collection of information sources available in the library.
- To find out the level of access to the information services provided by the library.

Data Analysis and Interpretation

Table 1: Gender Wise Distribution of the Respondents

S.No	Gender	M.C.A	M.Sc	Total	Percentage/ M.C.A	Percentage/ M.sc
1	**Male**	34	33	67	56%	55%
2	Female	26	27	53	43.3%	45%
Total		**60**	**60**	**120**	**100%**	**100%**

From the above table it is noted that out of 60 respondents 34(56%) male and 26(43.3%) female are visiting the library from the M.C.A department. Then it is said that out of 60 respondents 33(55%) male and 27(45%) female visit the library from M.sc Department.

The table 2 shows us the frequency of library visit by the respondents. From the department M.C.A 52(86%) respondents are visiting the library daily and from the M.Sc. department 39(65%) respondents are visiting the library daily.

Table 2: Frequency of Visit to Dr. T.P.M Library

S.No	Distribution	M.C.A	M.Sc	Total	Percentage/ M.C.A	Percentage/ M.Sc
1	**Daily**	**52**	**39**	**91**	**86.00%**	**65.00%**
2	Once in a week	3	3	6	05.00%	05.00%
3	**More than once in a week**	**5**	**14**	**19**	**08.30%**	**23.30%**
4	Once in a month		3	3	-	05.00%
5	**Occasionally**		**1**	**1**	-	**01.60%**
	Total	**60**	**60**	**120**	**100%**	**100%**

Table 3: Distributions of Types of Documents

S.No	Distribution	M.C.A	M.Sc	Total	Percentage/ M.C.A	Percentage/ M.Sc
1	Books	39	24	73	65.00%	40.00%
2	Journals	17	16	33	28.30%	27.00%
3	References books	4	17	21	06.60%	28.30%
4	Others	-	3	3	-	05.00%
	Total	60	60	120	100%	100%

Table 3 describe to the type of documents used by the respondents. Out of 60 respondents 39 (65%) are using the books than journals and reference books in M.Sc. department.24(40%) out of 60 respondents are using the books in M.C.A. department.

Table 4 shows that frequency of visiting the library when comparing to the other library in this out of 60 respondents 38 (63.3%) are M.C.A, 12(20%) are M.Sc visiting the department library.35 (58.3%) are M.C.A and 20(33.3%) are M.Sc are visiting the Dr.T.P.M Library in the internet 2(3.3%) are M.C.A and 9 (15%) are M.Sc and in the others only 4(6.6%) are M.Sc from the 60 respondents.

Table 4: Frequency of Visit to other Library

S.No	Distribution	M.C.A	M.Sc	Total	Percentage /M.C.A	Percentage /M.Sc
1	Department library	38	12	50	63.30%	20.00%
2	Dr. T.P.M library	35	20	55	58.30%	33.30%
3	Internet	2	9	11	03.30%	15.00%
4	Others	-	4	4	-	06.60%
	Total	60	60	120	100%	100%

Table 5: Distribution Wise Prepare the Resources

S.No	Distribution	M.C.A	M.Sc	Total	Percentage /M.C.A	Percentage /M.Sc
1	**Books**	**30**	**16**	**46**	**50.00%**	**26.70%**
2	News papers	5	3	8	08.30%	05.00%
3	**Journals**	5	**20**	**25**	**08.30%**	**33.30%**
4	E-resources	20	21	41	33.30%	35.00%
	Total	**60**	**60**	**120**	**100%**	**100%**

Table 5 shows that distribution wise preparing the resources from among the 60 respondents 30(50%) are M.C.A, 16(26.7%) are M.Sc prepare the books. 5(8.3%) are M.C.A, 3 (5%) are M.Sc prepare the news papers. 5(8.3%) are M.C.A, 20(35%) are M.Sc prepare the journels.20 (35%) are M.C.A, 21(33.3%) are M.Sc prepare the e-resources in Dr.T.P.M library.

