

**LIBRARY PROFESSIONALS' COMMUNICATION
OVER ONLINE FORUM: CONTENT ANALYSIS OF
NEW MILLENNIUM LIS PROFESSIONALS (NMLIS)**

*A dissertation submitted in partial fulfillment of the requirement for the Degree
of Doctor of Philosophy in Library and Information Science*

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D E C L A R A T I O N

I, **Jacob MS Dawngliana**, hereby declare that the subject matter of this dissertation is the record of work done by me, and the contents of this dissertation did not form basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and that the dissertation has not been submitted by me for any research degree in any other University/ Institute.

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C E R T I F I C A T E

This is to certify that the dissertation entitled "**LIBRARY PROFESSIONALS' COMMUNICATION OVER ONLINE FORUM: CONTENT ANALYSIS OF NEW MILLENNIUM LIS PROFESSIONALS (NMLIS)**" submitted by **JACOB MS DAWNGLIANA** for the award of the Degree of Doctor of Philosophy in Library & Information Science is carried out under my supervision. This is the candidate's original work and is worthy of examination.

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ABBREVIATIONS

Terms	Description
AcqNet	: Acquisition Network
ACRL	: Association of College and Research Libraries
ALA	: American Library Association
ALCTS	: Association for Library Collections & Technical Services
ALESS	: Association of Librarians in English Speaking Schools
ASDOLIS	: Association for the Development of Library and Information Science
API	: Application Programming Interface
ARPANET	: Advanced Research Projects Agency Network
AVI	: Audio Video Interleave
BMP	: Bitmap
BUSLIB-L	: Business Librarian List
CC	: Core Categories
CMC	: Computer Mediated Communication
CON	: Conference Communications
CSS	: Cascading Style Sheets
DSIR	: Department of Scientific and Industrial Research
E-Commerce	: Electronic Commerce
E-mail	: Electronic Mail
FDM	: Faculty Development Communications
FM	: Fully Moderated
GIC	: General Information Communications
GRC	: Greetings Communications
HTML	: Hyper Text Markup Language
IATLIS	: Indian Association for Teachers in Library and Information Science
ICT	: Information and Communication Technology
ILA	: Indian Library Association

IP	:	Internet Protocol
JACLA	:	Joint Academic Committee of Librarians
JOB	:	Job Posts Communications
JPG	:	Joint Photographic Expert Group
KM	:	Knowledge Management
KULIS	:	Kuvempu University Library and Information Science
LIS	:	Library and Information Science
LIS Links	:	Library and Information Science Links
LMS	:	Learning Management System
LSC	:	Library Science Communications
M-Forum	:	Knowledge Management Discussion Forum
MANLIBNET	:	Management Libraries Network
MEDLIN-L	:	Medical Library List
MIDT	:	Master of Instructional Design & Technology
MLA	:	Medical Library Association
MOOC	:	Massive Open Online Courses
MPEG	:	Moving Picture Experts Group
MVC	:	Model View Controller
MyBB	:	MyBulletin Board
MySQL	:	My Structured Query Language
NC	:	Non-Core Categories
NCSI	:	National Center for Science Information
NISSAT	:	National Information System for Science and Technology
NMLIS	:	New Millennium LIS Professionals
NMRT	:	New Members Round Table
OBI	:	Obituary Communications
oss4lib	:	Open Source Systems for Libraries
OTH	:	Other Communications
PakLAG	:	Pakistan Library Automation Group

PDF	:	Portable Document Format
PHP	:	Hypertext Preprocessor
phpBB	:	Hypertext Preprocessor Bulletin Board
RAR	:	Roshal Archive
SEO	:	Search Engine Optimization
SMCR	:	Sender-Message-Channel-Receiver
SMF	:	Simple Machine Forum
SPSS	:	Statistical Package for the Social Sciences
TIFF	:	Tagged Image File Format
UNCG	:	University of North Carolina at Greensboro
VoIP	:	Voice over IP
RSS	:	Rich Site Summary
USD	:	United States Dollar
WMP	:	Windows Media Player
WWW	:	World Wide Web
XML	:	Extensible Markup Language

PREFACE

The area of content analysis is measuring the information content delivered through scholarly communications. In the online discussion forums, there exists scholarly communications in the form of query, some kind of information requirement, clarification regarding some prevalent issues, and providing valuable information to the forum members. The *NMLIS* forum is the most widely used online discussion forum in the area of Library and Information Science since 1999. The information shared through online discussion forum belongs to professional discussions and non-professional discussions.

The study aimed to analyze the content of conversations communicated in the *NMLIS* forum during the study period through which we can know the usefulness of such kind of forums in professional development as well as personal development. The study was conducted for ten years of time frame from 2007 to 2016 which includes 26, 412 communications posted by forum members.

The study is presented in five chapters:

Chapter 1: Introduction

Chapter 2: Online Communication Media: An Overview

Chapter 3: Online Communication Forums in LIS

Chapter 4: Content Analysis of NMLIS Forum

Chapter 5: Conclusion

Chapter 1 introduces the overview of the entire research work and discusses the significance, scope of study, literature review, and research design of the study.

Chapter 2 highlights about communication, communication trends, communication skills, communication models, and communication channels & their characteristics.

Chapter 3 deals with the detailed discussion over online communication forum software and online discussion forums in LIS.

Chapter 4 highlights the research data and its description in the form of tables and figures as well as findings of the study.

Chapter 5 presents the brief summary of the entire study and suggestions for improve upon the online forums available in the field of Library and Information Science.

The bibliography and appendices are given at the end. Publication Manual of the American Psychological Association (6th ed.) is used for recording the references.

CHAPTER - I

INTRODUCTION

CHAPTER – I

INTRODUCTION

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1.1 INTRODUCTION

Library is a treasure-house of knowledge that provides organized access to a collection of materials that served the information needs of an individual or group. A well stock library is an asset to the school, college, university or the neighbor. We can say that a library renders a great service to the society. However, the collection of written knowledge in some sort of repository is a practice as old as civilization itself (Shukla & Dawngliana, 2017). Aristotle, for instance, collected a large private collection. Ancient geographer Strabo said Aristotle was the first to have put together a collection of books and to have taught the kings in Egypt how to arrange a library. Throughout the 17th and 18th centuries, libraries surged in popularity. They grew as universities developed and as national, state-supported collections began to appear. Many of these became national libraries. The 17th and 18th centuries encompassed what is known as the golden age of libraries. During this, some of the more important libraries were founded in Europe. At the start of 18th centuries, libraries were becoming increasingly public and were more frequently lending libraries. The 18th century shows the switch from closed libraries to lending libraries.

The invention of moveable type printing in the mid-1400s marked the beginning of a new era in libraries. The time period includes the major changes in libraries worldwide. After civil world war, an educational reform movement spread across the United States. This movement coincided with the development of the library movement. In the mid to 19th century, librarians began holding meetings and conventions to discuss issues of professional interest. Specialty areas within the field of librarianship began to emerge. The first librarian's convention was held in New York City in 1853 in which about 80 participants attended the conference and discussed issues such as communication, library management, cataloguing, and collection development. During the Centennial Exposition in Philadelphia in 1876, 103 librarians responded to a call for the convention of librarians. The American Library Association (ALA) was formed on October 6, 1876. As a result of the first convention of librarians, the Library Association of the United Kingdom was formed in 1877. Many other professional organizations followed into the 20th century such as the Libraries Association of New Zealand founded in 1924, Indian Library Association (ILA) formed in 1933, and the Australian Library and Information Association formed in 1937 (History of Libraries, n.d.).

1.2 LIBRARY PROFESSIONALS

The term “Library Professionals” and “LIS Professionals” used interchangeably in the context though there is no difference between both the terms. Library Professionals’ refers to those members of the profession who have completed the course qualification in Library and Information Science (LIS) at either associate or library technician level. Library Professionals’ are believed and trust for scientific dissemination and application of knowledge concerning information and its transfer. Library Professionals have been creatively managing the information and research resources of their firms (Shukla & Dawngliana, 2017). Library Professionals’ plays a significant role to promote information literacy in society. They need to play an important role in the education process by making people aware of a need and motivating the use of information a new knowledge and a new ability. Library Associations play an important role in the promotion of librarianship as a profession vital to an informed and knowledgeable society. Library Association at the local, national regional and international levels are of great importance to libraries, the profession, and the society. The LIS Professionals’ Association must be able to provide educational opportunities through conference, workshops, and publications among others. In this regard, the members of LIS Professionals’ need to work together and share experience and ideas on creativities beyond the country’s borders.

1.2.1 Medium of Communication among Library Professionals

Earlier there existed very few opportunities for communication between LIS Professionals. There were seminars, training programs, and periodical publications to gather and express their views and share messages. Traditional methods of professional communication were not interactive and were very time-consuming. Communication between professionals in the same domain is very important. The digital era of Internet and mobile technology made a revolution for communication that take an important part in every day’s life. Thus, email-based discussion forums made a revolution in professional communication (Shukla & Dawngliana, 2017). The Internet has become one of the leading channels for communication. The email, instant messaging and asynchronous discussions are the major tools for communication that the Internet users take the advantages by the way. Ever since with the growth and development of Information Communication Technology (ICT), many are very much influential on the

condition of accessing online resources by communicating through technology. Now a day every student and faculty residing in different places saves their time in getting relevant information through ICT application.

There are many online communication services provided by many online platforms /search engines. The following are some of the online platforms who are providing such services:

a) *Yahoo Groups*

Yahoo group is one of the world's largest collections of online discussion boards. Group message can be read and posted by e-mail or on the Group's webpage like a web forum. In addition, members can choose whether to receive individual, daily digest or special delivery e-mails or simply read Group posts on the Group's website. Groups can be created with public or member-only access.

b) *Google Groups*

It is a service from Google and it supports discussion groups, including many Usenet newsgroups, based on common interest. Members of Google Groups are free of charge and the user can find discussion groups related to their interests and participate in threaded conversations.

c) *OneDrive Groups*

OneDrive Groups (previously called Windows Live Groups) was an online service by Microsoft as part of its Windows Live range of services that enabled users to create their social groups for sharing, discussion, and coordination. The service allowed users to form their own community groups, similar to the way Facebook Groups function, allowing members of the group to participate in group discussions. In addition, Windows Live Groups integrated with the following Windows Live services to provide collaboration and sharing features:

- i. The calendar provides a group calendar function which allows all members of the Group to add or keep track of calendar events for their Group.
- ii. OneDrive provides members of the Group 15GB of storage to upload and share their files and documents for others in the Group to download.
- iii. Photos allow members of the Group to upload and share their photos with each other.

- iv. Outlook.com provides users to send mass group e-mail messages to all members of a particular Group they are part of.
- v. Office Online provides users with access to the Office Web Apps, and it uses the group's OneDrive storage.
- vi. Windows Live Family Safety blocks the use of Windows Live Groups for child managed accounts.

The owner of the group could choose a group theme, message, and a picture. They could also delete the group, manage who joins the group etc.

1.2.2 Professional Communication of Library Professionals

Library professionals have been engaging in professional communication for years. Some library professionals reflect on their personal practice with colleagues in the privacy of their work area to share ways to make their library most useful for their students; others meet in small groups in the staff room with the librarian to discuss library improvement plans; and others attend large group of professionals to learn the latest development in the field (Shukla & Dawngliana, 2017). The Internet presents library professionals with a platform to expand the scope of collaboration and even shift professional conversations into a variety of publicly shared online environments (online forums). The online forum has offered the potential to gain knowledge from and share experiences with another library professional outside the confines of their work area and local communities (Shukla & Dawngliana, 2017). While many library professionals' conversations have taken place orally, in a face-to-face environment, in the work area; online forum transformed the concept of talking about our thoughts in the form of written communication and sharing with other library professionals in the group. Library professionals from various geographical locations are able to participate in informal, self-organized conversations within a self-selected online social medium such as an online forum, making their professional communication transparent to a wider public audience (Shukla & Dawngliana, 2017).

1.3 ONLINE FORUMS

An online discussion forum is a web-based communication tool that enables participants to post the message and to type to others' messages asynchronously. Unlike the real-time

(synchronous) discussions of chat rooms and instant messaging, the online discussion typically lasts longer. An “online forum is also known by various names such as discussion board, discussion group, discussion forum, message boards etc” (Shukla & Dawngliana, 2017). It is an online discussion site where people can hold conversations in the form of posted messages. They differ from chat rooms in that messages are often longer than one line of text, and are at least temporarily archived. Also, depending on the access level of a user or the forum set-up, a posted message might need to be approved by a moderator before it becomes visible. The Business Dictionary defines it as “informal and voluntary gathering of individuals (in person, through a conference call, or website) to exchange ideas, information, and suggestions on needs, problems, subjects, etc., of mutual interest.”

Online forums have evolved into a natural sharing of knowledge, resources, and interaction that makes thinking and learning publicly visible. Ebner et al. (2010) contended that it is not the “transfer of information or status messages that are crucial factors, but rather, the opportunity to be part of someone else’s process by reading, commenting, discussing or simply enhancing it” that leads to being part of a “murmuring community” (p. 98).

1.3.1 LIS Online Discussion Forums

LIS Online Discussion Forums/Groups act as an electronic forum (or conference) for library and information professionals and users of library and information systems and services. It creates an opportunity to discuss issues related to library and information practices and act as an electronic medium for the quick exchange of information and experiences related to new initiatives, plans, projects, information sources and services, forthcoming events, professional development and international development. There are multiple of LIS Online Discussion Forums. Following are some of the popular and commonly used LIS Online Discussion Forums/Groups (Discussion Groups / LIS Forums – India, 2014):

- a) ASDOLIS: The Association for the Development of Library and Information Science.
- b) Corporatelibrns: An interactive forum for corporate librarians.
- c) Digital Libraries India

- d) IATLIS: Indian Association for Teachers in Library and Information Science.
- e) INDIA-LIS: The INDIA-LIS is a Library and Information Science in India.
- f) JACLA: Joint Academic Committee of Librarians.
- g) KM-Forum: Knowledge Management Discussion Forum.
- h) KULIS Forum: Kuvempu University Library and Information Science Forum.
- i) Librarian's Digital Library: Digital Library Discussion Forum.
- j) LIS-Forum: Discussion forum for library and information professionals in India.
- k) LIS Links: Library and Information Science Links.
- l) MANLIBNET-India: Management Libraries Network.
- m) M-Forum: Knowledge Management Discussion Forum.
- n) NMLIS: New Millennium LIS Professionals.

1.3.2 New Millennium LIS Professionals (NMLIS) Forum

The discussion forum *New Millennium LIS Professionals (NMLIS)* created on 22nd October 1999. The mailing list of information professionals is to exchange views, ideas, and opinions relating to the library and information fields. This is basically made to develop inter-relationship and help. This forum is also interested in sharing the knowledge and experience among the information professionals between developing and developed countries. The interaction may also lead to the initiation of collaborative projects. The LIS professionals will be able to make use of this forum effectively and get the advantage of the technology. At present, there are 3117 (as on 08/05/2018) members registered and used English language as a medium of communication. The *NMLIS* forum is a Yahoo Mail based discussion forum. Those who wish to join the service filled the details in NMLIS forum website. After finishing the registration an email will be sent to user mailbox for confirmation. Members can access the facility under the restriction of group setting as shown below:

- a) This is a restricted group
- b) Attachment is permitted
- c) Members cannot hide email address
- d) Membership requires approval
- e) Messages require approval
- f) All members can post and comment messages

1.4 CONTENT ANALYSIS

Content analysis is described as the scientific study of the content of a communication. It is the study of the content with reference to the meanings, backgrounds, and purposes contained in messages (Prasad, 2008). According to White & Marsh, (2006) content analysis is a method which can be used qualitatively or quantitatively for systematically analyzing written, verbal, or visual documentation. Holsti (1968) defines it as a technique for making inferences by systematically and objectively identifying a specific characteristic of messages. The content analysis consists of extracting and evaluating in a systematic and generally quantitative manner the occurrences of the manifest and latent content of a body of textual or audiovisual materials. An early definition of content analysis by Berelson (1952) defines content analysis as, “a research technique for objective, systematic and quantitative description of the manifest content of communications.” The researcher quantifies and analyzed the presence, meanings, and relationships of such words and concepts, then make inferences about the messages within the texts, the writer, the audience, and even the culture and time of which these are a part. Texts can be defined broadly as books, book chapters, essays, interviews, discussions, newspaper headlines and articles, historical documents, speeches, conversations, advertising, theater, informal conversation, or really any occurrence of communicative language (Berelson, 1952).

Due to the fact that it can be applied to examine any piece of writing or occurrence of recorded communication, content analysis is currently used in many fields of inquiry . Content analysis is used to make inference about the backgrounds of a communication, it describes and makes inference about characteristics of communication and makes inference about the effects of communication. The following list (adapted from Berelson, 1952) offers more possibilities for the uses of content analysis:

- a) Reveal international differences in communication content.
- b) Detect the existence of propaganda.
- c) Identify the intentions, focus or communication trends of an individual, group or institution.
- d) Describe attitudinal and behavioral responses to communications.
- e) Determine the psychological or emotional state of persons or groups.

Content analysis has most often been thought of in terms of conceptual analysis. In the conceptual content analysis, a concept is chosen for examination, and the analysis involves quantifying and tallying its presence. Conceptual analysis begins with identifying research questions and choosing a sample or samples. Once chosen, the text must be coded into manageable content categories. The process of coding is basically one of selective reduction. By reducing the text to categories consisting of a word, set of words or phrases, the researcher can focus on, and code for, specific words or patterns that are indicative of the research question. Relational content analysis, like conceptual analysis, begins with the act of identifying concepts present in a given text or set of texts. However, relational analysis seeks to go beyond presence by exploring the relationships between the concepts identified. Relational content analysis has also been termed semantic analysis.

1.5 SIGNIFICANCE OF THE STUDY

The exponential growth of the Internet and the increased reliance on digital information have revolutionized online discussion forum with new ways that offer the opportunity for LIS professionals and play a significant role in the generation of knowledge and information. Thus, the communication over online forum must be capable of supporting communication between professionals. Through *New Millennium LIS Professionals (NMLIS)* forum, many issues related to Library and Information Science has been put forth for discussion among forum members at the national level. Therefore the value of this study relates to the understanding the quality of its sources and services of *NMLIS* forum. The online tool, information resources and the mode of communication are the important components of modern LIS professionals to serve the users and communicate with fellow professionals. For proper and systematic planning and development of the mode of communication through an online forum, discussion forums become the focus of the study.

Online communication tools play an important role in sharing important information effortlessly by providing services over the Web. Communications over an online forum can be improved with further study and analysis. The more information is shared and accessed over the online forum, the better online communication can become. Consequently, online forum can be used to meet the needs of the users. Further, this study used a qualitative approach to explore the nature of professional conversations

taking place on an online forum among self-organized groups of library professionals’. Since there have been no documented research that have analyzed the nature of professional communications among library professionals, need arose to take up this as a research topic on “Library Professionals’ Communication over Online Forum: Content Analysis of *New Millennium LIS Professionals (NMLIS)*”. The findings of the study will provide insight for constructing professional learning opportunities that could be explored in future research. Considering the new potentials of naturally occurring conversations in social media environments, research is required that will investigate how library professionals may benefit from these conversations in the context of cognitive and social development.

1.6 SCOPE OF THE STUDY

The study was confined to the content analysis of communications (messages) posted by forum members of *New Millennium LIS Professionals (NMLIS)* from January 2007 to December 2016. *NMLIS* is a discussion forum formed in October 1999 by Prof. N. Laxman Rao on Yahoo! The forum is well popular amongst library professionals in terms of sharing information and resources since start. This is the biggest discussion forum among all Library & Information Science discussion forums in terms of forum members (3117) as well as in terms of communications (35025) communicated on the forum (as on 08.05.2018).

Table 1.1: List of communications posted by library professionals

Year	No. of Communications	Year	No. of Communications
1999	51	2009	3075
2000	80	2010	3171
2001	621	2011	2481
2002	805	2012	2665
2003	917	2013	2732
2004	757	2014	2470
2005	1740	2015	2844
2006	1609	2016	2406
2007	1843	2017	1472
2008	2779	2018	507 <small>(as on 8th May, 2018)</small>

(Source: NMLIS at Yahoo.com)

1.7 REVIEW OF LITERATURE

Due to information and communication technology (ICT) revolution, the sheer quality of knowledge and information is growing exponentially. As a result, the Library and Information Science professionals are facing growing challenge to meet the quality medium for communication to share their views, enter dialogue, and learn from each other. To examine the real problem, quite a good number of studies have been conducted by the researcher to know the quality of communication and its resources and services provided. The theme-based literature has been reviewed to give more focused insight into the context.

1.7.1 Online Communication and Learning

Learning takes place through message sharing in online discussion forums/groups in various subject fields. Ruane & Lee (2016) analyzed the interactions on discussion board in an online peer mentoring site which was created to unite the first year and third year pre-service teacher enrolled in an undergraduate teacher education program; and found that online mentoring site supported valuable interaction and professional communication among the students, and thus online peer mentoring sites can develop the cultivation of learning, ideas, and knowledge exchange as well as support of students learning in informal environments. To identify the level of knowledge construction in online learning communities Lai (2015) conducted a case study with doctoral students and found a high level of knowledge construction in some of the program of the discussion forums.

To find out the feedback of LIS students on online courses, Aharony (2011) conducted a study and analyzed that major theme expressed in LIS student's feedback is their "personal impression" on their online experience. Further, the study revealed that LIS university students were more satisfied with their online learning experience due to lively discussions and more thoughtful interactions. Nor et al. (2010) analyzed the online discussion forums in context of promoting knowledge construction through collaborative learning and found that students actively administered and studied the postings in the online discussion forums and were able to relate their postings to what they have learned in the lectures, and also providing links to applicable websites for further reading. Therefore, there was an indication that students worked collaboratively in order to

respond to the postings based on the topics offered during the lecture and tutorial. They also revealed that students' interaction indicated various phases of knowledge construction which is a reflection of their perceptive thinking process. An asynchronous discussion group was studied by De Wever et al. (2009) to evaluate the impact of self-assessment on students' levels of knowledge construction through social negotiation and revealed a significant positive effect of assigning roles to students which depends on the moment of the introduction of the roles. The higher levels of social knowledge building were found in discussion groups where roles were presented right at the start of the discussions and faded out towards the end.

1.7.2 Content Analysis of Online Discussion Forums

Yahoo! platform based many groups are running in the different field and different purposes. Library and Information Science field is also one of them which have many Yahoo! based Groups. ALESS is a Yahoo! based group run in Hong Kong and a studied conducted by Choi & Dukic (2016) to know the professional association of school librarians' online communication and found that ALESS members used effectively the Yahoo! Groups platform even though they do not exploit all accessible features; group members were frequently using web-based mail, files and polls also. Adetimirin (2015) conducted an empirical study on use of online discussion forums by Library and Information Science students using technology acceptance model and found that use of technology for learning is increasingly accepted in Nigerian universities. PG students embrace online discussion forums to promote learning. Further suggested that for increased and improved use of online discussion forums for learning, it is essential to consider among other factors: computer self-efficacy, perception of external conditions, computer anxiety and computer playfulness of PG students. The institution and instructor must provide an enabling environment and also consider the behavior of the PG students to promote e-learning using online discussion forum.

In Indian scenario, Pujar et al. (2014) explored the messages on LIS Forum and found that announcements are forming the major posting made by the group members. Further revealed that email-based discussion lists remain hold its relevance, significance, and attractiveness in the era of numerous powerful social media tools. An electronic conference network related to library professionals has been studied by Kovacs et al.

(1995) and the study reveals that researcher in the field of Library and Information Science was mostly using e-conference as a source of professional and research information for their personal use. The result of this study also shows that e-conference is a source of information in providing direct and indirect service to library patrons; and indicated that some of the established information sources like journals, physical conferences, interpersonal emails and telephone contacts were replaced by e-conference communications.

Online discussion forums are available in many areas for problem-solving, and sharing of information, expressions, and views on certain topics. It may be subjective or general discussion based. A MOOC related discussion forum has been analyzed by Wong et al. (2015) to identify cognitive learning information sharing and found that explicit educational exchange occurred. Therefore, the engagement of students with a forum in an online course seems to contribute to student learning. The research result also shows that interaction within MOOC discussion forum is a learning process with unique characteristic and suggested that different types of interactions have characteristics specific to particular cognitive learning level. Tucker (2015) analyzed the contents of EcoKids discussion forum and found few direct interactions between users. The majority of posts were unconnected statements stating the user's opinion about the matter at hand. Out of the 227 posts included in the study, only one was a response to another user, and another seven were requests for information, explanation, or conversation. It shows that over 96% of submissions displayed "no interest" in social interaction beyond answering that month's question.

An asynchronous environment based online discussion forum was analyzed by Green et al. (2014) and revealed that discussion forums were the most used features of LMS site. The total posts made a significant direct contribution to the final mark of the students. The result of the study indicated that asynchronous online discussion forums can be an effective tool for the students in learning outcomes as indicated by the final marks in gross anatomy teaching. Anish & Vimal Kumar (2013) surveyed the popularity of LIS-Forum among LIS Professionals and found that men wrote most posts in LIS-Forum than women, young professionals are more active in the forum with more representation of South Indian states specially Karnataka. The study also found that librarians are more in the community than faculty members, research scholars and students, majority of the

forum members were subscribers of other email discussion forums in LIS domain and checking messages daily. There are few members regularly contribute messages. Negative/ personal content in messages was most annoying thing as felt by subscribers. Another important complaint was that topics were not raised for healthy discussion. Community members demand Web 2.0 features like RSS feeds, tagging, user profiles, and message sharing. Social networks with high user participation are replacing traditional email based discussion forum.

Ravichandran & Kaur (2012) studied the content analysis of Rubric-based online discussion forums for MIDT students in Open University Malaysia and indicated that the success of any online course depends on how efficiently the organizers anchor the discussion forum to bring in the meaningful and quality discussion. The study showed a significant relationship between the discussion forum postings against the final score of the students. Nandi et al. (2011) studied the activity of students in online discussion forums and revealed that a high percentage of students do not access the discussion forums or post at all throughout the semester. The study result also shows that it is dissemination to participate regularly to achieve a high grade but another side managing the course content and expectations have a large impact on how students contribute to online discussion forums.

To study the use of discussion forums for sharing the high level thinking and problem-solving by sharing intellectual ideas, McLoughlin & Mynard (2009) conducted such kind of study in a Women's University at the United Arab Emirates and found that online discussion forums have higher-order thinking processes. Al-Shalchi (2009) conducted a study on the effectiveness and development of online discussions and found that online discussions should be included in distance education courses, and they can also be incorporated into traditional classrooms. Online discussions provide students with several advantages and allow for students to communicate and interact. With the proper development of online discussions, students can enjoy having a positive learning experience. For studying the occupational problems of computer teachers over online discussion forums Deryakulu & Olkun (2007) investigated the occupational problems faced by teachers and found that sharing of personal ideas and thought were very common in an online discussion which indicated that online social interaction among the

teachers was quite reflective which is considered to be the heart of professional development.

To study the interaction and participation pattern in the online community at Singapore, Sing & Khine (2006) conducted a study and found that teachers designed a knowledge-building community and cooperatively discussed issues related to integrating information technology inside the classroom. The study also revealed that teachers formed a socially organized community and their participations were active but found that comprehensive and supportable online interaction was lacking. Hara et al. (2000) analyzed the content of online discussion forums in Applied Educational Psychology course and concluded that in the online learning activity, students were able to have more time to follow the course content and make in-depth understanding and social contributions to the class that would be particularly impossible in a regular college classroom. A study conducted by Anderson & Kanuka (1997) to check the use of online forums for professional development and group collaboration and found that online technology has relative advantages for organizers and sponsors while most users were being less satisfied than face to face interaction. However, study revealed that online forum is easier to handle and more applicable which indicated that “technology” has the possibility to become a major means for enduring professional education.

1.7.3 Email/ Mailing list based Discussion Forums

There are a number of studies conducted on email-based discussion forums and mailing lists. In this regard, Khode (2012) conducted an extensive survey on the use of various mailing lists by the library professionals of India and found that almost all categories of library professionals were using mailing lists. Further, it has been the inference from the study that mailing lists are a very good means for Librarian’s community to share information content and problems solving on certain issues. The study also indicated that mailing lists provide a platform to promote the development of the profession by sharing views and solving problems as a community. Another informative study conducted by Dhanvandan & Tamizhchelvan (2012) where they analyzed the e-mail discussion forums and highlighted LIS groups available over the Internet and features of each forum, the number of members, the mode of hosting the messages among LIS forums. Finally, they concluded that Library and Information Science forums play an important assistant role

for the profession and a simple as well as efficient way to communicate to the group members. A similar study on library-related mailing lists was conducted by Pujar et al. (2003) which found that mailing list creates a sense of good cooperation among professionals and brings people to work together for a common cause. It reveals that the communication forum strengthens the bond of librarianship by means of motivating members to share knowledge with fellow librarians. The revealed that many contributions are communicated by only a few members and the other members are mostly the silent observer. Siddique & Mahmood (2009) studied a mailing group called “plagpk” created by volunteers of LIS professionals of Pakistan Library Automation Group (PakLAG) and revealed that impact of “plagpk” mailing group is very positive and provides a useful platform to share their knowledge, resources, and capabilities and solve the problems. The study also shows that the mailing list is helpful in the placement of fresh graduates by posting jobs.

1.7.4 Content Analysis of Library related Social Networking Sites

The social networking sites have been used for dissemination of information content to the users and fellow professionals. There is a number of research conducted based on Facebook, Twitter, and other social networking sites. Das & Mahapatra (2018) studied the Facebook group of Library and Information Science professionals and found active for interacting, sharing of knowledge, and cooperating with others. LIS professionals are very much involved in the partnership and sharing knowledge through Facebook postings, and also found that “comments” and “likes” are more than sharing of useful posts. Finally, concluded that Facebook-based LIS groups are sharing ephemeral materials more rather creative events and knowledgeable posts. Golwal et al. (2012) also conducted a study based on Facebook and found that it was used to get interacted professionally and to keep up-to-date with the latest news with sharing their views and participate in discussions. The study revealed that Facebook was used for sharing their academic and research activity, and majority of the members were satisfied with the service.

In a study, Majhi et al. (2014) compared the use of Facebook in academic, public, and special libraries in India and suggested that library profiles should be created on Facebook. Due to extensive use of Facebook by school, college and university students,

academic libraries with Facebook profile might have better success than other social network tool. If students contact the library via Facebook, by all means, the library should respond in the same fashion to increase the use of library Facebook profile. An exploratory study by Aharony (2012) on the use of Facebook in American public and academic libraries found that both kinds of libraries (public and academic) use the “information section” and the “wall” and that there is a difference in the use of other Facebook sections, which was surprisingly limited in both kinds of libraries. In addition, public libraries use the “wall” and the “photos section” as major channels of information more than academic libraries which seem that both kinds of libraries use Facebook simply as a way to deliver information to users, rather than as a venue for discussion.

Twitter is considered as a micro-blogging site to share information, views, and feelings in a short. Library and Information Science Professionals also use the Twitter account to interact with each other. In this regard, Aharony (2010a) explored the use of Twitter in public and academic libraries to understand micro-blogging patterns. Analysis of the tweets was conducted in two phases: statistical descriptive analysis, and content analysis. The research findings show there are some differences between public and academic libraries, including the number of tweets, linguistic differences, and content. However, it seems that using Twitter in libraries enables both kinds of libraries to broadcast and share information about their activities, opinions, status, and professional interests. The research findings are relevant for librarians and information scientists who wish to better understand and explore the phenomenon of library tweets.

1.7.5 Content Analysis of Other Social Networks

There are some social networks which are prevalent in country-specific like “Renren” in China studied by Lin et al. (2012) to analyze and compare the interaction pattern of “Renren” with “Sina Weibo” and found that participants of the two online platform share some common interaction patterns, however, users in “Sina Weibo” are more widespread and different and thus proved that “Sina Weibo” is more effective platform for information dissemination than “Renren”. In a study, Stewart & Abidi (2012) analyzed the network subjugated by a single institution and a single profession; and found a varied correlation among reading and posting content to the discussion forum. The social network analysis revealed a healthy network with strong communication patterns while

identifying which users are at the center of the community in terms of enabling interaction. The group-level analysis suggests that there is strong inter-professional and inter-regional communication. Similarly, Li et al. (2016) analyzed social network analysis (SNA) to study the level of participation as well as the pattern of communication among health professionals in a large professional learning network and found that their learning network is highly centralized and roughly connected and level of participation is low in general. The qualitative analysis of academic groups on Facebook was analyzed by Arendt et al. (2012). They analyzed free-text essay with the students' own perceptions, while forum interactions were evaluated according to modern learning patterns with human values. Both sets of results showed a pleasant social climate that fostered an effective interaction as students posted, responded, received feedback and gained insights that develop a serious study. Further, the study revealed that not all students jointed or contributed actively.

1.7.6 Content Analysis of Blogs

The content analysis research conducted on various subject-specific blogs. The focus of the study of different subject blogs was to know the feelings, sentiments, behavior, providing services and seeking feedback etc. The blog posts discussing health issues in Japan has the by Sato et al. (2015) focusing on the feelings and satisfaction levels of Lung Cancer patients and their family members after being notified of their disease; and found that dissatisfied patients were more than satisfied patients. Based on 100 blog posts and 2499 sentences, they identified 495 expressions of dissatisfaction and anxiety. Another health-related 21 blogs were studied by Boepple & Thompson (2014) which deals with physical and mental health including information on eating, exercise, and self-image. This content analysis study was designed to evaluate the information content of 21 blogs from a larger sample based on two criteria: they had won an award for healthy blogs, and they had a large number of page views. The analysis shows five of the bloggers self-identified with an eating disorder; seven faced difficulties with either menstruation or fertility; eleven referenced being on a diet; five indicated with some form of dietary restraint; and eleven included with some negative/guilt-inducing message about food. The study suggests that content of healthy living blogs might be problematic for viewers who have eating or body image issues. Another exploratory study on Cancer blogs content was conducted by Kim (2009) who established that public turns to the

Internet to communicate with one another about health-related issues including Cancer. The blogs are different in communication to disseminate information content and thus medical librarians can assist in identifying more representative blog contents and are integrated into library collections.

There is a number of Library and Information Science (LIS) related blogs studied by researchers for different aspects. A study conducted by Gala (2013) on “LIS Blogs” concluded that “LIS blogosphere is discussing very specific subjects as well as very broad subjects. It is important for bloggers to encourage users to stay connected and share their blog content”. Further identified that LIS blogger is using the Web 2.0 tools and techniques to share information content and encouraging the use of various Web 2.0 tools also. The study found that blogs on specific topics provide a platform for instant access to current and relevant information, thereby making it possible to detect current trends in the broad subject categories. The blogs have a feedback system with blogger and study found that on an average the blog content comprised of 30% blog posts and 25% response & comments. Further, suggested that archived blog post and comments can be used to trace the documented growth of a trend or a discussion thread. Similarly, Jackson-Brown (2013) examined communication taking place within a purposive sample of 12 librarian blogs using qualitative content analysis to locate activity of the blogs under four genres: research, social, political and professional development. Furthermore, the study analyzes the genre to examine the communication exchanges of participants of librarian blogs. The librarian blogs study shows that “professional development” was the major focus of the blog content during the period of study. The findings of the study contributed to knowledge regarding the attraction of blog readers to blogs that support professional continuing education around technology, conferences, career advising and other areas.

A lot of library literature has been written on the various techniques to deal with angry library patrons. However, Operario (2013) conducted a study to gain some insights into what is written about angry library patrons in the blogosphere. While the cause of anger in most angry library patron literature is often attributed to an unpopular library policy or procedure or a breakdown in communication between a library staff member and a patron, it turns out that a number of patrons become angry because of the actions and behavior of other patrons in the library. Moreover, various technology/ computer related

causes such as frustrations in using the online catalogue and e-books and even the online porn viewing habits of some patrons also now play a major part in angering library patrons. The library patrons' anger is usually directed towards either library items or the staff members. The ways they express their anger can be relatively mild or severe which usually involves verbal abuse or violence. No library blogger mentioned being significantly affected by an angry patron though.

Seker & Duzyol (2011) conducted a content analysis with 277 posts sent to ACRLog which were belongs to "technological aspects of LIS", "LIS service activities", "others" (conference announcements, information and announcements about ACRL, personal ideas and experiences, etc.) and "scientific and professional communication". The study found the statistically significant difference in the subjects of the posts by year. The keyword analysis of study found that posts mostly contain the words "library" and "librarian", and the noun phrases "academic librarian" and "academic library". Scattering of words to the posts is wide. Some of the words like "ACRL", "conference", "google", etc. come from certain blog posts. The subjects of blog posts and most frequently used words/ noun phrases in the blog posts provide consistent results. Further stated to increase the quality of ACRL blog as a professional communication, the interest in the ACRL blog should be increased and current issues such as Web 2.0, information literacy and digital rights should be discussed more often to enrich the content.

An exploratory study of LIS blog comments was conducted by Aharony (2010b) in two phases: statistical descriptive analysis, and content analysis. The study findings indicated that majority of comments were written in a personal style. Moreover, the research findings reflect the readers' moderate participation and low activity in the creation and dynamics of these blogs. However, comment writers deal with substantive issues which reflect their professional as well as their personal interests. Thus, comments' writers did not express only courtesy comments but they took advantage of the platform and expressed personal, impressive, advisory, as well as reflective comments also. The research findings are relevant for librarians and information scientists as they cause them to better understand and explore the LIS blogosphere. A study on the use of blog by libraries and librarians' conducted by Bar-Ilan (2007) in December 2003 and February 2005; and the contents of one month of postings were characterized using multi-faceted content analysis. The blogs identified in 2003 were compared to the blogs listed in 2005

and found that blogs have an impact on the activities of information professionals and they (blogs) are a novel information channel for transferring information both to fellow professionals and to other users of the Web. In addition, blogs also serve as an effective tool for “marketing” library events and resources. Librarians use blogs to disseminate professional and general information, while libraries often use blogs for announcements. Libraries utilize blogs in a novel way that allows them to disseminate information to their patrons. Even though there has been a considerable increase in the number of libraries with blogs, further growth can be expected, since as of February 2005 only a minority of the libraries utilized this tool.

The use of blogs as a professional development tool for teachers was studied by Hou et al. (2009). The study used interaction behavioral patterns of 470 teachers who are using blogs to conduct instructional pattern; and the depth knowledge construction shows that blogs can serve as a channel for teachers to share teaching information, on the other hand, the features of knowledge construction is limited.

Research Gap

Based on the above mentioned literature review conducted in the area of content analysis, online forums, mailing lists, social networking sites, blogs, and online communications, it has been found that there was lack of study in the area of library professionals’ conversation over online forums and more specifically the objectives of the present study had not been touched in any of the research. This motivated to take up it as a research topic and through research attempted to fill up the gap in the area.

1.8 RESEARCH DESIGN

1.8.1 Statement of the Problem

Library professionals’ communication over online forums started for more than a decade. They are communicating with each other through online conversations and sharing a variety of information, knowledge, and resources. By this way, they are serving their users’ community as well as working for their professional development. The content of information should be categorized and related to professional development of forum members. There are varieties of information shared through online forums but all the information shared is not the productive information which can promote the

professionals' growth. Thus contents of information shared are very much important to know the professionals' growth in the forum. The abundant amount of research has been found and sufficient amount of literature is available on professional communication over social media like Facebook and Twitter. But there was lack of research and related literature observed on the content analysis of professional communication of LIS professionals' over the online forums. From the LIS perspective, there is inadequate research conducted to analyze the content of the online conversations over the online forums of Library & Information Science. More specifically, further research was warranted to examine the depth of intellectual conversations or the nature of critical thinking taking place among library professionals' participating in conversations on the online forums. Therefore, need arose to analyze the contents of the online forum "*New Millennium LIS Professionals (NMLIS)*". From the LIS perspective, there has been few research observed so far based on blog posts analysis of Library and Information Science rather than online forums and it motivated to conduct the study in the area of content analysis of the online forums.

1.8.2 Objectives of the Study

The objective of the study was to analyze the contents of communications carried over the online forum *New Millennium LIS Professionals (NMLIS)*. The specific objectives of the study were:

- a) To examine the extent of communications among LIS professionals' over the online forum.
- b) To examine the categories and their extent of communications among LIS professionals' over the online forum.
- c) To examine the trend and growth of communications among LIS professionals' over the online forum.
- d) To determine the major focus of LIS Professionals' as demonstrated by their communications over the online forum.
- e) To find out the communication pattern and extent of communications done over the online forum.
- f) To find out the prolific contributors to communications among LIS professionals' over the online forum.