The table 6 shows the search materials methods in Dr.T.P.M library from among the 60 repentances 32(53.3%) are M.C.A, 22(36.7%) are M.Sc to search the books subject wise. 24(40%) are M.C.A, 16(26.7%) are M.Sc to search the book's author wise. 4(6.6%) are M.C.A, 19 (31.7%) are M.Sc. to search the book's title wise.

Table 6: Search Methods in Dr. T.P.M Library

S.No	Distributioh	M.C.A	M.Sc	Total	Percentage /M.C.A	Percentage /M.Sc
1	**Subject wise**	**32**	**22**	**54**	**53.30%**	**36.70%**
2	Author wise	24	16	40	40.00%	26.70%
3	**Published wise**		3	3	-	05.00%
4	Title wise	4	19	23	06.60%	31.70%
	Total	**60**	**60**	**120**	**100%**	**100%**

Table 7: Purpose of Seeking Information

S.No	Distribution	M.C.A	M.Sc	Total	Percentage /M.C.A	Percentage /M.Sc
1	Developing knowledge	33	30	63	55.00%	50.00%
2	Prepare for seminar	20	9	29	33.30%	15.00%
3	Prepare for other exam's	5	11	16	08.30%	18.30%
4	Writing journals/articles	2	10	12	03.30%	16.70%
	Total	60	60	120	100%	100%

The table 7 shows the Purpose of seeking information among the 60 respondents 33 (55%) are M.C.A 30(50%) are M.Sc students are developing the knowledge .20(33.3%) are M.C.A, 9(15%) are M.Sc students are prepare the seminar.5 (8.3%) are M.C.A,11(18.3%) are M.Sc students are prepare the other exam's.2 (3.3%)are M.C.A,10(16.7%) are M.Sc students are prepare the writing journals/article.

Table 8: Satisfaction Level of Seeking Information

S.No	Distribution	M.C.A	M.Sc	Total	Percentage /M.C.A	Percentage /M.Sc
1	Very good	32	25	57	53.30%	41.70%
2	Good	23	14	37	38.30%	23.30%
3	Satisfaction	5	13	18	08.30%	21.70%
4	Poor	-	8	8	-	13.30%
	Total	60	60	120	100%	100%

The conclude from above table 8 satisfaction level of seeking information from M.C.A 32(53.3%) respondents are says Very good , and 23 (38.3%) respondents are Good, it is followed M.Sc 25 (41.7%) respondents are says Very good, and 14 (23.3%) respondents are good.

Table 9: Purpose of Using the Internet

S.N o	Distribution	M.Sc	M.C.A	Total	Percentage /M.Sc	Percentage / M.C.A
1	Communication	37	9	46	61.7%	15%
2	Education	23	39	52	38.3%	65%
3	Entertainment	-	8	8	-	13.3%

4	News	-	4	4	-	6.6%
	Total	**60**	**60**	**120**	**100%**	**100%**

Table 9 states that out of 60 respondents 37 are using the internet for communication and 23(38.3%) are using the internet for education in M.Sc students. But in M.C.A out of 60 respondents 39(65%) are using the internet for education, 9(15%) for communication, 8(13.3%) for entertainment and 4(6.6%) for news.

Table 10: Satisfaction Level of Digital Resources

S.No	Distribution	M.C.A	M.Sc	Total	Percentage /M.C.A	Percentage /M.Sc
1	Very good	22	20	42	36.70%	33.30%
2	Good	33	19	52	55.00%	31.70%
3	Satisfaction	5	21	26	08.30%	35.00%
4	Poor	-	-	-	-	-
5	Very poor	-	-	-	-	-
	Total	60	60	120	100%	100%

The conclude from above table 10 satisfaction level of digital resources from M.C.A 22(36.7%) respondents are says Very good, and 33(55%) respondents are Good, it is followed M.Sc 20(33.3%) respondents are says Very good, and 19(31.7%) respondents are good.

The shows table 11 satisfaction of information sources from M.Sc 38(63%) respondents are satisfied library resources, and 22 (36.7%) respondents are dissatisfied the library resources, it is followed M.C.A 41 (68.3%) respondents are satisfied, and 19 (31.7%) respondents are dissatisfied level of library resources.