1.8.3 Hypotheses

The hypotheses of the study were:

Hypothesis 1:

H_0 : There is no statistically significant relationship between the increase of library professionals' communication and time period of the online forum.

H_1 : There is statistically significant relationship between the increase of library professionals' communication and time period of the online forum.

Hypothesis 2:

H_0 : There is no statistically significant relationship between the increase of professional communications and time period of the online forum.

H_1 : There is statistically significant relationship between the increase of professional communications and time period of the online forum.

1.8.4 Research Methodology

The methodology is a primary segment of research to find out the relevant information concerning the study. The survey and observation methods of research have been applied to conduct the study.

Data Collection Methods and Procedures

The primary strategy of data collection involved accessing the Yahoo group *New Millennium LIS Professionals (NMLIS)*. Archived records of online conversations are searchable and accessible for registered members on *NMLIS* forum. Members of the online forum were tracked to gather the data to know the level of their involvement, type of their activity, and the number of postings with description. All the conversations posted between the periods of January 2007 to December 2016 from the archived database has been recorded and grouped into different categories. Combinations of qualitative and quantitative methods have been used in the study. The qualitative analysis involved in terms of examination and evaluation of the content of the *NMLIS* forum. The conversation details were tabulated before starting the coding process (see Annexure - I). After coding, the data has been analyzed. The quantitative analysis involved in terms of measuring the amount of online interaction that involved counting and categorizing the

unit of content. The suitable statistical packages and statistical tests have been applied in the analysis and its interpretation.

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CHAPTER - II

ONLINE COMMUNICATION

MEDIA: AN OVERVIEW

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2.1 INTRODUCTION

In recent year, there has been an accelerated growth of communication technologies which transform the way of communicating from one person to another. The techniques of communication have changed along with the increase in the volume of information and speed. People communicate through different means like email, video conferencing, texting service and by various kinds of social media channels. In future, emerging technologies will renovate the communication system towards advanced techniques and thus it will be difficult for any individual or organization to run the system without modern communication technologies. Communication will be taking place within the community and therefore the process of communication became the subject of studies to handle the flow of information.

2.2 COMMUNICATION

Different types of definitions and descriptions have been published in the communication and related writing by different professionals and scholars. It has been defined as “communication is the exchange of information, the flow of information and ideas between the people which involve a sender impart idea and information to the receiver” (U.S. Army Environmental Center, 1994).

Shannon and Weaver (1949) stated that “the element or component of communication includes a source of communication which is known as sender, a transmitter, a signal and a receiver. The source could be determined as the speaker, the signal as the information and the receiver as the listener”. Rice-Johnston (2008) characterized communication as “a communication makes the scene as one individual, a sender, display, pass on or otherwise directs a set of representation to another individual, a receiver, to plan for changing something, either something the receiver is doing or not or changing his or her worldview. The symbol which is set during the interaction is typically described as the message”.

We can say that communication is a procedure of interaction by transmitting information from the sender to the receiver with the use of media in which the communicated information is understood. The ability to communicate effectively with someone else is

necessary to attain satisfaction for both the sender and the receiver, also the means of communication for excellent flow of information.

2.2.1 Communication Trends

There are different types of method of communication for transmitting information such as sign or signal, speaking, sound etc. Methods of communication have changed and developed as the societies require change. Communication has occurred in many forms, however, “the very first kind of communication devices appeared in “Sumer” in the form of pictograph written on clay tablet at the time of ancient period and early era” (Faraj, 2016). We can say that pictogram have been the main means of communication for quite a long time. In medieval times, there were several techniques and system of disseminating information. In the middle age, society needed access to information quickly. In medieval times, transportation is difficult, expensive, time-consuming and unsafe. The rulers, nobles and other important people had a little time to travel with news or messages and so, they used to hire trusted messengers to act on their behalf (Bellerby, 2017). During the time of war or insensitive period, messages were sometimes sent in a coded form or hidden about the person of a messenger. However, at the beginning of the late middle ages, the method of block printing which comes from China over 2,000 years ago was the earliest known for printing technique. Thus, personal interaction, presence, and contact are usually adopted for communication.

“A drastically change occur in the technique of communication at the Ages of Enlightenment which is also called an Age of Reason. The Enlightenment Period served as a bridge between the past and present of communication study” (Age of Enlightenment). During this period the transformation in communication field reflected the cultural shift, that the system of modernized printing really change the way people learned and communicated.

At the beginning of 19th century, mail network communication takes place with a great expansion and begins to start connecting different countries. The use of telegraph plays an important role in communication in the 19th century which is faster to acquire information other than mail or news to arrive by boat. Moreover, the improvement in telecommunication during the 19th century started people to interact with the rest of the

world (Higgins, 2008). Radio is one of the most significant tools of communication during the 19th century till the beginning of 20th century. By the beginning of 20th century, the system of communication has experienced a drastic change which affects throughout the society and the organization as well as individuals also. On 24th December 1960, the first radio broadcast was transmitted from Brant Rock, Massachusetts to the general public (Fry, 1973). After the invention of the typewriter in the 1860s became rapidly popular, then they were widely used by professionals, business correspondent, and other organizations.

2.2.2 Communication Skills

Communication skills play a significant role in every person to receive information and express ideas and opinion to others. It is important to develop multiple communication skills for both communication to others and how to interpret the information received from others. Communication is one of the most important skills that are needed not only for daily life but also for required in the professional domain.

To become successful in any profession, one must have good communication skills to interact with others to gain knowledge. Accordingly, effective communication is the most important tool to accomplish the desired purpose (Maharajan, 2015). The ability to communicate with the co-worker is essential that assertively form any professional in achieving his or her goal. Thus, professionals or any staffs in digital era must be acquainted with how to effectively deliver and receive messages in person as well as by means of phone, email and other social media (Doyle, 2018). Professionally or personally, communication skills are essential to build a relationship and to obtain information for solving the problems. Good communication skills can give feedback effectively and in a way that will affect the current status of any individual or professional organization.

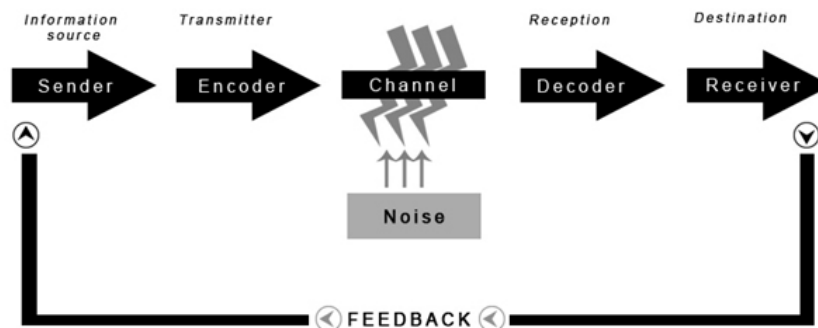
Communication skills are important to each person for conveying and receiving information through different forms of communication skills. There are four types of communications have been observed by the scholars that are mentioned below:

- a) *Verbal / Oral Communication*: There can be a different explanation regarding the meaning of verbal /oral communication. However, simply we can say that sharing information by means of words is verbal communication. Used of spoken word for communicating is verbal or oral communication. On the other hand, speaking is not the only verbal communication, listening is also equally important for this type of communication (Mikoluk, 2013).
- b) *Non-Verbal Communication*: Non-verbal communication comprise of physical expression to communicate with others. This type of communication has been recognized for centuries as a critical aspect of communication. The non-verbal communication is the transfer of information in addition to words in a communication to the receiver (Heathfield, 2018). Communication through non-verbal technique by means of eye contact, gestures, signs, facial expression, and many others.
- c) *Written Communication*: Written communication is a formal method of communication and also it is one of the most significant skills that any professionals need to perform more efficiently. Other than oral form of communication, written communication is also among the early known form of communication. A written communication means a message or information which can be presented in the different form of handwriting or print. It is a communication by means of sending messages, orders, circulars, manuals, report, and telegram etc. (Sharma, n.d.). Every successful organization is determined by the written communication skills adopted by every individual within the group. Hence, writing is an essential professional skill to transfer information and knowledge from one to another and for future reference.
- d) *Visual Communication*: Visual communication is the concept of creating clue to express sensation and data by means of carving image, photograph, chart, graphs etc. Instantly visual communication is one of the most important ways of communicating and sharing of information. Visual communication is the formation of emotion, data, information and knowledge through visual expression which can be applied to anything visual including art, architecture, media, performing art and fashion etc. (Spacey, 2017).

2.2.3 Communication Models

Communication is the technique of exchanging information which is executed in a two-way process and it is incomplete without feedback from the recipient to the source on how well the message is understood by the receiver. The importance of effective communication is limitless in the world of business and in personal life but it can be understood that effective business communication is critical to the successful operation of the modern enterprise and every professional need to understand the fundamentals of effective communication (Sanchez, n.d). Component of communication is also known as a model of communication which occurs when there is a sender who generates the message and a receiver to receive it. Numerous model of communication has been developed to understand different categories of the communication process to improve the procedure of communication.

The first and well-known model of communication has been developed by Shannon and Weaver in 1949 for Bell Laboratories to ensure the maximum efficiency of telephone cables and radio waves. The model consists of five elements as illustrated in the diagram below.



SHANNON-WEAVER'S MODEL OF COMMUNICATION

Fig. 2.1: Shannon-Weaver's Model of Communication

(Source: CommunicationTheory.org, 2010)

Shannon and Weaver's model of communication is simple and broad which was later used to describe different fields of communication. Other than the concept, sender, encoder, channel, decoder and receiver of Shannon-Weaver's model, there is also a

concept of “noise” included in the model, that goes through the channel and reduces the message more difficult to recognize by the receiver.

The linear model of communication comes in one way straight line communication with others forming the procedure simple and easy to understand that does not involve any feedback from the receiver. The model of communication comprised three elements, the first part is the sender, who is speaking and the second part of the model is the channel, which is the device for transmitting the message and the last part of the model is the receiver, who collect the message (Linear Model of Communication: Definition & Examples at study.com). The illustration below shows how Linear model of communication works.



Fig. 2.2: Linear Model of Communication
(Source: Schreiber & Hartranft, 2013)

The linear model of communication originated from Shannon and Weaver which was late adapted by David Berlo into his own model known as SMCR model of communication. However Linear model is not appropriate in general human communication but applicable in mass media communication like television, radio etc.

Unlike the Linear model of the channel, communicating in one-way straight line, the more collaborating model of communication was developed known as an Interactive model. Here, the communication carries on by way of switching message from the sender to the receiver, then, from the receiver to the sender back again (Fedler, 2000). The Interactive model, also known as Convergence model allows the feedback process which consists of messages sent in response to other messages.

The Interactive model is relatively a new model of communication for new technology like Web, thus, the procedure of communication involves different components of communication to perform.

Interactive Communication Model

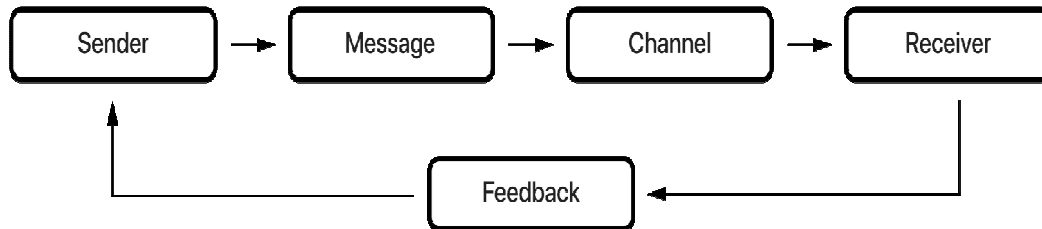


Fig. 2.3: Interactive Communication Model (Source: Kwon, 2017)

In every communication, it is important that any message generated by the sender must be understood by the receiver without losing the originality intended by the sender. In any arena of communication, every component plays an important role in carrying out the smooth flow of information resulting in a successful understanding between the sender and the receiver. However several models of communication have been designed and developed to handle different systems of communication, therefore, it is important to understand which model will help us to measure the effectiveness of communication. Hence, in any process of communication within the organization, communication breakdown can happen, so as to figure it out the nature of communication barrier communication model can be an essential source.

As skills and equipment are improved from time to time, the medium of communication also changed. Consequently, the method and skills of communication also change drastically. Many managerial models of communication have been published by different researchers and experts, but it is impossible to specify the outstanding model of all the communication models, however, it might be possible to choose the most acceptable model for several organizations. With the growth and development of information and communication technology (ICT), the process of communication is initiated and transfer data or information electronically with the help of the electronic device. Digital communication is one of the most generally used modes of communication nowadays.

Digital communication is certainly a fast way to transfer information, the data or information flow in digital communication can reach the recipient within a second. In digital communication, the data or information are represented by binary sequences in which the network is the channel used for communication of data from one location to another station in the network. The digital or analog data are transfer through a communication media in the form of a signal from the source to the receiver. Both the data, either analog or digital can be encoded into a form of the digital signal using different encoding techniques. The exchange of data in digital communication takes place between two devices through some form of transmission medium such as wireless or wired cable. The analog information sources are microphone activated by a speech, a camera scanning a scene and a continuous amplitude signal. Analog information is the information that is continuous, any bit of information that can collect on any of an infinite set of values is said to be analog information. The digital information sources are teletype or the numerical output of computer which is restricted to a finite set of values. It involves a sequence of discrete symbols or letters. The digital communication system is made up of a combination of hardware and software which depends on four fundamental characteristics such as delivery, accuracy, timeliness, and jitter (Rob, 2011).

- a) *Delivery*: It is the function of transporting data to the destination. The data must reach the destination to the exact receiver without difficulty. In digital communication, the data is sent and received by the intended device for digital communication.
- b) *Accuracy*: The system of communication must deliver the information accurately. The data that have been modified for transmitting through the channel might leave improper which leads to useless data.
- c) *Timeliness*: The system must deliver the information or data to the correct endpoint within the time frame so that the receiver of information could easily receive or access the information. The late deliveries of data are useless. The delivery of information within a stipulated time is called real-time transmission.
- d) *Jitter*: It is a variation in the delay of received packets. It is the rough delay in the delivery of audio and video packets.

In an era of digital age, the information comes in different forms such as text, audio, video and the communication system convert the source output in a binary series and then switch that binary series into an appropriate form to transmit over a particular physical media such as wire, optical fiber or radio wave through space. Digital communication covers a wide range of communications technique which includes the digital transmission that transmits digital pulses between two or more points and a digital radio which transmits digitally modulated analog carriers between more than two points in a communication system. Digital communication systems are the technique of communicating using a digital sequence as an interface in between both the source and the channel input (Gallager, 2008). The component of the digital communication system is illustrated as below:

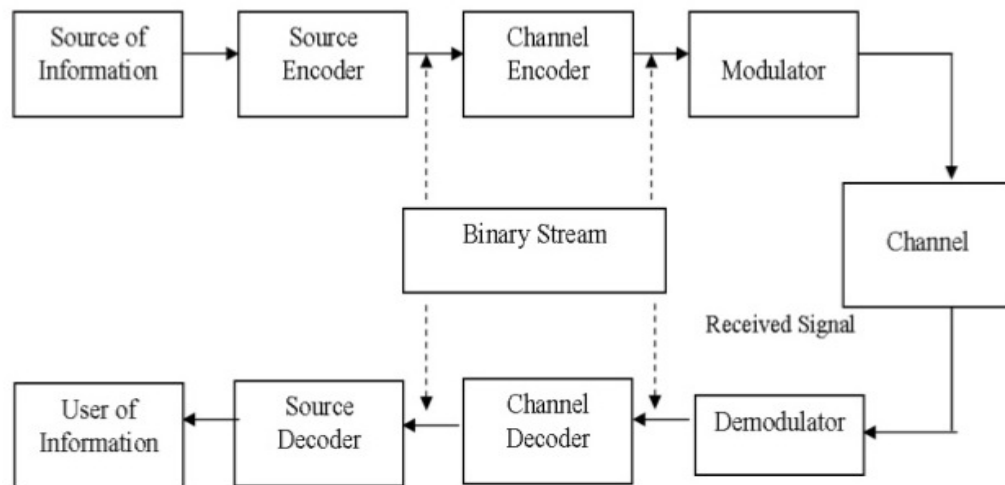


Fig. 2.4: Digital Communication System (Source: Kaware, 2013)

- i) *Input source*: It is a source of information which could be presented in any form of analog-like audio, video signal etc. or digital like teletype signal.
- ii) *Source encoder*: The signal derived from the source is converted into a digital signal by the source encoder into a binary sequence of 0's and 1's. This process is also known as source coding or data compression as source encoder removes as much redundancy as possible to the data from the information source.
- iii) *Channel encoder*: Here the function of channel encoder is to correct the error emerge while transferring the signal through the channel. The process of applying

some redundant bits to a classified order of information bit to correct transmission errors in a controlled manner is known as channel coding or error controlled coding.

- iv) *Modulator*: The modulator translates the binary sequence into an electronic signal so that it can be transmitted over the communication channel. The element of modulator converts the different types of symbols output by the channel encoder into an analog waveform allowing to transfer over the physical channel (Madhow, 2008).
- v) *Channel*: The channel in the digital communication system is the physical medium that equipped with an electrical connection between the transmitter and receiver. Channel in the digital communication system has the only finite bandwidth and the signal may frequently suffer bounty and phase mix-up as it travels over the channel. However, the channel can vary widely, and to shape an efficient communication system, the most suitable channel should be formed.
- vi) *Demodulator*: Demodulation is the inverse process of the modulator which extracts the baseband message from the channel to proceed at the receiver. The demodulator in digital communication model converts the noisy waveform to a sequence of the bit that signifies estimates of the transmitted data symbol.
- vii) *Channel decoder*: Channel decoder recovers the information aspect bits from the coded binary transmission. The decoder map the channel productivity into an output digital signaling which the effect of the channel noise is minimized. The data symbol passed through the channel decoder which tries to restructure the original information sequence of the code used by the channel encoder.
- viii) *Source decoder*: The binary outputs of the channel decoder are converted into a symbol sequence by the source decoder. The source decoder executes the reversed calibrating and processed for delivery to the user destination, which is a reproduction of the digital source output.

2.2.4 Communication Channel and Their Characteristics

A failure in communication channels leads to the disorganized flow of information, accordingly, the channel or the medium used to transfer information affects how perfectly the information will be delivered to the receiver. The primary effective communication is to match the channel of communication with the target message (Barry & Fulmer, 2004). Basically, the communication channel can be categorized into two types, where any groups or professional organization usually used formal and informal communication.

- a) *Formal Communication:* The communication which follows the conventional system, rules and regulations, procedure reports etc. are generally in written forms. Various formal channels are considered the most effective channel of communication which do not function automatically where the organization determine all the purpose and carefully planned and design to its need (Chand, n.d.). Any exchange of information that occurs in the formal channel is accurate, reliable and legally valid. Formal channel encompasses many advantages which makes it possible for easy flow of information to reach the destination without any interruption. Informal communication, it is possible to simply contact the source of information by the recipient. The source of information could be easily sited in this form of communication.

Though formal communication channels are considered the more effective method of communication, several weaknesses are also observed in various ways. It may lead to a lag in the flow of information as communication between the source and the receiver of information was managed by the group of a sequence which may lead to delay in communication. Also, formal means of communication is inflexible, compose or modification cannot be considered easily when needed as it is a rigid form of communication. Though on many conditions, formal communication could be considered as the formal standard of the communication system, on the other hand, the guidelines and parameter that occur within the flow of information create some kind of drawback in formal communication.

b) *Informal Communication*: In the informal system of communication, the information flow runs in all direction irrespective of the formal communication which is why it is also called grapevine. In informal communication channel, the information is shared without any formally imposed commitments and limits. Due to the specific need of any member of an organization, the informal communication takes place generally by means of oral and may be by simple glance or sign. Thus, an informal communication forms a social relationship among the members of any organization as it intended to satisfy personal needs and provide the information to the associate that the formal communication channel could not get through it.

However, informal communication channel has its own weakness. In many cases, under informal communication channel rules and regulations are not observed that creates numerous conflicts and confusion in the organization. Furthermore, within the informal channel of communication, while people utilized the informal communication for disseminating accurate information, some people use this channel to spread the wrong information which spread rumors rapidly due to the absence of bound rules or guidelines. In informal communication, another problem that exists, non-existence of seriousness in information network since the entire participant is anonymous. Thus the informal communication system leads to sharing of poor quality information especially within the long distance vocational education (Xu and Li, 2013).

2.3 INTERNET AND MEDIA

The growth and development of Information and Communication Technology (ICT) have revolutionized the way of communication like never before. The ICT development encompasses many types of infrastructure and its services which enable modern computing. Besides, the Internet was initially developed to aid the process of computing technology. The history of the Internet is complex and comprises many features like technological, organization and community. It was about in the late 1960s the Internet as we know today was developed with the start of Advanced Research Projects Agency Network (ARPANET) and transmitted its first message on 29th October 1969. Not only to the technical field of computer communication, the Internet influence throughout the

society as we move toward the increasing use of online tools to achieve information acquisition and community operation (Leiner et. al., 1997). Today, billions of Web pages were generated by individuals or society or by companies from around the world through the Internet to store, access and disseminate information and for entertainment. The Internet endlessly facilitates to communicate and share information from around the world and offer the customers to disseminate and retrieve knowledge and entertainment.

Now, we can say that Internet has become a part of our life. Without Internet services and resources, turn out to be impossible for many business organization, institutions and for personal matters to perform and accomplishment of obligation. The primary aim of Internet has always been the communication which facilitates e-mail messaging, chat online definitely to interact with others. The Internet provides useful data, information and knowledge for the personal, social and economic development as every individual or organization can acquire the Internet resources to gain knowledge and use the Internet as a platform to promote business through various e-commerce solutions (Sharma, 2016). Internet promotes to socialize and assist to interact with the associate to share information.

Media can be broadly defined as a communication process that the data or information are delivered through some types of medium like newspaper, television, radio, and computer. Media cover a wide range of information source and service, thus, various researcher and writers have produced different definitions of media. Business Dictionary defines media “as a communication channel through which data, education, entertainment, news are disseminated” (Business Dictionary). Media is the plural form of medium; it is a communication channel for communication with other people indirectly rather than in person or contact face-to-face. The media don’t just attempt to open the window to explore the world and it doesn’t just present actuality, they represent it (Buckingham, 2003). Consequently, the media made the world smaller and made us easy to communicate from the remote area at any second whenever an individual or an organization require.

Now, we are in the world of information age where every individual or organization linked with each other to access content at any place, anytime, and in any format. Broadcast media such as radio, television, music etc. diffuse their information

electronically, whereas print media use a physical body such as a newspaper, book, pamphlet etc. to produce their information. Present day technique of communication by means of the Internet change the way we create and contact the media. Now we are almost continuously connected to an Internet-enabled device and every individual or organization is certainly grasping the new media that comes with the new rule and new exception (Hirshberg, n.d.), moreover, the Internet is one of the paramount platforms for new media today.

The medium used for disseminating and retrieving information has changed drastically as the technology has experienced its improvement and grown more advanced. Earlier, acquiring and transmission of information was partial and time consuming to access mass media. Then the existence and development of inexpensive and highly accessible communication tools have changed how we share knowledge before the existence of its resources and services of the new media. On the other hand, new media also has its own weakness and still traditional media is still an important means of communication.

2.3.1 Traditional Media

Traditional media are also known as old media, is the technique which involved mostly non-digital advertising and publicizing methods. The means of traditional media communication exist before the arrival of modern mass media and they are the original methods that have served the society as a device or medium of communication for ages.

The old media forms are television, radio and print media like newspaper, magazines, and books are the most media which are commonly used earlier and are available until today. Traditional media has its own weakness and advantages, in some way it is accepted as the most constant and reliable form of media and news throughout the world. On the other hand, several shortcomings have also been spotted regarding its resources and services offered by the traditional media.

Advantages of Traditional Media: The audio-visual effects of television have a lifelong impression for any persons who approach that equipment. The television advertisement is a device that delivers accurate information in a day which can reach a million viewers straightaway (Essays, UK, 2013). The presentation in the form of television can be

controlled and direct the messages in such a way to make it more impressive and sensitive depending on the target audience. New technological devices like smart-phones, computers, tablets etc. are not needed to access the resources of traditional media.

Print media can make publicity budget more efficient and effective and reach to interested audience extensively with less expense. Moreover, the print media publication is durable and last longer, and it creates an environment of seriousness and the atmosphere to be more focus on to the message since the material is easy to handle as it involves not any technical mechanism. The newspaper or print advertisement can play an important role in marketing approach (Jud, 2016). Consequently, print literature still holds many benefits and still plays an important role in research or other kinds of learning. It is a platform that can be handled easily to spread information to a target group or organization and read by the users to find out what exactly the content is.

Disadvantages of Traditional Media: However, the advancement of the Internet and its services have changed the way how we communicate and circulate the message. Since Internet has the possibility to reach a remote area and could cover a wider range than print media. In this case, the process of accessing and disseminating information in traditional media is time-consuming and costly that matters a lot on how the user or customer attains their satisfaction.

In old media communication, the facilities of feedback services were not supported and thus, it is not possible to certainly enquire the confusion occur in the information. The rise of Internet features the disadvantages of print media, as the particular information may not be actually accessible every time for the specific recipient. The print media may not always likely to circulate widely resulting in inaccessibility of information from the remote places within a stipulated time.

2.3.2 New Media

The new media can be defined broadly as it can embrace various kinds of new scientific communication devices and its resources and services. The advancement of Information and Communication Technology and adoption of the use of computers and the Internet

facilities have changed the product and services of information. It can explain that new media are the gadget acquired and regulated by an advanced technology for sharing, retrieving and storing of information. Today, these channels of communication have influenced the whole society, as well as the education system, business, and politics. Manovich (2006) explains communication as “text distributed on a computer (website and electronic books) are considered as a new media”. As a result of innovation of computer technology, the communication can be done through the automated channel using modern communication devices.

There can be different categories of new media, as many innovative tools and technique of communication devices have to emerge and developed rapidly in the present day. Blogs are an early model of new media and are still relevant. The information can be easily shared through blogs and it could be easily retrieved due to its services rendered by the blog facilities. It is user-friendly, easy to access and are well organized and regularly shorted out. Blogs are a regular source for researcher, businessman, and journalists. Like other new media, the new media encompass different types of media such as photos, videos, and the text.

Social media is a major platform for creating, sharing and swapping of data, information, and knowledge through online. Social media is an Internet-based communication which offers users an easy communication through electronic communication channel via computer, tablet or other smart-phones through the web application. The study of uses of social media by Pew Research Center (2018) highlight that the United States and China lead the list of social media usage: Facebook (2.167 billion users as of January 2018), YouTube (1.5 billion), WhatsApp (1.3 billion), Facebook Messenger (1.3 billion), WeChat (980 million), QQ (843 million), Instagram (800 million), Tumblr (794 million), QZone (568 million), Sina Weibo (376 million), Twitter (330 million), Baidu Tieba (300 million), Skype (300 million), LinkedIn (260 million), Viber (260 million), Snapchat (255 million), Reddit (250 million), LINE (203 million), Pinterest (200 million), YY (117 million). The social media provide networking website and allow any individual or any other organizations to interact with others and thus, it relies greatly on the participation of users to provide value. An online newspaper facilitates to publish current updated information through Facebook, Twitter or using any other platform.

Advantages of New Media: The new media has changed the way how communication is organized and operated. The biggest advantage of using new media is the lack of barrier and always accessible anytime and anywhere if one has the device. The new media provide an opportunity to always connected with other people around the world and share our thought and ideas with our related personnel. The social media offers opportunities for professional online communication and stays connected with a colleague and discuss the topic which is related to the profession and is relevant for problem-solving.

Disadvantages of New Media: Although the new media enable us to connect with people from around the world within a second by using a device, correspondingly there is the disadvantage in relation to its resources and services. As the new media are somehow flexible and unrestricted, it turns out to be an undependable source to get information, because every user is capable to share information including the wrong information. This may cause lots of problems to users and in turn affect his or her job, education, inquiry etc.

The new media end the privacy of an individual or an organization. Unlike the print media or traditional types of media, the new media enable to simply access our information and other resources just by entering into account in any application. Thus, unlike before the evolution of the new media, not anyone can have their privacy and have their own life (Askoul, 2014).

2.4 ONLINE COMMUNICATION

Before the existence of World Wide Web and Internet, the traditional media offers the system of communication which is operated manually. An online communication is the process of sharing, retrieving and storing of information and knowledge by using a device connected to the Internet. The various channels which are available on the Internet for communication and interaction are the forms of online communication, thus it provides the service of capturing, storing and communicating the information generally by means of written including audio and visual as well. Online communication can be the numerous range of communicating method or system, some of the systems are:

- a) *Video conferencing*: The video conferencing services have become one of the important types of online communication technique which are mostly used for having interaction within the community of education, business and other organization. This service enables to hold a meeting without physically present which save the time and money and thus, facilitate collaboration without an individual to travel far off distance.
- b) *Email*: E-mail was the earliest form of online communication and its services are one of the most valuable communication tools. E-mail service facilitates to distribute information to a large number quickly and enable to take in different file types like audio, video and other electronic documents.
- c) *Forum*: Online discussion forum or bulletin boards are the online platforms which provide a capacity to participate multiple users to interact with each other by posting a message. The online discussions enable to share and access information without limit, not bound by time or space. Educator, researcher, businessman etc. can use the online discussion forum to give and receive feedback regarding their activity or investigation where the result or information received from the different person could be utilized for improvement. The online forums form an atmosphere to discuss, express opinions, share thoughts and resources on a particular topic or current events which are related to the profession of a particular group.
- d) *Chats*: It is a real-time online conversation by using text. The unique software for messaging program has been developed and thus, it comes in different forms. Chat is a popular method of online communication; it allows a user to discuss with multiple people at the same time.
- e) *Voice over IP*: It is one of the most common systems of voice conversation using the Internet as a channel of communication instead of traditional channel. Voice over IP (VoIP) is a kind of technology that allows users to make a call using the broadband Internet rather than the analog phone system. The transformations of sound into digital voice communication are transferred to the destination through Internet broadband. This allows you to stay in touch with your co-workers and clients to discuss important deals, affairs, meetings, files, documents, agendas, no matter where you are (Writing, n.d.).

There are many advantages regarding the services rendered by the online communication and how it handles the information. In an online communication, messages were delivered immediately to the recipient, since, the channel enable to travel rapidly using the electronic mode of transmission to the receiver's device. Thus, the features of online communication are no doubt that it plays a vital role in assembling people, society, and businesses from around the world closer together. Interaction in an online communication system can be performed at anytime and anywhere if the Internet and devices for accessing or browsing the Internet are available. In this way, the online communication supports the scholar, business personnel, and many organizations in accessing and retrieving the information at the time of requirement, at any place. Unlike verbal communication, the online communication has the facility to store the communicated information or transferred document like written information, photo, video and other documents and that can be accessed and retrieve easily in future.

There are clear advantages of online communication; however, it also has many disadvantages relating to the facilities and resources provided. In an online communication, a large volume of the message can be dispatched from different location easily resulting in information overload that can create difficulty in understanding an issue. It may also cause disruption while seeking information for effective decision making.

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CHAPTER - III

ONLINE COMMUNICATION FORUMS IN LIS

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ONLINE COMMUNICATION FORUMS IN LIS

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3.1 INTRODUCTION

The Internet and World Wide Web (WWW) are the major mechanisms which bring individuals or organizations to communicate and interact globally. Online communication support a wide range of candidates from an individual or organization, unlike the traditional media communication, online communication authorized countless participants. The users of online communication should have the equipment and devices connected to the Internet to initiate the interaction and to become the section of the community. Thus, as mention in the earlier chapter, online communication served the user to communicate from the remote area and discussed a common topic and shared information without physically present on the spot. “An online service provides a variety of forums, and the participants can share information freely. It is sometimes called an online discussion forum or newsgroups” (Beal, n.d.). Web discussion forum provides any person or an organization to extend the area of discussion which enables to interact with each other from afar off remote distance at any time.

3.2 ONLINE COMMUNICATION FORUM SOFTWARE

Before the development of Internet and computer technology, the interaction was possible only by physical meetings and face-to-face interaction or by sending emails through the post. Thus, it creates many difficulties for the participants to share urgent information to the group members. An online forum avail asynchronous communication, hence, the user or member of the groups are not mandatory to be online at the similar time to access the information. The users can post a message or comments from time to time, also view the message anytime the users wish. The participants of the same interest from the different location can share information by posting a message or by comments anytime with other professionals and the new messages could be read at any time when the participants wish. Many websites provide a facility of discussion boards to share and discuss information and view.

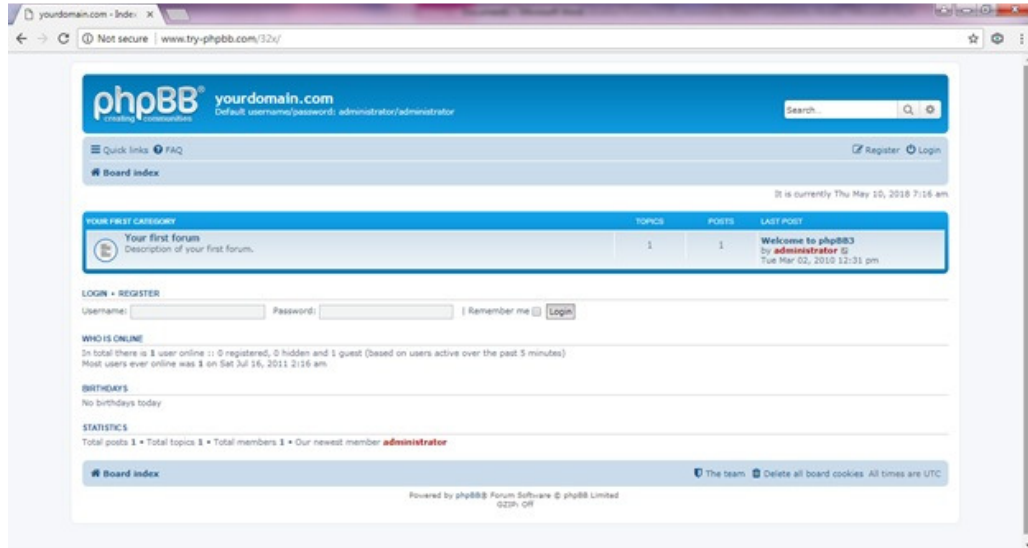
Today, with the development of information and communication technology, the online discussion forums is a widely-used technological tool by professionals to exchange ideas and views, make a decision, draw an inference, and solve problems on a particular issue. There are numbers of forums running based on different disciplines by different professionals, like an educational forum, marketing forum, political forum, technical

forum, entertainment forum, sports forum and many more. A forum usually comprises resembling a tree-like structure. “The ‘Categories’ is a top end, which denotes the relevant topic of discussions. Under the ‘Categories’ there are sub-forums, and these sub-forums again can have further sub-forums. From the lowest level of sub-forums the topic which is also commonly known as ‘threads’ were formed and these are the place where discussion or post was started by the members of the forums” (Biriyai & Emmah, 2014). Particularly, an online forum facilitates to attach almost any file. “When the file is being attached, the file is uploading to the forums’ server. Usually, forums maintain a very strict limit on the type and size of the file that can be attached (Biriyai & Emmah, 2014).

Apart from the website based forum, a free self-hosted online forum software are available which you can select the appropriate platform related to the profession or own interest. There is both paid and open source online forums software which offered an ability to create an online discussion board willingly. Some of the free and accessible forum platforms available online are:

3.2.1 phpBB

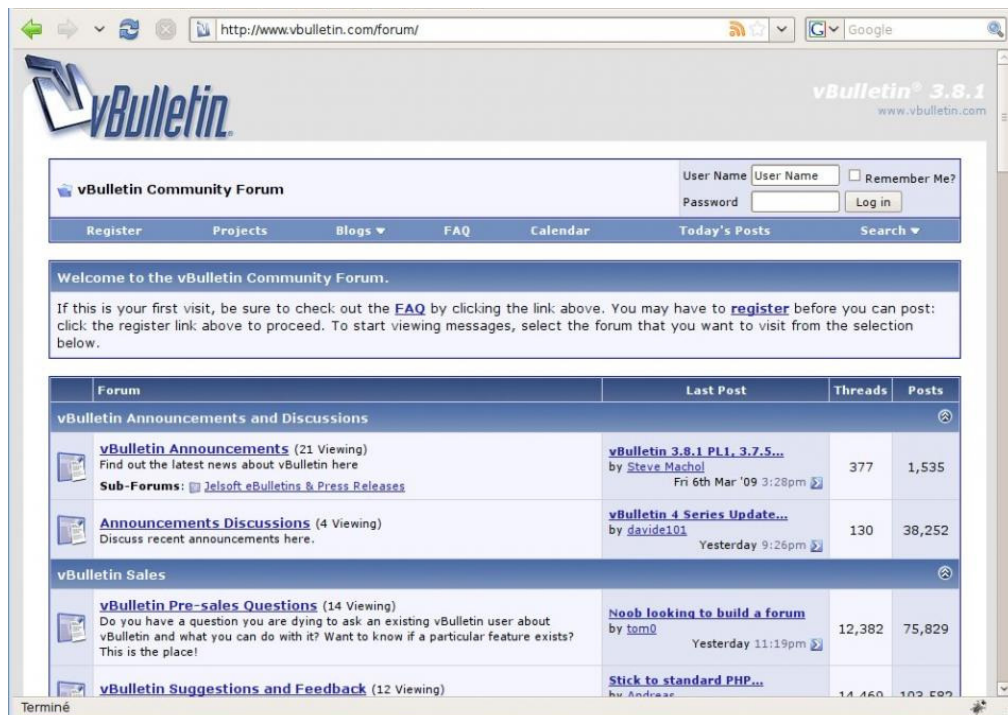
It is the most popular free and open source forum software. The phpBB is an abbreviation of *PHP Bulletin Board* (phpBB). “The software is also well equipped with an extensive database of users created and plugins; theme design and supports social login including Facebook and Google account using an extension” (H2S Staff, 2017). Currently phpBB is running its 3rd major version, furnished with professional-quality modular design, tight security, multiple-language interface, support to maintain larger numbers of user’s database services and full customization of the layout. The phpBB provides a comprehensive administrative control panel which allows the user to configure and customize almost every aspect of the board. The most important features of the software are that it provides users to send messages to one another directly via the board. The software provides the ability to post various numbers of files attachments and the type and size of files acceptable to be posted are fully configurable. “Also, polls facilities are fully configurable, multiple polling options along with time limit setting. The configuration can be set to allowed or disallowed to change their vote at a later time” (phpBB Features, n.d.).



Screenshot 1: phpBB homepage (Source: <http://www.try-phpbb.com/32x/>)

3.2.2 vBulletin

“It is paid public software and offers two possibilities which are a self-hosted version as well as a cloud version where it handles the hosting, upgrading and maintenance”.



Screenshot 2: vBulletin homepage
(Source: <https://www.forum-software.org/...../vBulletin%20Homepage.original.jpeg>)

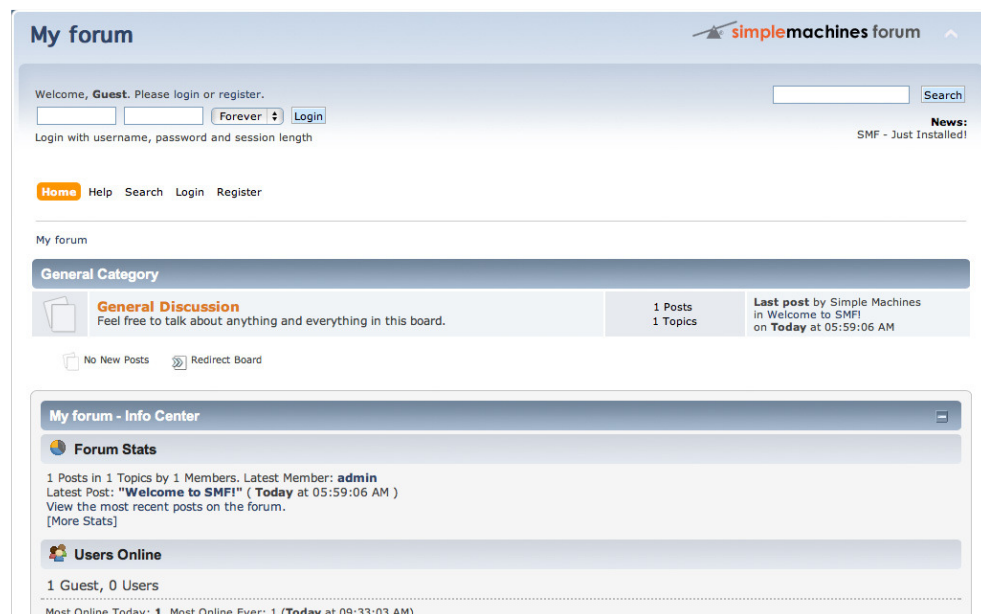
The vBulletin is easy to handle and modify which comes with three different versions

like, publishing suite, forum classic and mobile suit with different pricing which can be chosen based on the user's interest. The "*vBulletin* is an Internet-based online forum software created by Jelsoft Enterprise and produced by *vBulletin* solution. The script is written in PHP and uses MySQL database server" (What is *vBulletin*?, n.d.). The latest version of the *vBulletin* comes with many new features including site builder, new search, MVC architecture, responsive design, and expanded API.