Table 11: Satisfaction of Information Sources Available in Dr. T.P.M Library

S.No	Distribution	M.Sc	M.C.A	Total	Percentage /M.Sc	Percentage /M.C.A
1	Yes	38	41	79 (65.83%)	63.3%	68.3%
2	No	22	19	41(44.17%)	36.7%	31.7%
	Total	**60**	**60**	**120**	**100%**	**100%**

Findings

- This study compare with male and female respondents. The male 55.8% respondents are visiting the library more than the female 44.2% respondents.
- Noted that M.C.A 86% respondents are visiting library daily the more than from M.Sc 65% respondents in Dr.T.P.M library.
- The majority of M.C.A 65% respondents are using the books compare with M.Sc 40% respondents.
- 63.3% M.C.A respondents are visit the Department Library compare with M.Sc 20% respondents
- 50% and 33% M.C.A respondents prepare the Books and E-resources compare with only 33.3% and 35% M.Sc., respondents are prepare the Books and E-resources
- 53.3% and 40% M.C.A respondents are use the subject and author methods for collect the information in Dr.T.P.M Library compare with only 36.7% and 26.7% M.Sc., respondents are use the subject and author methods.
- The satisfaction level of seeking information M.C.A respondents are 53.3% very good more than the M.Sc., respondents 41.7%.
- Purposes of seeking information M.C.A respondents 55% are developing knowledge more than the M.Sc., respondents 50%.
- The satisfaction level of Digital resources M.C.A respondents are 55% good more than the M.Sc., respondents 31.7%.
- Both the M.C.A and M.Sc., respondents 65.83% are satisfaction information sources available in Dr. T.P.M Library.

Conclusions

The study investigated the information needs and information-seeking behavior of M.Sc., (computer) and M.C.A students in Madurai Kamaraj University. It was found that respondents used a variety of information sources for teaching and research. Books, reports and statutes were considered more important. It is interesting to note that, although respondents perceived the Dr.T.P.M library as effective in meeting their information needs, they prefer to first consult their personal collections. It might be due to easy and convenient access to the personal collection and/or unawareness about library collections, services and facilities. It is also noted that a considerable number of respondents also visited

certain other libraries. It is understandable that no one library can acquire all materials produced in a particular discipline. However, in view of the fact that a considerable number of respondents visited other libraries, it is possible that they might not be aware of the library catalogue and OPAC service provided by the Dr. T.P.M library.

References

Ellis, David. 1993. Modeling the information-seeking patterns of academic researchers: a grounded theory approach. Library Quarterly: 1993, Vol. 63, 4, pp. 469-486.

Krikelas, J. 1983. Information-seeking behavior: patterns and concepts. Drexel Library Quarterly. 1983, Vol. 19, 2, pp. 5-20.

Wilson, T. D. (2000). Human Information behavior. Special issue on Information Science Research, 13 (2), 49-55. Available at: http://inform.nu/Articles/Vol3/v3n2p49-56.pdf. (Accessed 20/05/15)

Vezzosi, Monica. 2009. Doctoral students' information behavior: an exploratory -study at the University of Parma (Italy). New Library World. 2009, Vol. 110, 1/2, pp. 65-80.

Mendes, De C and Meadows, A. J. 1997. Personal information acquisition by health professionals in Brazilian and Bn'tish hospitals: a comparative study. Journal of Librarianship and In/or/nation Science. 1997, Vol. 29, 4, pp. 189-193.

Ellis, David. 1993. Modeling the information-seeking patterns of academic researchers: a grounded theory approach. Library Quarterly}: 1993, Vol. 63, 4, pp. 469-486.

Siatri, Rania. 2008. The evolution of user studies. Libri. 2008, V01. 49, 3, pp. 132-141.- 2008. Information seeking in electronic environment: a comparative investigation among Computer Scientists in British and Greek Universities. Information Research. [Online] October 2008. [Citedt March 23, 2005.] http://'1ni'romationR.net/ir/42lisiclsiatri].