3.2.3 Simple Machine Forum

It is one of the best PHP forum software that is a free and open source. It supports the full control of the layout of the message board and let the forum interact with each other. "Simple Machine Forum is written in PHP and uses MySQL database but supports PostgreSQL and SQLite too. The software provides the users with several Search Engine Optimization (SEO) options and comes with advanced security setting which includes IP blocking and time-out" (Hammond, 2017).

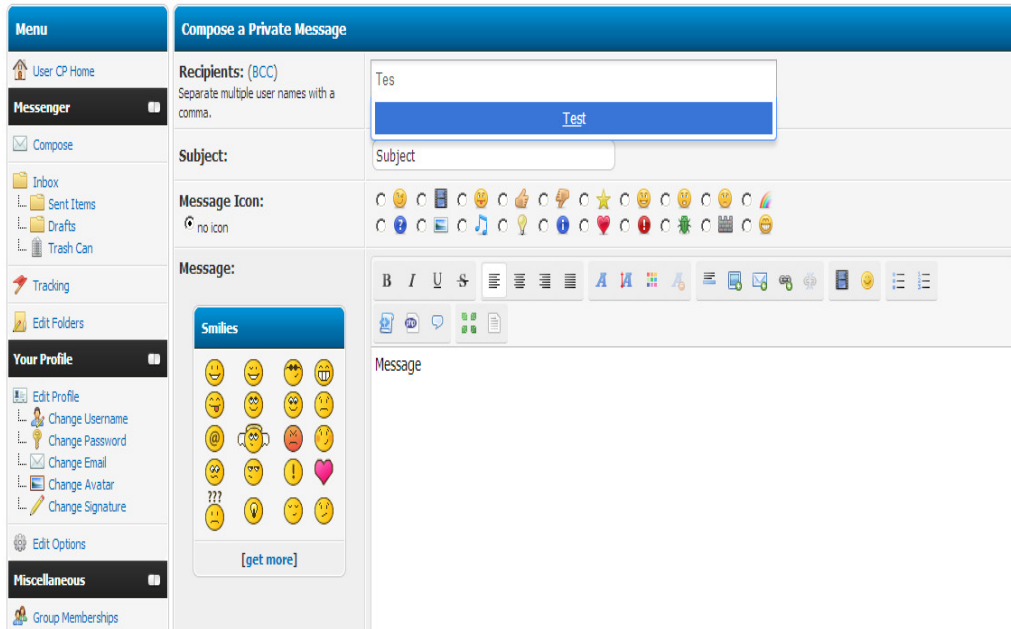
The forum data can be export using XML or RSS and it enables to track new and old unread topics, not just from the last visit. It supports wildcards for email address, IP address and hostname and also poll can be added or remove to existing topics. Currently, the forum is a member-run organization. There are two corporate level teams that span various projects, marketing, and project support.



Screenshot 3: Simple Machines Forum homepage
(Source: <https://www.google.co.in/>)

3.2.4 MyBB

The “MyBB forum platform is a free and open source forum software that comes with extensive plugins database. Many free extensions and language packs are available and they can be installed easily using a built-in plugin installer, thus, it is not necessary to paste in any code manually” (Carny, 2018).

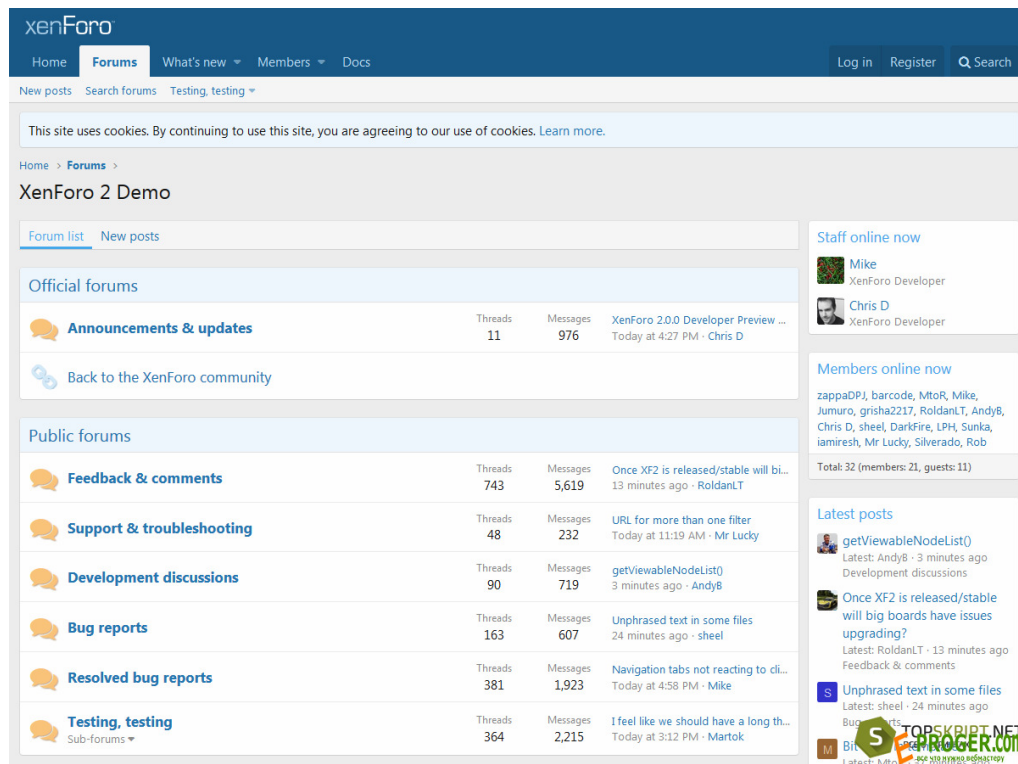


Screenshot 4: MyBB compose page
(Source: <https://mybb.com/...../compose-pm.png>)

It has the features of templates, theme and easy CSS editor for style customization. It is possible to access tutorials, plugins, modifications and software support within the community. The software uses an intuitive discussion board structure, with that visitor can effortlessly start and reply to discussions and markup posts. The forum administrators and moderators can use MyBB’s inline editing and moderation features to control the activity prevail inside the forum like discussion and keep the forum tidy.

3.2.5 XenForo

It is a commercial Internet forum software package written in PHP programming language. “The software was developed by former *vBulletin* lead developers and has several SEO features inbuilt, recent activity stream, powerful add-ons, social engagement functionalities, etc.” (Web Tools, n.d.).



Screenshot 5: XenForo forums(community) page
(Source: <https://xenforo.com/community/>)

The XenForo software has the alerting feature which makes it easy for the users to stay up to date with updates which are available and accessible to the specific users. The above forums which are mention earlier were the paid and open source self-hosted online forum software, and much more online discussion forums software is available. Those which were mention are among the most widely used forum platform.

3.3 ONLINE DISCUSSION GROUPS

Group discussion or group communication denotes interaction of more than two individuals sharing information on a specified topic to accomplish a certain task. Earlier, face-to-face interaction or other traditional methods of discussion were the common methods of group interaction. However, the development of communication technology transforms the technique of communication. In the digital age, group interactions are drawn up through online and take the form of computer-mediated communication (CMC). Groups collaborate through email, discussion boards, wikis, and other Web 2.0 technologies. To use online discussion forum or online discussion group effectively, one must thoroughly understand what exactly the nature of the discussion group, and as the system and technique require Internet and communication devices, the participants must

acquire how to handle the devices.

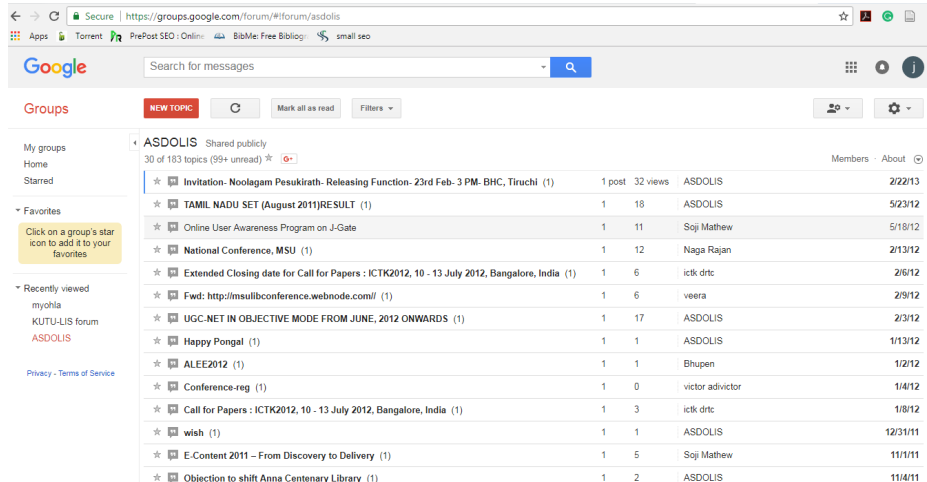
Earlier group interactions achieved by assembling in one room and interact face-to-face and discuss a specific topic and share their confusion relating to the current topic. The problems and misunderstanding faced by the participants can be demonstrated and clarify on the spot, face to the face resulting in effective interaction within the group, these facilities were not available in an online discussion group. However, in an online discussion group, the interaction could be executed from a remote location. Today, online discussion group are the most commonly used in formal and informal communication. Many professionals are exchanging information through online, and accessing information can be conducted at any moment by the members when required.

Apart from the self-hosted online forums software, there are varieties of Web-based discussion group which is supported by the users to post and comment or starts the conversation with one or more participants. Likewise, online discussion groups enable to discuss issues, or as a support base for those that want to ask others for advice. “Online discussion groups firstly took place on bulletin boards, formed by members of electronic mailing lists, where members can interact with one another by posting messages” (Online Discussion Groups, 2013). “In an online discussion, users dependent on each other for information and their communication demonstrate relational development” (Gritsenko, 2016). Some of the important online discussion forums in social media which are related to the study and the most commonly used nowadays is:

3.3.1 Google Groups

Google group is a service administered by Google that provides discussion group or mailing list where participants can share information on a specific topic and common interest. It makes it easy to interact and collaborate with the group of professional fellow with special interest. “Google group became operational on February 12, 2001” (Google Groups, 2018) and it is “one of the oldest service provided by Google which also supports many Usenet newsgroups” (Basu, 2013). The services enable to easily create Google Group which supports customization of its appearance and settings according to suit the focus of the group interests. Through Google Group, an individual can share Google documents, videos, calendars among the group member. “Apart from these, Google Groups provide useful features like My Groups, that list all the groups an

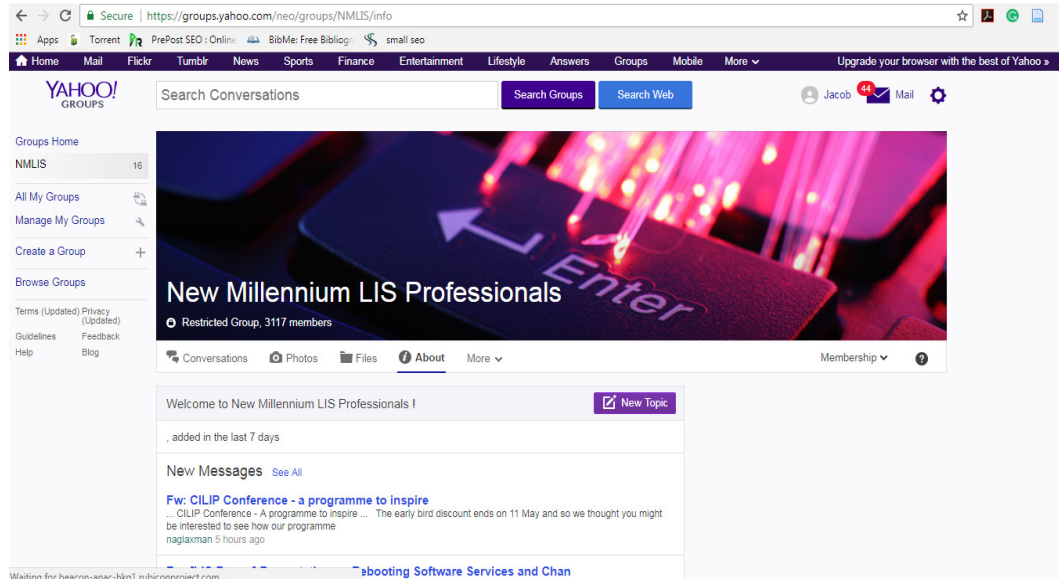
individual belongs to and facilities to manage own group memberships. Group directory lists all the groups for organization and uses the dictionary to view the formation of the groups, including group members. Another important feature of the Google group service is the discussion archives. It records all communications between the group members and enables them to read the old messages and even the post and reply to group messages” (Information Technology Services, n.d.).



Screenshot 6: ASDOLIS - Google Groups
(Source: <https://groups.google.com/forum/#!forum/asdolis>)

3.3.2 Yahoo Groups

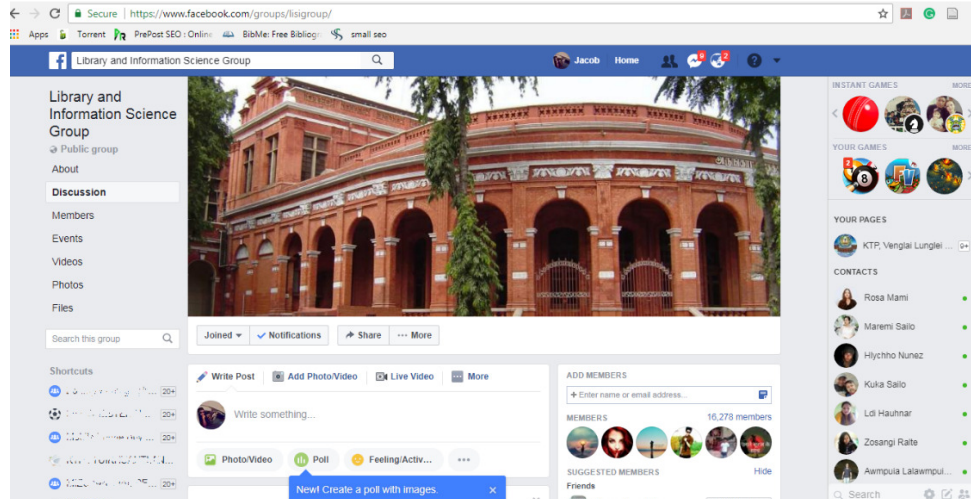
It is one of the largest collections of online discussion boards which were established in the year 2001. “In 1994, Jerry Yang and David Filo created a website called ‘Jerry and David’s guide to the World Wide Web (WWW)’ a cataloging site. Later the name was changed to Yahoo and in the year 1995 ‘Yahoo.com’ domain name was created” (Kuchler, 2016). Since the launch of Yahoo Groups, it has attracted lots of users from all over the world. “The Web-based mailing list is one of the key features of Yahoo Groups and this feature may be the reason why an individual or organization from the different part of the world still use it for professional networking” (Choi et al., 2018). The group members can post a message through email or Web and facilitate the users to create and vote multiple choice poll and many more other features. “Yahoo Groups also provides the features like uploading files and share links with the rest of the groups, create phone books, music libraries, and more through collaborative database templates (Overview of Yahoo Groups, n.d.).



Screenshot 7: New Millennium LIS Professionals - Yahoo! Groups
(Source: <https://groups.yahoo.com/neo/groups/NMLIS/info>)

3.3.3 Facebook Groups

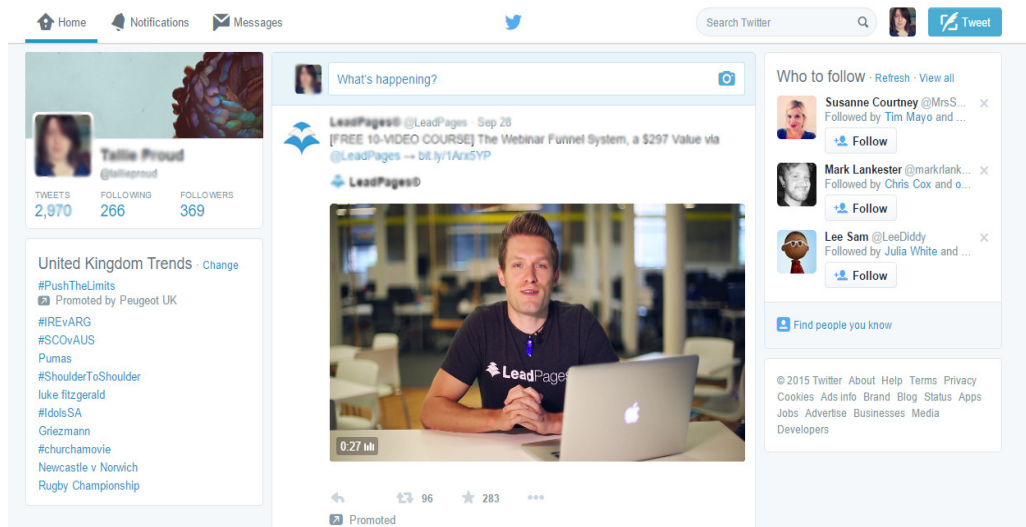
Facebook is a social networking service launched on February 5, 2004. Its website was launched on February 2004 by Mark Zuckerberg. Facebook is an excellent platform for online group discussion and a co-operative environment that foster trust among learners and instructor (Arendt et al., 2012) which enables the individual or group to interact with others effectively. Thus, the social networking site is now generally used and preferred by professionals, “resulting in fast replacing the traditional modes of communication such as letters, faxes even telephone call” (Ping & Maniam, 2015). There are three categories of Facebook Groups while creating the group there are three options for privacy settings, open, close and secret. Open or public setting enables anyone to view the group, allow accessing the post and comment on the group along with the files attached. Anyone can join the group and can start posting. Whereas, closed setting limits the activity of Facebook users. The settings allow only viewing the group and its members and only the invited people can join the group. Only the group members can access the group post. The secret setting allows only the members of the group to view the post and make comments. In this settings, who are not the member won’t even be able to see that the group exists.



Screenshot 8: Library and Information Science Group – Facebook Groups
(Source: <https://www.facebook.com/groups/lisigroup/>)

3.3.4 Twitter Groups

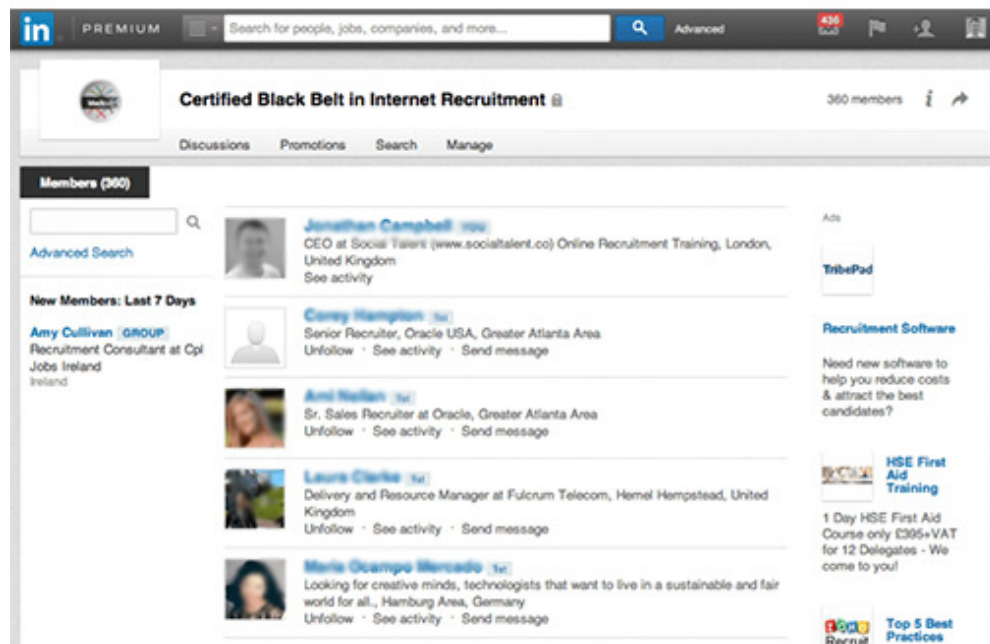
Twitter was created by Jack Dorsey, Noah Glass, Biz Stone and Evan Williams in the year 2006. “One of the most impressive features of Twitter is the ability to create groups, allowing members to focus on different sets of people they’re following” (Carta, 2009). It is a micro-blogging service where users can engage to receive and send contents or tweets with others. “Tweets can be published by sending e-mails, sending SMS text messages and using a wide array of Web-based services” (Castillo et al., 2011). These features enable to disseminate information to a wide range of users readily from a remote location.



Screenshot 9: Twitter homepage
(Source: <https://digiproud.files.wordpress.com/2015/10/twitter-home.png>)

3.3.5 LinkedIn Groups

In the year 2002, Reid recruits a team of old colleagues from SocialNet and PayPal to work on a new idea and launched LinkedIn (A Brief History of LinkedIn, n.d.), a platform for a business and employment-oriented service which is operated by means of websites and mobile apps (LinkedIn, 2018).



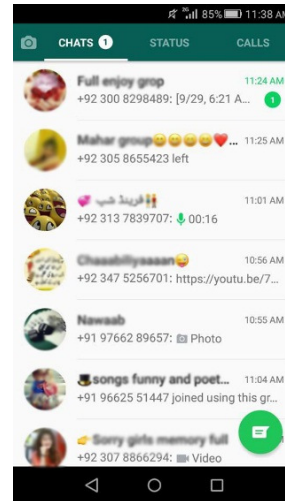
Screenshot 10: LinkedIn Group page
(Source: <https://www.socialtalent.com/...../new-updates-to-linkedin-groups-page>)

LinkedIn Groups provides appropriate features for the professional body from different categories to form an effective group of common interest and utilized it for problem-solving and timely information. An individual or group of participants can share knowledge and interact with fellow professionals successfully. “Any group member can explore the current discussion from the conversation page and can start or participate in the conversation. A message can be sent to any member if an individual wants to interact with the member of the groups” (LinkedIn Groups – Overview, n.d.).

3.3.6 WhatsApp Groups

WhatsApp was founded in the year 2009 by the former employees of Yahoo! Brian Acton and Jan Koum. Facebook Inc. bought WhatsApp for US\$19 billion in February 2014. WhatsApp feature allow the text messaging, voice call and video call and allows

sending image and other media, documents, and user location (WhatsApp, 2018). WhatsApp application facilitates to send an individual message and possible to send from one to numerous recipient and also available to post a message in group chat. “WhatsApp application allows to send and receive documents like photos, videos and also PDF, Excel, and word files by simply attaching the document (Deccan Chronicle, 2016), thus, the features and services form the users to cope with an effective interaction online and share information effectively. WhatsApp has to turn out to be a significant means of communication in many field educations, business, and numerous other organizations to stay in touch with others. Moreover, WhatsApp and group communication seems to be so useful for organizing things that it also qualifies for professional purposes (Seufert et al., 2016).



Screenshot 11:
WhatsApp Groups

“Any person having an Internet connection and having the authorization of membership on a particular group can contribute to an online discussion group. However, some groups are not having such restriction and free to join” (Online Discussion Groups, 2013). An interaction in an online forum enhanced an effective interaction more than before, as an individual or any organization can easily access information and discussed along with the associate members relating to the specific topic. It facilitates to easily negotiate the issue related to the group or forum by querying the group members from home or anywhere and received an answer from any participants quickly.

3.4 ONLINE DISCUSSION FORUMS IN LIS

Library and Information Science (LIS) is a profession that deals with the information and communication technology. “LIS plays a vital role in the development of all aspect of the human organization, therefore, the librarians and the organization and the libraries itself along with the information system certainly involved in generating creativity, innovation and answering what people’s needs and attaining an expectation” (Malekabadizadeh, 2009). Librarian served the people, and the main goal of is to satisfy the needs of the

information seeker. “Librarian bond the gap between the people, information and technology” (What is Library and Information Science? n.d.) which trained a person in seeking the right information and to become an information literate.

Library professionals also need an opportunity to interact with their fellow professional and further discussion on a related topic. The different online discussion forum in a different subject area now exist and served the participants with the latest news, current issues relating to the subject of the forum. LIS discussion group are created under different Web-based and social media platform usually under Google Groups, Yahoo! Groups, LinkedIn and Blogs. Some of the common LIS discussion groups are:

3.4.1 ASDOLIS

ASDOLIS (The Association for the Development of Library and Information Science) was established as a professional association in December 2007 (Registered under section 10 of the Tamil Nadu Societies Registration Act 1975, Register No.295/2007) by a committed group of librarians to raise the professional standards in the current scenario of LIS in Tamil Nadu and India (ASDOLIS, n.d.). The key purpose of the association was to develop the resources and services rendered by the libraries and to guide Tamil Nadu and Indian librarians in their professional aspect. It covers a wide range associating with the different organization from the state level to the international level having the same interest to develop the standard of librarianship in India. “ASDOLIS has created a platform for interacting online on Google Group on July 17, 2009, and designate the group name as ‘ASDOLIS’. Currently, there are 1028 members (as on 3rd May 2018) and the medium of communication is done by the English language. The discussion groups enable the participants to freely view the content without restriction and anyone can join the group. Only registered members can make a post in the forum and all the posts are held for moderation. There is a restriction regarding viewing the member list that only the group members can view the list of members” (ASDOLIS - Google Groups, n.d.).

3.4.2 Corporatelibrns - An Interactive Forum for Corporate Librarians

It is a forum created under Yahoo! Group for Library & Information professionals to discuss and interact with others relating to the achievement, problems faced by the library professionals as well as creative solutions, tools, and technologies. The forum was founded on 15th November 2000. Currently, there are 1036 registered members and

follow the English language as a medium of communication. It is a restricted group where non-members could not freely join and access the content of the forum. It is a platform for library professionals “to share issues and literature relating to the library and its services with fellow professionals. It is a platform to share and notify about the jobs, events, and resources” (Corporatelibrns: Group Description, n.d.).

3.4.3 Digital Libraries: India

This group is founded on 28th March 2001. The moderator of the group is Dr. K. Prakash and is created under the platform of Yahoo! Group to “generate awareness about the issues relating to Digital Libraries, Library Automation, and Management standard”. Apart from the above-mentioned issues, the discussion forum facilitates to share job opportunities in LIS position (Digital Libraries: India – Group Description, n.d.). Currently, there are 1024 members joining the group and used the English language as a medium of communication.

3.4.4 LIS-Forum

LIS-Forum is an e-mail based discussion forum designed for Library and Information professionals in India. It is administered and maintained by JRD Tata Memorial Library, Indian Institute of Science, Bangalore and NCSI-Net Foundation. It was established in the year 1995 with financial support from NISSAT, DSIR, Govt. of India (LIS-Forum Info Page, n.d.).

3.4.5 Library and Information Science Group

Library and Information Science Group is a Facebook group created generally for the Indian library professionals to share information among the participants relating to library resources and services. Currently, there are 16,314 members enrolled in the group and four admins and moderators (Description: Library and Information Science Group, n.d.).

3.4.6 LIS Links: Library and Information Science Links

It is a virtual community of Indian Library and Information Science (LIS) professionals. The LIS Links website was created by Dr. Badan Barman on 26th February 2008. It is the first and largest social networking site in its domain and one of the most popular forum

and a huge gathering place for library professionals. It enables to customize its services in various sub-areas of Library and Information Science to the professionals through voluntary collaboration of its members (LIS Links, n.d.).

3.4.7 KM-Forum

The forum serves as a Knowledge Management Discussion Forum for global knowledge management (KM) and LIS professionals. It is a platform to share professional ideas with fellow professionals in Knowledge Management and Library & Information Science globally. KM-Forum is a group created under Yahoo! Group which is founded on 2nd May 2005, and currently there are 738 group members (KM-Forum, n.d.).

3.4.8 lisforum_orissa

It is a forum created on Yahoo! Group which was founded on 24th October 2006. The lisforum_orissa is a common platform for LIS professionals, teachers, researchers and students to share views, knowledge, messages, and information etc. among the LIS professionals. It aids to address issues on Library and Information Science, to resolve the problems of libraries, resource sharing among libraries and generation of new ideas on LIS (Group Description: lisforum_orissa, n.d.).

3.4.8 AcqNet

The AcqNet list is run by the Association for Library Collections & Technical Services (ALCTS) acquisition section which is a discussion forum for ALCTS members and also open for non-register members to discuss on the issue on acquisitions librarians and others concerned in acquisitions work to share information, ideas, and to find clarifications to common problems. It is started in December 1990 as a moderated list in which all the potential posting were received by the moderators and distributed them to the subscribers (acqnet - acqnet, n.d.).

3.4.9 PRISON-LIB

It is a Prison and Jail Librarians Interest Group which was created on 21st August 1999. PRISON-LIB is a discussion forum for librarians serving prisons or correctional institutions and jails. This group enables teachers and other program managers to join and access the forum. It is an un-moderated discussion, which enables the participants to

share messages and contents directly and the content can be access only by the registered members only. The forum is owned by Phalbe Henriksen, Emily Watts, and Elaine Womack. Currently, there are 136 subscribers (Topica, n.d.).

3.4.10 LIBLICENSE-L Discussion Forum

It begins in 1997 as a moderated list for the discussion issues related to the licensing of digital information by academic and research libraries. This list was intended to support librarians and others concerned with the licensing of and access to information in digital format, i.e., in dealing with some of the unique challenges faced by this medium. The list moderator is Ann Okerson, and all the messages will automatically be directed to the moderator for screening for the list (LIBLICENSE, n.d.).

3.4.11 oss4lib

It is an open source forum for libraries to build better and free systems for use in libraries which was started at the Yale Medical Library in early February 1999. The oss4lib has maintained a listing of free software and system design for libraries and frequently track news about project updates or related issues of interest (About oss4lib, 2005).

3.4.12 Project Wombat

Previously in 1992 ‘Stumpers-L’ was created by Ann Feeney, later it was renamed as Dominican University. In 2005, Dominican University ended hosting the list and the name was replaced as ‘Project Wombat’ in 2006 and is hosted by Project Gutenberg (Stumpers-L, 2017). It is a discussion list for challenging reference questions, continuing in the tradition of the now-defunct Stumper list. It facilitates anyone to join or submit a question freely. However, there are three versions of Project Wombat:

- a) *Project Wombat Classic*: It is a semi-moderated list with posting guidelines. Most people opt for the Classical list.
- b) *Project Wombat Open*: In this version, it has no posting guidelines, thus, the Open list can sustain a more controversial conversation.
- c) *Project Wombat FM*: The FM list is opposite to the Open list. FM stands for Fully Moderated in which all the post made by the participants are gone through screening of the moderators. This version was produced in response to the several people who unsubscribed from the old Stumpers list saying that they required

continuing contributing but found the volume of mail to be exhausting (Project Wombat, n.d.).

3.4.13 NMRT-L

NMRT-L is a list maintained by American Library Association (ALA) which serves two complementary purposes. The first purpose is to provide a forum for discussion of issues related to those of fresh to the library field, including, but not limited to, salaries, professional involvement, training, continuing education, staffs development, library school, and almost any topic related to fresher librarians, new ALA members, para-professionals, and students. The other purpose is to offer a communications network for members of NMRT and its state colleagues, especially officers and board members, and as such, provide a place for announcements, calls for participation, general interaction and other activities of the organizations. The list is not moderated and thus, all the messages sent will go directly to the senders and all the messages were archived to the database (ALA – NMRT, n.d.).

3.4.14 BUSLIB-L

It is an electronic forum that addresses all issues concerning the collection, storage, and distribution of Business Information within a library setting regardless of format. BUSLIB-L depends on LISTSERV brand software and it was hosted at Northern Arizona University in Flagstaff, Arizona, USA. The BUSLIB-L admits all announcements of conference news, and also accepts submission of job vacancy notices. It also serves as a librarian to locate reference materials that are not readily available (BUSLIB-L, n.d.).

3.4.15 MEDLIB-L

It is an Email Discussion List for Medical Librarians sponsored by MLA and hosted by the University of Vermont. It is a public list and offers a forum for MLA members and other health sciences information professionals to discuss significant professional issues. MEDLIB-L does not accept attachment files or vcf signature card, it will be rejected automatically if included (MLA, n.d.).

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CHAPTER - IV

CONTENT ANALYSIS OF NMLIS FORUM

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4.1 INTRODUCTION

The data is collected from *New Millennium LIS Professionals (NMLIS)* forum from the year 2007 to 2016 having the span of 10 years. There are total 26466 communications were posted in the *NMLIS* forum by the contributors (forum members) and out of that 26412 communications (99.79%) were retrieved from the *NMLIS* Archive for the study purpose. A total of 54 communications (0.21% of total) could not retrieve due to loss of communications from the online forum. This online forum is running on Yahoo! platform and has 3117 members (as on 08.05.2018). The required data has been collected from the archive of *NMLIS* forum in terms of contents (subject) of the messages communicated, contributors of messages, and file attachments. The raw data were collected and tabulated in MS-Excel for easy processing and classification (categorization) of the communications (messages/posts). For the categorization of messages communicated in the forum, a separate pilot study has been conducted and identified eight (8) categories of communications prevalent in the forum. The term “communications”, “messages” and “posts” have been used at different places for the same purpose to make the lucidity of the text. Similarly, the term “contributor” and “communicator” have been used also for the same purpose at different places of the analysis.

4.2 CATEGORY OF COMMUNICATIONS

The *NMLIS* forum shared the number of communications among forum members. A pilot study conducted by Shukla & Dawngliana (2017) on content analysis of *NMLIS* forum, identified eight (8) different categories of communications. They analyzed a total of 2403 communications (9.09% of 26412 communications) communicated in *NMLIS* forum during the year 2016 and found similarity in the nature of communications. Finally, they identified eight (8) kinds of categories of communications with descriptive details. The research data obtained from *NMLIS* forum for the analysis has been categorized based on eight (8) categories of communications identified by Shukla & Dawngliana (2017). These categories are given in Table 4.1 with their description in brief. In their studies (Shukla & Dawngliana, 2017; Dawngliana & Shukla, 2018; Shukla & Dawngliana, 2018) focus of the communications has been analyzed and observed that “core categories” of communications are directly related to the development of LIS professionals rather than “non-core categories”.

These “core categories” of communications are CON, FDM, JOB, and LSC which are covering the major portion of communications while GIC, GRC, OBI and OTH identified as “non-core categories” (Shukla & Dawngliana, 2017; Dawngliana & Shukla, 2018).

Table 4.1: Categories of Communications

SN	Categories (Abbreviation)	Description
1	Conference Communications (CON)	The category includes conference/ seminar/ workshop/ symposia/ colloquia etc. alerts and invitation calls for writing papers and for participation in the same.
2	Faculty Development Communications (FDM)	The category includes short-term courses, refresher/ orientation programs, faculty development programs/ courses and specialized training programs for LIS professionals.
3	Job Posts Communications (JOB)	The category includes apprenticeship, traineeship, private and government sector LIS vacancies from all over the world.
4	General Information Communications (GIC)	The category includes general kind of information communicated through posts. Such posts have a very general approach which is not specifically related to LIS profession.
5	Library Science Communications (LSC)	The category includes short communications, information/ knowledge sharing, historical account, recent trends, award information, lecture series, technical problem solving, LIS education, admission, grants, coaching, reference queries and much more core information related to LIS profession and professionals.
6	Greetings Communications (GRC)	The category includes new year wishes, award wishes, congratulation messages, festival wishes etc.
7	Obituary Communications (OBI)	The category includes LIS professionals' death related information communications.
8	Other Communications (OTH)	The category includes filtered communications which not fits into above seven categories of communications.

(Source: Shukla & Dawngliana, 2017)

4.3 DATA PRESENTATION

Table 4.2 presents the data obtained for communications of *NMLIS* forum for 10 years of time period. Table 4.21 represents the categorized communications communicated in *NMLIS* forum during the period of study and determines the focus of communications during the period.

4.3.1 Total No. of Communications

Table 4.2 represents the total number of communications carried over 10 years of time duration and arranged in the year as well as month wise. From the table 4.2, it has been observed that there are 26412 communications communicated among forum members during 10 years of time frame. In the year 2007, a total of 1842 communications took place which is 6.97% of total communications carried over the 10 years of time frame. The continuous growth has been observed in the number of communications during 2007 to 2010, and after 2010 again communications growth declined. The highest number of communications took place in the year 2010 (3166 messages) which contributes 11.98% of total communications followed by the year 2009 (3067 messages, 11.61%), the year 2015 (2840 messages, 10.75%), and the year 2008 (2781 messages, 10.52%). The least number of communications took place in the year 2007 with 1842 messages which contribute 6.97% of total communications. The month wise analysis of communications for all the years display that the highest number of communications took place in the month of January with 2601 communications which contribute 9.84% of total communications followed by October (2370 messages, 8.97%), February (2293 messages, 8.68%), and November (2244 messages, 8.49%). The least number of communications took place in the month of May with 1967 messages which contribute 7.44% of total communications. January 2010 (394 messages), October 2015 (374 messages), and December 2009 (362 messages) have been identified as top three (3) contributory months during the study period whereas July 2007 was identified as the least contributory month. The average numbers of communications have been calculated in two dimensions, monthly average year-wise (arranged in a horizontal row) and monthly average for ten years time frame (arranged in a vertical column). On the average calculation (arranged in horizontal row) for the months of each year, it has been observed that the highest average communications per month were for the year 2010 (263.83 messages per month) followed by the year 2009 (255.58 messages per month) and year

2015 (236.66 messages per month) whereas the least average communications per month was observed for the year 2007 with 153.5 messages per month. The annual average of communications for ten years is calculated as 2641.2 communications (messages) per year. On the average calculation (arranged in vertical column) for the each months of 10 years duration, it has been observed that the highest average communications per month (on 10 years base) was for the month of January (260.1 messages) followed by October (237 messages) and February (229.3 messages) whereas least average communications was observed for the month of May. The average of total communications for twelve months is calculated as 2201 communications (messages) per month.