A Study on Use of Internet by Faculty Members in two Aided Christian Autonomous Colleges in Tiruchirappalli, Tamilnadu

J. Franklin
P.G. & Research Dept. of Library and Information Science, Bishop Heber College (Autonomous), Tiruchirappalli
Email: jfrankbhc@yahoo.co.in

G. Carmal
P.G. & Research Dept. of Library and Information Science, Bishop Heber College (Autonomous), Tiruchirappalli

Abstract

The Internet is the goldmine of information and it is an inseparable part of today's educational system. The faculty members of higher educational institutes need to update their knowledge by using Internet in order to provide latest information to students. The study explores the use of Internet by the faculty members in two leading Arts & Science colleges in Tiruchirappalli. The key findings are i) All(100%) the faculty members are using Internet; ii) Majority(60%) of the faculty members are using Internet from home; iii) Majority (58.5%) of the faculty members are using Internet daily; iv) Majority(64.5%) of the faculty members use websites other than subject oriented and recreational v) Majority(64.5%) of the faculty members are using Internet for checking E-mail and which is followed by Teaching(62.5%). vi) Majority(60%) of the faculty members use e-journals,57.5% of them use E-thesis & dissertations and 56% of them use internet for downloading information. Based on the findings suggestions were given to improve the use of internet by the faculty members.

Keywords: *Internet, E-mail, E-Resources, Information, Faculty Members, Tiruchirappalli*

Introduction

Internet is Networks of Networks, consists of a large numbers of the interconnected computers all over the world and offers access to unimaginably large amounts of information, data and interpreted materials in a timely, cost-effective and comfortable manner. Being a very powerful and dynamic tool for communication, it is the largest single sources of information at global level.

Internet is now developing as the major way of communication media in the present society. It is a challenge and means for Library and Information professionals for providing information services. The internet has many resources that can be harnessed by academics for good scholarly work. These include discussion groups, Usenet news groups, Telenet, File Transfer Protocol (FTP), e-mail, directories, search engines and information gateways.

Use of internet by faculty members is an important area of study in today's information environment. The internet has now-a-days become an important component in academic institution as it plays a pivotal role in meeting information and communication needs of institutions. It makes it possible to access a wide range of information, such as recent developments in a subject, from anywhere in the world. It also enables faculty members to disseminate information to a wider audience around the globe having websites and a way to search them and organize the output.

Objectives of the study

The following are the objectives of the study

- To know the frequency of use of internet
- To identify the purpose of use of internet
- To know the type of internet service used
- To know the search engines used by the respondents
- To find out the satisfaction level of the respondents
- To offer suitable suggestions to make effective use of internet

Research Hypotheses

The following are the research hypotheses framed for the study

- There is a significant association between Gender and frequency of use of Internet
- There is a significant association between Gender and Location of use of Internet
- There is a significant association between Socio Economic Background and Frequency of Use of Internet

Methodology

Questionnaire has been used to collect data from the respondents. The questionnaire is well structured and easily understandable one. The questions are

close ended and logically sequenced in simple English. Extra space is provided to the respondents to write their suggestions.

Results

Table 1: Distribution of Respondents by Age

Sl.No.	Age of the Respondents	No. of Respondents	Percentage
1	21-25 years	40	20
2	26-30 years	51	25.5
3	31-35 years	60	30
4	36-40 years	27	13.5
5	41-45 years	17	8.5
6	46 years and above	5	2.5
	Total	**200**	**100**

It is clear that, 30% of the respondents are in the age group 31-35 years, followed by 25.5% of the respondents in the age group and which is followed by 20% of the respondents in the age group 21-25 years.

Table 2: Distribution of Respondents based on Gender

Sl.No.	Gender	No. of Respondents	Percentage
1	Male	120	60
2	Female	80	40
	Total	**200**	**100**

With regard to age, majority (60%) of the respondents are male and the rest (40%) are female.

Table 3: Distribution of Respondents based on Socio Economic Background

Sl.No.	Socio Economic Background	No. of Respondents	Percentage
1	Rural	55	27.5
2	Urban	145	72.5
	Total	**200**	**100**

It is evident from the table that majority (72.5%) of the respondents are from urban area and 27.5% of them are from rural area.

Table 4: Distribution of Respondents based on Designation

Sl.No.	Designation	No. of Respondents	Percentage
1	Assistant Professor	141	70.5
2	Associate Professor	59	29.5
	Total	**200**	**100**

With regard to the designation, majority (70.5%) of the respondents are Assistant Professors and 29.5% of them are Associate Professors.

Table 5: Distribution of Respondents based on Educational Qualification

Sl.No.	Designation	No. of Respondents	Percentage
1	PG only	23	11.5
2	PG and M.Phil	90	45
3	PG and Ph.D	77	38.5
4	PG and NET/SET	10	0.5
	Total	**200**	**100**

With regard to Educational Qualification, 45% of the respondents have completed PG with M.Phil, 38.5% of them are PG with Ph.D and 11.5% of them have completed PG degree only.

Table 6: Distribution of Respondents based on Experience

Sl.No.	Years of Experience	No. of Respondents	Percentage
1	0-5 years	110	55
2	6-10 years	60	30
3	11-15 years	15	7.5
4	16-20 years	10	5
5	21 years and above	5	2.5
	Total	200	100

It is evident from the table that 55% of the respondents have 0-5 years of experience , 30% of them have 6-10 years of experience and 7.5% of them have 11-15 years of experience.

Table 7: Use of Internet by the Respondents

Sl.No.	Do you use Internet?	No. of Respondents	Percentage
1	Yes	200	100
2	No	0	0
	Total	**200**	**100**

It is evident from the table that all the respondents(100%) are using Internet.

Table 8: Distribution of Respondents based on Methods of Acquiring Internet Skills

Sl.No.	Methods of Acquiring Internet Skills	No. of Respondents	Percentage
1	Self-trial and error	156	78
2	Guidance from friends and colleagues	44	22
3	Through online information	60	30
4	Training from University	55	27.5
5	Through reading books or magazines	70	35

It is obvious from the table that majority(78%) of the respondents acquired Internet skills by self-trial and error method, 35% of them acquired by reading books or magazines and 30% of them acquired Internet skills through online information.

Table 9: Distribution of Respondents based on Location of Internet use

Sl.No.	Location	No. of Respondents	Percentage
1	College Library	34	17
2	Computer/internet Laboratory	32	16
3	Home	120	60
4	Cyber Café	14	7
	Total	**200**	**100**

With regard to Location of Internet use, majority(60%) of the respondents are using Internet from home ,17% of them using Internet from college library and 16% of them using Internet from computer/Internet laboratories.

Table 10: Distribution of Respondents based on Frequency of Use of Internet

Sl.No.	Frequency	No. of Respondents	Percentage
1	Daily	117	58.5
2	2 or 3 times in a week	30	15
3	Weekly	3	1.5
4	Occasionally	50	25
	Total	**200**	**100**

With regard to use of Internet, Majority(58.5%) of the respondents are using Internet daily, 25% of them using occasionally and 15% of them using 2 to 3 times in a week.

Table 11: Distribution of Respondents based on Type of website used

Sl.No.	Type of website used	No. of Respondents	Percentage
1	General	129	64.5
2	Discipline oriented	60	30
3	Recreational	11	5.5
	Total	**200**	**100**

With regard to type of website used, majority(64.5%) of the respondents use General websites,30% of them use discipline oriented websites and 5.5% of them use recreational websites.

Table 12: Distribution of Respondents based on Purpose of use of Internet

Sl.No.	Purpose of use of Internet	No. of Respondents	Percentage
1	For Teaching	125	62.5
2	For research	117	58.5
3	For doing M.Phil/Ph.D	113	56.5
4	To give information to research scholars	105	52.5
5	To improve current knowledge	77	38.5
6	For personal interest	87	43.5
7	To check e-mail	129	64.5
8	For reading news	13	6.5
9	Others(i.e.booking train tickets, internet banking etc.)	90	45

It is seen from the table that majority(64.5%) of the respondents are using internet to check e-mail,62.5% of them for teaching,58.5% of them for doing research and 56.5% of them for doing M.Phil/Ph.D.