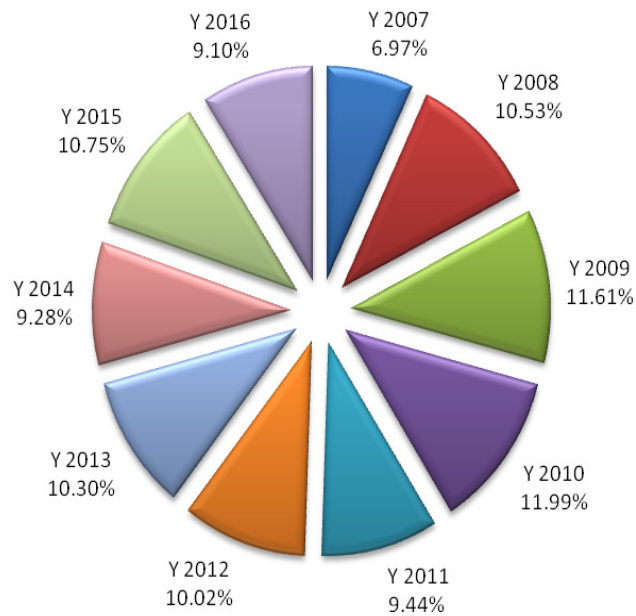


Fig. 4.1: Distribution of communications – year-wise

Table 4.2: Total number of communications

Month	Years										Total	Percentage	Average
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016			
January	166	245	318	394	296	233	224	228	262	235	2601	9.84	260.1
February	173	246	269	326	197	189	222	208	233	230	2293	8.68	229.3
March	185	276	199	246	224	236	240	184	192	163	2145	8.12	214.5
April	108	224	209	205	207	233	234	169	171	214	1974	7.47	197.4
May	148	266	169	227	241	255	157	157	155	192	1967	7.44	196.7
June	115	272	213	212	179	233	214	187	211	232	2068	7.82	206.8
July	102	270	250	225	231	209	145	243	207	227	2109	7.98	210.9
August	151	186	280	294	145	221	347	264	222	165	2275	8.61	227.5
September	135	143	234	246	182	237	270	187	272	232	2138	8.09	213.8
October	214	206	245	273	181	231	258	240	374	148	2370	8.97	237
November	197	179	319	272	223	186	228	199	282	159	2244	8.49	224.4
December	148	268	362	246	188	184	181	186	259	206	2228	8.43	222.8
Total	1842	2781	3067	3166	2494	2647	2720	2452	2840	2403	26412	---	2641.2
Percentage	6.97	10.52	11.61	11.98	9.44	10.02	10.29	9.28	10.75	9.09	---		
Average	153.5	231.75	255.58	263.83	207.83	220.58	226.66	204.33	236.66	200.25	2201		

(Source: Survey Data)

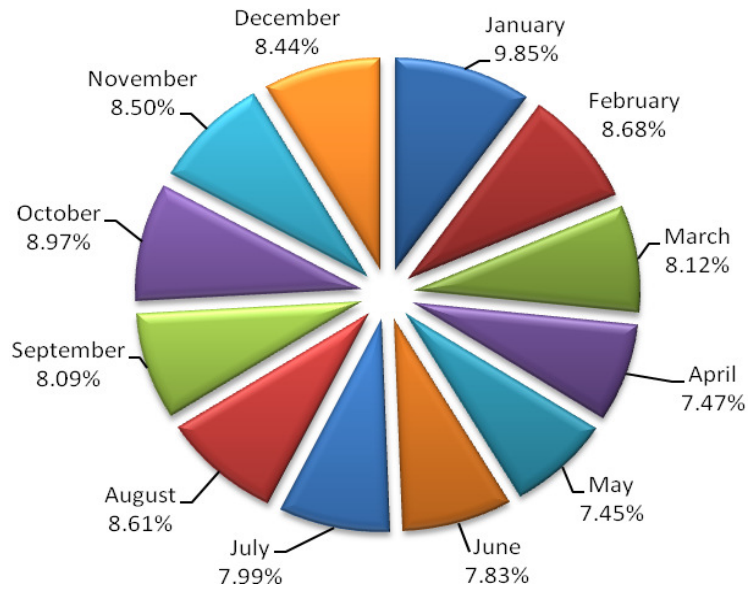


Fig. 4.2: Distribution of communications – month wise

4.3.2 Total No. of Communications in the Year 2007

Table 4.3 display the categorical data for communications carried over *NMLIS* forum during the year 2007. A total of 1842 communications took place in the year 2007. The highest number of communications observed in the category of LSC communications with 783 messages which contribute 42.5% of total communications for the year 2007. A total of 446 communications are categorized under GIC communications which share 24.21% communications of the total. There are 222 communications related to Conference Communications (CON) category which shares 12.05% communications of total whereas 207 JOB related communications (11.23% of total communications) took place during the year. The GRC related 70 communications (3.8%) and OTH related 88 communications (4.77%) took place during the year. There are 18 communications (0.97%) identified for FDM category whereas 8 communications (0.43%) falls under OBI category also. The LSC, GIC, CON, and JOB related communications have been found much higher in number than rest of the categories (FDM, GRC, OBI, and OTH).

Table 4.3: Categorical Breakup of Communications for the Year 2007

Month	Year 2007								Total
	CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH	
January	29	0	36	9	17	48	0	27	166
February	28	2	41	0	22	55	0	25	173
March	20	1	60	3	34	50	0	17	185
April	12	2	25	0	18	47	1	3	108
May	11	6	45	3	20	59	1	3	148
June	7	1	38	6	6	55	1	1	115
July	7	0	31	1	16	44	2	1	102
August	14	1	35	7	17	74	3	0	151
September	14	3	26	2	6	81	0	3	135
October	27	2	55	4	23	99	0	4	214
November	35	0	25	19	17	99	0	2	197
December	18	0	29	16	11	72	0	2	148
Total	222	18	446	70	207	783	8	88	1842
Percentage	12.05	0.97	24.21	3.8	11.23	42.5	0.43	4.77	

(Source: Survey Data)

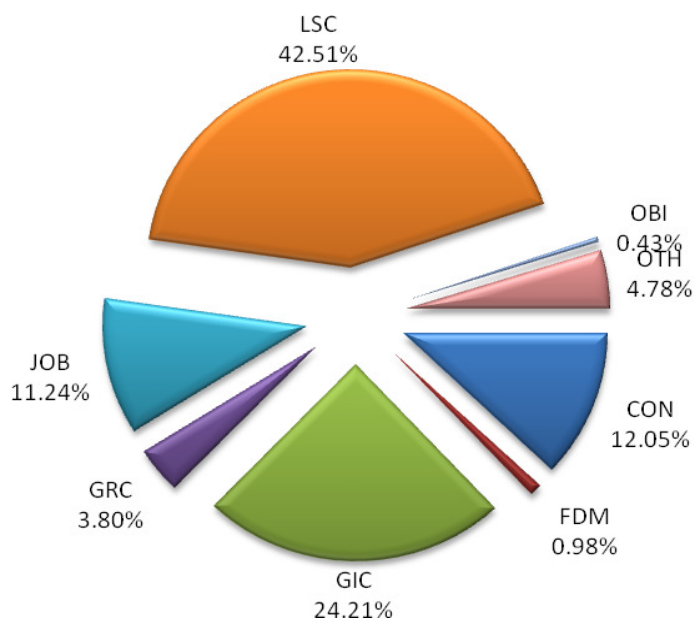


Fig. 4.3: Distribution of communications for the year 2007 – Category wise

4.3.3 Total No. of Communications in the Year 2008

Table 4.4 display the categorical data for communications carried over *NMLIS* forum during the year 2008. A total of 2781 communications took place in the year 2008. The highest number of communications observed in the category of

LSC communications (1232 messages) which share 44.3% of total communications for the year 2008 followed by GIC related 553 communications (19.88%), JOB related 422 communications (15.17%), and CON related 340 communications (12.22%).

Table 4.4: Categorical Breakup of Communications for the Year 2008

Month	Year 2008								Total
	CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH	
January	23	3	43	21	37	102	7	9	245
February	37	2	41	2	42	116	0	6	246
March	44	1	68	10	18	130	0	5	276
April	27	2	47	5	37	102	1	3	224
May	33	7	69	1	46	109	0	1	266
June	18	3	40	3	42	166	0	0	272
July	26	1	63	2	52	124	0	2	270
August	22	4	43	9	27	79	0	2	186
September	24	3	35	5	30	45	0	1	143
October	27	2	35	33	25	81	0	3	206
November	35	1	31	6	36	69	0	1	179
December	24	2	38	62	30	109	1	2	268
Total	340	31	553	159	422	1232	9	35	2781
Percentage	12.22	1.11	19.88	5.71	15.17	44.3	0.32	1.25	

(Source: Survey Data)

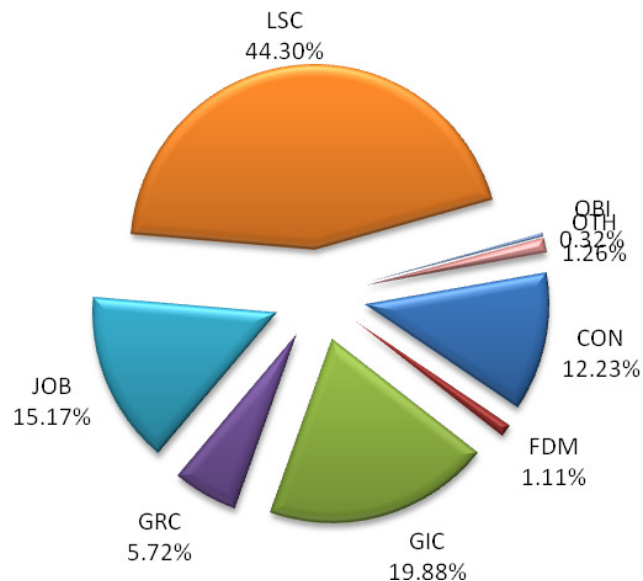


Fig. 4.4: Distribution of communications for the year 2008 – Category wise

There are 31 communications related to FDM which is 1.11% of total communications whereas OTH related 35 communications were observed (1.25%). There are 159 GRC related communications (5.71%) and 9 OBI related communications (0.32%). On the observations of Table 4.4, it has been found that categories LSC, GIC, JOB, and CON related communications are more and totally shares 91.58% communications than rests of the categories.

4.3.4 Total No. of Communications in the Year 2009

The Table 4.5 display 3067 communications carried over *NMLIS* forum during the year 2009. From the Table 4.5, it has been observed that majority (38.5%) of the communications belong to LSC category followed by GIC category (with 590 communications, 19.23%), JOB category (577 communications, 18.81%), and CON category (369 communications, 12.03%). The categories GRC (177 communications, 5.77%), OTH (85 communications, 2.77%), FDM (54 communications, 1.76%) and OBI (34 communications, 1.1%) have contributed less number of communications during the year 2009. The four categories of communications (LSC, GIC, JOB, and CON) shared 88.58% communications to the total communications of 2009.

Table 4.5: Categorical Breakup of Communications for the Year 2009

Month	Year 2009								Total
	CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH	
January	45	4	59	31	49	123	0	7	318
February	26	2	68	1	54	115	0	3	269
March	17	5	24	12	38	100	0	3	199
April	15	4	40	3	37	103	7	0	209
May	14	5	41	3	32	74	0	0	169
June	24	8	51	1	30	97	1	1	213
July	40	7	39	3	60	91	0	10	250
August	23	6	52	21	79	73	13	13	280
September	33	2	40	20	35	88	9	7	234
October	23	3	47	26	45	90	0	11	245
November	53	2	72	1	57	117	2	15	319
December	56	6	57	55	61	110	2	15	362
Total	369	54	590	177	577	1181	34	85	3067
Percentage	12.03	1.76	19.23	5.77	18.81	38.5	1.1	2.77	

(Source: Survey Data)

4.3.5 Total No. of Communications in the Year 2010

Table 4.6 display categorical breakup of 3166 communications carried over *NMLIS* forum during the year 2010. From the Table 4.6, it has been found that LSC category related communications have major contributions (35.94%) during the year 2010 followed by GIC category (with 668 communications, 21.09%), JOB category (634 communications, 20.02%), and CON category (371 communications, 11.71%). Further, categories GRC (198 communications, 6.25%), OTH (119 communications, 3.75%), FDM (30 communications, 0.94%) and OBI (8 communications, 0.25%) have contributed less number of communications during the year 2010. The four categories of communications (LSC, GIC, JOB, and CON) contributed 88.78% communications to the total communications of the year 2010.

Table 4.6: Categorical Breakup of Communications for the Year 2010

Month	Year 2010								Total
	CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH	
January	55	2	76	42	60	138	3	18	394
February	29	5	70	5	72	136	1	8	326
March	30	1	49	8	60	88	0	10	246
April	14	2	52	7	44	74	1	11	205
May	22	0	51	5	62	77	0	10	227
June	27	6	41	0	60	73	1	4	212
July	30	3	53	4	36	96	0	3	225
August	30	5	62	32	48	108	0	9	294
September	25	1	59	3	61	82	0	15	246
October	44	2	65	16	42	98	2	4	273
November	27	3	52	32	53	86	0	19	272
December	38	0	38	44	36	82	0	8	246
Total	371	30	668	198	634	1138	8	119	3166
Percentage	11.71	0.94	21.09	6.25	20.02	35.94	0.25	3.75	

(Source: Survey Data)

4.3.6 Total No. of Communications in the Year 2011

Table 4.7 presents the categorical divisions of 2494 communications posted during the year 2011 in *NMLIS* forum. A total of 877 communications have been identified as LSC communications which are the highest (35.16%) contributing category of communications in the year 2011. There are 498 communications belong to JOB category (19.96%) followed by GIC category (469 communications, 18.8%), CON category (413 communications, 16.55%), GRC category (89 communications, 3.56%),

OTH category (95 communications, 3.8%), FDM category (41 communications, 1.64%) and OBI category (12 communications, 0.48%). The top four categories LSC, GIC, JOB, and CON shared cumulatively 90.49% communications to the total communications of the year 2011.

Table 4.7: Categorical Breakup of Communications for the Year 2011

Month	Year 2011								Total
	CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH	
January	53	0	45	32	57	93	3	13	296
February	24	1	33	3	50	75	0	11	197
March	25	3	69	8	32	80	1	6	224
April	21	5	39	8	30	93	0	11	207
May	33	8	41	4	63	85	0	7	241
June	32	1	25	1	31	84	0	5	179
July	40	5	27	4	72	79	2	2	231
August	33	4	14	0	35	51	1	7	145
September	34	2	30	3	35	68	3	7	182
October	34	3	37	17	29	49	0	12	181
November	47	6	61	1	37	62	2	7	223
December	37	3	48	8	27	58	0	7	188
Total	413	41	469	89	498	877	12	95	2494
Percentage	16.55	1.64	18.8	3.56	19.96	35.16	0.48	3.8	

(Source: Survey Data)

4.3.7 Total No. of Communications in the Year 2012

Table 4.8 display categorical breakup of 2647 communications carried over *NMLIS* forum during the year 2012. From the Table 4.8, it has been found that LSC category related 942 communications have major contributions (35.58%) during the year 2012 followed by GIC category (with 614 communications, 23.19%), CON category (461 communications, 17.41%), and JOB category (453 communications, 17.11%). Further, categories GRC (74 communications, 2.79%), OTH (62 communications, 2.34%), FDM (35 communications, 1.32%) and OBI (6 communications, 0.22%) have contributed less number of communications during the year 2012. The top four categories of communications (LSC, GIC, JOB, and CON) contributed 93.31% communications to the total communications of the year 2012.

Table 4.8: Categorical Breakup of Communications for the Year 2012

Month	Year 2012								Total
	CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH	
January	60	1	58	6	24	83	0	1	233
February	32	5	53	0	14	79	1	5	189
March	29	1	54	12	47	85	0	8	236
April	29	0	60	3	20	106	0	15	233
May	28	7	65	0	56	92	0	7	255
June	36	7	56	2	50	71	4	7	233
July	40	4	46	0	46	71	0	2	209
August	44	2	43	3	39	87	0	3	221
September	51	2	41	14	56	67	1	5	237
October	41	1	56	9	47	72	0	5	231
November	35	2	36	15	35	61	0	2	186
December	36	3	46	10	19	68	0	2	184
Total	461	35	614	74	453	942	6	62	2647
Percentage	17.41	1.32	23.19	2.79	17.11	35.58	0.22	2.34	

(Source: Survey Data)

4.3.8 Total No. of Communications in the Year 2013

Table 4.9 display the categorical divisions of 2720 communications posted during the year 2013 in *NMLIS* forum.

Table 4.9: Categorical Breakup of Communications for the Year 2013

Month	Year 2013								Total
	CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH	
January	30	4	57	20	33	71	1	8	224
February	28	0	53	7	32	94	3	5	222
March	37	2	64	2	39	95	0	1	240
April	16	0	81	7	33	87	0	10	234
May	25	3	39	1	31	56	0	2	157
June	33	4	58	6	42	66	2	3	214
July	24	7	34	0	44	36	0	0	145
August	50	4	91	7	69	123	0	3	347
September	44	2	81	2	51	87	1	2	270
October	46	5	63	10	52	80	0	2	258
November	28	2	51	13	37	85	2	10	228
December	30	5	42	16	27	56	4	1	181
Total	391	38	714	91	490	936	13	47	2720
Percentage	14.37	1.39	26.25	3.34	18.01	34.41	0.47	1.72	

(Source: Survey Data)

A total of 936 communications have been identified as LSC communications which are the highest (34.41%) contributing category of communications in the year 2013. There are 714 communications belong to GIC category (26.25%) followed by JOB category (490 communications, 18.01%), CON category (391 communications, 14.37%), GRC category (91 communications, 3.34%), OTH category (47 communications, 1.72%), FDM category (38 communications, 1.39%) and OBI category (13 communications, 0.47%). The top four categories LSC, GIC, JOB, and CON shared cumulatively 93.05% communications to the total communications of the year 2013.

4.3.9 Total No. of Communications in the Year 2014

Table 4.10 display categorical breakup of 2452 communications carried over *NMLIS* forum during the year 2014. From the Table 4.10, it has been found that GIC category related 870 communications have major contributions (35.48%) during the year 2014 followed by LSC category (with 580 communications, 23.65%), CON category (494 communications, 20.14%), and JOB category (367 communications, 14.96%).

Table 4.10: Categorical Breakup of Communications for the Year 2014

Month	Year 2014								Total
	CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH	
January	51	1	62	12	40	57	2	3	228
February	26	2	68	3	37	68	0	4	208
March	35	0	67	4	30	46	1	1	184
April	28	1	66	5	28	41	0	0	169
May	20	4	67	0	24	40	1	1	157
June	37	4	58	3	28	50	5	2	187
July	42	0	93	1	43	56	8	0	243
August	47	2	101	9	41	59	2	3	264
September	51	0	68	4	28	33	0	3	187
October	66	1	73	12	32	51	1	4	240
November	46	1	75	2	20	49	2	4	199
December	45	3	72	15	16	30	3	2	186
Total	494	19	870	70	367	580	25	27	2452
Percentage	20.14	0.77	35.48	2.85	14.96	23.65	1.01	1.1	

(Source: Survey Data)

Further, categories GRC (70 communications, 2.85%), OTH (27 communications, 1.1%), FDM (19 communications, 0.77%) and OBI (25 communications, 1.01%) have contributed less number of communications during the year 2014. The top four

categories of communications (LSC, GIC, JOB, and CON) contributed 94.24% communications to the total communications of the year 2014.

4.3.10 Total No. of Communications in the Year 2015

Table 4.11 display the categorical divisions of 2840 communications posted during the year 2015 in *NMLIS* forum. A total of 1120 communications have been identified as GIC communications which are the highest (39.43%) contributing category of communications in the year 2015.

Table 4.11: Categorical Breakup of Communications for the Year 2015

Month	Year 2015								Total
	CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH	
January	45	1	141	10	13	44	2	6	262
February	32	0	132	1	11	50	0	7	233
March	34	0	91	2	12	43	0	10	192
April	27	1	95	0	8	35	0	5	171
May	26	3	52	2	32	35	0	5	155
June	22	2	120	0	31	27	2	7	211
July	35	1	97	0	28	29	0	17	207
August	39	4	98	4	18	43	1	15	222
September	32	0	85	0	80	69	0	6	272
October	44	0	93	1	146	81	0	9	374
November	42	0	45	10	111	71	0	3	282
December	54	3	71	2	68	48	0	13	259
Total	432	15	1120	32	558	575	5	103	2840
Percentage	15.21	0.52	39.43	1.12	19.64	20.24	0.17	3.62	

(Source: Survey Data)

There are 575 communications belong to LSC category (20.24%) followed by JOB category (558 communications, 19.64%), CON category (432 communications, 15.21%), OTH category (103 communications, 3.62%), GRC category (32 communications, 1.12%), FDM category (15 communications, 0.52%) and OBI category (5 communications, 0.17%). The top four categories LSC, GIC, JOB, and CON shared cumulatively 94.54% communications to the total communications of the year 2015.

4.3.11 Total No. of Communications in the Year 2016

Table 4.12 display the categorical divisions of 2403 communications posted during the year 2016 in *NMLIS* forum. A total of 874 communications have been identified as GIC

communications which are the highest (36.37%) contributing category of communications in the year 2016. There are 581 communications belong to LSC category (24.17%) followed by CON category (450 communications, 18.72%), JOB category (243 communications, 10.11%), OTH category (174 communications, 7.24%), GRC category (43 communications, 1.78%), FDM category (21 communications, 0.87%) and OBI category (17 communications, 0.7%). The top four categories LSC, GIC, JOB, and CON shared cumulatively 89.38% communications to the total communications of the year 2016.

Table 4.12: Categorical Breakup of Communications for the Year 2016

Month	Year 2016								Total
	CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH	
January	51	3	58	9	44	64	2	4	235
February	41	6	95	0	27	46	4	11	230
March	22	1	39	1	20	74	1	5	163
April	32	5	68	13	23	48	0	25	214
May	38	3	54	1	22	38	2	34	192
June	30	0	116	0	20	31	1	34	232
July	31	1	103	4	18	51	1	18	227
August	51	0	55	1	19	34	0	5	165
September	43	1	93	1	30	50	0	14	232
October	28	1	58	8	5	45	0	3	148
November	40	0	60	0	6	39	4	10	159
December	43	0	75	5	9	61	2	11	206
Total	450	21	874	43	243	581	17	174	2403
Percentage	18.72	0.87	36.37	1.78	10.11	24.17	0.7	7.24	

(Source: Survey Data)

4.3.12 Total No. of Conference Communications (CON)

Table 4.13 depicts the year-wise breakup of communications related to Conference Communications (CON) category. There are 3943 communications related to CON category. Month-wise distribution of communications has also been arranged. From the observation of table 4.13, it has been found that CON related communications have shown the growth from the year 2007 to 2016 in terms of the number of communications which is just doubled. The highest number of CON related communications has been observed in the year 2014 (494 communications) which shared 12.52% of total CON related communications followed by the year 2012 (461 communications, 11.69%), and year 2016 (450 communications, 11.41%). The least numbers of CON related

communications has been observed in the year 2007 with 222 communications which shared 5.63% of total CON related communications. In month wise analysis, the highest CON related communications have been observed in the month of January (442 communications) followed by November (388 communications) and December (381 communications) while April has been observed for least number (221) of communications.

Table 4.13: Year-wise breakup of Conference Communications (CON)

Month	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
January	29	23	45	55	53	60	30	51	45	51	442
February	28	37	26	29	24	32	28	26	32	41	303
March	20	44	17	30	25	29	37	35	34	22	293
April	12	27	15	14	21	29	16	28	27	32	221
May	11	33	14	22	33	28	25	20	26	38	250
June	7	18	24	27	32	36	33	37	22	30	266
July	7	26	40	30	40	40	24	42	35	31	315
August	14	22	23	30	33	44	50	47	39	51	353
September	14	24	33	25	34	51	44	51	32	43	351
October	27	27	23	44	34	41	46	66	44	28	380
November	35	35	53	27	47	35	28	46	42	40	388
December	18	24	56	38	37	36	30	45	54	43	381
Total	222	340	369	371	413	461	391	494	432	450	3943
Percentage	5.63	8.62	9.35	9.4	10.47	11.69	9.91	12.52	10.95	11.41	

(Source: Survey Data)

4.3.13 Total No. of Faculty Development Communications (FDM)

Table 4.14 depicts the year-wise breakup of communications related to Faculty Development Communications (FDM) category. There are 302 communications related to FDM category. Month-wise distribution of communications has also been arranged for FDM category. From the observation of table 4.14, it has been found that FDM related communications have shown the growth from the year 2007 to 2013 in terms of the number of communications and after that growth declined than earlier. The highest number of FDM related communications has been observed in the year 2009 (54 communications) which shared 17.88% of total FDM related communications followed by the year 2011 (41 communications, 13.57%), and the year 2013 (38 communications, 12.58%). The least numbers of FDM related communications has been observed in the year 2015 with 15 communications which shared 4.96% of total FDM related communications. In month wise analysis, the highest FDM related communications have been observed in the month of May (46 communications) followed by June (36 communications) and August (32 communications) while March has been observed for least number (15) of communications.

Table 4.14: Year-wise breakup of Faculty Development Communications (FDM)

Month	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
January	0	3	4	2	0	1	4	1	1	3	19
February	2	2	2	5	1	5	0	2	0	6	25
March	1	1	5	1	3	1	2	0	0	1	15
April	2	2	4	2	5	0	0	1	1	5	22
May	6	7	5	0	8	7	3	4	3	3	46
June	1	3	8	6	1	7	4	4	2	0	36
July	0	1	7	3	5	4	7	0	1	1	29
August	1	4	6	5	4	2	4	2	4	0	32
September	3	3	2	1	2	2	2	0	0	1	16
October	2	2	3	2	3	1	5	1	0	1	20
November	0	1	2	3	6	2	2	1	0	0	17
December	0	2	6	0	3	3	5	3	3	0	25
Total	18	31	54	30	41	35	38	19	15	21	302
Percentage	5.96	10.26	17.88	9.93	13.57	11.58	12.58	6.29	4.96	6.95	

(Source: Survey Data)

4.3.14 Total No. of General Information Communications (GIC)

Table 4.15 present the year-wise breakup of communications related to General Information Communications (GIC) category. There are 6918 communications related to GIC category. Month-wise distribution of communications has also been arranged for GIC category. From the observation of table 4.15, it has been observed that GIC related communications have shown the tremendous growth from the year 2007 to 2016 in terms of the number of communications. The highest number of GIC related communications has been observed in the year 2015 (1120 communications) which shared 16.18% of total GIC related communications followed by the year 2016 (874 communications, 12.63%), and year 2014 (870 communications, 12.57%). The least numbers of GIC related communications has been observed in the year 2007 with 446 communications which shared 6.44% of total GIC related communications. In month wise analysis, the highest GIC related communications have been observed in the month of February (654 communications) followed by January (635 communications) and June (603 communications) while November has been observed for least number (508) of communications.

Table 4.15: Year-wise breakup of General Information Communications (GIC)

Month	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
January	36	43	59	76	45	58	57	62	141	58	635
February	41	41	68	70	33	53	53	68	132	95	654
March	60	68	24	49	69	54	64	67	91	39	585
April	25	47	40	52	39	60	81	66	95	68	573
May	45	69	41	51	41	65	39	67	52	54	524
June	38	40	51	41	25	56	58	58	120	116	603
July	31	63	39	53	27	46	34	93	97	103	586
August	35	43	52	62	14	43	91	101	98	55	594
September	26	35	40	59	30	41	81	68	85	93	558
October	55	35	47	65	37	56	63	73	93	58	582
November	25	31	72	52	61	36	51	75	45	60	508
December	29	38	57	38	48	46	42	72	71	75	516
Total	446	553	590	668	469	614	714	870	1120	874	6918
Percentage	6.44	7.99	8.52	9.65	6.77	8.87	10.32	12.57	16.18	12.63	

(Source: Survey Data)

4.3.15 Total No. of Greetings Communications (GRC)

Table 4.16 display the year-wise breakup of communications related to Greetings Communications (GRC) category. There are 1003 communications related to GRC category. Month-wise distribution of communications has also been arranged for GRC category. From the observation of table 4.16, it has been found that GRC related communications have shown the growth from the year 2007 to 2010 in terms of the number of communications and after that growth declined from 2011 to 2016. The highest number of GRC related communications has been observed in the year 2010 (198 communications) which shared 19.74% of total GRC related communications followed by the year 2009 (177 communications, 17.64%), and year 2008 (159 communications, 15.85%). The least numbers of GRC related communications has been observed in the year 2015 with 32 communications which shared 3.19% of total GRC related communications. In month wise analysis, the highest GRC related communications have been observed in the month of December (233 communications) followed by January (192 communications) and October (136 communications) while July has been observed for least number (19) of communications. The month December has recorded the highest GRC related communications due to the festival of Christmas and eve of New Year. The forum members communicate more GRC related communications on these occasions. Similarly, in the month of January forum members again communicate for New Year wishes to each other, so recorded second highest communications. Due to festivals of Dussehara and Diwali as well as Mahatma Gandhi's Birthday, the month of October also recorded the higher number of GRC related communications. Rest of the months, some local festival (less popular) as well as new assignments to fellow LIS professionals have been cherished and recorded some amount of communications.

Table 4.16: Year-wise breakup of Greetings Communications (GRC)

Month	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
January	9	21	31	42	32	6	20	12	10	9	192
February	0	2	1	5	3	0	7	3	1	0	22
March	3	10	12	8	8	12	2	4	2	1	62
April	0	5	3	7	8	3	7	5	0	13	51
May	3	1	3	5	4	0	1	0	2	1	20
June	6	3	1	0	1	2	6	3	0	0	22
July	1	2	3	4	4	0	0	1	0	4	19
August	7	9	21	32	0	3	7	9	4	1	93
September	2	5	20	3	3	14	2	4	0	1	54
October	4	33	26	16	17	9	10	12	1	8	136
November	19	6	1	32	1	15	13	2	10	0	99
December	16	62	55	44	8	10	16	15	2	5	233
Total	70	159	177	198	89	74	91	70	32	43	1003
Percentage	6.97	15.85	17.64	19.74	8.87	7.37	9.07	6.97	3.19	4.28	

(Source: Survey Data)

4.3.16 Total No. of Job Posts Communications (JOB)

Table 4.17 display the year-wise breakup of communications related to Job Posts Communications (JOB) category. There are 4449 communications related to JOB category. Month-wise distribution of communications has been arranged also for GRC category. From the observation of table 4.17, it has been observed that JOB related communications have shown the growth from the year 2007 to 2016 in terms of the number of communications. The highest number of JOB related communications has been observed in the year 2010 (634 communications) which shared 14.25% of total JOB related communications followed by the year 2009 (577 communications, 12.96%), and year 2015 (558 communications, 12.54%). The least numbers of JOB related communications has been observed in the year 2007 with 207 communications which shared 4.65% of total JOB related communications. In month wise analysis, the highest JOB related communications has been observed in the month of October (446 communications) followed by July (415 communications) and September (412 communications) while April has been observed for least number (278) of communications. These JOB related communications included many repetitions for the same advertisement posted by the same forum member many times as well as same advertisement by other members also. The study counted uniformly each repetitive communications as a unique message and no duplicates have been removed for any duplicate message sent by the same forum member.

Table 4.17: Year-wise breakup of Job Posts Communications (JOB)

Month	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
January	17	37	49	60	57	24	33	40	13	44	374
February	22	42	54	72	50	14	32	37	11	27	361
March	34	18	38	60	32	47	39	30	12	20	330
April	18	37	37	44	30	20	33	28	8	23	278
May	20	46	32	62	63	56	31	24	32	22	388
June	6	42	30	60	31	50	42	28	31	20	340
July	16	52	60	36	72	46	44	43	28	18	415
August	17	27	79	48	35	39	69	41	18	19	392
September	6	30	35	61	35	56	51	28	80	30	412
October	23	25	45	42	29	47	52	32	146	5	446
November	17	36	57	53	37	35	37	20	111	6	409
December	11	30	61	36	27	19	27	16	68	9	304
Total	207	422	577	634	498	453	490	367	558	243	4449
Percentage	4.65	9.48	12.96	14.25	11.19	10.18	11.01	8.24	12.54	5.46	

(Source: Survey Data)

4.3.17 Total No. of Library Science Communications (LSC)

Table 4.18 display the year-wise breakup of communications related to Library Science Communications (LSC) category. There are 8825 communications related to LSC category. This category has the highest number of communications during the study period. Month-wise distribution of communications has been arranged also for LSC category. From the observation of table 4.18, it has been found that LSC related communications have shown the growth from the year 2007 to 2013 in terms of the number of communications and after that growth declined and reached to the least level. The highest number of LSC related communications has been observed in the year 2008 (1232 communications) which shared 13.96% of total LSC related communications followed by the year 2009 (1181 communications, 13.38%), and year 2010 (1138 communications, 12.89%). The least numbers of LSC related communications has been observed in the year 2015 with 575 communications which shared 6.51% of total LSC related communications. In month wise analysis, the highest LSC related communications have been observed in the month of February (834 communications) followed by January (823 communications) and March (791 communications) while May has been observed for least number (665) of communications. These LSC related communications also included many repetitions for the same message posted by the same forum member many times as well as reply to the posted messages if required. There are many messages which required some kind of supply of information or the simple query to know the concept or idea which they do not know. The study counted uniformly each repetitive communications as a unique message and no duplicates have been removed for any duplicate message sent by the same forum member.

Table 4.18: Year-wise breakup of Library Science Communications (LSC)

Month	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
January	48	102	123	138	93	83	71	57	44	64	823
February	55	116	115	136	75	79	94	68	50	46	834
March	50	130	100	88	80	85	95	46	43	74	791
April	47	102	103	74	93	106	87	41	35	48	736
May	59	109	74	77	85	92	56	40	35	38	665
June	55	166	97	73	84	71	66	50	27	31	720
July	44	124	91	96	79	71	36	56	29	51	677
August	74	79	73	108	51	87	123	59	43	34	731
September	81	45	88	82	68	67	87	33	69	50	670
October	99	81	90	98	49	72	80	51	81	45	746
November	99	69	117	86	62	61	85	49	71	39	738
December	72	109	110	82	58	68	56	30	48	61	694
Total	783	1232	1181	1138	877	942	936	580	575	581	8825
Percentage	8.87	13.96	13.38	12.89	9.93	10.67	10.6	6.57	6.51	6.58	

(Source: Survey Data)

4.3.18 Total No. of Obituary Communications (OBI)

Table 4.19 depicts the year-wise breakup of communications related to Obituary Communications (OBI) category. There are 137 communications related to OBI category. This category has the least number of communications during the study period. Month-wise distribution of communications has been arranged also for OBI category. From the observation of table 4.19, it has been found that OBI related communications have not shown growth in any pattern. The highest number of OBI related communications has been observed in the year 2009 (34 communications) which shared 24.81% of total OBI related communications followed by the year 2014 (25 communications, 18.24%), and year 2016 (17 communications, 12.4%). The least numbers of OBI related communications has been observed in the year 2015 with 5 communications which shared 3.64% of total OBI related communications. In month wise analysis, the highest OBI related communications has been observed jointly in the months of January and August (20 communications in each month) followed by June (17 communications) and September (14 communications) while months of March and October jointly have been observed for least number (3) of communications. The OBI related communications also included many repetitions for the same message posted by the same forum member twice or thrice as well as reply to the posted messages if required. After knowing the sad demise of any LIS professionals, forum members communicated their condolence messages towards bereaved family and thus each message counted as unique communications in the study.

Table 4.19: Year-wise breakup of Obituary Communications (OBI)

Month	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
January	0	7	0	3	3	0	1	2	2	2	20
February	0	0	0	1	0	1	3	0	0	4	09
March	0	0	0	0	1	0	0	1	0	1	03
April	1	1	7	1	0	0	0	0	0	0	10
May	1	0	0	0	0	0	0	1	0	2	04
June	1	0	1	1	0	4	2	5	2	1	17
July	2	0	0	0	2	0	0	8	0	1	13
August	3	0	13	0	1	0	0	2	1	0	20
September	0	0	9	0	3	1	1	0	0	0	14
October	0	0	0	2	0	0	0	1	0	0	03
November	0	0	2	0	2	0	2	2	0	4	12
December	0	1	2	0	0	0	4	3	0	2	12
Total	8	9	34	8	12	6	13	25	5	17	137
Percentage	5.83	6.56	24.81	5.83	8.75	4.37	9.48	18.24	3.64	12.4	

(Source: Survey Data)

4.3.19 Total No. of Other Communications (OTH)

Table 4.20 display the year-wise breakup of communications related to Other Communications (OTH) category. There are 835 communications related to OTH category. Month-wise distribution of communications has been arranged also for OTH category. From the observation of table 4.20, it has been found that OTH related communications have not shown growth in any pattern. The highest number of OTH related communications has been observed in the year 2016 (174 communications) which shared 20.83% of total OTH related communications followed by the year 2010 (119 communications, 14.25%), and year 2015 (103 communications, 12.33%). The least numbers of OTH related communications has been observed in the year 2014 with 27 communications which shared 3.23% of total OTH related communications. In month wise analysis, the highest OTH related communications have been observed in the month of January (96 communications) followed by February (85 communications) and April (83 communications) while the month of July has been observed for least number (55) of communications. The OTH related communications also included many repetitions for the same message posted by the same forum member many times without having any subject or non-understandable subject.

Table 4.20: Year-wise breakup of Other Communications (OTH)

Month	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
January	27	9	7	18	13	1	8	3	6	4	96
February	25	6	3	8	11	5	5	4	7	11	85
March	17	5	3	10	6	8	1	1	10	5	66
April	3	3	0	11	11	15	10	0	5	25	83
May	3	1	0	10	7	7	2	1	5	34	70
June	1	0	1	4	5	7	3	2	7	34	64
July	1	2	10	3	2	2	0	0	17	18	55
August	0	2	13	9	7	3	3	3	15	5	60
September	3	1	7	15	7	5	2	3	6	14	63
October	4	3	11	4	12	5	2	4	9	3	57
November	2	1	15	19	7	2	10	4	3	10	73
December	2	2	15	8	7	2	1	2	13	11	63
Total	88	35	85	119	95	62	47	27	103	174	835
Percentage	10.53	4.19	10.17	14.25	11.37	7.42	5.62	3.23	12.33	20.83	

(Source: Survey Data)

4.3.20 Progression (Growth) of Categorized Communications

Table 4.21 and Figures 4.5, 4.6, and 4.7 displays the growth of communications arranged in a categorized manner from the year 2007 to 2016. The LSC category showed its highest progress in the year 2008 and after that progress declined. In the Fig. 4.5, linear trendline has been drawn for LSC category to ascertain the progression (growth) in terms of the number of communications. The trendline for LSC category has $R^2 = 0.527$ which indicates that data for LSC category do not fit with the line and downward direction of trendline shows negative progression with the steady rate.

The GIC category has shown the progress during the study period and its highest progress recorded in 2015. In the Fig. 4.5, linear trendline for GIC has $R^2 = 0.692$ which indicates the data for GIC category is not the good fit with the linear line but an upward direction of linear trendline for GIC shows progression with the steady rate.

The JOB category has shown progress up to 2010 and after that decline in the data has been observed. As per Fig. 4.5, linear trendline for JOB has $R^2 = 0.001$ which indicates least fit of data with linear line and slight downward direction of the trendline shows negative progression with the steady rate.

The CON category has shown continuous progress till 2012 and after that down and ups were observed. In the Fig. 4.5, linear trendline for CON has $R^2 = 0.671$ which indicates that data for CON category is not the good fit with the linear line but the upward direction of trendline for CON category shows progression with the steady rate.

The GRC category has shown continuous growth till 2010 and after that decline in the growth has been observed. In the Fig. 4.6, linear trendline for GRC has $R^2 = 0.411$ which indicates that data for GRC category is not the good fit with linear line and its downward direction shows the negative progression to GRC related communications.

The OTH category has shown growth in terms of the number of communications till 2016. In the Fig. 4.6, linear trendline for OTH has $R^2 = 0.088$ which indicates that OTH data does not fit with the linear line but an upward direction of trendline shows progression in OTH related communications.

The FDM category has no any uniform growth in communications during the study period. In Fig 4.6, linear trendline for FDM has $R^2 = 0.130$ which indicates that FDM related data is not the good fit with linear line and slight downward direction of trendline shows negative progression in FDM related communications.

The OBI category also has no any uniform growth in communications during the study period. In the Fig. 4.6, linear trendline for OBI has $R^2 = 0.001$ which indicates that OBI related data is not the good fit with linear line and non-significant upward direction of trendline shows non-significant progression in OBI related communications.

The Table 4.21 and Fig. 4.7 display total communications carried over in *NMLIS* forum during the ten years of study period. From the observation of Table 4.21, it has been found that the number of communications is growing from 2007 to 2016. During the year 2010, the highest number of communications observed which then started declining till 2016. As per Fig. 4.7, the linear forecast trendline has been drawn which shows $R^2 = 0.003$. The linear forecast trendline shows slight upward direction which indicates that there is a non-significant progression in communications of *NMLIS* forum and 2 periods forecast also shows non-significant progression in communications for two more consecutive years in future.