Table 13: Distribution of Respondents based on Search Engines used

Sl.No.	Search Engine Used	No. of Respondents	Percentage
1	Google	200	100
2	Yahoo	119	59.5
3	Rediff	50	25
	Total	200	100

The above table shows that all(100%) the respondents use the search engine Google,59.5% of them use yahoo and 25% of them use Rediff.

Table 14: Distribution of Respondents based on Internet Services used

Sl.No.	Internet Services used	No. of Respondents	Percentage
1	E-mail	200	100
2	www	200	100
3	E-Journal	70	35
4	FAQ	19	9.5
5	Document Delivery Service	81	40.5
6	Online Chatting	111	55.5
7	Electronic Translation Services	20	1
8	News/Discussion Group	11	5.5
9	Others	9	4.5

With regard to Internet services used, all (100%) the respondents use internet services E-mail and www. 55.5% of them use internet for online chatting,40.5% of them for Document Delivery Service and 35% of them to refer e-journals.

Table 15: Distribution of Respondents based on Internet Resources used

Sl.No.	Internet Resources used	No. of Respondents	Percentage
1	E-Journals	120	60
2	E-Theses & Dissertations	115	57.5
3	Database	80	40
4	Subject Gateways	16	8
5	Web Resources	41	20.5
6	Downloading Services	112	56
7	Online search	52	26
8	Discussion Group/Forum	16	8
9	Mailing List	61	30.5
10	E-Books	20	10

It is clear from the table that majority(60%) of the respondents use e-journals,57.5% of them use E-thesis & dissertations and 56% of them use internet for downloading information.

Table 16: Responses based on opinion with regard to use of Internet

Sl.No.	Opinion with regard to use of Internet	No. of Respondents	Percentage
1	Most Helpful	174	87
2	Helpful	26	13
	Total	**200**	**100**

It is evident from the table that 87% of the respondents opined that internet is most helpful to them and 13% of them opined that it is helpful to them.

Table 17: Distribution of Respondents based on Satisfaction with regard to internet facilities provided by the college

Sl.No.	Satisfaction with regard to Internet facilities	No. of Respondents	Percentage
1	Fully satisfied	80	40
2	Partially Satisfied	19	9.5
3	No comments	101	50.5
	Total	**200**	**100**

With regard to satisfaction of Internet facilities provided by the college, 40% of the respondents are fully satisfied , 9.5% of them are partially satisfied and more than half(50.5%) of them have no comments.

Testing Hypotheses

Research Hypothesis 1: There is a significant association between Gender and frequency of use of Internet

Null Hypothesis: There is no significant association between Gender and frequency of use of Internet

Table 18: Association between Gender and frequency of use of Internet

Sl.No.	Frequency of use of Internet	Gender		Statistical Inference
		Male	Female	
1	Daily	71	46	Chi-square=0.513 df=3 p<0.05 significant
2	2 or 3 times in a week	18	12	
3	Weekly	1	2	
4	Occasionally	30	20	

Since the calculated value(0.513) is less than the tabulated value(7.815) at three degree of freedom at 0.05 level of significance, there is a significant association between Gender and Frequency of use of Internet. Hence, the null hypothesis is rejected.

Research Hypothesis 2: There is a significant association between Gender and Location of use of Internet.

Null Hypothesis: There is no significant association between Gender and Location of use of Internet.

Table 19: Association between Gender and Location of use of Internet

Sl.No.	Location of use of Internet	Gender		Statistical Inference
		Male	Female	
1	College Library	21	14	chi-square =0.42 df=3 p<0.05 significant
2	Computer/internet Laboratory	20	14	
3	Home	70	46	
4	Cyber Café	9	6	

Since the calculated value (0.42) is less than the tabulated value (7.815) at three degree of freedom at 0.05 level of significance, there is a significant association between Gender and Location of use of Internet. Hence, the null hypothesis is rejected.

Research Hypothesis 3: There is a significant association between Socio Economic Background and Frequency of Use of Internet

Null Hypothesis: There is no significant association between Socio Economic Background and Frequency of Use of Internet

Table 20: Association between Socio Economic Background and Frequency of Use of Internet

Sl.No.	Frequency of use of Internet	Gender		Statistical Inference
		Male	Female	
1	Daily	30	80	Chi-square=5.525 df=3 p<0.05 significant
2	2 or 3 times in a week	7	27	
3	Weekly	3	3	
4	Occasionally	15	35	

Since the calculated value(5.525) is less than the tabulated value(7.815) at three degree of freedom at 0.05 level of significance, there is a significant association between Gender and Frequency of use of Internet. Hence, the null hypothesis is rejected.

Conclusion

The internet has emerged as the single most powerful vehicle for providing access to unlimited information. The internet is an inseparable part of today's educational system. The dependency on the internet and its services is increasing day by day and the users of colleges too are depending more and more on the Internet for their various educational purposes. The information on the internet is not usually available in an organized way and the users are unable to get pin-pointed information from the Internet. In order to make internet more beneficial, the library staff who have acquired a good deal of efficiency should organize and classify the information on a website in such a way that the users are able to find the information easily. The library services supplemented by internet services can prove a great boon to the faculty members in getting the right information at the right time.

Suggestions

Based on the findings of the study and suggestions given by the respondents the following measures may be taken to improve the usage of internet by the faculty members in the above colleges

1. The study revealed that majority (75.5%) of the faculty members are between the age group of 21-35 years. Therefore, senior faculty members may be given training in Internet.
2. The study showed that 78% of the faculty members acquire Internet skills by trial and error method. Therefore, faculty members may be given periodic training to use internet effectively.
3. It is clear from the study that majority(60%) of the faculty members are using internet from home and therefore the college authorities should take necessary steps to extend internet facilities to the departments also.
4. It is surprising to know 25% of the faculty members use internet occasionally. Therefore, the college should find ways and means to make the faculty members to use the internet regularly.
5. More than half(50.5%) of the faculty members had given "no comment" with regard to satisfaction of internet facilities provided by the college. The above two college authorities may find reasons for that and help the faculty members to use the internet effectively.
6. Faculty members may be provided with better infrastructure with sophisticated systems
7. The problem of slow connectivity may be overcome by increasing bandwidth.

8. More computers with the latest specification and multimedia kit may be installed.
9. Technical staff may be appointed and they should always be present in the internet section for expert advice
10. Information regarding popular and latest website with their addresses may displayed on the Notice Boards
11. Capacity of servers and fire walls may be installed for protection from viruses

References

Franklin, J. & Ally Sornam, S.(2011).ICT Facilities in Aided Christian College Libraries in Tamilnadu:A Study with reference to Faculty Perception. *SALIS Journal of Library and Information Science*,2(4),35.

Haseloff, A.M.(2005). Cyber cafes and their potential as Community Development Tools in India. *The Journal of Community Informatrics.* 1(3),53-65.

Husain, A.(2006). Internet Use by the Faculty Members of Kuwait University. *The Electronic Library, 24*(6),791-803.

Parameshwar, S. & Patil, D. B.(2010). Use and Awareness of the Internet Facilities by Members of the Faculty and Research Scholars in Gulburga University Library, Karnataka: A Study. *IJISS,4*(1),18-23.

Reny,J. & Carolyne,J (Eds.) (2001). *Directory of Church-related Colleges in India.* New Delhi: AIACHE.

Kumaresan, S.C., et al (2002). *Library Science Unleashed.* Tiruchirappalli: Rock City Publication. 364.