Table 4.21: Progression of categorized communications

Category	Year										Total	Percentage
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		
CON	222	340	369	371	413	461	391	494	432	450	3943	14.928
FDM	18	31	54	30	41	35	38	19	15	21	302	1.143
GIC	446	553	590	668	469	614	714	870	1120	874	6918	26.192
GRC	70	159	177	198	89	74	91	70	32	43	1003	3.797
JOB	207	422	577	634	498	453	490	367	558	243	4449	16.844
LSC	783	1232	1181	1138	877	942	936	580	575	581	8825	33.412
OBI	8	9	34	8	12	6	13	25	5	17	137	0.518
OTH	88	35	85	119	95	62	47	27	103	174	835	3.161
Total	1842	2781	3067	3166	2494	2647	2720	2452	2840	2403	26412	
Percentage	6.97	10.52	11.61	11.98	9.44	10.02	10.29	9.28	10.75	9.09		

(Source: Survey Data)

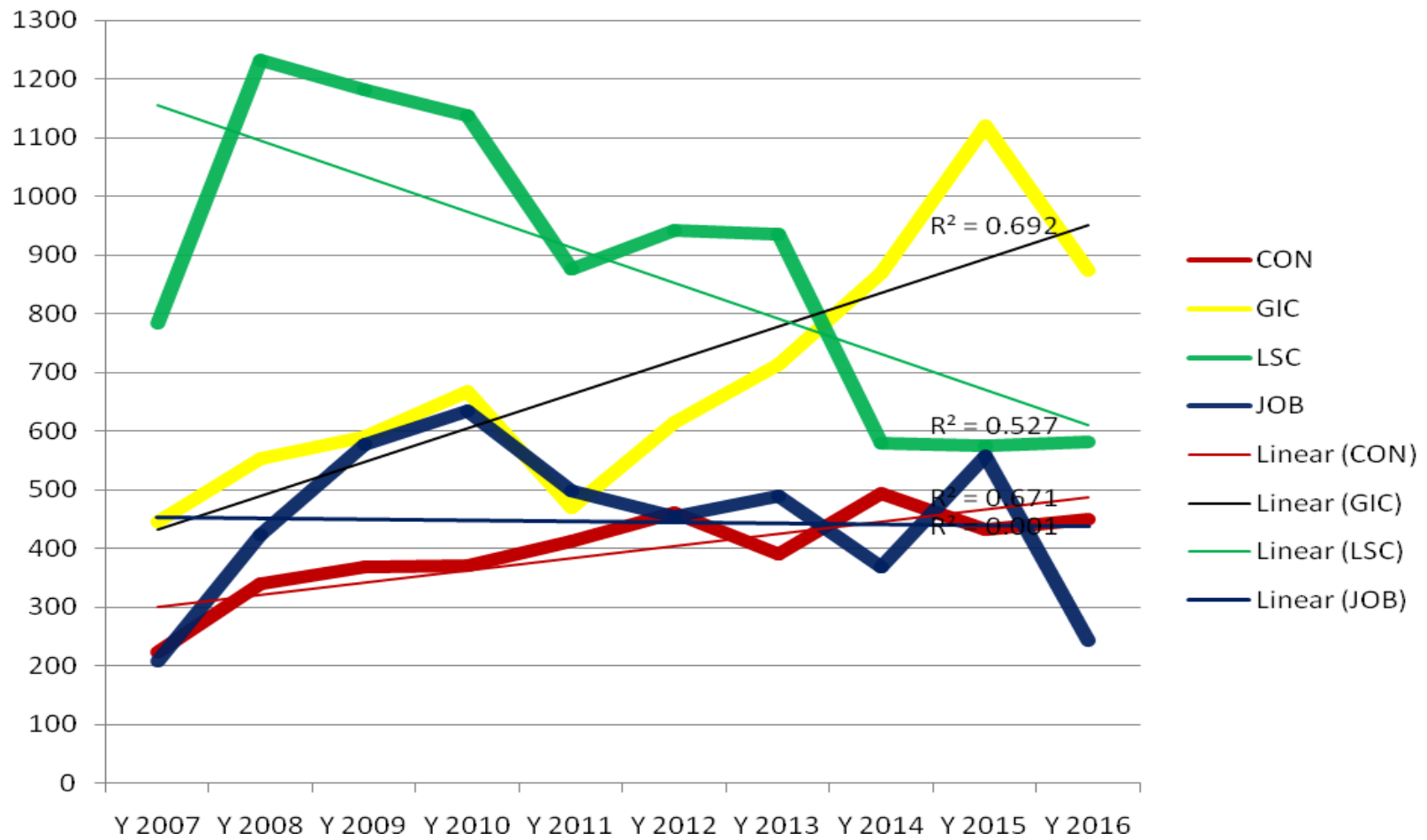


Fig. 4.5: Progression of communications for categories CON, GIC, LSC, and JOB

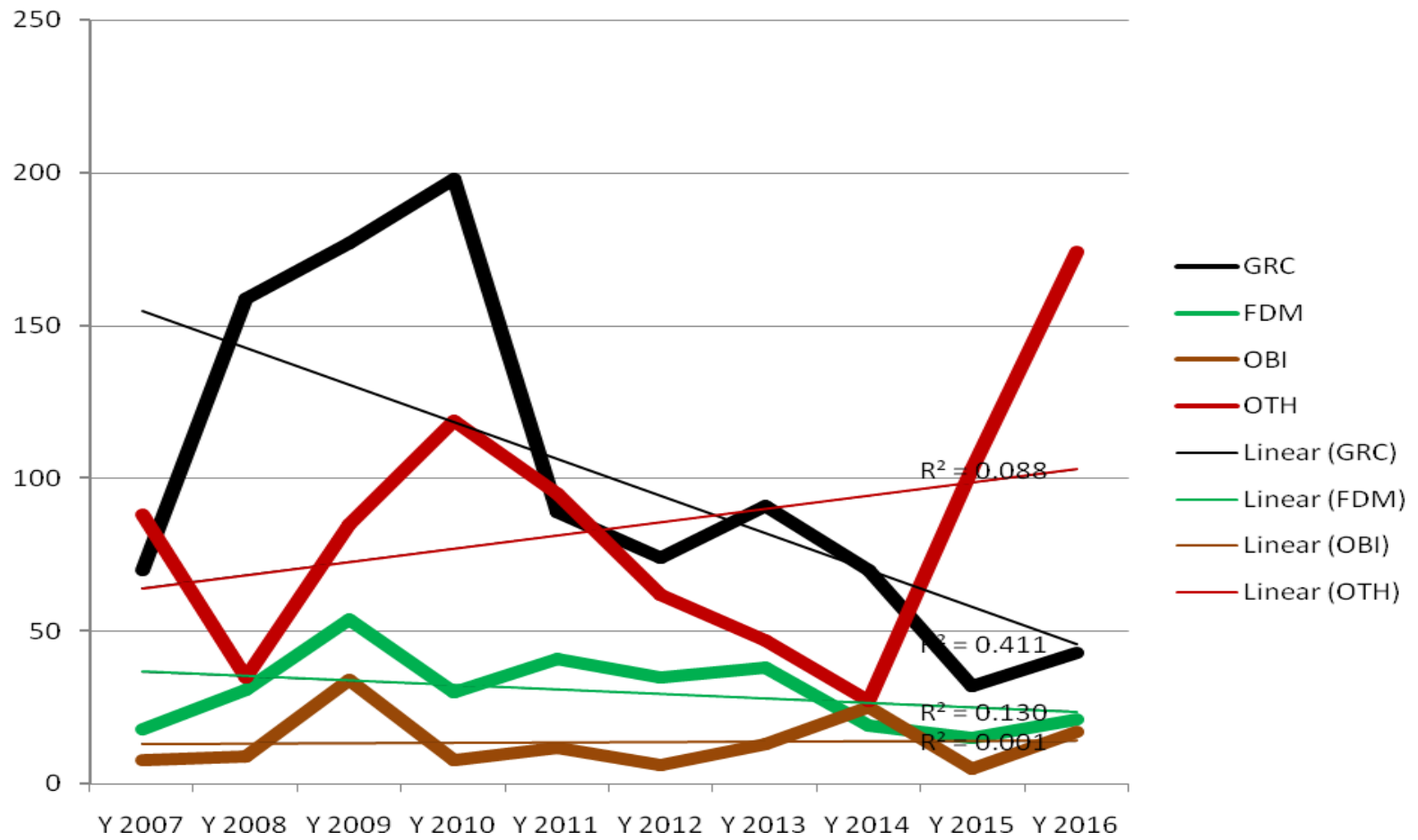


Fig. 4.6: Progression of communications for categories GRC, FDM, OBI, and OTH

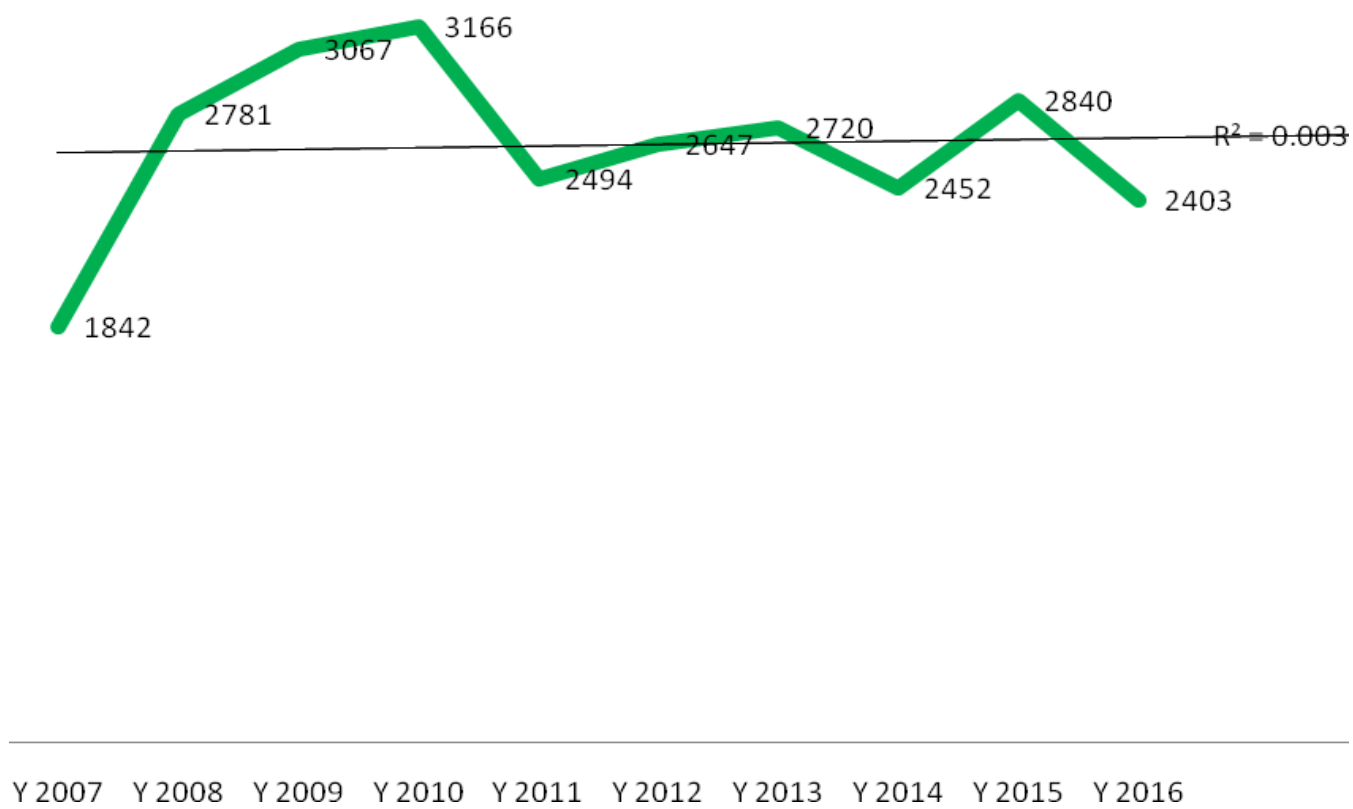


Fig. 4.7: Progression in total communications of *NMLIS* (with linear forecasting trendline for 2 periods)

4.3.21 Total Number of Contributors in NMLIS

Table 4.22 display the total number of message contributors to the *NMLIS* forum during the study period. The unique message contributors have been counted month wise but there is a repetition of message contributors in a year. A message contributor may contribute maximum 12 times in a year if contributing every month. For an instance, in the year 2007, there are total 613 contributors but all contributors are not unique. Many of them are common in every month. The ratio of contributors and communications for the year 2007 is 1 : 3. The year 2008 recorded 902 message contributors with 2781 communications having the ratio of 1 : 3.08. The year 2009 have the highest number of message contributors (1026) with 3067 communications. The ratio of contributors and communications is 1 : 2.98 for the year 2009. The year 2010 have 1023 message contributors with 3166 communications. The ratio of the contributor and communications is 1 : 3.09 for the year 2010. In the year 2011, a total of 734 message contributors have communicated 2494 communications having the ratio of 1 : 3.39. The year 2012 have 684 message contributors with 2647 communications having the ratio of 1 : 3.86. The year 2013 has 625 message contributors with 2720 communications. The ratio of contributors and communications for the year 2013 is 1 : 4.35. There are 609 message contributors with 2452 communications for the year 2014. The ratio of contributors and communications is 1 : 4.02 for the year 2014. The year 2015 recorded 451 message contributors with 2840 communications which have the ratio of 1 : 6.29 between contributors and communications. The year 2016 recorded the least number of message contributors (357) with 2403 communications. Due to least number of message contributors in the year 2016, the ratio of contributors and communications is 1 : 6.73. The contributors and communications ratio for the year 2016 is the highest ratio among all years. Table 4.22 and Fig. 4.7 clearly depicts that the number of contributors is continuously decreasing while communications are increasing. The downward direction of linear trendline for contributors is showing regression while an upward direction of linear trendline for the number of communications is showing progression. This indicates that the number of communications is increasing while the number of contributors is decreasing during the study period. This trendline proves the increasing ratio of message contributors and communications in due course of time.

Table 4.22: Total number of contributors and communications ratio

Month	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
January	51	86	104	122	100	52	56	61	52	41	725
February	45	59	82	72	71	46	58	57	41	31	562
March	47	72	73	74	74	49	65	49	43	25	571
April	41	72	67	68	70	50	60	54	39	33	554
May	47	59	56	75	70	69	47	36	35	31	525
June	56	72	69	67	65	57	50	48	32	29	545
July	42	83	90	77	66	56	22	55	36	34	561
August	62	67	92	88	36	76	65	45	35	30	596
September	55	69	95	88	45	59	35	44	37	31	558
October	51	77	78	89	48	50	56	61	34	23	567
November	62	82	99	105	46	66	58	47	33	25	623
December	54	104	121	98	43	54	53	52	34	24	637
Total Contributors (A)	613	902	1026	1023	734	684	625	609	451	357	7024
Total Communications (B)	1842	2781	3067	3166	2494	2647	2720	2452	2840	2403	26412
Ratio of (A) : (B)	1 : 3.0	1 : 3.08	1 : 2.98	1 : 3.09	1 : 3.39	1 : 3.86	1 : 4.35	1 : 4.02	1 : 6.29	1 : 6.73	1 : 3.76

(Source: Survey Data)

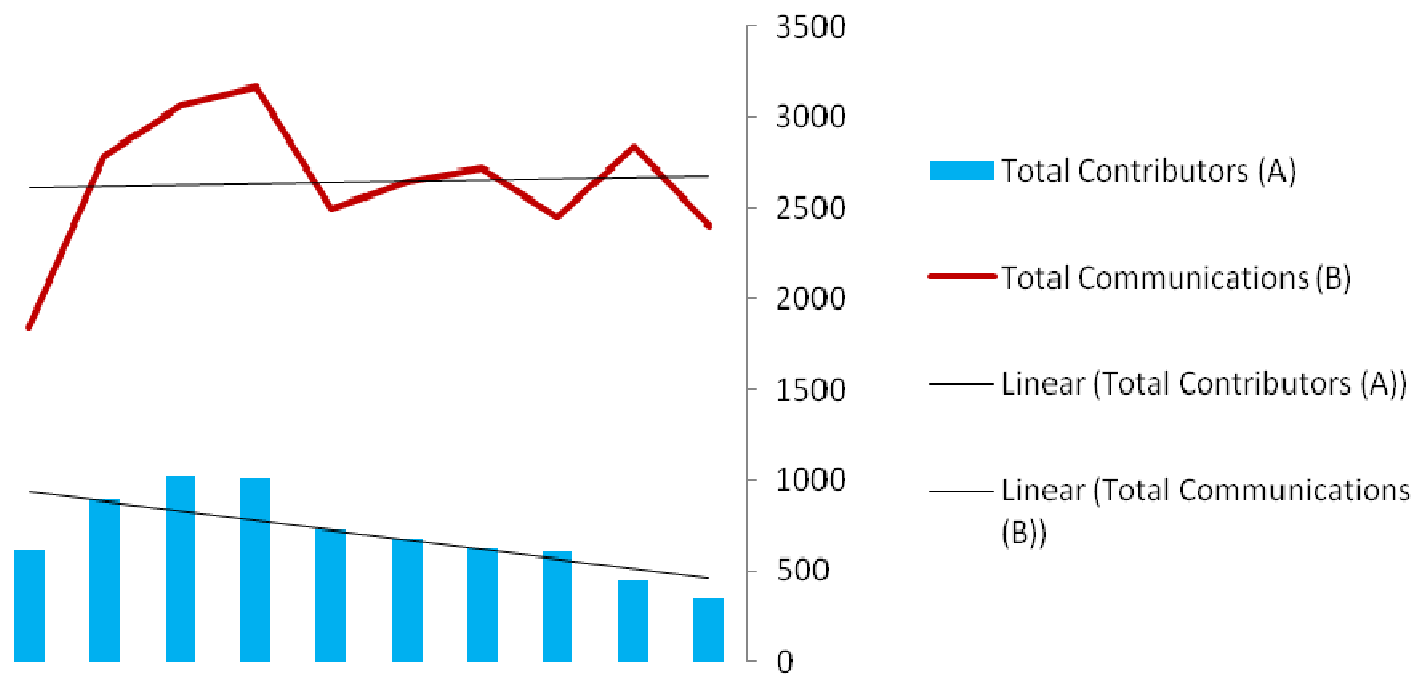


Fig. 4.8: Relation between contributors and communications of *NMLIS* (with linear trendline)

4.3.22 Total Number of Communications with File Attachments

Table 4.23 presents the number of communications during the study period which has files as attachments for sharing of information among forum members. There is total 3738 number of communications which have attachments and categorized according to year-wise as well as month wise for ten years. From the observation of Table 4.23, it has been found that year 2007 have no file attachments from January to August, and total communications with file attachments are least (93 communications, 2.48%) during the study period. The highest number of communications with file attachments (488) has been observed in the year 2013 which shares 13.05% of total communications with file attachments. There is 12.22% file attachments found for the year 2012 followed by the year 2010 with 11.85% file attachment, year 2015 with 10.94% file attachments, year 2014 with 10.67% file attachments, year 2011 with 10.48% file attachments, year 2016 with 10.35% file attachments, year 2008 with 9.97% file attachments, and year 2009 with 7.94% file attachments. In the month wise analysis for ten years, January month have maximum (391 communications) file attachments followed by October (374), August (338), and December (325). The Fig. 4.9 shows the trend of file attachments with communications of *NMLIS* forum. The growing trend of file attachments is shown by linear trendline which has $R^2 = 0.352$.

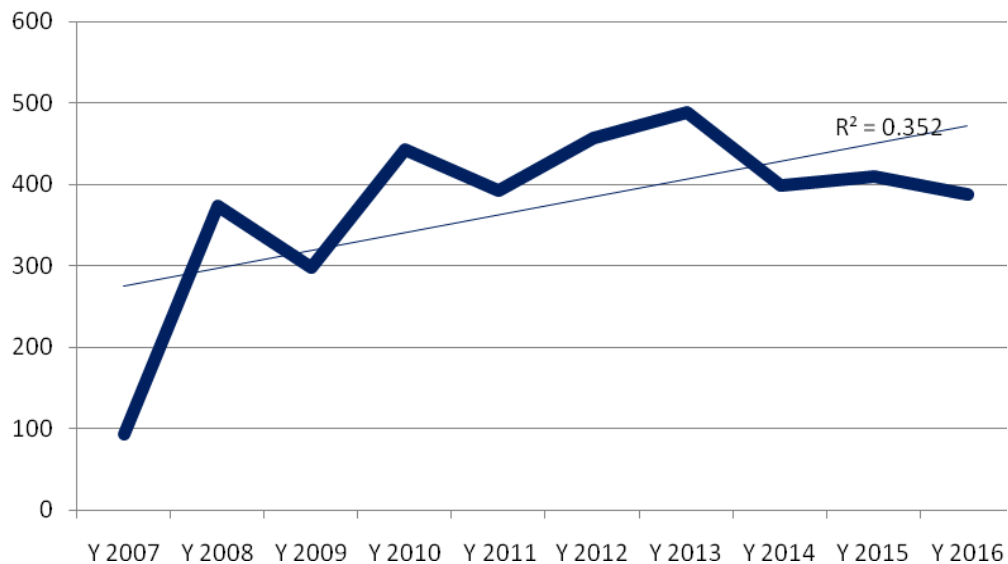


Fig. 4.9: No. of communications with file attachments (with linear trendline)

Table 4.23: Total number of communications with file attachments

Month	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
January	0	55	18	48	47	36	41	47	54	45	391
February	0	46	20	32	23	25	50	27	35	35	293
March	0	24	14	31	34	36	37	29	42	11	258
April	0	40	15	30	34	28	32	34	27	37	277
May	0	71	11	36	41	34	39	20	20	30	302
June	0	50	22	28	28	44	36	29	21	33	291
July	0	19	27	23	42	39	38	36	27	35	286
August	0	12	29	39	35	39	66	47	35	36	338
September	6	7	19	46	24	49	40	38	32	40	301
October	45	12	38	52	28	59	38	41	36	25	374
November	20	19	48	30	25	37	42	22	36	23	302
December	22	18	36	48	31	31	29	29	44	37	325
Total	93	373	297	443	392	457	488	399	409	387	3738
Percentage	2.48	9.97	7.94	11.85	10.48	12.22	13.05	10.67	10.94	10.35	

(Source: Survey Data)

4.3.23 Number of Files with File Attachments

Table 4.24 display the number of files attached to communications having file attachments. There are a total of 5059 files attached to 3738 communications having file attachments. One communication may have one attachment but the number of files may differ. There are many communications which have 4-5 files as an attachment. Generally, the communications related to CON, GIC, LSC, and FDM categories have a number of files attached for sharing the information among forum members. The continuous growth has been observed in the number of files attached to communications of *NMLIS* forum. The highest number of files has been found in the year 2016 (663 files) which shares 13.1% of total files attached in communications followed by the year 2012 with 647 files (12.78%), year 2013 with 645 files (12.74%), and year 2010 with 610 files (12.05%). Further, there are 598 files have been observed in the year 2015 which shares 11.82% of total files followed by the year 2014 with 550 files (10.87%), and year 2011 with 509 files (10.09%). The least number of files (93 files) has been found for the year 2007 which shares 1.83% of total files. Table 4.24 also display the total number of communications which have file attachments and the ratio of file attachments and the number of files have been also calculated. The overall ratio is 1 : 1.35 between total communications with file attachments and the total number of files. The highest ratio of file attachments and the number of files has been calculated for the year 2016 followed by the year 2015, the year 2012, the year 2010 & year 2014, and the year 2013 while the least ratio calculated for the year 2007 and year 2008 which is 1 : 1.

Table 4.24: Total number of files attached to communications

Month	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
January	0	55	18	64	61	48	51	69	74	128	568
February	0	46	20	47	28	40	67	48	49	68	413
March	0	24	14	33	57	55	48	37	60	20	348
April	0	40	15	31	41	44	40	39	45	79	374
May	0	71	11	38	49	43	50	25	22	44	353
June	0	50	34	37	28	60	48	41	34	44	376
July	0	19	39	28	49	56	46	48	32	54	371
August	0	12	32	49	53	51	91	69	56	58	471
September	6	7	29	55	33	71	55	48	48	44	396
October	45	12	48	117	34	81	51	57	53	51	549
November	20	19	62	40	31	47	59	32	52	26	388
December	22	18	49	71	45	51	39	37	73	47	452
Total Files in Attachments (A)	93	373	371	610	509	647	645	550	598	663	5059
Percentage	1.83	7.37	7.33	12.05	10.06	12.78	12.74	10.87	11.82	13.1	---
File Attachments (B)	93	373	297	443	392	457	488	399	409	387	3738
Ratio of (B) : (A)	1 : 1	1 : 1	1 : 1.24	1 : 1.37	1 : 1.29	1 : 1.41	1 : 1.32	1 : 1.37	1 : 1.46	1 : 1.71	1 : 1.35

(Source: Survey Data)

4.3.24 Category of File Types

There is a various number of file types. These file types are nothing but file extensions used in various application programs. In an academic environment, generally, we use common applications software to perform our task. The software uses different file extensions when we want to save the performed work on that software or want to disseminate to others. Microsoft Office, Adobe PDF, Audio/Visual Files, Web pages and other files use different file extensions of formats. The most used file extensions are MS-Word, MS-Excel, MS-Powerpoint, Adobe PDF, Image files (JPG, BMP, TIFF etc.), Audio/Visual files (AVI, MPEG, MP3, MP4, WMP etc.) Web page files (HTML), Compression files (ZIP, RAR etc.) and others. The frequently used 10 file types have been identified which have a maximum probability of communication of communications through email based forum *NMLIS*. During data collection and tabulation, utmost care has been given to identifying the file type and its extent.

Table 4.25 displays the analyzed data of file types communicated in the forum during the study period. From the Table 4.25 and Fig. 4.10, it has been observed that majority of files belong to PDF (2058 files) files which share 40.67% files of total files followed by 1177 image files (23.77%) and 827 MS-Word files (16.34%). There are less number of files observed for MS-Excel (50 files) and MS-Power point (30 files) which shares 0.98% and 0.59% respectively. A total of 38 Zip files (0.75%) and 16 HTML files (0.31%) have been also found during the study. During the study period, only 2 video files have been observed in the forum for information dissemination which is sharing only 0.03% of total files while no files have been observed in audio formats. Surprisingly “Others” category of files have shown 861 files which share 17.02% of total files. The files which were not identifiable as well as beyond the category of chosen file types have been grouped under “Others”. The third major category of files is covered under “Others” file types. On the year-wise observation of Table 4.25, PDF files were dominating most of the time in terms of number while Image files were in second leading position. The most used file types were PDF files, Image files, and MS-Word files which consists 80.29% of total files.

Table 4.25: Category of file types

Year	Type of Files										
	PDF	Image	Excel	Word	PPT	Audio	Video	Others	Zip	HTML	Total
2007	0	0	0	0	0	0	0	93	0	0	93
2008	0	0	0	0	0	0	0	373	0	0	373
2009	150	48	4	60	6	0	0	96	2	5	371
2010	297	113	16	131	5	0	0	40	7	1	610
2011	236	102	6	127	3	0	0	27	8	0	509
2012	263	162	5	177	2	0	1	28	7	2	647
2013	342	137	15	120	1	0	0	27	3	0	645
2014	280	118	1	92	0	0	1	53	3	2	550
2015	294	165	2	62	13	0	0	52	7	3	598
2016	196	332	1	58	0	0	0	72	1	3	663
Total	2058	1177	50	827	30	0	2	861	38	16	5059
Percentage	40.67	23.26	0.98	16.34	0.59	0	0.03	17.02	0.75	0.31	

(Source: Survey Data)

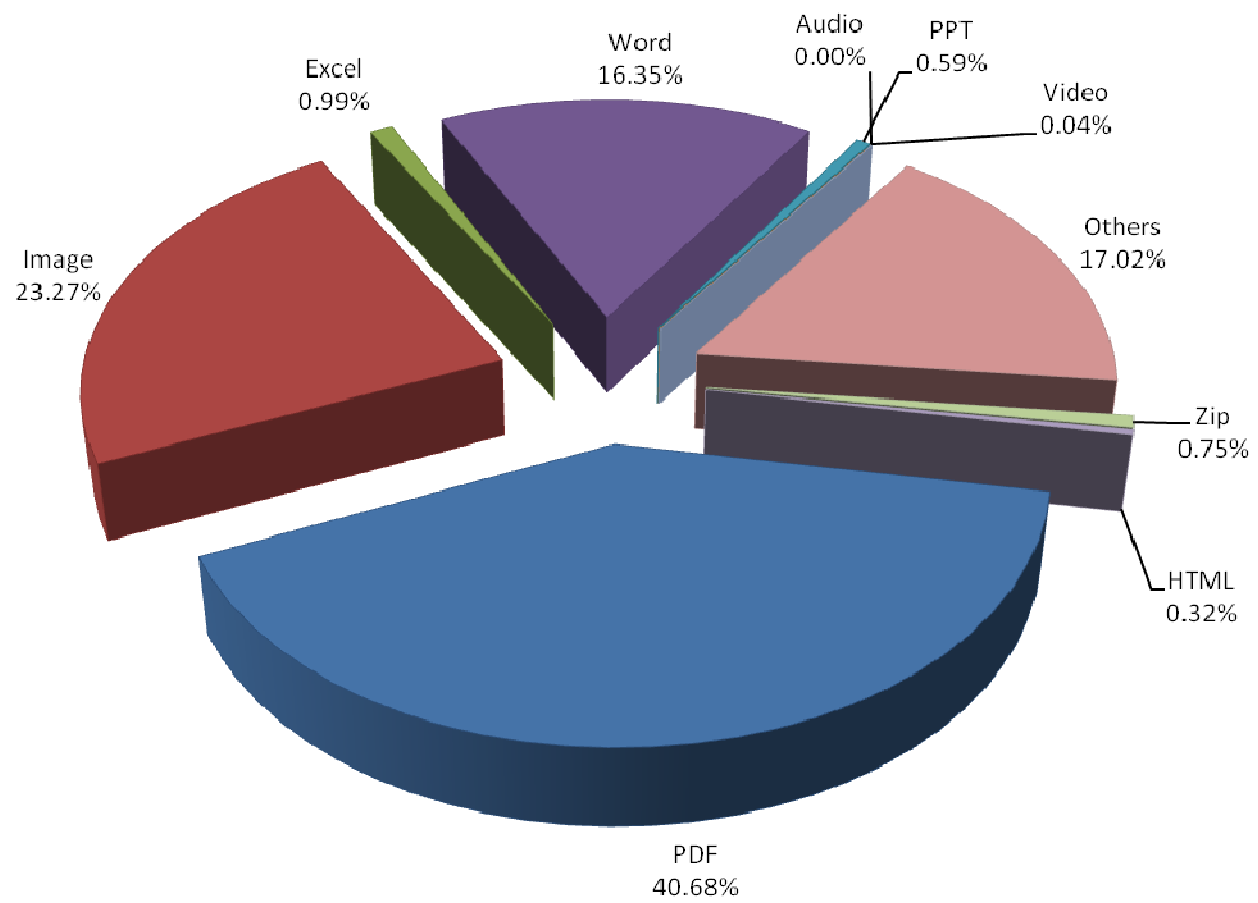


Fig. 4.10: Share of file types in a file attachment

4.3.25 Categorized Number of Communications with Unique Contributors

Table 4.26 represents the number of communications that have file attachments in a categorized way with their unique contributors. The CON category of communications has the highest number of communications (1252 communications) which have file attachments posted by 73 unique contributors. There are 29 unique contributors who posted 79 communications with attachments for FDM category of communications. The GIC category of communications is third in terms of the number of communications (806 communications) having file attachment posted by 91 unique contributors. There are 114 communications with file attachments have been recorded for GRC category posted by 61 unique contributors. The JOB related 399 communications have been posted by 77 unique contributors. The LSC related communications are second in terms of number (950 communications) posted by 198 unique contributors. The number of unique contributors is the highest for LSC related communications followed by GIC related 91 contributors and JOB related 77 contributors. The OBI related communications have been recorded least in terms of number (6 communications) and in terms of unique contributors (6 contributors) while OTH related 132 communications have been posted by 38 unique contributors.

Table 4.26: Categorized communications with files and contributors

Category of Communication	No. of Communications with Attachments	No. of Unique Contributors
CON	1252	73
FDM	79	29
GIC	806	91
GRC	114	61
JOB	399	77
LSC	950	198
OBI	06	06
OTH	132	38
Total	3738	---

(Source: Survey Data)

4.3.26 Prolific Contributors to Communications with File Attachments

a) CON related Contributors

Table 4.27 display top five contributors for CON related communications with the frequency of communications and number of file attachments. On the observation of Table 4.27, it has been found that “Prof. N. Laxman Rao” is the

top contributor with 619 CON related communications having 854 attached files followed by **@nil** (82 communications with 124 files), Sambhaji Patil (32 communications with 54 files), Ravindra Mendhe (30 communications with 48 files), and Rahul Khandare (18 communications with 33 files). The display names of contributors have been mentioned in the Table 4.27 as appeared in the *NMLIS* forum.

Table 4.27: CON related contributors with frequency and files

Rank	Contributor's Name	Frequency of Communications	No. of Files Attached
1	Prof. N. Laxman Rao	619	854
2	** @nil **	82	124
3	Sambhaji Patil	32	54
4	Ravindra Mendhe	30	48
5	Rahul Khandare	18	33

(Source: Survey Data)

b) FDM related Contributors

Table 4.28 display top five contributors for FDM related communications with the frequency of communications and number of file attachments.

Table 4.28: FDM related contributors with frequency and files

Rank	Contributor's Name	Frequency of Communications	No. of Files Attached
1	Prof. N. Laxman Rao	38	57
2	Dr.Margam.Madhusudhan	4	4
3	A. Madhava Rao	2	4
3	Sharma Jitender	2	4
4	shyam sunder	2	3
5	arun kishore	2	2
5	bjagadish1@yahoo.co.in	2	2
5	Dattatraya Kalbande	2	2
5	G Mahesh	2	2
5	Dr.K.R. Mulla	2	2

(Source: Survey Data)

On the observation of Table 4.28, it has been found that “Prof. N. Laxman Rao” is the top contributor with 38 FDM related communications having 57 attached files followed by Dr. Margam Madhusudhan (4 communications with 4 files), A. Madhava Rao and Sharma Jitender (2 communications with 4 files), Shyam

Sunder (2 communications with 3 files), and Arun Kishore, B Jagadish, Dattatraya Kalbande, G Mahesh & Dr. K. R. Mulla (2 communications with 2 files each). On the third rank, two contributors for FDM while on the fifth rank five contributors have been found in the study. The display names of contributors have been mentioned in the Table 4.28 as appeared in the *NMLIS* forum.

c) GIC related Contributors

Table 4.29 display top five contributors for GIC related communications with the frequency of communications and number of file attachments. On the observation of Table 4.29, it has been found that “Prof. N. Laxman Rao” is the top contributor with 379 GIC related communications having 497 attached files followed by ****@nil**** (20 communications with 27 files), Anil Kumar Jharotia (15 communications with 15 files), Rajesh Agavane (12 communications with 20 files), and A. Madhava Rao & B Jagadish (11 communications with 19 files each). There are two contributors on the fifth rank for GIC related communications.

Table 4.29: GIC related contributors with frequency and files

Rank	Contributor’s Name	Frequency of Communications	No. of Files Attached
1	Prof. N. Laxman Rao	379	497
2	** @nil **	20	27
3	anil kumar jharotia	15	15
4	Rajesh Agavane	12	20
5	A. Madhava Rao	11	19
5	bjagadish1@yahoo.co.in	11	19

(Source: Survey Data)

d) GRC related Contributors

Table 4.30 display top five contributors for GRC related communications with the frequency of communications and number of file attachments. On the observation of Table 4.30, it has been observed that “Prof. N. Laxman Rao” is the top contributor with 14 GRC related communications having 26 attached files followed by K. R. Mulla (5 communications with 5 files), ****@nil**** (4 communications with 8 files), A. Madhava Rao (4 communications with 4 files),

and Ravindra Mendhe & Shambhji Patil (3 communications with 5 files each). There are two contributors on the fifth rank for GRC related communications.

Table 4.30: GRC related contributors with frequency and files

Rank	Contributor's Name	Frequency of Communications	No. of Files Attached
1	Prof. N. Laxman Rao	14	26
2	K.R. Mulla	5	5
3	** @nil **	4	8
4	A. Madhava Rao	4	4
5	Ravindra Mendhe	3	5
5	Sambhaji Patil	3	5

(Source: Survey Data)

e) JOB related Contributors

Table 4.31 display top five contributors for JOB related communications with the frequency of communications and number of file attachments.

Table 4.31: JOB related contributors with frequency and files

Rank	Contributor's Name	Frequency of Communications	No. of Files Attached
1	Prof. N. Laxman Rao	200	225
2	gopalakrishnan shanmugam	48	93
3	anil kumar jharotia	12	13
4	rabindra maharana	10	11
5	A. Madhava Rao	8	9

(Source: Survey Data)

On the observation of Table 4.31, it has been found that “Prof. N. Laxman Rao” is the top contributor with 200 JOB related communications having 225 attached files followed by Gopalakrishnan Shanmugam (48 communications with 93 files), Anil Kumar Jharotia (12 communications with 13 files), Rabindra Maharana (10 communications with 11 files), and A. Madhava Rao (8 communications with 9 files). The display names (as appeared in the forum) of contributors have been mentioned in the Table 4.31.

f) LSC related Contributors

Table 4.32 display top five contributors for LSC related communications with the frequency of communications and number of file attachments. On the observation of Table 4.32, it has been found that “Prof. N. Laxman Rao” is the top contributor

to 404 LSC related communications having 493 attached files with them. Pralhad Jadhav is the second highest contributor (80 communications with 84 files) to LSC category of communications followed by **@nil** (43 communications with 55 files), Dr. S. Yadagiri (22 communications with 25 files), B Jagadish (21 communications with 73 files), and Anil Kumar Jharotia (21 communications with 21 files). The display names of contributors have been mentioned in the Table 4.32 as appeared in the *NMLIS* forum.

Table 4.32: LSC related contributors with frequency and files

Rank	Contributor's Name	Frequency of Communications	No. of Files Attached
1	Prof. N. Laxman Rao	404	493
2	Pralhad Jadhav	80	84
3	** @nil **	43	55
4	Dr.S.Yadagiri	22	25
5	bjagadish1@yahoo.co.in	21	73
5	anil kumar jharotia	21	21

(Source: Survey Data)

g) OBI related Contributors

Table 4.33 display top five contributors for OBI related communications with the frequency of communications and number of file attachments. On the observation of Table 4.33, it has been found that “Rajender Alvala” is the top contributor to 1 OBI related communications having 5 attached files with them. Gopikuttan Gopikuttan is the second highest contributor to OBI category of communications (1 communications with 4 files) followed by Prof. N. Laxman Rao (1 communications with 2 files), and Truptee Shah, Manjunath K & Erukonda Rama Reddy (1 communications with 1 files each).

Table 4.33: OBI related contributors with frequency and files

Rank	Contributor's Name	Frequency of Communications	No. of Files Attached
1	Rajender Alvala	1	5
2	gopikuttan gopikuttan	1	4
3	Prof. N. Laxman Rao	1	2
4	Truptee Shah	1	1
4	Manjunath K	1	1
4	Erukonda Rama Reddy	1	1

(Source: Survey Data)

There are three contributors on the fourth rank for OBI related communications. The display names of contributors have been mentioned in the Table 4.33 as appeared in the *NMLIS* forum.

h) OTH related Contributors

Table 4.34 display top five contributors for OTH related communications with the frequency of communications and number of file attachments.

Table 4.34: OTH related contributors with frequency and files

Rank	Contributor's Name	Frequency of Communications	No. of Files Attached
1	Prof. N. Laxman Rao	72	131
2	** @nil **	11	16
3	anil kumar jharotia	3	3
4	Sambhaji Patil	2	5
4	Mohd Hanif	2	5
5	Telangana library Association	2	2
5	subhash khode	2	2

(Source: Survey Data)

On the observation of Table 4.34, it has been found that “Prof. N. Laxman Rao” is the top contributor with 72 OTH related communications having 131 attached files followed by **@nil** (11 communications with 16 files), Anil Kumar Jharotia (3 communications with 3 files), Shambhaji Patil & Mohd Hanif (2 communications with 5 files each), and Telangana Library Association & Subhash Khode (2 communications with 2 files each). There are two contributors on the fourth rank and two on the fifth rank for OTH related communications. The display names of contributors have been mentioned in the Table 4.34 as appeared in the *NMLIS* forum.

4.3.27 List of Contributors with No. of Categorized Communications

Table 4.35a display the list of contributors of *NMLIS* forum with their contribution in the forum during 10 years of time frame. The contributor's, who contributed (posted) minimum 20 communications in 10 year period of study, have been included in the list. So far there are 121 unique contributors including “no authors” to the communications also. During the data collection form *NMLIS* archive, it has been found that some communications does not show any contributor name and so listed under “no author”.