Communication Problems in the Classroom Level Teaching and Learning: a Study based on Schools in the Nallur Division of Jaffna Educational Zone

J. Rasanayakam
Department of Education,
University of Jaffna, Sri Lanka

P. Rajeswaran
Jaffna National College of Education, Jaffna, Sri Lanka
pararajasingamrajeswaran@gmail.com

Abstract

Sri Lanka has creditable achievements in the education sector with regard to enrolment, participation, literacy, and gender equity; when compared to other countries in South East Asia. Even though International organizations like UNESCO and World Bank pointed out several aspects that were identified as lacking in the existing system of education in Sri Lanka, educational specialists and policy-makers were concentrated on effective educational outcomes. Teachers' and learners' communication skills were identified as one of the factors influenced on learning out comes. Communication skill is identified one of the element of information literacy. Teachers need to encourage their students to verbalize their own knowledge so that they can learn more efficiently. Jaffna district is the largest in Northern Province by population (622,589), but smallest by land area (1,023 square km). Educators have a responsibility to improve the communication skills of the student population of this area, where the last two decades of long lasting warfare had caused severe impede in the education, teaching and learning environment. The influx of communication has the potential to effect to the classroom activities. This paper reports the findings of a primary study to recognize communication problems that exist in the classroom level teaching and learning of this study area. The Objective of this study was to identify the communication problems that exist in the classroom level teaching and learning, the students selected from Nallur division of Jaffna district. Research method of this study was quantitative. Using stratified random sampling method, 10 classrooms from schools in Nallur division of Jaffna District participated in this survey. Structured questionnaire, check list and Observation notes were used as data collection tools in this study. The results indicate that several factors such as lack of communication skills, lack of language proficiency,

speech difficulties, boring and unmotivated classroom lesson, busy home works, lack of interaction in teaching, lack of enthusiasm and creativity in the lesson plans, Personality differences between students and teachers, frustration and unhappiness due to war, peer pressure with friends, fear or embarrassment due to family background were identified as major communication problems among the study population. Finally, based on the findings it was identified the majority of the students and teachers have to improve their communication skills. It is recommended to implement communication development workshops and activities to the teachers as well as students to improve this situation.

Keywords: *Education, Information Literacy, Communication, Teaching, Learning*

An Account on Information Literacy Programme conducted for the National Diploma in Technology Students

T. M. Seneviratne
Library, University of Moratuwa
Email: thushari@lib.mrt.ac.lk

U.N. Kodithuwakku
Library, University of Moratuwa
Email: upekshak@uom.lk

Abstract

The Institute of Technology at the University of Moratuwa conducts National Diploma in Technology (NDT) and other courses at similar level. NDT students are expected to satisfy their information needs through the university library as well as divisional libraries at Institute of Technology, University of Moratuwa. Although NDT students participate in library orientation programme in their first year; information literacy (IL) programmes have not been assigned to them. Forty two students of Polymer Technology and Chemical Engineering Technology had the opportunity of attending 12 week IL programme which was conducted by the Library, University of Moratuwa covering traditional as well as modern information sources, services and technical writing. Variety of teaching, learning and evaluation methods was used to enhance IL skills of diploma students through this programmed. This study tried to identify the problems faced by the students in using university library as well as satisfying their information needs were identified. Survey method is used in this study for the analysis of the effectiveness of the IL programmed. NDT students were able to gain new knowledge and majority of them were satisfied about the contents of the programme. However, they wish this programme be conducted in First Year of the course. Novel topic named "Online Reading" captured the highest attention. According to the final evaluation, participants listed "Online Reading", "Referencing" and "Patent Searching" as the top 3 topics they gained knowledge as well as captured their interest. Majority of the students felt the assignment given to them was suitable. Chemical Technology students achieved best scores. Only seven Polymer Technology students made the presentation. Overall attendance of the students was not satisfactory. Recommendations were made to design effective orientation programme for NDT students and to alter library collection development policy. Conducting a programme as a component of academic calendar is suggested since the value of being information literate is felt in latter part of the academic career.

Keywords: *Academic Libraries; User Education; Information Literacy; Technical Student; Collection Development*

Author Index