The name of contributors' appeared in the Table 4.35a as they have chosen their display names in the forum. Many of the contributors have used more than one contributors' identity and they have been merged together in the Table 4.35a to show the list of unique contributors to their all communications. The contributor "Prof N. Laxman Rao" used the highest number of display identity during the posting of communications. From the observation of Table 4.35a, it has been found that "Prof. N. Laxman Rao" is the topmost contributor of the *NMLIS* forum with 10, 875 communications. There are total 26, 412 communications contributed in the *NMLIS* forum during 10 years of time frame and out of that 41.17% communications were shared by "Prof. N. Laxman Rao" alone. Further "Pralhad Jadhav" contributed second highest number of communications which shares 14.36% of total communications followed by A. Madhava Rao (762 communications, 2.88%), **@nil** (501 communications, 1.89%), and LIS Professional (257 communications, 0.97%). Out of 121 contributors, only two contributors communicated more than 1000 communications (total 14669 communications) while rest of the 119 contributors contributed below 1000 communications (total 7473 communications) during the study period.

Table 4.35a: List of contributors with the number of categorized communications

SN	Contributor's Name	Category of Communications								Total	%(out of 26, 412)
		CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH		
1	Prof. N Laxman Rao	2014	162	2515	144	2470	3121	54	395	10875	41.174
2	Pralhad Jadhav	26	2	2436	5	27	1222	1	75	3794	14.364
3	A Madhava Rao	22	5	82	11	353	282	0	7	762	2.885
4	** @nil **	132	0	138	45	23	124	0	39	501	1.896
5	LIS Professional	3	0	40	1	132	80	0	1	257	0.973
6	Dimple Patel	22	2	116	0	3	44	0	6	193	0.730
7	anil kumar jharotia	12	0	41	18	42	54	1	12	180	0.681
8	sri priya	2	0	50	0	11	114	0	0	177	0.670
9	Badan Barman	13	1	10	2	37	82	0	0	145	0.548
10	Dr Ramesh C Gaur	51	1	20	1	7	54	3	1	138	0.522
11	Dr. K.R. Mulla	15	2	36	17	7	52	1	0	130	0.492
12	leohyd	17	1	38	0	37	30	0	0	123	0.465
13	Charu Mathur	8	1	36	8	9	53	0	4	119	0.450
14	Dr. Sandeep Bhavsar	11	3	23	2	1	73	1	1	115	0.435
15	Arunachalam Hariharan	59	1	5	3	3	39	1	2	113	0.427
16	Prof D CHANDRAN	28	2	23	32	5	16	4	2	112	0.424
17	Ajay Kamble	16	1	20	6	20	35	1	4	103	0.389

SN	Contributor's Name	Category of Communications								Total	% (out of 26, 412)
		CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH		
18	Prof Pijushkanti Panigrahi	32	1	4	5	0	50	7	1	100	0.378
19	thimmappa naik	4	2	27	0	4	48	0	2	87	0.329
20	ASIAN LIBRARY ASSOCIATION	53	0	7	0	12	14	0	0	86	0.325
21	Dr. J. K. Vijayakumar	15	0	30	0	2	28	0	2	77	0.291
22	A.T. Francis	31	1	8	1	3	29	3	0	76	0.287
23	Vinod Kumar Mishra	7	0	9	1	5	48	0	5	75	0.283
24	mohd hanif	41	0	6	5	14	5	0	3	74	0.280
25	Dr. Pawan Agrawal	10	0	18	3	16	24	0	2	73	0.276
26	Elan Ramesh	9	4	17	8	4	26	0	5	73	0.276
27	Sharma Jitender	32	4	5	1	2	23	1	2	70	0.265
28	Dr. Sambhaji Patil	41	1	9	9	0	7	0	2	69	0.261
29	gopalakrishnan shanmugam	7	0	2	0	53	5	0	0	67	0.253
30	subhash khode	0	0	16	1	2	36	0	12	67	0.253
31	Dr. Mallikarjun Angadi	20	0	6	0	8	32	0	0	66	0.249
32	P.K. Jain	46	0	2	1	2	15	0	0	66	0.249
33	Panneerselvam	25	0	7	1	3	29	0	1	66	0.249
34	Srinivasa K	1	0	21	1	4	36	0	2	65	0.246
35	D.B.Eswara Reddy	20	0	4	8	3	19	5	3	62	0.234

SN	Contributor's Name	Category of Communications								Total	% (out of 26, 412)
		CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH		
36	bjagadish1@yahoo.co.in	2	2	12	0	9	36	0	0	61	0.230
37	Deepak Yadav	36	0	2	0	6	16	0	0	60	0.227
38	Ravindra Mendhe	36	1	0	12	1	10	0	0	60	0.227
39	Dattatraya Kalbande	14	2	16	8	3	15	0	1	59	0.223
40	Muniraju T	0	0	9	1	6	42	0	0	58	0.219
41	Dr.S.Yadagiri	2	0	7	6	2	40	0	0	57	0.215
42	Jagtar Singh	30	0	0	8	0	18	1	0	57	0.215
43	kalilur rahman	4	0	14	3	2	26	1	4	54	0.204
44	Neetu Routela	0	0	3	0	35	14	0	2	54	0.204
45	Manjunath K	7	0	7	7	3	27	1	1	53	0.200
46	surendran cherukodan	9	1	6	2	5	30	0	0	53	0.200
47	Dr. Nabi Hasan	12	2	8	0	17	13	0	0	52	0.196
48	Rahul Khandare	20	1	12	5	0	14	0	0	52	0.196
49	suresh male	6	0	1	15	19	8	2	1	52	0.196
50	G. Krishnan	4	0	14	1	11	21	0	0	51	0.193
51	Christofhar George	1	1	14	1	2	18	0	13	50	0.189
52	Prakasan E.R	0	0	0	2	3	41	0	3	49	0.185
53	Engg-Lib-Forum from India	1	0	21	0	3	18	0	2	45	0.170

SN	Contributor's Name	Category of Communications								Total	% (out of 26, 412)
		CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH		
54	kota ravi	1	0	1	0	1	42	0	0	45	0.170
55	khus brar	22	1	2	2	1	16	0	0	44	0.166
56	Md. Anwarul Islam	1	0	15	2	0	23	1	2	44	0.166
57	srinivas rao	2	0	3	2	2	32	0	3	44	0.166
58	Jayadev P Hiremath	0	0	3	2	0	37	0	1	43	0.162
59	Dr.Tariq Ashraf	9	1	6	4	5	16	0	1	42	0.159
60	Debal Chandra Kar	26	0	0	4	0	10	0	0	40	0.151
61	Dr. V K J Jeevan	1	0	8	0	3	27	0	1	40	0.151
62	Pandurang Konnur	3	0	3	4	2	25	1	1	39	0.147
63	Sukhdev Singh	0	0	7	0	1	28	0	2	38	0.143
64	Praveen Kumar V	1	0	18	0	13	5	0	0	37	0.140
65	RAJESH	1	0	11	4	3	13	0	5	37	0.140
66	chetan sonawane	1	0	11	0	12	11	0	1	36	0.136
67	gopikuttan gopikuttan	9	8	2	1	0	13	2	1	36	0.136
68	Gurpreet singh	2	1	5	0	2	25	0	1	36	0.136
69	rabindra maharana	4	0	5	0	22	4	0	0	35	0.132
70	Shri Ram	19	0	2	1	0	13	0	0	35	0.132
71	Deepak Wadtele	0	0	15	3	10	4	0	2	34	0.128

SN	Contributor's Name	Category of Communications								Total	%
		CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH		
72	Dr.Margam Madhusudhan	4	4	4	4	1	16	1	0	34	0.128
73	Chinmayee Bhangе	1	0	10	0	1	20	0	1	33	0.124
74	Dabas Bharat K	11	0	2	0	7	13	0	0	33	0.124
75	K Sampathachary	2	0	2	3	11	12	2	1	33	0.124
76	Premaraj Mishra	0	0	7	1	3	20	1	1	33	0.124
77	Shihab Illias	0	0	6	0	1	26	0	0	33	0.124
78	Veeresh Hanchinal	9	0	12	0	1	10	0	1	33	0.124
79	skumar_31	25	0	0	0	2	5	0	0	32	0.121
80	veera chamy	10	0	4	0	4	12	0	2	32	0.121
81	Archana Kulkarni	4	0	2	2	16	6	0	1	31	0.117
82	MD MUZAFFAR IQBAL	0	1	7	3	9	7	0	4	31	0.117
83	Rahul Hiremath	0	0	23	0	0	7	0	1	31	0.117
84	sanjay nayak	1	0	5	3	15	6	0	1	31	0.117
85	anand_shukla003	5	4	6	0	4	10	0	0	29	0.109
86	digeswar mahananda	6	0	1	5	13	4	0	0	29	0.109
87	G Mahesh	1	16	0	1	2	9	0	0	29	0.109
88	pandu swamy	0	0	2	1	0	26	0	0	29	0.109
89	Vijayakumara	6	0	5	0	6	11	0	1	29	0.109

SN	Contributor's Name	Category of Communications								Total	%(out of 26, 412)
		CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH		
90	chhavi jain	1	0	7	0	0	19	0	1	28	0.106
91	faizal sl	15	0	2	1	0	10	0	0	28	0.106
92	kaila janardhanreddy	3	1	7	8	0	6	1	1	27	0.102
93	Malatee Padhan	1	0	0	3	21	1	0	1	27	0.102
94	LIJESH TK	0	0	1	0	0	25	0	0	26	0.098
95	nirmal swain	1	0	1	7	0	16	0	1	26	0.098
96	Shiba	1	0	8	0	0	17	0	0	26	0.098
97	shyam sunder	17	3	0	2	1	3	0	0	26	0.098
98	Dr. Nagappa B	11	0	3	4	5	1	0	1	25	0.094
99	Kishor Satpathy	16	0	0	0	3	5	0	1	25	0.094
100	lingaiah vuppala	5	1	1	9	4	3	0	2	25	0.094
101	bala Theresa	15	0	0	1	1	6	1	0	24	0.090
102	kuldeep swami	3	0	4	1	3	7	0	5	23	0.087
103	Priya	0	0	5	0	0	18	0	0	23	0.087
104	Bulu Maharana	3	1	0	3	0	15	0	0	22	0.083
105	Infosoji	9	0	6	0	0	7	0	0	22	0.083
106	Rajesh Singh	14	0	1	2	2	3	0	0	22	0.083
107	rajesh_dodle	3	0	4	3	4	6	0	2	22	0.083

SN	Contributor's Name	Category of Communications								Total	%(out of 26, 412)
		CON	FDM	GIC	GRC	JOB	LSC	OBI	OTH		
108	sudhir jena	0	0	1	2	0	15	2	2	22	0.083
109	Vijay Bhasker Lode	0	0	1	12	5	4	0	0	22	0.083
110	Bhagaji Varshil	1	1	3	0	8	6	0	2	21	0.079
111	Champeswar Mishra	1	0	2	1	5	12	0	0	21	0.079
112	NASAR	1	0	2	0	4	14	0	0	21	0.079
113	praggya pandey	1	0	3	1	8	6	0	2	21	0.079
114	senthil kumar	1	0	5	4	0	11	0	0	21	0.079
115	Suresh D Horakeri	4	0	1	14	1	1	0	0	21	0.079
116	vivek anand jain	2	0	2	3	1	10	2	1	21	0.079
117	yaseen mohammad	0	0	3	0	15	3	0	0	21	0.079
118	Daulat Jotwani	12	0	1	0	3	4	0	0	20	0.075
119	Nihar Patra	2	0	0	2	9	6	0	1	20	0.075
120	no author	3	0	1	3	4	6	0	3	20	0.075
121	shashi bhat	1	0	0	0	0	19	0	0	20	0.075
	Total	3363	250	6263	549	3731	7205	102	679	22142	

(Source: Survey Data)

Table 4.35b: List of top five contributors in each category with their communications

CON	Comm.	FDM	Comm.	GIC	Comm.	GRC	Comm.
Prof. N Laxman Rao	2014	Prof. N Laxman Rao	162	Prof. N Laxman Rao	2515	Prof. N Laxman Rao	144
** @nil **	132	G Mahesh	16	Pralhad Jadhav	2436	** @nil **	45
Arunachalam Hariharan	59	gopikuttan gopikuttan	8	** @nil **	138	Prof D CHANDRAN	32
ASIAN LIBRARY ASSOCIATION	53	A Madhava Rao	5	Dimple Patel	116	anil kumar jharotia	18
Dr Ramesh C Gaur	51	Sharma Jitender	4	A Madhava Rao	82	Dr. K.R. Mulla	17

JOB	Comm.	LSC	Comm.	OBI	Comm.	OTH	Comm.
Prof. N Laxman Rao	2470	Prof. N Laxman Rao	3121	Prof. N Laxman Rao	54	Prof. N Laxman Rao	395
A Madhava Rao	353	Pralhad Jadhav	1222	Prof Pijushkanti Panigrahi	7	Pralhad Jadhav	75
LIS Professional	132	A Madhava Rao	282	D.B.Eswara Reddy	5	** @nil **	39
gopalakrishnan shanmugam	53	** @nil **	124	Prof D CHANDRAN	4	Christofhar George	13
anil kumar jharotia	42	sri priya	114	Dr Ramesh C Gaur & A.T. Francis	3	anil kumar jharotia	12

(Source: Survey Data)

Table 4.35b displays the top five contributors in each category of communications. From the Table 4.35b, it has been observed that Prof. N. Laxman Rao is the most prolific contributor in all categories while Pralhad Jadhav contributed the second highest number of communications in 3 categories namely GIC, LSC, and OTH.

4.3.28 Focus of Communications

Table 4.36: Focus of communications (Source: Survey Data)

Year	Core Categories (CC)				Non-Core Categories (NC)				Total	Total CC	Total NC
	CON	FDM	JOB	LSC	GIC	GRC	OBI	OTH			
2007	222	18	207	783	446	70	8	88	1842	1230	612
%	(12.1)	(1.0)	(11.2)	(42.5)	(24.2)	(3.8)	(0.4)	(4.8)	(100.0)	(66.8)	(33.2)
2008	340	31	422	1232	553	159	9	35	2781	2025	756
%	(12.2)	(1.1)	(15.2)	(44.3)	(19.9)	(5.7)	(0.3)	(1.3)	(100.0)	(72.8)	(27.2)
2009	369	54	577	1181	590	177	34	85	3067	2181	886
%	(12.0)	(1.8)	(18.8)	(38.5)	(19.2)	(5.8)	(1.1)	(2.8)	(100.0)	(71.1)	(28.9)
2010	371	30	634	1138	668	198	8	119	3166	2173	993
%	(11.7)	(0.9)	(20.0)	(35.9)	(21.1)	(6.3)	(0.3)	(3.8)	(100.0)	(68.6)	(31.4)
2011	413	41	498	877	469	89	12	95	2494	1829	665
%	(16.6)	(1.6)	(20.0)	(35.2)	(18.8)	(3.6)	(0.5)	(3.8)	(100.0)	(73.3)	(26.7)
2012	461	35	453	942	614	74	6	62	2647	1891	756
%	(17.4)	(1.3)	(17.1)	(35.6)	(23.2)	(2.8)	(0.2)	(2.3)	(100.0)	(71.4)	(28.6)
2013	391	38	490	936	714	91	13	47	2720	1855	865
%	(14.4)	(1.4)	(18.0)	(34.4)	(26.3)	(3.3)	(0.5)	(1.7)	(100.0)	(68.2)	(31.8)
2014	494	19	367	580	870	70	25	27	2452	1460	992
%	(20.1)	(0.8)	(15.0)	(23.7)	(35.5)	(2.9)	(1.0)	(1.1)	(100.0)	(59.5)	(40.5)
2015	432	15	558	575	1120	32	5	103	2840	1580	1260
%	(15.2)	(0.5)	(19.6)	(20.2)	(39.4)	(1.1)	(0.2)	(3.6)	(100.0)	(55.6)	(44.4)
2016	450	21	243	581	874	43	17	174	2403	1295	1108
%	(18.7)	(0.9)	(10.1)	(24.2)	(36.4)	(1.8)	(0.7)	(7.2)	(100.0)	(53.9)	(46.1)
Total	3943	302	4449	8825	6918	1003	137	835	26412	17519	8893
%	(14.9)	(1.1)	(16.8)	(33.4)	(26.2)	(3.8)	(0.5)	(3.2)	(100.0)	(66.3)	(33.7)

Table 4.36 displays the data denoting focus of communications during the period of study. Percentages of communications have been calculated year-wise. The communications have been divided into eight categories of communications (Shukla & Dawngliana, 2017; Dawngliana & Shukla, 2018; Shukla & Dawngliana, 2018). These eight categories have been further grouped as “Core Categories” and “Non-Core Categories” based on the nature of eight categories. The “Core Categories” (CC) covers communications that are directly relation with the professional development of library professionals while “Non-Core Categories” (NC) covers communications which do not have any relation with the professional development of library professionals. The Core Categories (CC) includes CON, FDM, JOB, and LSC categories of communications and Non-Core Categories (NC) includes GIC, GRC, OBI, and OTH categories of communications. The focus of communications has been analyzed in the Table 4.36 and inference that “Core Categories” related communications communicated more (66.3%) than “Non-Core Categories” related communications (33.7%). On the observation of Table 4.36, it has been found that share of communications of “Core Categories” is declining while the share of “Non-Core Categories” related communications is increasing. The “Core Categories” of communications are referred as “Professional Communications” while “Non-Core Categories” referred as “Non-Professional Communications” in the present study.

4.3.29 Communications: Trend Pattern

Table 4.37 represents the trend pattern of categorized communications during the study period.

Table 4.37: Communications trend pattern

Category	Y'07	Y'08	Y'09	Y'10	Y'11	Y'12	Y'13	Y'14	Y'15	Y'16	Total
LSC	1	1	1	1	1	1	1	2	2	2	1
GIC	2	2	2	2	3	2	2	1	1	1	2
JOB	4	3	3	3	2	4	3	4	3	4	3
CON	3	4	4	4	4	3	4	3	4	3	4
GRC	6	5	5	5	6	5	5	5	6	6	5
OTH	5	6	6	6	5	6	6	6	5	5	6
FDM	7	7	7	7	7	7	7	8	7	7	7
OBI	8	8	8	8	8	8	8	7	8	8	8

(Source: Survey Data)

From the analysis of Table 4.37, it has been found that LSC related communications have been communicated highly and ranked first 7 times during the study period while GIC related communications ranked second 6 times and ranked first 3 times. Similarly, the ranking has been given to each category year-wise. The categories FDM and OBI constantly ranked 7th and 8th respectively during study period except in the year 2014 where they exchanged the ranking. Overall trend pattern of communications have been calculated and found that LSC category is ranked first followed by GIC (2nd rank), JOB (3rd rank), CON (4th rank), GRC (5th rank), OTH (6th rank), FDM (7th rank), and OBI (8th rank).

4.3.30 Hypotheses Testing

The study proposed two hypotheses which were tested using SPSS software (version 20.0). The hypotheses of the study were:

Hypothesis 1:

H_0 : There is no statistically significant relationship between the increase of library professionals' communication and time period of the online forum.

H_1 : There is statistically significant relationship between the increase of library professionals' communication and time period of the online forum.

Hypothesis 2:

H_0 : There is no statistically significant relationship between the increase of professional communications and time period of the online forum.

H_1 : There is statistically significant relationship between the increase of professional communications and time period of the online forum.

Testing of Hypothesis 1:

H_0 : There is no statistically significant relationship between the increase of library professionals' communication and time period of the online forum.

H_1 : There is statistically significant relationship between the increase of library professionals' communication and time period of the online forum.

Table 4.38: Total communications – year-wise

Year	Y'07	Y'08	Y'09	Y'10	Y'11	Y'12	Y'13	Y'14	Y'15	Y'16
Total Comm.	1842	2781	3067	3166	2494	2647	2720	2452	2840	2403

Table 4.38 represents the total number of communications communicated in *NMLIS* forum during the study period and arranged year-wise to show the increase of communications during the time period. For knowing the growth of communications with the time period, Pearson Correlation has been calculated between time period and number of communications.

Table 4.39: Correlation between time and communications

		Communications
Time Period	Pearson Correlation	.059
	Sig. (1-tailed)	.436
	N	10

Table 4.39 denotes the result of Pearson Correlation between time period and the number of communications and found that there is an insignificant weak correlation between time period and the number of communications (since $p > 0.05$). Thus null hypothesis (H_0) is accepted.

Further, to study the progression of the total communications during time period, Linear Trend analysis has been done using SPSS and found that R^2 is very low (0.003) which denotes that data is not good fit with linear trendline (as shown in Fig. 4.11) and $b_1 = 7.285$ (as shown in Table 4.40) which denotes poor growth of communications during the time period. Thus null hypothesis (H_0) is accepted.

Table 4.40: Trend analysis of time and communications

Model Summary and Parameter Estimates							
Dependent Variable: Total Communications							
Equation	Model Summary					Parameter Estimates	
	R Square	F	df1	df2	Sig.	Constant	b1
Linear	0.003	0.028	1	8	0.872	-12012.3	7.285
The independent variable is Year.							

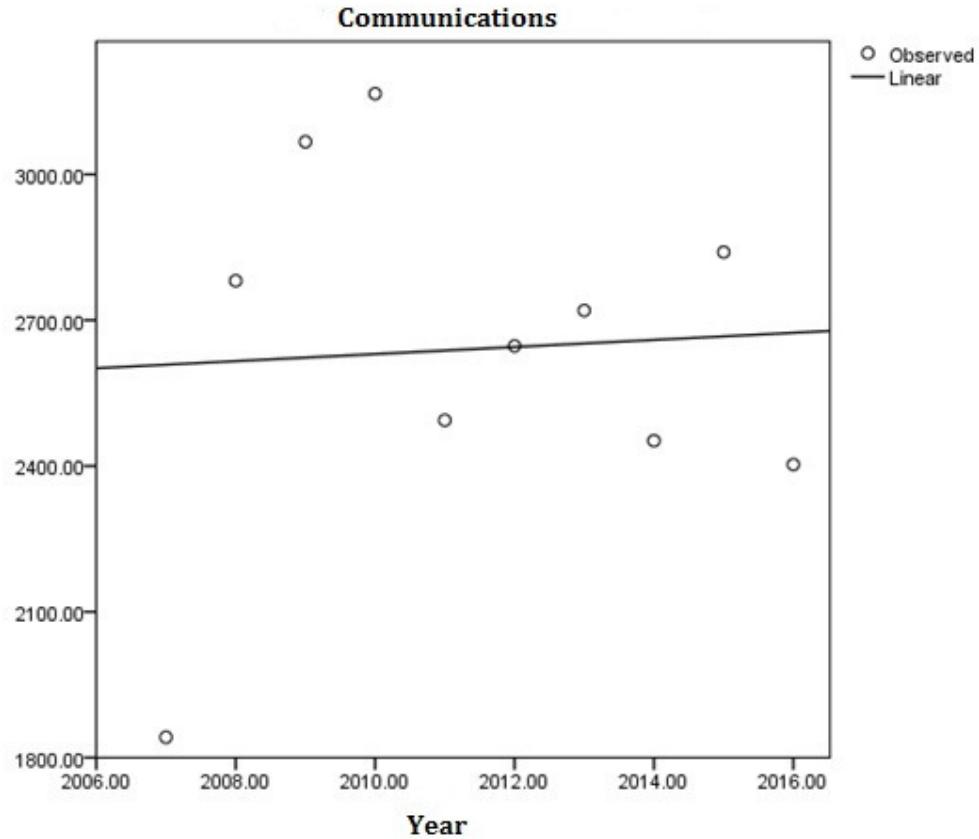


Fig. 4.11: Linear trendline between time and no. of communications

Testing of Hypothesis 2:

H_0 : There is no statistically significant relationship between the increase of professional communications and time period of the online forum.

H_1 : There is statistically significant relationship between the increase of professional communications and time period of the online forum.

Table 4.41: Professional (CC) and non-professional (NC) communications

Category	Y'07	Y'08	Y'09	Y'10	Y'11	Y'12	Y'13	Y'14	Y'15	Y'16	Total
CC	66.8	72.8	71.1	68.6	73.3	71.4	68.2	59.5	55.6	53.9	66.3
NC	33.2	27.2	28.9	31.4	26.7	28.6	31.8	40.5	44.4	46.1	33.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 4.41 represents the total number of professional and non-professional communications during the time period. For knowing the increase in professional communications with the time period, Pearson Correlation has been calculated between

time period and number of professional communications (Table 4.42) and non-professional communications (Table 4.44) separately.

Table 4.42: Correlation between time and professional communications

		CC
Time	Pearson Correlation	-.374
	Sig. (1-tailed)	.143
	N	10

Table 4.42 denotes the result of Pearson Correlation between time period and the number of professional communications and found that there is a moderately negative correlation between time period and the number of professional communications and an insignificant increase (since $p > 0.05$) in the professional communications. Thus null hypothesis (H_0) is accepted. Further, to study the progression of the professional communications during the time period, Linear Trend analysis has been done using SPSS and found that R^2 is very low (0.14) which denotes that data is not good fit with linear trendline (as shown in Fig. 4.12) and $b_1 = -42.588$ (as shown in Table 4.43) which denotes negative growth of professional communications during the time period. Thus, null hypothesis (H_0) is accepted.

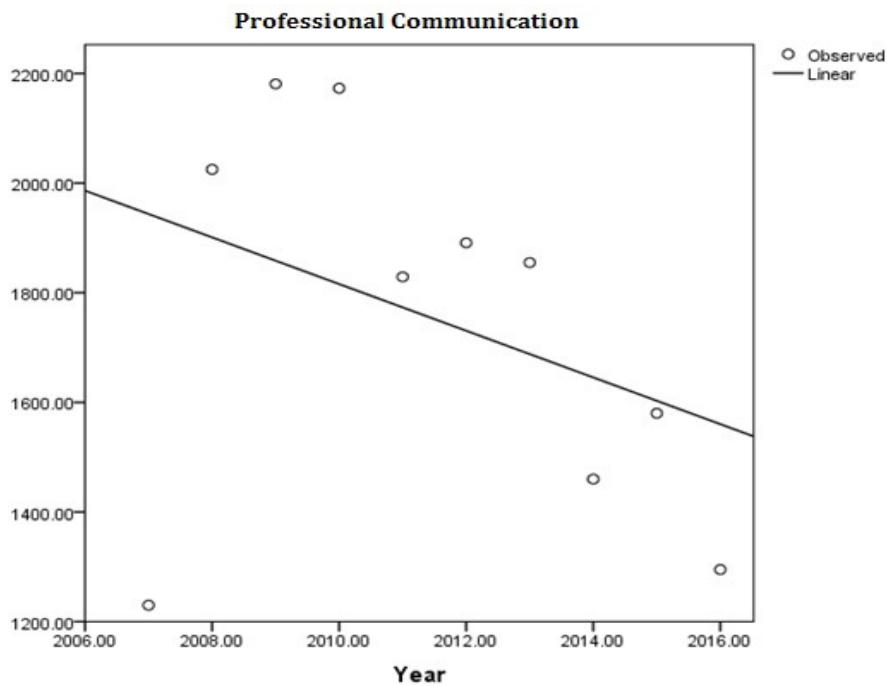


Fig. 4.12: Linear trendline between time and professional communications

Table 4.43: Trend analysis of time and professional communications

Model Summary and Parameter Estimates							
Dependent Variable: CC							
Equation	Model Summary			Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1
Linear	0.14	1.304	1	8	0.287	87417.42	-42.588
The independent variable is Year.							

Table 4.44 denotes the result of Pearson Correlation between time period and the number of non-professional communications and found that there is a significant correlation between time period and the number of non-professional communications and significant increase observed in the non-professional communications. Thus null hypothesis (H_0) is accepted. Further, to study the progression of the non-professional communications during the time period, Linear Trend analysis has been done using SPSS and found that R^2 is low (0.555) which denotes that data is not good fit with linear trendline (as shown in Fig. 4.13) and $b_1 = 49.873$ (as shown in Table 4.45) which denotes growth of non-professional communications during the time period. Thus null hypothesis (H_0) is accepted.

Table 4.44: Correlation between time and non-professional communications

		NC
Year	Pearson Correlation	.745**
	Sig. (1-tailed)	.007
	N	10
**. Correlation is significant at the 0.01 level (1-tailed).		

Table 4.45: Trend analysis of time and non-professional communications

Model Summary and Parameter Estimates							
Dependent Variable: NC							
Equation	Model Summary			Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1
Linear	0.555	9.968	1	8	0.013	-99429.7	49.873
The independent variable is Year.							

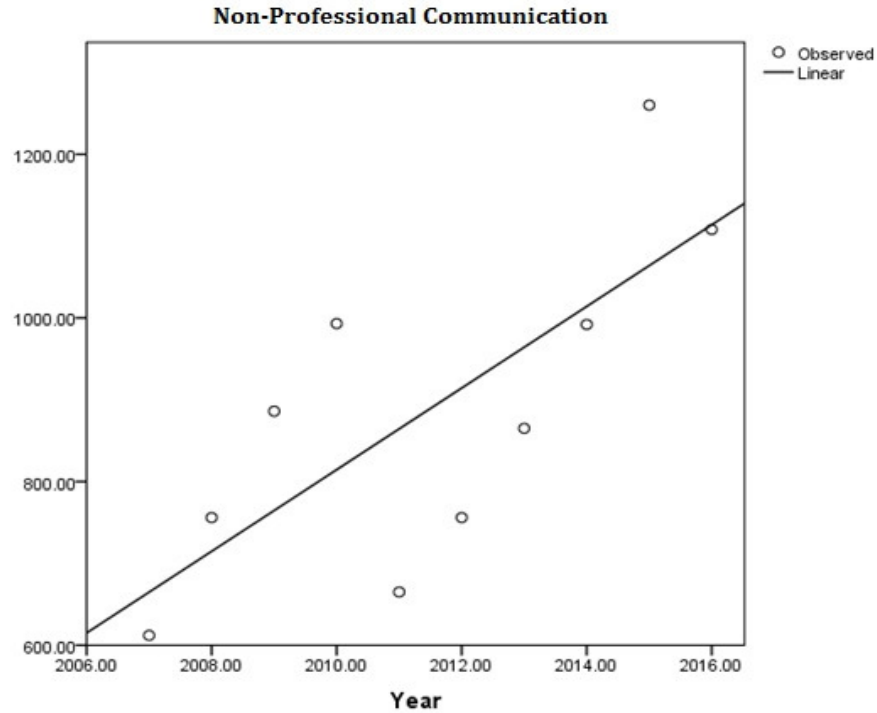


Fig. 4.13: Linear trendline between time and non-professional communications

4.4 RESEARCH FINDINGS

The analysis of the data collected through survey and observation have revealed a number of findings on the content analysis of *NMLIS* forum which are as follows:

- 4.4.1 The study has been conducted for 10 years (2007-2016) and total 26412 communications have been recorded during the time period.
- 4.4.2 A pilot study has been conducted on the research topic (with 2403 communications) and eight categories of communications (see Table 4.1) have been identified which are: CON, FDM, GIC, GRC, JOB, LSC, OBI, and OTH. Further “Core Categories” and “Non-Core Categories” have been found based on the nature of communications.
- 4.4.3 Core Categories (CC) includes four identified categories of communications namely CON, FDM, JOB, and LSC. The Core Categories related communications are having a direct relationship to the professional development of library professionals.

- 4.4.4 Non-Core Categories (NC) includes four identified categories of communications namely GIC, GRC, OBI and OTH which does not have any relation to the professional development of library professionals.
- 4.4.5 The highest number of communications has been recorded in the year 2010 (with 3166 messages) which share 11.98% of total communications while the least number of communications has been recorded in the year 2007 (with 1842 messages) which share 6.97% of total communications.
- 4.4.6 The annual average of communications for ten years is 2641.2 communications per year while the average of total communications for twelve months is 2201 communications per month.
- 4.4.7 A total of 1842 communications recorded in the year 2007 and the highest number of communications found for LSC category (783 messages) which shares 42.5% of total communications in the year 2007.
- 4.4.8 A total of 2781 communications recorded in the year 2008 and the highest number of communications found for LSC category (1232 messages) which shares 44.3% of total communications in the year 2008.
- 4.4.9 There are 3067 communications recorded in the year 2009 and majority (38.5%) of the communications belongs to LSC category.
- 4.4.10 There are 3166 communications carried over in *NMLIS* forum in the year 2010 and found that the highest number of communications belongs to LSC category (35.94%).
- 4.4.11 A total of 2494 communications recorded in the year 2011 and out of that 877 communications have been identified as LSC communications which is the highest (35.16%) contributing category of communications in the year 2011.
- 4.4.12 A total of 2647 communications carried over in *NMLIS* forum during the year 2012. The highest number of communications has been observed for LSC category (942 messages) which shares 35.58% of total communications in the year 2012.
- 4.4.13 There are 2720 communications posted during the year 2013 and LSC category (with 936 communications) has been identified as the highest (34.41%) contributing category of communications.
- 4.4.14 There are 2452 communications carried over in *NMLIS* forum during the year 2014 and the highest number of communications contributing category is GIC

- (with 870 messages) which shares 35.48% of total communications in the year 2014.
- 4.4.15 A total of 2840 communications posted during the year 2015 in *NMLIS* forum and GIC category has been found as the highest contributing category (with 1120 messages) which shares 39.43% of total communications in the year 2015.
- 4.4.16 A total of 2403 communications recorded in the year 2016 in *NMLIS* forum and 874 communications have been identified as GIC related communications which is the highest (36.37%) contributing category in the year 2016.
- 4.4.17 There are 3943 communications related to CON category during ten year period and the highest number of CON related communications has been observed in the year 2014 (494 messages) which shares 12.52% of total CON related communications.
- 4.4.18 Faculty Development Communications (FDM) related 302 communications have been recorded during ten year time period, and the highest number of FDM related communications has been observed in the year 2009 (with 54 messages) which shares 17.88% of total FDM related communications.
- 4.4.19 There are 6918 communications recorded for GIC category during the time period of ten years and GIC related communications have shown the tremendous growth from the year 2007 to 2016 in terms of the number of communications. The highest number of GIC related communications has been observed in the year 2015 (1120 messages) which shares 16.18% of total GIC related communications.
- 4.4.20 There are 1003 communications recorded for GRC category and the highest number of GRC related communications has been observed in the year 2010 (198 messages) which shares 19.74% of total GRC related communications. The increase has been observed in the GRC related communications during festivals and New Year.
- 4.4.21 There are 4449 communications related to JOB category during the study period and growth has been observed in JOB related communications during the study period. Further, the highest number of JOB related communications recorded for the year 2010 (634 messages) which shares 14.25% of total JOB related communications.
- 4.4.22 There are 8825 communications recorded for LSC category. This category contributed the highest number of communications during the study period. The

highest number of LSC related communications has been observed in the year 2008 (1232 messages) which shares 13.96% of total LSC related communications.

- 4.4.23 There are 137 communications related to OBI category. This category contributed the least number of communications during the study period. The maximum number of OBI related communications has been observed in the year 2009 (34 messages) which shares 24.81% of total OBI related communications.
- 4.4.24 There are 835 communications related to OTH category during the study period and the highest number of OTH related communications has been observed in the year 2016 (174 messages) which shares 20.83% of total OTH related communications.
- 4.4.25 The progression of eight categories have been analyzed using Linear Trendline and found negative progression (growth) for LSC category, JOB category, GRC category, and FDM category while progression have been observed for GIC category, CON category, and OTH category. There is non-significant progression observed for OBI category.
- 4.4.26 The Linear Forecast Trendline has been analyzed for 2 periods based on ten-year data and found non-significant progression ($b_1=7.285$) in future.
- 4.4.27 The contributors and contributed communications ratio has been calculated and found the highest ratio (1:6.73) in the year 2016. From the analysis, it has been found that the number of contributors is continuously decreasing while number of communications is increasing thus resulting in the increasing ratio from 2007 to 2016 between contributors and communications.
- 4.4.28 There is total 3738 number of communications (14.15% of total communications) which have file attachments during the study period. The highest number of communications with file attachments (488) has been observed in the year 2013 which shares 13.05% of total communications with file attachments. The growing trend of file attachments has been analyzed in the study by using Linear Trendline ($R^2 = 0.352$).
- 4.4.29 There are a total of 5059 files attached to 3738 communications having file attachments. The continuous growth has been observed in the number of files attached to communications of *NMLIS* forum and the highest number of files has been found in the year 2016 (663 files) which shares 13.1% of total files attached in communications.

- 4.4.30 The frequently used file types have been identified in the *NMLIS* forum. In the study, it has been observed that majority of files belong to PDF (2058 files) which shares 40.67% of total files followed by image files (1177 files, 23.77%) and MS-Word files (827, 16.34%).
- 4.4.31 The analysis has been done to assess the number of communications that have file attachments in a categorized way with their unique contributors and found that CON related communications have the highest number of communications (1252) which have file attachments posted by 73 unique contributors. The LSC related communications are second in terms of number (950 communications) posted by 198 unique contributors.
- 4.4.32 The number of unique contributors is the highest for LSC related communications followed by GIC (91 contributors), and JOB (77 contributors).
- 4.4.33 The analysis has been done to know the most prolific contributor in terms of number of categorical communications that have file attachments during the study period and found that “Prof. N. Laxman Rao” is the most prolific contributor for CON (619), FDM (38), GIC (379), GRC (14), JOB (200), LSC (404), and OTH (72) related communications. The OBI related communications have not been analyzed due to only one contribution made by all the contributors.
- 4.4.34 From the collected data, analysis has been conducted to generate the list of contributors to *NMLIS* forum with their communications during 10 years of time frame. Based on the filtering of communications (minimum 20 communications), there are 121 unique contributors. The contributor “Prof. N. Laxman Rao” used the highest number of display identity during the posting of communications. In the study, it has been found that “Prof. N. Laxman Rao” is the topmost contributor in the *NMLIS* forum (10, 875 messages) which shares 41.17% of total communications followed by Pralhad Jadhav (3794 messages, 14.36%), A. Madhava Rao (762 messages, 2.88%), **@nil** (501 messages, 1.89%), and LIS Professional (257 messages, 0.97%).
- 4.4.35 Out of 121 contributors, only two contributors communicated more than 1000 communications (total 14669 messages) while rest of the contributors (119) contributed below 1000 communications (total 7473 messages) during the study period.
- 4.4.36 Prof. N. Laxman Rao contributed the highest number of communications in all categories. The share of his contributions is 41.17% while categorically 51% in

CON, 53% in FDM, 36% in GIC, 14% in GRC, 55% in JOB, 35% in LSC, 39% in OBI, and 47% in OTH.

- 4.4.37 The focus of communications during the study period has been analyzed and eight categories of communications have been grouped as “Core Categories (CC)” and “Non-Core Categories (NC)”. The “Core Categories” (CC) have a direct relationship with the professional development of library professionals while “Non-Core Categories” (NC) does not have any relation.
- 4.4.38 The “Core Categories” included CON, FDM, JOB, and LSC categories of communications while “Non-Core Categories” (NC) included GIC, GRC, OBI, and OTH categories of communications.
- 4.4.39 The focus of communications has been analyzed and found that “Core Categories” related communications (66.3%) communicated more than “Non-Core Categories” related communications (33.7%).
- 4.4.40 The overall trend pattern of communications have been calculated and found that LSC category is ranked first followed by GIC (2nd rank), JOB (3rd rank), CON (4th rank), GRC (5th rank), OTH (6th rank), FDM (7th rank), and OBI (8th rank).
- 4.4.41 Hypothesis 1 has been tested using Pearson Correlation and Linear Trend Analysis and in the result, null hypotheses (H_0) was accepted ($p=0.059$).
- 4.4.42 Hypothesis 2 has been tested using Pearson Correlation and Linear Trend Analysis and in the result, null hypotheses (H_0) was accepted ($p= -0.374$).

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CHAPTER - V

CONCLUSION

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5.1 INTRODUCTION

Library and Information Science (LIS) profession is well known for information collection, organization, and dissemination to users at the right time. Due to advent of computer technology especially information and communication technology, the process of information collection, organization and dissemination have been changed totally. Communication systems have a greater role in information dissemination. Library professionals are very much involved in acquisition, processing, organization, and dissemination of information using information and communication technology enabled devices. Simultaneously, library professionals communicate the necessary information related to their profession among professionals also. This communication relates to their professional growth as well as normal discussion. After the introduction of the Internet in public life of every individual, it becomes the popular, reliable, and fast medium of communication. *New Millennium LIS Professionals (NMLIS)* forum is also one of the media of communication among library professionals. The information content communicated in the forum relates to some kind of subject especially professional development related content or general information content. The types of information content and a huge quantity of information shared in the *NMLIS* forum motivated us to conduct a well-prepared study on content analysis of professionals' communication carried over online forum *NMLIS*.

The study made an attempt to analyze the contents of communications carried over online forum *New Millennium LIS Professionals*. The objectives laid down for the study were as follows:

- a) To examine the extent of communications among LIS professionals' over the online forum.
- b) To examine the categories and their extent of communications among LIS professionals' over the online forum.
- c) To examine the trend and growth of communications among LIS professionals' over the online forum.
- d) To determine the major focus of LIS Professionals' as demonstrated by their communications over the online forum.
- e) To find out the communication pattern and extent of communications done over the online forum.

- f) To find out the prolific contributors to communications among LIS professionals' over the online forum.

On the basis of objectives of the study, following hypotheses were drawn to assess the research objectives:

Hypothesis 1:

H₀: There is no statistically significant relationship between the increase of library professionals' communication and time period of the online forum.

H₁: There is statistically significant relationship between the increase of library professionals' communication and time period of the online forum.

Hypothesis 2:

H₀: There is no statistically significant relationship between the increase of professional communications and time period of the online forum.

H₁: There is statistically significant relationship between the increase of professional communications and time period of the online forum.

The study was limited to content analysis of communications of LIS professionals carried over the online forum *NMLIS* during 2007 to 2016. The survey and observation methods of research have been used to conduct this study. The primary data were collected from the Yahoo! Group *NMLIS* and tabulated and processed in MS-Excel. The study analyzed the data in terms of total scholarly communications, categorized scholarly communications, file attachments, the progression of scholarly communications, categorized file types, the extent of contributors and their contributions, prolific contributors, the focus of scholarly communications, and trend pattern of scholarly communications.

5.2 RESEARCH OBJECTIVES

The following section presents a discussion on the laid objectives:

5.2.1 Extent of communications among LIS professionals' over the online forum.

One of the objectives of the study was to examine the extent of communications among LIS professionals' over the online forum. For the purpose, communications carried over online forum were recorded and found that there are 26,412 communications over a period of time (cf. section 4.3.1). On an average, there are 2641 communications per year. The communications of *NMLIS* forum have been analyzed year-wise also. Based on the year-wise analysis, the highest number of communications has been found in the year 2010 (11.98% messages) followed by the year 2009 (11.61% messages). The least number of communications has been found in the year 2007 (6.97% messages). Table 4.2 (cf. Chapter 4) displays the total extent of communications carried over *NMLIS* forum and year-wise communications have been displayed in Table 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, and 4.12.

5.2.2 Categories and their extent of communications among LIS professionals' over the online forum.

One of the objectives of the study was to examine the categories and their extent of communications among LIS professionals' over the online forum. For the purpose, a pilot study has been conducted based on 2403 communications carried over during 2016. The study identified eight categories of communications (cf. section 4.2) which are CON, FDM, GRC, GIC, JOB, LSC, OBI, and OTH. Further, four categories (CON, FDM, JOB, and LSC) have been grouped under "Core Categories" and rests of the four categories (GRC, GIC, OBI, and OTH) have been grouped under "Non-Core Categories". The communications related to "Core Categories" have a direct relationship with the professional development of library professionals (cf. Table 4.36 & Table 4.44) and thus referred as "professional communications" whereas "Non-Core Categories" have no relationship with the professional development. From the study, it has been an inference that communications related to "Core Categories" covered the major portion of communications (cf. Table 4.36).

Moreover, categorized communications have been also analyzed and displayed in Tables 4.13 – 4.20. Table 5.1 show at a glance of the extent of categorized communications carried over online forum during the time period.

Table 5.1: Categorized extent of communications

Category	Total	%	Category	Total	%
CON	3943	14.928	GIC	6918	26.192
FDM	302	1.143	GRC	1003	3.797
JOB	4449	16.844	OBI	137	0.518
LSC	8825	33.412	OTH	835	3.161
Total	17519	66.33	Total	8893	33.67

The study found that LSC related communications are highest in terms of the number followed by GIC and JOB. The “Core Categories” have communicated more than 2/3rd of the total communications while “Non-Core Categories” related communications have been observed 1/3rd out of total communications. The second highest number of communications (26.192%) found for GIC related communications which give an impression that forum runs a significant number of communications beyond professional discussions also. Greetings Communications (GRC) have the share of 3.79% during the time period and observed the increase in the number of communications during the month of October, December and January every year due to festivals of Dussehara, Diwali, Christmas, and New Year. The study recorded the sad demise of fellow professionals during the time period and recorded under OBI communications (cf. Annexure - III).

5.2.3 Trend and growth of communications among LIS professionals’ over the online forum.

One of the objectives of the study was to examine the trend and growth of communications among LIS professionals' over the online forum. For the purpose, trend analysis has been done based on the communications data recorded during the study period. The categorical trend and growth, as well as cumulative trend and growth of communications, have been analyzed (cf. section 4.3.20). The communications related to LSC, JOB, GRC, and FDM categories have shown negative trend of progression and declined growth of communications (cf. Table 4.21; Fig. 4.5, & 4.6) during the time period while communications related to GIC, CON, and OTH categories have shown positive trend of progression and increased growth in number of communications (cf. Table 4.21; Fig. 4.5 & 4.6). The communications related to OBI category has shown non-significant progression and increased growth in the number of communications during the time period. The trend and growth of total communications during the time

period have been calculated with forecasting and concluded that statistically there is non-significant trend and growth in number of communications. The Linear Forecast Trendline has shown non-significant progression in the number of communications (cf. Fig. 4.7) in future also. The trend pattern of categorized communications (cf. Section 4.3.29) has been analyzed and concluded that trend of LSC category related communications was highest followed by GIC and JOB related communications (cf. Table 4.37). This trend indicates that online professional forums communicate more professional oriented communications than others.

5.2.4 Major focus of LIS Professionals' as demonstrated by their communications over the online forum.

One of the objectives of the study was to determine the major focus of LIS Professionals' as demonstrated from their communications over the online forum. For the purpose, the focus of LIS Professionals' communications has been analyzed (cf. Table 4.36) from the total number of communications. The "Core Categories" (CC) of communications have been considered as the important one which shares professional development related communications over the forum and from the analysis it has been an inference that 2/3rd number of communications belonged to "Core Categories". This resulted that LIS Professionals' major focus is professional development and besides that, they communicates general nature of information content. The section 4.3.28 of the dissertation has an elaborative discussion over this objective. The study also found declining growth in "Core Categories" related communications over the period of time, and thus increasing trend has been observed towards "Non-Core Categories" and especially GIC related communications. Among the "Core Categories" of communications, LSC category has the major focus of communications in the forum.

5.2.5 Communication pattern and extent of communications done over the online forum.

One of the objectives of the study was to find out the communication pattern and extent of the contribution of communications done over the online forum. For the purpose, communication pattern has been analyzed (cf. Section 4.3.29) and found the overall pattern and trend of communications over the period of time. According to the trend pattern, LSC is the highest communicated category followed by GIC, JOB, CON, GRC,

OTH, FDM and OBI (cf. Table 4.37). With regard to extent of the contribution of communications (cf. section 4.3.21), month-wise unique contributors have been identified but the study has not analyzed year-wise unique contributors. The calculated ratio of total contributors and total communications is 1:3.76 (cf. Table 4.22). The study also found that the number of contributors is decreasing over the period of time while the number of communications is increasing (cf. Fig. 4.8).

The list of contributors with their number of contributions in the categorized manner has been recorded (cf. Table 4.35a & 4.35b) which included 121 unique contributors which have communicated at least 20 communications during the study period (cf. section 4.3.27). Prof. N. Laxman Rao shared more than 41% of communications alone in the forum while Pralhad Jadhav has shared more than 14% communications during the study period. More than 55% communications of the forum have been communicated by two contributors only. Moreover, the number of communications with file attachments have been calculated (cf. section 4.3.22) and found that more than 14% communications have file attachments and growing trend of communications with file attachment has been inference (cf. Fig. 4.9).

The number of files in communications with file attachments has been calculated also and found that 3738 communications have attached 5059 files with the ratio of 1:1.35. The growing trend has been observed in the number of files during the period of study (cf. Table 4.24). The category of file types studied based on 5059 files and found that more than 40% file attachment belongs to PDF, 23% belongs to Image files, and 16% belongs to MS-Word (cf. Fig. 4.10). This gives clear idea that professionals' communicate or share information content using PDF, image, and MS-Word based format and these file formats are prevalent in information sharing/dissemination among forum members.

5.2.6 Prolific contributors to communications among LIS professionals' over the online forum.

One of the objectives of the study was to find out the prolific contributors to communications among LIS professionals' over the online forum. For the purpose, list of prolific contributors for categorized and overall communications have been generated

(cf. Section 4.3.25, 4.3.26, and 4.3.27). The unique contributors for categorized communications that have file attachments have been generated and found that CON related communications are the highest in number followed by LSC while unique contributors are the highest for LSC related communications than CON or other categories (cf. section 4.3.25). Further, prolific contributors for categorized communications with file attachments have been calculated and found that Prof. N. Laxman Rao is the most prolific contributor to seven categories of communications (cf. section 4.3.26). Prolific contributors for overall communications have been analyzed (cf. section 4.3.27) and found that Prof. N. Laxman Rao is the most prolific contributor in *NMLIS* forum followed by Pralhad Jadhav, A. Madhava Rao, ****@nil****, and LIS Professional (cf. Table 4.35a). The top five prolific contributors for each category of communication (cf. Table 4.35b) also declared Prof. N. Laxman Rao as the most prolific contributor of the forum. The study also recorded total contributors (with using many display names/ identities in the forum) with their contributions of communications in the *NMLIS* forum (cf. Annexure – II).

5.3 RESEARCH HYPOTHESES

The following section presents a discussion on the laid hypotheses:

5.3.1 Hypothesis 1

***H₀*: There is no statistically significant relationship between the increase of library professionals' communication and time period of the online forum.**

***H₁*: There is statistically significant relationship between the increase of library professionals' communication and time period of the online forum.**

At the beginning of the study, it was conceived that Library Professionals communicate in the *NMLIS* forum but over the period of time there will be no increase in the number of communications. In terms of the number of communications, *NMLIS* forum has shown growth but a decline in the number of communications observed also. After testing of the Hypothesis 1 (cf. section 4.3.30), the null hypothesis is accepted using Pearson Correlation and Linear Trend Analysis and concluded that library professionals'

communication over online forum has not increased with the time period of the online forum.

5.3.2 Hypothesis 2

H_0 : There is no statistically significant relationship between the increase of professional communications and time period of the online forum.

H_1 : There is statistically significant relationship between the increase of professional communications and time period of the online forum.

Professional communications relate to “Core Categories” of communications carried over the online forum. The assumption made that forum is meant exclusively for library professionals’ and thus there was equal chance to communicate the number of professional communications as well as non-professional communications among forum members during the period of time. In this regard, the Hypothesis 2 was tested using Pearson Correlation and Linear Trend Analysis (cf. section 4.3.30), and found that null hypothesis is accepted which concluded that professional communications among library professionals’ over online forum are not increasing significantly over the time period.

5.4 SOME OBSERVATIONS AND EXPERIENCES

The world is not perfect and hence same is true also for the studies in the area of content analysis of online professional forum. There is a number of online professional forums available on various platforms and thus selection of professional forum for the study was one of the difficult jobs. Some professional forums meant for small user groups while some meant for the specific domain. Another side, consistency in running the professional forum is also important which makes forum live and thus interesting for research purposes. *New Millennium LIS Professionals (NMLIS)* forum is one of them which is running consistently since 1999 with more than 3000 professional members and more than 200 communications per month. The primary data collection from the archived records of the professional forum is another challenging task. There are 26,412 communications carried over the online forum during study period and acquisition of these communications was really a big challenge for the researcher. Tabulation of such a huge number of communications manually is an eye paining job. Further coding/

classification of communications are really a brainstorming work for the researcher. Every time you have to be alert during coding of communications and apply logic to codify/ classify under the proper category. There were many fanciful subjects of communications have been received which makes difficult the classification task. Some of the contributors used many identities/display names in the forum which made the task difficult to identify the unique contributor during analysis. Many contributors used full names and after sometime used forename or surname only which made the task difficult. Messages without subject were also found which propelled to make a new category “Other Communications (OTH)” for un-identified communications. Generating the list of unique contributors with their contributions is a time-consuming and really very difficult job. From start to an end of the study, I learned a lot and enjoyed the work and difficulties whatever came in the way.

5.5 FINAL OUTCOME

The study was aimed to analyze the contents of communications carried over online forum *New Millennium LIS Professionals (NMLIS)*. For analyzing the contents of communications carried over an online forum, the study has focused on codifying the contents of communications. The study has contributed to Library and Information Science including content analysis with its findings. One of the important outcomes of this study has been the identification of eight (8) *Categories of Communications* for professional forums of Library Science. The *Core Categories (CC)* and *Non-Core Categories (NC)* are another research outcome of the study. The formulas to calculate *Degree of Effectiveness* and *Level of Effectiveness* for Core Contents and Non-Core Contents of professional forums are another outcome of the study but published as a journal article and not the part of the dissertation.

Professional communications are growing in terms of number but statistically the growth is non-significant. Communications related to “Core Categories” are much communicated but decreasing trend observed due to the increase of “Non-Core Categories” related communications which leads to decreasing trend of professional communications over the period of time. The significant growth observed for “Non-Core Categories” related communications which is not a good sign for professional forums in future. More than 50% of the forum members are message contributors (1556) while

rests are silent observers (Pujar et al., 2003). Prof. N. Laxman Rao is the founder of *NMLIS* forum, so it is obvious for him to maintain the liveliness of *NMLIS* forum and in this regard, he shared more than 41% communication and known as the “top prolific contributor” of the forum. The *NMLIS* forum maintained its consistency in terms of regularity of message posting and in terms of an average number of communications per month. After the launch of Facebook and Whatsapp, it is very much difficult and challenging task to run such kind of professional forums in any domain.

Library Science Communications (LSC) are still the highly communicated category in the *NMLIS* forum which made the forum useful but increasing trend of General Information Communications (GIC) may make forum worthless in near future. Forum administrator has to control the situation and make the forum live for future endeavor so that LIS professionals can make use of it for their self-development and LIS profession's development.

5.6 SUGGESTIONS

Based on the analysis, observation, and experience related to study, following are some important suggestions to improve upon the *NMLIS* forum and professionals' members:

5.6.1 Suggestions for LIS Professionals

- a) LIS Professionals' should use one and unique identity / display name for communication in the forum.
- b) LIS Professionals' should mention clear cut and precise subject in the communications for faster retrieval of the content as well as saving the time of forum members.
- c) LIS Professionals' should avoid the posting of same communication many times. Before posting, they should check and verify the information posted in the forum last few days.
- d) LIS Professionals' should maintain the decorum of forum. It is subject specific forum and only “Core Categories” related communications should be communicated in the forum. Since the “Non-Core Categories” related communications are increasing and unnecessarily filling-up the inbox of forum members which may distract the forum members.

- e) Master Degree level and Bachelor Degree level LIS students should be informed to become the member of such forums and should participate actively for personal as well as professional development.

5.6.2 Suggestions for Forum Administrator/ Moderator

- a) *NMLIS* forum administrator should promote the LIS Professionals to use one and unique identity / display name for communication in the forum.
- b) Forum administrator, if possible, should make the subject of communications precise.
- c) Forum administrator should restrict/ block/ filter the posting of duplicate communications in the forum. Forum administrator has to play the very active role to avoid message redundancy.
- d) Forum administrator should promote only “Core Categories” related communications in the forum. Since the “Non-Core Categories” related communications are increasing and unnecessarily filling-up the inbox of forum members which may lead to the distraction of the forum members in future.
- e) Forum administrator should divide the responsibility of forum to some more forum members for filtering of redundant communications, for making the subject precise, for posting of “Core Categories” related communications etc.
- f) Forum administrator should request to LIS departments to motivate their Master and Bachelor students as well as research scholars to join the forum for professional as well as personal development. Similarly request should be made also to Librarians and their library staff to join the forum.

5.6.3 Suggestions for LIS Students & Research Scholars

- a) LIS students of Master level and Bachelor level as well as research scholars of LIS field should join the forum to get the latest and updated information from forum.
- b) LIS students and research scholars should take part in the discussions of forum which clarifies their subject doubts and get the practical implications of theoretical aspects of LIS courses.

- c) LIS students and research scholars should communicate more with other forum members to get the help in their field as well as build up the professional and personal relation with some forum members.
- d) LIS students and research scholars can ask their information requirement in terms of journal articles, if any, from forum members. This will increase the resource sharing among LIS Professionals.

5.7 SCOPE OF FURTHER RESEARCH

The content analysis study is an open area of research. The present study was an attempt to analyze contents of communications of an online professional forum. However, a study is warranted to look into the comparative study of professional forums available on various online platforms. With the advent of many advanced and handy technologies, a research is required in this area to analyze the professional forums run using these technologies. Based on the *Categories of Communications* for the professional forum, many other studies may be conducted which has the potential for further research. The study found *Core Categories* and *Non-Core Categories* which also have a lot of potentials to carry out the similar study with many other professional forums and their usability.

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ANNEXURE

Annexure – I: Sample Data Sheet – Partial (October, 2007)

SN	MSG No.	Subject of Communication	Code	Contributor	Attachment	No. of Files
1	7862	PROF.K. A ISAAC COMMEMORATION LECTURE, 2007	LSC	gopikuttan gopikuttan		
2	7863	Databases	LSC	Priya		
3	7864	Fwd: SciDev.Net Weekly Update: 24 September - 1 October 2007	GIC	Prof. N. Laxman Rao		
4	7865	Fwd: [INDIA-LIS] National Seminar - PSGIM - reg.	CON	Prof. N. Laxman Rao	YES	1
5	7866	Fwd: IASLIC TRIENNIAL ELECTION 2008 – 2010 =20?=-	LSC	Prof. N. Laxman Rao		
6	7867	Fwd: [LIS-Forum] National Workshop on Koha	CON	Prof. N. Laxman Rao	YES	1
7	7868	Fwd: [LIS-Forum] About International Journal of Internet Science	LSC	Prof. N. Laxman Rao	YES	1
8	7869	IASLIC TRIENNIAL ELECTION 2008 – 2010	LSC	Pijushkanti Panigrahi		
9	7870	Beautiful Libraries	LSC	Smita Chandra		
10	7871	Request for article from Indian J Physiol Pharmacol	LSC	Brijesh Sukumaran		
11	7872	maths journals pl.	LSC	sushma --		
12	7873	One Day Seminar	CON	Veeresh Hanchinal	YES	1
13	7874	My New Contact Details	GIC	tariq22@gmail.com		
14	7875	Free e-books on Electronic Concept:	LSC	sri priya		
15	7876	Fwd: University Libraries to play major role in consortium's mass digitization project	LSC	Prof. N. Laxman Rao		
16	7877	Fwd: [INDIA-LIS] Fwd: National Workshop on Application of GenIsisWeb at IITM-K	CON	Prof. N. Laxman Rao	YES	1
17	7878	Fwd: [INDIA-LIS] National Seminar, PSG Institute of Management, Coimbatore, February 1 & 2, 2008	CON	Prof. N. Laxman Rao	YES	1
18	7879	Fwd: Re: [LIS-Forum] list of indian univeresities	GIC	Prof. N. Laxman Rao	YES	1
19	7880	Engineering, Science & Computing Directories	GIC	Muniraj. T		
20	7881	OECD Health Data 2007	GIC	sri priya		
21	7882	Special Lecture for Health Science Librarians on 06.10.2007 at RGUHS, Karnataka	LSC	thimmappa03		

SN	MSG No.	Subject of Communication	Code	Contributor	Attachment	No. of Files
22	7883	Request article	LSC	sri priya		
23	7884	Vacancy at Jhalwar Medical College	JOB	Muniraj. T		
24	7885	refresher course for colege librarians, asst librarians of unviersities and lecturers in LIS	FDM	Prof. N. Laxman Rao		
25	7886	BookYards.com! : Free e-books	LSC	sri priya		
26	7887	Re:maths journals pl.	LSC	kalilur rahman	YES	1
27	7888	Fwd: [ERIL-L] APA Invites You to Participate in a Cognitive Science Survey	GIC	leohyd		
28	7889	Fwd: [ERIL-L] New METRO Job Magnet Posting: Electronic Resources Librarian (New York Institute of Technology)	JOB	leohyd		
29	7890	Fwd: [ERIL-L] ACM a la carte subscriptions for Libraries	LSC	leohyd		
30	7891	Fwd: [ERIL-L] ER&L Projects Wiki on Publisher Preservation Issues	GIC	leohyd		
31	7892	Fwd: [ERIL-L] Job Announcement -- Associate University Librarian	JOB	leohyd		
32	7893	Fwd: [ERIL-L] JOB POSTING: Grinnell College Libraries - Data Services Librarian	JOB	leohyd		
33	7894	Fwd: [ERIL-L] Job posting, Serials and Electronic Resources Catalog Librarian, Tulane University	JOB	leohyd		
34	7895	Textbook Revolution!: web's source for free educational materials	GIC	sri priya		
35	7896	Fwd: SciDev.Net Weekly Update: 1 - 8 October 2007	GIC	Prof. N. Laxman Rao		
36	7897	How the Open Source Movement Has Changed Education: 10 Success Stories	GIC	Muniraj. T		
37	7898	[nmlis] Re:maths journals pl.	LSC	sri priya		
38	7899	ALSD Lecture -- 12th October 2007	LSC	Dimple Patel		
39	7900	Fwd: Re: [LIS-Forum] OPAC in Indian languages.	LSC	Prof. N. Laxman Rao		
40	7901	Fwd: [LIS-Forum] Looking for LibraryScience Graduates/Post-Graduates for 1 Month project	JOB	Prof. N. Laxman Rao	YES	1
41	7902	Fwd: [LIS-Forum] vacancy for the post of librarian in delhi	JOB	Prof. N. Laxman Rao	YES	1

SN	MSG No.	Subject of Communication	Code	Contributor	Attachment	No. of Files
42	7903	Fwd: [LIS-Forum] A post for Librarian	JOB	Prof. N. Laxman Rao	YES	1
43	7904	Fwd: [LIS-Forum] Engineering E-journal Search Engine (EESE)	LSC	Prof. N. Laxman Rao	YES	1
44	7905	Fwd: [LIS-Forum] BookYards.com! : Free e-books	LSC	Prof. N. Laxman Rao		
45	7906	Fwd: [LIS-Forum] Vacancy at Jhalwar Medical College	JOB	Prof. N. Laxman Rao	YES	1
46	7907	Fwd: [LIS-Forum] How the Open Source Movement Has Changed Education: 10 Success Stories	GIC	Prof. N. Laxman Rao		
47	7908	Fwd: [LIS-Forum] Documentation cum assistant librarian in Nagalnad University.	JOB	Prof. N. Laxman Rao	YES	1
48	7909	Ashok Jambhekar Memorial Lecture on 16th November 2007	LSC	Sharma Jitender	YES	1
49	7910	Online information system for health records	LSC	praveenkumar veeramalla		
50	7911	Fwd: [LIS-Forum] a post of Information Officer in DU	JOB	Prof. N. Laxman Rao	YES	1
51	7912	free indexing,tagging tools for desktop & online	LSC	praveenkumar veeramalla		
52	7913	Sophia Scholarship year 2007 9th Annual Scholarship Awards for medical and Eng.students	GIC	sri priya		
53	7914	Need Help: Free e-books	LSC	Dinesh Kr. Arya		
54	7915	Online information system for health records	LSC	praveenkumar veeramalla		
55	7916	free indexing,tagging tools for desktop & online	LSC	praveenkumar veeramalla		
56	7917	Fwd: [LIS-Forum] Does anyone care for libraries? - article in THE HINDU	LSC	Prof. N. Laxman Rao	YES	1
57	7918	Contents of new issue of Journal of Marketing and Communication	LSC	Sharma Jitender		
58	7919	free online dictionaries	LSC	Shihab I		
59	7920	Reminder: ALSD Lecture -- 12th October 2007	LSC	Dimple Patel		
60	7921	Request for Paper	LSC	nandeesh nandu		
61	7922	Fwd: [LIS-Forum] A Reader post in Jammu University	JOB	Prof. N. Laxman Rao	YES	1
62	7923	Fwd: [LIS-Forum] Top 10 Largest Databases in the World	LSC	Prof. N. Laxman Rao		

Annexure – II: List of Contributors with Number of Contributions

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123	leohyd	57	DrSYadagiri
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70	Pawan Agrawal	45	kota ravi
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7 zafar lib
7 KP SINGH
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7 lok nath
7 prabhu s
7 A Srinu
7 Anurudh

7 Charu
7 Jhasa
7 Vijay
7 shiva
6 geetanjali amrutkar
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6 praveen veerabomma
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1 trushna dora
1 umesh sharma
1 venkateshwar
1 vilas jadhav
1 Ajay kamble
1 Anoop Singh
1 Aparna Mule
1 Archita M M
1 Ashok Kumar
1 Atanu garai
1 Bhojaraju G
1 Bunny Baker
1 Chhavi jain
1 D K Pradhan
1 Damo dharan
1 Devarai R S
1 Gadepalli A
1 Gautam bahl
1 Harish sati
1 Kanagaraj M
1 MK Prasanna

1 Nidhi Setia
1 Pandu swamy
1 Prabhakar G
1 Pradilaliga
1 Rajasnchari
1 Rakesh bhoi
1 Ramesh Gaur
1 Ravi Uyyala
1 Ravinandhan
1 Rupesh Gaur
1 SAVITHRY tk
1 SUSRI PADHI
1 Shankar Jha
1 Singh padma
1 Soji Mathew
1 Sreeragi RG
1 Subhashkhod
1 Suresh Male
1 Susant Dhal
1 Swapna Goud
1 VENUS GOODY
1 Varalaanand
1 Veera chamy
1 Vivek Yadav
1 adarsh bala
1 anilsagar67
1 anugupta160
1 bkthawkar07
1 cnbhushanam
1 dineshgadge
1 gautam bahl

1 gsaravanane
1 intekhabsms
1 jainmukta80
1 jeetusept12
1 kadali24 26
1 kolasarvani
1 kuldeep lis
1 kumarkkutty
1 madhu madhu
1 mamta joshi
1 mandha 2009
1 nanna email
1 p sarasvadi
1 pradeep1957
1 raghu ashok
1 rajasnchari
1 rama murthy
1 rameshcgaur
1 raviisai 80
1 richa gupta
1 samsamrober
1 shekhar sri
1 surjya rath
1 venusgoody1
1 vimla BISHT
1 viral navik
1 Anjoosbabu
1 Arun Kumar
1 Bkdubeybhu
1 Jawed Iqba
1 Jockim Raj

1 Kamal Negi
1 Kumar Boya
1 Mkprasanna
1 Mmt Mishra
1 Nihal Alam
1 ON Chaubey
1 Prem Kumar
1 Rahul Mali
1 Rinivasa K
1 S D Parmar
1 Sapan Shah
1 Sunil Kaul
1 V K Thomas
1 abbas khan
1 alagappanu
1 anga muthu
1 atul bhatt
1 b suresh b
1 baban more
1 barby jhon
1 bjagadish1
1 dixa gupta
1 jane Evans
1 jerry arun
1 jyoti 2829
1 k s dinesh
1 koti reddy
1 ksr vithal
1 laxman rao
1 m sanjeeva
1 megharaj p

1 mkbabu svu
1 nandan v78
1 pawan kuma
1 puram giri
1 rajan babu
1 rangashrik
1 sasi kumar
1 shaji john
1 sudha rani
1 swaindk 69
1 usha isola
1 vivek more
1 yuga priya
1 Aarumugam
1 Anahita Z
1 Gawandesn
1 Hariharan
1 Huzaiifa M
1 Jeb Gorge
1 Kalyani K
1 Laxmanrao
1 M Sandhya
1 Mmtmishra
1 Mrskmanna
1 Muralidar
1 Nageshwar
1 Padma Rao
1 Reddy S S
1 Selvanata
1 Srinivasa
1 Tara Danu

1 ajay sahu
1 angroshma
1 anil fun l
1 anisdacca
1 anjaiah m
1 chary pen
1 deva mlis
1 eva del09
1 harshsati
1 hg geetha
1 jaya appa
1 kshema sp
1 lotus5673
1 mohd hani
1 nikking20
1 nsnegi001
1 payalsh04
1 prai 2006
1 prem bhoi
1 rajashree
1 saami m81
1 sari 0179
1 selvanata
1 swapna vs
1 vke sevan
1 ysraonitr
1 Abhishek
1 Ali Khan
1 Bhoo Jal
1 Chandran
1 Dr Swain

1	Kumara B	1	Chandru
1	Manish K	1	DrBRavi
1	Mendeley	1	DrTariq
1	Merabalu	1	JASIM S
1	Mythreyi	1	Jawahar
1	NagaBabu	1	Padma P
1	Nagesh p	1	Parveen
1	R C Gaur	1	Praggya
1	Rikeylib	1	Priya S
1	Rupender	1	Ravi Ch
1	SANKAR P	1	Sheerin
1	TT Patil	1	Sneha R
1	Vgavgani	1	Ssr ssr
1	Vijaya B	1	Susanta
1	Zuniaorg	1	Vahideh
1	ali raza	1	anu 073
1	balu mer	1	anu 074
1	dsnaik81	1	bhdas59
1	faizal s	1	drdckar
1	jp covai	1	frnds33
1	naglaxma	1	icbandi
1	nik king	1	majju15
1	pry rani	1	pk jain
1	rajeswar	1	ssr ssr
1	shri ram	1	tshitut
1	shyam ud	1	Anil G
1	sri hari	1	Aparna
1	tariqmai	1	Hannah
1	ullas kg	1	Jumm c
1	Aliraza	1	Laxman
1	Arockia	1	MEESAM

1 Madhav
1 Mukesh
1 Nandan
1 RaghuB
1 SANJAY
1 SURESH
1 Shoona
1 Shyama
1 Suri R
1 b arun
1 gbapug
1 kaberi
1 ramesh
1 sarayu
1 Beena
1 DNATH
1 Dipak
1 Manas
1 Medha

1 Mohan
1 Neera
1 Scour
1 Sunil
1 Ullas
1 ketan
1 mrkdo
1 raina
1 BAPI
1 JOSU
1 Sasi
1 Shah
1 Tara
1 Vilu
1 Anu
1 Ram
1 SCh
1 Sch

Annexure – III: Famous LIS Professionals Demised during Study Period

The names of demised persons were obtained from Obituary Communications (OBI) communicated during the study period. The list includes LIS professionals as well as other persons whose names were clearly mentioned in the OBI communications.

SN	Name of LIS Professional	Designation/ Affiliation	Month & Year of Demise
1.	Dr. Dipankar Nag	General Secretary, IASLIC	April, 2007
2.	Saheb Singh Verma	Ex-Librarian & Chief Minister, UT of Delhi	June, 2007
3.	Prof. Prabir Roy Chowdhury	Professor, DLIS, Jadavpur University	August, 2007
4.	Prof. A. B. George	---	August, 2007
5.	Dr. Vengan	---	January, 2008
6.	Mrs. K Kalaiselvi	Chief Librarian, VIT	April, 2008
7.	Mrs. Renuka	Research Scholar, DLIS, Osmania University	April, 2008
8.	Dr. Gayatri Mahapatra	Reader, Utkal University	April, 2009
9.	Mr. Sivasubramanian	Librarian, Karnataka	June, 2009
10.	Dr. Kamalavijayan	---	August, 2009
11.	Prof. P. N. Kaula	Professor & Librarian, BHU, Varanasi	August, 2009
12.	Y. S. Rajasekhar Reddy	Chief Minister of Andhra Pradesh	September, 2009
13.	Mr. S. Srinivas	Librarian, ICRISAT	November, 2009
14.	Prof. V. Vishwa Mohan*	DLIS, Osmania University, Hyderabad	January, 2010
15.	Shri V. L. Kalyane	Information Scientist	June, 2010
16.	Prof. Arvind Tikekar	Professor, DLIS, Univ. of Mumbai	October, 2010
17.	Dr. Padma Upadhya	---	January, 2011
18.	Dr. K. Doraswamy	Deputy Librarian, Bangalore University	March, 2011
19.	Prof. Kamaiah	SK University	July, 2011
20.	Prof. S. R. Ijari	Professor, DLIS, Karnatak University, Dharwad	September, 2011
21.	Prof. N. Guruswamy Naidu	Professor, DLIS, Sri Venkateswara University, Tirupati	September, 2011
22.	Mr. H. M. K. Moodgal	Deputy Librarian, JNU	November, 2011
23.	Dr. Bidhan Chandra Biswas	Associate Professor, DLIS, University of Kalyani	November, 2011
24.	Prof. T. Viswanathan	Former Director, INSDOC	June, 2012
25.	G. Kumarappa	National Library, Kolkata	June, 2012

SN	Name of LIS Professional	Designation/ Affiliation	Month & Year of Demise
26.	Prof. K. Siva Reddy	Professor, DLIS, Andhra University	September, 2012
27.	Shri Subir Sen	---	January, 2013
28.	Prof. M. A. Gopinath	Professor, DRTC, Bangalore	February, 2013
29.	Atul Chitnis	Founder of FOSS.in	June, 2013
30.	Dr. M. B. Konnur	----	June, 2013
31.	Prof. Emeritus F. W. Lancaster	Professor, University of Illinois, Urbana	September, 2013
32.	Dr. Harish Chandra	Librarian of IIT, Madras	June, 2014
33.	Mr. Ramchandra Potdar	---	December, 2013
34.	K M Govi	---	December, 2013
35.	Prof. J. Yadagiri Reddy	---	December, 2013
36.	Hiran Kumar Dutta	---	January, 2014
37.	Mr. Ragvan	---	March, 2014
38.	Prof. Mohan Pathak	---	May, 2014
39.	Prof. A. Neelameghan	Professor, DRTC, Bangalore	July, 2014
40.	Prof. A. K. Dasgupta	President, IASLIC, 1999	July, 2014
41.	Dr. Shamkant Deshmukh	---	August, 2014
42.	Prof. Sarada	---	August, 2014
43.	Prof. Satyanarayana	---	October, 2014
44.	Dr. Velaga Venkatappaiah	---	December, 2014
45.	Prof. K. C. Sahu	Professor, DLIS, Dr. H. S. Gour Sagar University	January, 2015
46.	Prof. Tarun Kumar Mitra	---	January, 2016
47.	Prof. Russell Bowden	---	January, 2016
48.	Prof. J. L. Sardana	Professor, DLIS, University of Delhi	February, 2016
49.	Sri M. L. Narasimha Rao	Secretary Krishna Devaraya Library, Hyderabad	February, 2016
50.	S. K. Kapoor	----	May, 2016
51.	Sri R. Yogeshwar	Son of Dr. S. R. Ranganathan	June, 2016
52.	Dr R. M. Vatnal	---	November, 2015
53.	J. R. Ramamurthy	University Librarian (Retd), Kannada University	December, 2016

*Prof. V. Vishwa Mohan is alive but subject of the communication had mentioned his name in place of sad demise of his family member.

CERTIFICATES

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PUBLICATIONS

Library Professionals' Scholarly Communications over Online Forum: Content Analysis of New Millennium LIS Professionals (NMLIS)

Akhandanand Shukla

Jacob MS Dawngliana

Abstract

The paper deals with the content analysis of scholarly communications posted over online forum NMLIS by library professionals. The paper discusses about online communications of LIS professionals through online discussion forums like NMLIS and in relation to that reviewed available literature. One year's scholarly communications of NMLIS have been taken in consideration with numbers of related objectives. Data collection and analysis has been done through online survey and observation methods. Eight categories have been identified for groupings of 2403 scholarly communications. The main focus of scholarly communications has been observed; most prolific contributors of every month have been identified from the group communications; extent of file attachments and numbers of files has been calculated and categorized according to their file types; and finally top most contributors of job related information and library specific information have been identified by number of postings and frequency of postings by contributors. Findings and conclusions have been drawn on the basis of analysis of the collected data at the end.

Keywords: Scholarly Communication, Online Forum, Library Professionals, Content Analysis, NMLIS, Yahoo Group.

1. Introduction

Library is a treasure-house of knowledge that provides organized access to a collection of materials that serves the information needs of an individual or group. A well stock library is an asset to the school, college, university or the neighbour. We can say that a library renders a great service to the society. However, the collection of written knowledge in some sort of repository is a practice as old as civilization itself. Library and Information Professionals (LIS) refers to those professionals who have completed the course qualification in library and information science at either associate or library technician level. LIS Professionals are

believed and trusted for scientific dissemination and application of knowledge concerning information and its transfer. LIS Professionals have been creatively managing the information and research resources of their firms. LIS Professionals play a significant role to promote information literacy in society. Earlier, there existed very few opportunities for communication between LIS Professionals. There were seminars, training programs and periodical publications to gather and express their views and share messages. Traditional methods of professional communication were less interactive and time consuming. The digital era of Internet and mobile technology made a revolution for communication that take an important part in every day's live. Thus, email based discussion forums made a revolution in professional communication.



LIS Professionals have been engaging in professional communication for years. Some library professionals reflect on their personal practice with colleagues in the privacy of their work area to share ways to make their library most useful for their students; others meet in small groups in the staff room with the librarian to discuss library improvement plans; and others attend large group of professionals to learn the latest development in the field. Internet presents library professionals with a platform to expand the scope of collaboration and even shift professional conversations into a variety of publicly shared online environments (online forums). The online forum has offered the potential to gain knowledge from and share experiences with other library professional outside the confines of their work area and local communities.

Online forum transformed the concept of talking about our thoughts in the form of written communication and sharing with other library professionals in the group. Library professionals from various geographical locations can participate in informal, self-organized conversations within a self-selected online social medium such as online forums, making their professional communication transparent to a wider public audience. An online discussion forum is a web-based communication tools that enable participants to post messages and to the type of others' messages asynchronously. Online forum is also known by various names such as discussion board, discussion group, discussion forum, message boards etc. Online forums have evolved into a natural sharing of knowledge, resources and interaction that makes thinking and learning publicly visible. Ebner et al. (2010) contended that it is not the "transfer of information or status messages that are crucial factors, but

rather, the opportunity to be part of someone else's process by reading, commenting, discussing or simply enhancing it" that leads to being part of a "murmuring community" (p. 98). There are multiple of LIS online discussion forums. New Millennium LIS Professionals (NMLIS) Group is widely accepted and used by the library professionals among all other LIS online discussion forums.

The discussion forum New Millennium LIS Professionals created on 22nd October 1999 by Prof. N. Laxman Rao on Yahoo! This is basically made to develop inter-relationship and help. This group is also interested in sharing the knowledge and experience among the information professionals between developing and developed countries. This is the biggest discussion group among all Library & Information Science discussion groups in terms of group members (3111) as well as in terms of communications posted (33269) on the group as on 16.03.2017. It uses English language as a medium of communication. The NMLIS Group is a Yahoo Mail based discussion forum. Those who wish to join the service filled the details in the NMLIS Group website.

"Content analysis is described as the scientific study of content of communication. It is the study of the content regarding the meanings, backgrounds and purposes contained in messages" (Prasad, 2008). According to White & Marsh (2006) "content analysis is a method which can be used qualitatively or quantitatively for systematically analyzing written, verbal, or visual documentation". Holsti (1968) defines it as a "technique for making inferences by systematically and objectively identifying specific characteristic of messages". According to Berelson (1952) "content analysis consists of extracting and evaluating in a systematic

and generally quantitative manner the occurrences of the manifest and latent content of a body of textual or audio-visual materials". Further Berelson (1952) describes the content analysis as "the researcher quantifies and analyzed the presence, meanings and relationships of such words and concepts, then make inferences about the messages within the texts, the writer, the audience, and even the culture and time of which these are a part. Texts can be defined broadly as books, book chapters, essays, interviews, discussions, newspaper headlines and articles, historical documents, speeches, conversations, advertising, theatre, informal conversation, or really any occurrence of communicative language".

2. Review of Literature

To examine the real problem, quite a good number of studies have been reviewed by researcher to know the quality of communication and its resources and services provided.

Akira & Aramaki (2015) conducted a content analysis of blog posts on lung cancer patients from Japan, focusing on the feelings and satisfaction levels of lung cancer patients. From the 2499 sentences in the 100 blog posts analyzed, the researchers identified expressions of dissatisfaction and anxiety in 495 sentences. Similar study has been done by Boepple & Kevin (2014) where they analyzed contents of healthy living blogs and after analysis found that the contents of healthy living blogs might be problematic for viewers who have eating or body image issues. Majhi & Maharana (2014), in their study, classified and compared the Facebook in academic, public and special libraries in India with the purpose of understanding patterns of Facebook use in libraries and concluded that library profiles on Facebook would be welcomed by many users

and, therefore, should be strongly considered. Academic libraries might have better success with Facebook than another social network tool. If students contact the library via Facebook the library should respond in the same fashion. The study conducted by Gala (2013) on LIS Blogs concludes that LIS blogosphere has discussing very specific subjects as well as very broad subjects. Blogs on specific topics provide a platform for instant access to current and relevant information, thereby making it possible to detect current trends in the broad subject categories. On an average the blog content comprised of 30% blog posts and 25% response & comments. Another content analysis study conducted by Jackson-Brown (2013) on librarian blogs and examined communication taking place within a purposive sample of 12 librarian blogs. A qualitative content analysis of these blogs was conducted to locate activity of the blogs under four genres – research, social, political and professional development. The study shows that professional development was a major focus of the blog content during the period of study. The findings of the study contribute to knowledge regarding the attraction of blog readers to blogs that support professional continuing education around technology, conferences, career advising and other areas.

A lot of library literature has been written on the various techniques to deal with angry library patrons. However, Operario (2013) conducted a study to gain some insights into what is written about angry library patrons in the blogosphere. He found, an unpopular library policy or procedure or a breakdown in communication between a library staff and a patron, is the reason of anger. Further analyzed that library patrons' anger is usually directed towards either library items or staff members. The ways they

express their anger can be relatively mild or severe which usually involves verbal abuse or violence. Dhanvandan & Tamizhchelvan (2012) analyzed the e-mail discussion forums and highlighted LIS groups available over the Internet and features of the each forum, the number of members, the mode of hosting the messages among LIS forums and found that Library and Information Science forums play an important assistant role for the profession and concluded that LIS forum is a simple and efficient way to communicate to the group members. Seker & Duzyol (2011) performed a content analysis with 277 posts sent to ACRLLog. Most of the posts were about “technological aspects of LIS”, “LIS service activities”, “others” (conference announcements, information and announcements about ACRL, personal ideas and experiences, etc.) and “scientific and professional communication.” They found statistically significant difference in the subjects of the posts by year. ACRLLog posts mostly contain the words “library” (1300) and “librarian”, and the noun phrases “academic librarian” and “academic library”. Further stated to increase the quality of ACRL blog as a professional communication, the interest in the ACRL blog should be increased and current issues such as Web 2.0, information literacy and digital rights should be discussed more often to enrich the content. Bar-Ilan (2007) conducted a study over the use of blogs (Weblogs) by libraries and librarians. The contents of blog posts were characterized using multi-faceted content analysis and findings indicates that blogs have an impact on the activities of information professionals and they are a novel information channel for transferring information both to fellow professionals and to other users of the Web. Librarians use blogs to disseminate

professional and general information, while libraries often use blogs for announcements.

3. Scope of the Study

The present study is confined to the 2403 scholarly communications (messages) posted by group members of New Millennium LIS Professionals (NMLIS) for the year 2016 i.e. from 1st January, 2016 to 31st December, 2016.

4. Objectives of the Study

The objective of study is to analyze the contents of scholarly communications carried over online forum New Millennium LIS Professionals (NMLIS). The specific objectives for the present study are to:

- ❖ Examine the extent of scholarly communications among LIS professionals' over online forum.
- ❖ Examine the category of scholarly communications among LIS professionals' over online forum.
- ❖ Determine the focus of scholarly communications over online forum.
- ❖ Find out the most prolific contributors of scholarly communications over online forum.
- ❖ Examine the extent of file attachments and category of file types communicated over online forum.
- ❖ Find out the degree of contribution and most prolific contributor for job posts communications over online forum.
- ❖ Find out the degree of contribution and most prolific contributor for library specific scholarly communications over online forum.

5. Data Collection Methods and Procedures

The survey and observation methods of research are being found appropriate for conducting the present study. The primary strategy of data collection involved accessing the Yahoo! group New Millennium LIS Professional (NMLIS). Archived records of online conversations are searchable and accessible for registered members on NMLIS group. Members in the online forum have been tracked to gather data about the level of their involvement, type of their activity and number of scholarly communications (postings) with description. All the conversations posted between the periods of 1st January, 2016 to 31st December, 2016 from the archived database have been collected and grouped into different categories and the transcribed group messages were coded appropriately. Combinations of qualitative and quantitative methods have been used in the study. The qualitative analysis involved to examine and evaluate the content of the discussion forums whereas quantitative analysis involved measuring the amount of online interaction that involved counting and categorizing the unit of content. The MS-Excel has been used for data collection, coding and its interpretation.

6. Data Analysis and Interpretation

a) Extent of Scholarly Communications

Table1: Total Extent of Scholarly Communications

Months	Extent of Scholarly Communications	Percentage
January	235	9.78
February	230	9.57
March	163	6.78
April	214	8.91

Library Professionals' Scholarly Communications...

May	192	7.99
June	232	9.65
July	227	9.45
August	165	6.87
September	232	9.65
October	148	6.16
November	159	6.62
December	206	8.57
Total	2403	100
Average	200.25	8.33

The table 1 represents the extent of scholarly communications posted in the NMLIS group during one year i.e. study period. There are total 2403 scholarly communications observed during the year and month wise breakups of the scholarly communications have been shown in the table 1. From the table 1, it has been observed that the highest number of scholarly communications took place in the month of January (235) which is 9.78% of total scholarly communications followed by June (232) & September (232) with 9.65% each of total scholarly communications. The least scholarly communications took place in the month of October (148) that is 6.16% of total scholarly communications during the year. Out of 12 months, 7 months have more than 200 scholarly communications; and if we take the monthly average of total scholarly communications, there is 200 scholarly communications took place in month that is 8.33% of total communications.

b) Category of Scholarly Communications

There are 2403 scholarly communications observed in NMLIS group during the study period. There are

several scholarly communications that belongs to same kind of nature. From the various researches and after the observation of 2403 scholarly communications, eight (8) kinds of categories have

been identified for the grouping of 2403 scholarly communications. These categories are given in table 2 with their description in brief.

Table 2: Categories of Scholarly Communications

SN	Categories (Abbreviation)	Description
1	Conference Communications (CON)	Category includes conference/ seminar/ workshop/symposia/ colloquia etc. alerts and invitation calls for writing papers and for participation in the same.
2	Faculty Communications (FDM)	Development Category includes short term courses, refresher/ orientation programs, faculty development programs/ courses and specialized training programs for LIS professionals.
3	Job Posts Communications (JOB)	Category includes apprenticeship, traineeship, private and government sector LIS vacancies from all over the world.
4	General Communications (GIC)	Information Category includes general kind of information communicated through posts. Such posts have very general approach which is not specifically related to LIS profession.
5	LibraryScienceCommunications(LSC)	Category includes short communications, information/ knowledge sharing, historical account, recent trends, award information, lecture series, technical problem solving, LIS education, admission, grants, coaching, reference queries and many more core information related to LIS profession and professionals.
6	Greetings Communications (GRC)	Category includes new year wishes, award wishes, congratulation messages, festival wishes etc.
7	Obituary Communications (OBI)	Category includes LIS professionals' death related information communications.
8	Other Communications (OTH)	Category includes filtered communications which not fits into above seven categories of scholarly communications.

c) Focus of Scholarly Communications

Table 3: Extent of Scholarly Communications – Category wise

Months	Extent of Scholarly Communications	Categories of Scholarly Communications							
		CON	FDM	JOB	GIC	LSC	GRC	OTH	OBI
January	235	51	7	44	58	60	9	4	2
February	230	41	8	27	93	46	0	11	4
March	163	22	2	19	39	74	2	5	0
April	214	32	5	22	68	48	13	26	0
May	192	38	3	22	54	38	1	34	2
June	232	30	0	20	102	27	0	52	1
July	227	30	2	17	94	49	4	30	1
August	165	51	0	18	51	30	1	14	0
September	232	44	1	29	85	46	1	26	0
October	148	28	1	2	54	45	4	14	0
November	159	40	0	6	56	38	0	15	4
December	206	43	0	8	73	59	4	17	2
Total	2403	450	29	234	827	560	39	248	16
Percentage	18.73	1.21	9.74	34.42	23.3	1.62	10.32	0.67	

Table 3 display extents of scholarly communications monthly as well as categorically in month and year wise. There are eight categories of scholarly communications have been identified and data have been analyzed accordingly. From the observation of table 3, it has been found that 34.42% “General Information Communications (GIC)” related scholarly communications were shared in the group which is the highest amongst all categories followed by “Library Science Communications (LSC)” with 23.3%, “Conference Communications (CON)” with

18.73%, “Other Communications (OTH)” with 10.32%, and “Job Posts Communications (JOB)” with 9.74%. “Faculty Development Communications (FDM)” is less than “Greetings Communications (GRC)”. During the study period, 0.67% “Obituary Communications (OBI)” has been also observed. The categories CON, FDM, JOB, and LSC are directly related to development of LIS professionals. There are 52.97% scholarly communications belongs to four (4) core categories (CON, FDM, JOB, and LSC) identified for professional development. From the

table 3, it has been inference that except “General Information Communications (GIC)” which is sharing one-third (34.42%) scholarly communications of the total, Conference Communications (CON), Job Posts Communications (JOB), and Library Science Communications (LSC) were the major focus of scholarly communications in NMLIS group.

d) Most Prolific Contributors of Scholarly Communications

Table 4 display prolific contributors of scholarly communications (top five contributors) along with total extent of contributors monthly. January month has highest number of contributors (41) followed by April (34), July (34), February (31), and September (31). The least contributors have been observed in the month of October with 23 contributors. From the table 4, it has been found that same contributor is repeating in many months and they are repeatedly occurring in top 5 lists of contributors. The extent

Table 4: Prolific Contributors (Top 5 Contributors)

Months	Extent of Contributors	Top 5 Contributors in Coden Name (with extent of Scholarly Communications)				
January	41	AMR (55)	NL (46)	PJ (42)	NLR (40)	DK; ASLA (4)
February	31	PJ (79)	NLR (47)	NL (45)	AMR (20)	GS (5)
March	25	PJ (53)	NL (45)	AMR (23)	NLR (15)	RCG (4)
April	34	PJ (63)	NL (48)	NLR (40)	AMR (19)	AL (6)
May	30	NLR (62)	NL (53)	PJ (27)	LR (11)	AL (8)
June	29	PJ (101)	NLR (52)	NL (36)	TLA (9)	ASLA (5)
July	34	NL (67)	PJ (66)	NLR (45)	PER (6)	GS (5)
August	30	PJ (49)	NL (42)	NLR (35)	ASLA; AL (4)	TLA (3)
September	31	PJ (86)	NLR (54)	NL (44)	AMR (9)	PER (4)
October	23	PJ (52)	NLR (21)	AMR (24)	NL (16)	AL (11)
November	25	PJ (74)	NL (27)	NLR (25)	AMR (5)	DS (3)
December	24	PJ (97)	NL (37)	NLR (20)	AMR (18)	AL (7)

Legends: AMR = A Madhava Rao; PJ = Pralhad Jadhav; NL = Naglaxman; NLR = Prof. N. Laxman Rao; LR = Laxman Rao; GS = gopalakrishnan shanmugam; TLA = Telangana library Association; ASLA = ASIAN LIBRARY ASSOCIATION; DK = Dattatraya Kalabande; PER = Prakasan E.R.; RCG = Dr. Ramesh C Gaur; AL = **@nil**; DS = dinesh sanadi.

of scholarly communications mentioned with the contributors coden name which is described below in the table 4 with legends section due to having more letters in writing names in the cells of table. The original identities of contributors are mentioned in the legends section as such appeared in the NMLIS posts.

Table 5: Most Prolific Contributors

Name of Contributor(s)	Extent of Contribution (Posts)	Percentage (out of 2403)	Frequency of Contribution (Months)
ASLA	13	0.54%	3
AL	36	1.49%	5
AMR	173	7.19%	8
DK	4	0.16%	1
DS	3	0.12%	1
GS	10	0.41%	2
LR	11	0.45%	1
NL	506	21.05%	12
NLR	456	18.97%	12
PER	10	0.41%	2
PJ	789	32.83%	12
RCG	4	0.16%	1
TLA	12	0.49%	2

Table 5 displays the frequency and extent of contribution (scholarly communications) of all month's top 5 contributors with their coden name as listed in table 4. As per extent of contribution, from table 5, PJ (Pralhad Jadhav) is the most prolific contributor amongst all followed by NL (Naglaxman), NLR (Prof. N. Laxman Rao), and AMR (A Madhava Rao). As per frequency of contributors' contribution, it has been found that three contributors namely NL, NLR and PJ have highest frequency of contribution i.e. every month they have contributed and they were appeared under top 5 contributors. There is one contributor, Prof. N. Laxman Rao, which

uses three different contributor identities LR, NL and NLR for his contributions in the group NMLIS; this separates his contributions into three parts, if we analyze separately by login identity. By the combination of three different login identity of Prof. N. Laxman Rao, he contributed 973 scholarly communications which is 40.49% of total scholarly communications observed during the study period. Pralhad Jadhav has contributed 789 scholarly communications with one login identity and alone covering 32.83% of total scholarly communications during the study period.

e) Extent of File Attachments & Category of File Types

Table 6: Extent of File Attachments

Months	Extent of Scholarly Communications	Extent of Communications having File Attachments (A)	Extent of Files (B)	Ratio between (A) & (B)
January	235	45	65	1 : 1.44
February	230	35	68	1 : 1.94
March	163	11	20	1 : 1.81
April	214	37	79	1 : 2.13
May	192	30	44	1 : 1.46
June	232	33	43	1 : 1.30
July	227	35	54	1 : 1.54
August	165	36	58	1 : 1.61
September	232	40	44	1 : 1.10
October	148	25	51	1 : 2.04
November	159	23	26	1 : 1.13
December	206	37	47	1 : 1.27
Total	2403	387	599	1 : 1.54

Table 6 display month wise extents of scholarly communications that have file attachments during the period of study. Further extents of files have been given against extent of scholarly communications that have file attachments. From the observation of table 6, it has been found that 387 scholarly communications were having file attachments during the study period which is 16.1% of total scholarly communications. The highest file attachments observed in the month of January (45) and the least file attachment observed in the month of March (11). On an average, 32 file attachments

per month is calculated. Extents of files are more than extent of communications that have file attachments due to more than one file as attachment in one scholarly communication. There are total 599 files found in 387 scholarly communications. Monthly ratio between extent of scholarly communications that have file attachments and extent of files has been calculated and found 1:1.54 ratio between both of them.

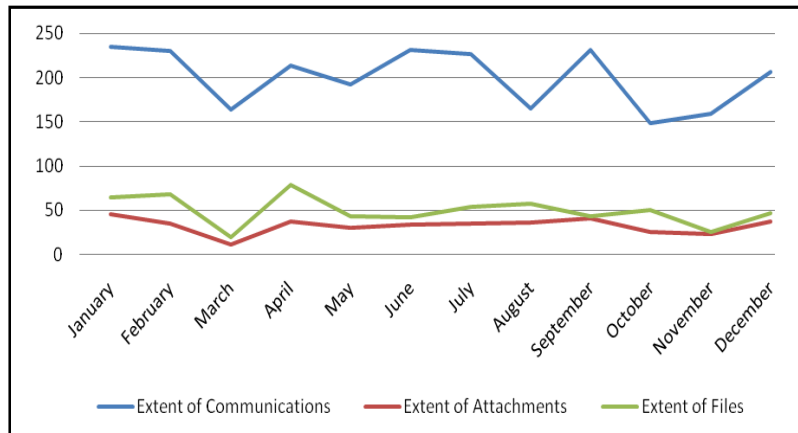


Figure 1: Extent of communications, attachments, and files

Table 7: Extent of File Attachments with File Types

Months	Extent of File Attachments	Extent of Files	File Types									
			PDF	Image	Excel	Word	PPT	Audio	Video	Others	Zip	HTML
January	45	65	24	30	0	4	0	0	0	6	0	0
February	35	68	28	37	0	1	0	0	0	2	0	0
March	11	20	5	13	0	1	0	0	0	1	0	0
April	37	79	30	46	0	3	0	0	0	1	1	0
May	30	44	12	20	0	8	0	0	0	4	0	0
June	33	43	8	17	0	15	0	0	0	2	0	2
July	35	54	18	29	0	2	0	0	0	5	0	0
August	36	58	15	22	0	15	0	0	0	5	0	1
September	40	44	8	21	1	1	0	0	0	13	0	0
October	25	51	10	36	0	1	0	0	0	4	0	0
November	23	26	2	5	0	1	0	0	0	16	0	0
December	37	47	14	26	0	2	0	0	0	5	0	0
Total	387	599	174	302	1	54	0	0	0	64	1	3
Percentage		100	29.04	50.41	0.16	9.01	0	0	0	10.68	0.16	0.5

There are various number of file types. There are 10 file types identified which have maximum probability for communication of scholarly content through email based group NMLIS. During data collection and tabulation, utmost care has been given to identify the file type and its extent. Table 7 display the analyzed data of file types communicated in the group during the study period. Microsoft Power Point (PPT), audio files and video files have not

been observed during the year as file attachments. Majority of file attachments were found in the form of Image files (50.41%) followed by PDF (29.04%), and MS-Word (9.01%). MS-Excel, HTML and Zip files appeared rarely. More than 10.68% files could not identify due to non-availability of proper documents and kept under "Others" category. The most used file types were Image files, PDF files and MS-Word files which consists 88.48% of total files as attachments.

f) Degree of Job Posts Contribution & Most Prolific Job Posts Contributor

Table 8: Degree of Job Posts Contribution & Prolific Contributors

Months	Extent of Scholarly Communications	Extent of JOB Posts	Top Contributor
January	235	44	AMR (34)
February	230	27	NL(11)
March	163	19	NL(13)
April	214	22	NL(6)
May	192	22	NL(9)
June	232	20	NL(9)
July	227	17	NL(8)
August	165	18	NL(6)
September	232	29	NL(15)
October	148	2	NL(1), NLR(1)
November	159	6	NL(3)
December	206	8	NL(3), NLR(3)
Total	2403	234	NL(84), AMR(34)

From the observation of table 8, it has been found that 234 JOB posts were communicated in the group NMLIS during the study period which is 9.74% of total scholarly communications. The highest JOB posts communicated in the month of January (44) and the least JOB posts communicated in the month of October (2). Top contributors for the JOB posts were calculated monthly and annually also. The contributor AMR (A Madhava Rao) contributed

only once with the highest number of JOB posts (34) in month of January which is highest amongst all months also. In rest of the months (from February to December), contributor NL (Naglakshman) contributed the highest JOB posts every months. From the total JOB posts, Naglakshman contributed 84 job related scholarly communications which is 35.89% of total JOB posts communicated in the group followed by A Madhava Rao (14.52%).

g) Degree of Library Science Communications & Most Prolific LSC Contributor

Table 9: Degree of LSC Posts Contribution & Prolific Contributors

Months	Extent of Scholarly Communications	Extent of LSC Posts	Top Contributor
January	235	60	AMR (18)
February	230	46	AMR (15)
March	163	74	PJ (25)
April	214	48	AMR (17)
May	192	38	NL (12)
June	232	27	PJ (11)
July	227	49	NL (14)
August	165	30	PJ (13)
September	232	46	PJ (19)
October	148	45	AMR (24)
November	159	38	PJ (16)
December	206	59	PJ (22)
Total	2403	560	PJ (107), AMR (74), NL (26)

From the observation of table 9, it has been found that 560 LSC posts were communicated in the group NMLIS during the study period which is 23.3% of total scholarly communications. The highest LSC posts communicated in the month of March (74) and the least LSC posts communicated in the month of June (27). Top contributors for LSC posts were calculated monthly and annually. The contributor AMR (A Madhava Rao) contributed four times as top contributor of LSC posts in the months of January, February, April and October. The contributor PJ (Pralhad Jadhav) contributed six times as top contributor of LSC posts whereas NL (Naglaxman) contributed twice as top contributor for LSC posts in the months of May and July. Pralhad Jadhav is the top most contributor of LSC posts in terms of frequency (6) and in terms of number of posts (107) which is 19.1% of total LSC posts communicated in the group followed by A Madhava Rao (4 times, 74 posts, 13.21%) and Naglaxman (2 times, 26 posts, 4.64%).

7. Findings of the Study

Following are the findings derived from the present study:

- ❖ In one year duration, NMLIS group has 2403 scholarly communications. On an average 200 scholarly communications takes place per month.
- ❖ Scholarly communications have been grouped into 8 identified categories. These categories are: Conference Communications (CON), Faculty Development Communications (FDM), Job Posts Communications (JOB), General Information Communications (GIC), Library Science Communications (LSC), Greetings Communications (GRC), Obituary

Communications (OBI), and Other Communications (OTH).

- ❖ From the eight categories of scholarly communications, General Information Communications (GIC) category is highly focused in the group posts followed by Library Science Communications (LSC), Conference Communications (CON), Other Communications (OTH) and Job Posts Communications (JOB). Faculty Development Communications (FDM) category is less focused in the group posts.
- ❖ Pralhad Jadhav is the most prolific contributor amongst all contributors followed by Naglaxman, Prof. N. Laxman Rao, and A Madhava Rao. As per frequency of contributors' contribution, Naglaxman, Prof. N. Laxman Rao and Pralhad Jadhav contributed every month in a year and they were under top 5 contributors every month. Pralhad Jadhav has contributed 789 scholarly communications alone which is 32.83% of total scholarly communications during the study period.
- ❖ There are 387 scholarly communications out of 2403, having file attachments during the study period which is 16.1% of total scholarly communications. Total 599 files were found attached in 387 scholarly communications. Annual ratio of scholarly communications that have file attachments and extent of files is 1:1.54.
- ❖ There are 10 file types identified for categorization of 599 files found as attachment in the scholarly communications. Microsoft Power Point (PPT), audio files and video files have not been observed as file attachments. Image and PDF files found most communicated file types.
- ❖ There are 234 Job posts were communicated in the group NMLIS during the study period which

is 9.74% of total scholarly communications. Naglaxman is the highest contributor of Job posts communications and contributed 35.89% of total Job posts.

- ❖ There are 560 Library Science Communications were communicated in the group NMLIS during the study period which is 23.3% of total scholarly communications. Pralhad Jadhav is the highest contributor of LSC posts in terms of frequency and in terms of number of posts also.

8. Conclusions

Since start of the LIS profession, it was the primary work of library professionals to disseminate and share knowledge and information among users' group. Library professionals have faced many technological challenges, overcome the challenges, and adopted the new techniques during the long journey of professional development. When a library professional is communicating with users' group, he is sharing scholarly knowledge. The advent of Internet and World Wide Web has increased the work beyond the boundary of library. For the development of LIS profession and self-development, library professionals' have their own circle for discussion. Nowadays, many Web based platforms are available through which they are making larger group of professionals and sharing scholarly communications amongst them. NMLIS is one of the largest groups of library professionals in India having more than 3000 online members and successfully run by library professionals with more than 33000 scholarly communications since the formation of the group. The group is posting significant number of scholarly communications in a year and these communications have variety also. From the general kind of information to library specific information, from job related information to

faculty development information, and from greetings to obituaries kind of information have been shared in the group. The focus of scholarly communications in group is still maintained, and majority of scholarly communications belongs to LIS professional development. The group has more than 3000 online members but group's scholarly communications contributors are very less comparatively. This seems that amongst the group of professionals, professional also become a user for getting information in the form of scholarly communication rather than sharing or creating more scholarly communications. There may be several reasons to become a user in the professionals' group and this is not our focus in this research. The group contributor shares scholarly communications, if necessary, in the form of files as attachments; though the number of such scholarly communications is less (16.1%) in the group. About 9.74% scholarly communications belongs to job related information which displays the interest of group members for their self-development and promotion. More than 23% scholarly communications belong to library specific information which increases the knowledge base of every group members whether they are senior librarian or library trainee. The library specific information contains all kinds of latest information of LIS profession from all over the world. Such kind of specific groups should be run by LIS professionals to boost up their calibre by enhancing the field specific knowledge and technical know-how of the field.

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CONTENT ANALYSIS OF SCHOLARLY COMMUNICATIONS OVER ONLINE FORUM: A LONGITUDINAL STUDY OF NEW MILLENNIUM LIS PROFESSIONALS (NMLIS)

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Abstract

Paper analyses contents of scholarly communications over online forum posted by library professionals during three year period. A total of 7695 scholarly communications collected from the group NMLIS through an online survey. The scholarly communications have been grouped into eight categories of scholarly communications. LIS professional development was the major focus of scholarly communications. The data analyzed in terms of most prolific contributors; the focus of scholarly communications; the extent of file attachments; categorization of file types; and finally top most contributors of job-related information and library-specific information have been identified. Findings and conclusions have been drawn on the basis of analysis of collected and processed data using MS-Excel.

Keywords: Scholarly Communication, Online Forum, Library Professionals, Content Analysis, NMLIS.

Introduction

Library and Information Science (LIS) professionals deeply involved in the dissemination of scholarly content available in the various physical forms. By using the Internet and its related technology, LIS professionals share and promote their information resources to the needy persons at their desktop. The communication becomes much faster amongst the fellow professionals. Online forum plays very much significant role in terms of dissemination of professional information as well as sharing of digital information resources. In the modern world, online forums have changed the way of interaction among peers and crossed the limits of geographical boundaries. It is a web-based communication tool that gives opportunities to members to post their views/message as well as react to other's posts. Online forums are popularized by various other names like Discussion Board, Discussion Group, Discussion Forum, and Message Boards etc. It is not the "transfer of information or status messages that are crucial factors, but rather, the opportunity to be part of someone else's process by reading, commenting, discussing or simply enhancing it" that leads to being part of a "murmuring community" (Ebner et al., 2010; p. 98).

In India, there are numbers of online LIS discussion forums, out of which *New Millennium LIS Professionals (NMLIS)* group is widely accepted and used by the library professionals among all other online discussion forums. The *NMLIS* created on 22nd October 1999 by Prof. N. Laxman Rao on Yahoo! The group is sharing the different varieties of knowledge and experience to the members of the group. This is the biggest discussion group in Library & Information Science discipline, in India, in terms of group members (3111) as well as in terms of scholarly communications posted (more than 33269) on the group as on 16.03.2017.

According to White & Marsh (2006) "content analysis is a method which can be used qualitatively or quantitatively for systematically analyzing written, verbal, or visual documentation". "Content analysis is described as the scientific study of the content of communication. It is the study of the content with reference to the meanings, backgrounds and purposes contained in messages" (Prasad, 2008). Further, Berelson (1952) describes the content analysis as "the researcher quantify and analyze the presence, meanings and relationships of such words and concepts, then make inferences about the messages within the texts, the writer, the audience, and even the culture and time of which these are a part. Texts can be defined broadly as books, book chapters, essays, interviews, discussions, newspaper headlines and articles, historical documents, speeches, conversations, advertising, theater, informal conversation, or really any occurrence of communicative language".

Review of Literature

The following existing literature reviewed in the area of research to examine the real status of scholarly communications carried over online platforms:

Shukla & Dawngliana (2017) conducted a study on content analysis of online forum and concluded that professional communication was highly preferred in the forum. They organized the messages into eight different

categories. Pujar et al. (2014) analyzed messages posting on a prominent LIS electronic discussion forum and found that the average posting of the message is about 1600 per year during the study period, out of which an "announcements" are forming the major posting. Majhi & Maharana (2014), in their study, concluded that library profiles on Facebook would be welcomed by many users and, therefore, should be strongly considered. Gala (2013) concluded that LIS blogosphere has discussing very specific subjects as well as very broad subjects. On an average, the blog content comprised of 30% blog posts and 25% response & comments. Another content analysis study conducted by Jackson-Brown (2013), and found that professional development was a major focus of the blog content during the period of study. Dhanvandan & Tamizhchelvan (2012) analyzed the e-mail discussion forums and highlighted LIS groups available over the Internet and features of the each forum, the number of members, the mode of hosting the messages among LIS forums and found that Library and Information Science forums play an important assistant role for the profession and concluded that LIS forum is a simple and efficient way to communicate with the group members.

Seker & Duzyol (2011) performed a content analysis with 277 posts sent to ACRLog and found that major focus of posts were "technological aspects of LIS", "LIS service activities", "others" (conference announcements, information, and announcements about ACRL, personal ideas and experiences, etc.) and "scientific and professional communication." Tonta & Karabulut (2010), in their study, analyzed the messages sent to KUTUP-L, an electronic discussion list for Turkish librarians. The study indicates that the number of messages posted to KUTUP-L has been increased over the years along with the authors. The result of the study shows that of the entire message posted to the list 40% were off topic as LIS professionals may not wish to waste their valuable time shifting through irrelevant posting. Issues about the Information Management Services were 32% and Information Science with 23% as well as 19% of the total post was related to professional and scientific communication. Moradi & Dokht (2009) conducted a content analysis of the electronic discussion group of Ferdowsi University of Mashhad, Iran and found that majority of the messages covers Library and Information Science related information followed by subscription request and congratulations and condolence messages. Moreover, messages related to Library and Information Science confirmed that 25.82% messages were related to news/events about LIS; and 22.90% posts were related to conferences and workshops.

Analysis of librarians' blogs conducted by Aharony (2009) shows that there are fewer posts and posting days, as well as lesser readers' comments, however a larger number of links and tags which are assigned to the posts. During the study, the majority of LIS blogs posting contained both personal and professional postings. The researcher found that blogger desire to write longer and more detailed posts with hypertext links. Deryakulu & Olkun (2007) conducted a content analysis of Computer Teachers' online discussion forum focusing message posted relating to job problems that the Turkish computer teachers experience and the type of social support provided by mutual discussion in an online forum. The study proves that the general problems face by computer teachers are from educational policies and organizational factors such as role conflict, lack of technological infrastructure and technical support. The researcher confirmed that the Turkish computer teachers used an online discussion forum as a social-professional platform for sharing their problems and employing possible solution and providing social support. White et al. (2007) conducted a study on the content of e-mail communicated between patients and their providers and found that majority of the message addressed to a single issue. Further, researchers found that the most common types of the message posted are relating to information updates to the physicians (41.4%). The study reveals that in general, messages were brief, formal and medically relevant; and the content and quality in the majority of e-mails were appropriate.

Bar-Ilan (2007) conducted a study over the use of blogs (Weblogs) by libraries and librarians. The contents of blog posts were characterized using multi-faceted content analysis and findings indicates that blogs have an impact on the activities of information professionals and they are a novel information channel for transferring information both to fellow professionals and to other users of the Web. Librarians use blogs to disseminate professional and general information, while libraries often use blogs for announcements. The studies of discussion by library professionals working with children and young adults in the public library by Edwards (1999) explained that PUBYAC has been and keep on to be an important and reliable source of information for library professionals. The study exposes that the purpose or function of the messages was to answer to an inquiry (32%) or to request ideas (18%).

Scope of the Study

This study is confined to the scholarly communications (7695 messages) posted by the group members of *New Millennium LIS Professionals (NMLIS)* during the three year period from 1st January 2014 to 31st December 2016.

Objectives of the Study

The general objective of the study is to analyze the contents of scholarly communications carried over online forum *New Millennium LIS Professionals (NMLIS)*. Further, the specific objectives of the present study are:

- a) To know the extent of scholarly communications carried over an online forum.
- b) To determine the focus of scholarly communications over online forum based on the category of scholarly communications.
- c) To find out the top five prolific contributors to scholarly communications.
- d) To assess the extent of file attachments and their category of file types.
- e) To assess the degree of contribution and most prolific contributor to job posts and library specific scholarly communications over the online forum.

1. Data Collection Methods and Procedures

The online survey and observation methods have been applied to conduct the study. The primary data collected from the Yahoo! group *New Millennium LIS Professional (NMLIS)* using archived records of online conversations carried among registered members of the group. The data have been collected to know the level of involvement, type of their activity and number of scholarly communications (postings) with description. The conversations carried out during the periods of 1st January 2014 to 31st December 2016 have been collected from the archived database; categorized and transcribed appropriately using already defined categories of scholarly communications identified by Shukla & Dawngliana (2017). The study involves a combination of qualitative and quantitative methods for the description of analysis and result. The MS-Excel has been used for data collection, coding, analysis, and its interpretation during the study.

2. Data Analysis and Interpretation

a) Extent of Scholarly Communications

Table 1: Extent of Scholarly Communications

Months	Extent of Scholarly Communications			Total	%
	2014	2015	2016		
January	228	262	235	725	9.42
February	208	233	230	671	8.71
March	184	192	163	539	7.00
April	169	171	214	554	7.19
May	157	155	192	504	6.54
June	187	211	232	630	8.18
July	243	207	227	677	8.79
August	264	222	165	651	8.46
September	187	272	232	691	8.97
October	240	374	148	762	9.90
November	199	282	159	640	8.31
December	186	259	206	651	8.46
Total	2452	2840	2403	7695	100
Average	204.33	236.67	200.25	641.25	8.33

Table 1 display the number of scholarly communications carried over *NMLIS* forum during three year period. The total 7695 scholarly communications took place during the study period. Year wise and monthly breakups of scholarly communications have been given in table 1. On the observation of table 1, it has been found that the highest number of scholarly communications have been posted during the year 2015 whereas the least communication took place in the year 2016. From the total scholarly communications carried over the study period, it has been an inference that on average 641 communications took place per month whereas the maximum number of communications gone up to 762 in the month of October and the least number of communications gone down to 504 in the month of May. Further, from the table 1, it has been observed that the highest percentage of scholarly communications took place in the month of October (9.9%) followed by January (9.42%) & September (8.97%). The least scholarly communications took place in the month of May (504) that is 6.54% of total scholarly communications during the study period.

b) Focus of Scholarly Communications

Table 2: Extent of Scholarly Communications – Category wise

Months	Extent of Scholarly Communications	Categories of Scholarly Communications							
		CON	FDM	JOB	GIC	LSC	GRC	OTH	OBI
January	725	144	17	97	260	157	31	13	6
February	671	103	11	75	293	159	4	22	4
March	539	91	4	62	196	161	8	16	1
April	554	87	7	58	229	124	18	31	0
May	504	84	9	79	173	113	4	39	3
June	630	88	9	79	280	102	3	61	8
July	677	107	4	88	283	132	5	49	9
August	651	136	7	77	251	131	14	32	3
September	691	127	2	136	238	148	5	35	0
October	762	137	4	178	221	175	17	29	1
November	640	125	6	137	175	157	12	22	6
December	651	141	9	91	215	137	21	32	5
Total	7695	1370	89	1157	2814	1696	142	381	46
Percentage		17.8	1.15	15.03	36.56	22.04	1.84	4.95	0.59

Table 2 displays the extent of scholarly communications monthly as well as categorically. There are eight categories of scholarly communications identified by Shukla & Dawngliana (2017). The collected data have been arranged and analyzed according to the above-mentioned categories of scholarly communications. From the observation of table 3, it has been found that 36.56% GIC related communications took place in the group which is the highest amongst all categories followed by LSC (22.04%), CON (17.8%), JOB (15.03%), OTH (4.95%), GRC (1.84%), FDM (1.15%), and OBI (0.59%). In a three year longitudinal period, again FDM related communications are less than GRC whereas 0.59% OBI related communications have been also observed. The categories CON, FDM, JOB, and LSC are directly related to the development of LIS professionals as observed by Shukla & Dawngliana (2017) in their study. In this regard, 56.03% scholarly communications belong to these four (4) core categories (CON, FDM, JOB, and LSC) identified for professional development. Moreover, the categories CON, JOB, and LSC were the major focus of scholarly communications in *NMLIS* group after excluding GIC that shares 54.87% scholarly communications together.

c) *Top Five Most Prolific Contributors to Scholarly Communications*

Table 3: Top Five Prolific Contributors

Months	Extent of Contributors	Top 5 Contributors (in Code Name with extent of Scholarly Communications)				
		Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
January	155	NL (159)	PJ (144)	NLR (138)	AMR (69)	AL (18)
February	131	PJ (204)	NLR (139)	NL (121)	AMR (20)	AL (15)
March	119	NL (146)	PJ (140)	NLR (65)	AMR (23)	AL (16)
April	126	PJ (170)	NL (106)	NLR (80)	AMR (19)	AL (14)
May	101	NL (159)	NLR (103)	PJ (82)	AL (20)	LR (11)
June	112	PJ (241)	NL (119)	NLR (104)	TLA (9)	ATF (8)
July	126	PJ (205)	NL (147)	NLR (124)	ASLA (16)	AL (15)
August	111	PJ (203)	NL; NLR (133)	AL (18)	ASLA (12)	GS; PJP (4)
September	112	PJ (171)	NLR (142)	NL (122)	LIS (100)	AL (11)
October	119	LIS (155)	NL (122)	NLR (107)	PJ (105)	AMR (95)
November	106	PJ (164)	AMR (138)	NL (115)	NLR (82)	ASLA (8)
December	110	PJ (194)	NL (138)	AMR (90)	NLR (77)	AL (11)

Legends: AMR = A Madhava Rao; PJ = Pralhad Jadhav; NL = Naglaxman; NLR = Prof. N. Laxman Rao; LR = Laxman Rao; GS = gopalakrishnan shanmugam; TLA = Telangana library Association; ASLA = ASIAN LIBRARY ASSOCIATION; AL = **@nil**;; LIS = LIS Professional; ATF = Dr. A. T. Francis; PJP = Prof Pijushkanti Panigrahi

Table 3 represents the top five most prolific contributors to scholarly communications over online forum during the three year period along with the total extent of contributors monthly. The highest number of contributors observed in the month of January (155) followed by February (131), April (126), and July (126); the least contributors have been observed in the month of May (101). Further, it has been observed that same contributor is repeating in other months and repeatedly coming in the list of top 5 contributors. Moreover, the extent of scholarly communications mentioned with the contributor's code name which is described below in table 3 in legends section. The original identities of contributors are mentioned in the legends section as such appeared in the *NMLIS* group communications.

Table 4: Most Prolific Contributors

Name of Contributor(s)	Extent of Contribution (Posts)	Percentage (out of 7695)	Frequency of Contribution (in Months)
AL	138	1.79	9
AMR	454	5.89	7
ASLA	36	0.46	3
ATF	8	0.10	1
GS	4	0.05	1
LIS	255	3.31	2
LR	11	0.14	1
NL	1587	20.62	12
NLR	1294	16.81	12
PJ	2023	26.28	12
PJP	4	0.05	1
TLA	9	0.11	1
Others (n=1416)	1872	24.32	---
Total (n=1428)	7695		---

Table 4 is displaying the frequency of contribution (in months) and the extent of scholarly contributions of all month's top 5 contributors with their code name as listed in table 3 during the three year period. From the observation of table 4, as per extent of scholarly contribution, PJ (Pralhad Jadhav) is the topmost prolific contributor amongst all followed by NL (Naglaxman), NLR (Prof. N. Laxman Rao), and AMR (A Madhava Rao). In the longitudinal study, there has been no change observed as per the study conducted by Shukla & Dawngliana (2017) for the year 2016 only. On the observation of frequency of contributor's contribution from the table 4, it has been found that three contributors namely NL, NLR, and PJ have the highest frequency of contribution (in months) i.e. they have contributed every month and observed under top 5 contributors. The founder of the group and contributor Prof. N. Laxman Rao uses three different identities namely LR, NL, and NLR for his scholarly contributions to the group. By combining three different login identities of Prof. N. Laxman Rao, he contributed 2892 scholarly communications which are 37.58% of total communications carried out during the three year study period. Pralhad Jadhav has contributed 2023 scholarly communications and sharing 26.28% of total scholarly communications. Further, A. Madhava Rao (AMR) has contributed 5.89% scholarly communications whereas contributor LIS Professional (LIS) has contributed 3.31%. There were 1428 contributors to the 7695 scholarly communications during three year period, out of which 12 contributors have contributed 75.68% scholarly communications whereas rest of the contributors (1416, 99.15%) have contributed 1872 scholarly communications only which is 24.32% of total contributions.

d) Extent of File Attachments & Category of File Types

Table 5: Extent of File Attachments

Months	Extent of Scholarly Communications	Extent of Communications having File Attachments (A)	% of (A) out of Total	Extent of Files (B)	Ratio between (A) & (B)
January	725	146	20.13	208	1 : 1.42
February	671	97	14.45	165	1 : 1.70

March	539	82	15.21	118	1 : 1.43
April	554	98	17.68	163	1 : 1.66
May	504	70	13.88	91	1 : 1.30
June	630	83	13.17	118	1 : 1.42
July	677	98	14.47	134	1 : 1.36
August	651	118	18.12	183	1 : 1.55
September	691	110	15.91	140	1 : 1.27
October	762	102	13.38	161	1 : 1.57
November	640	81	12.65	110	1 : 1.35
December	651	110	16.89	157	1 : 1.42
Total	7695	1194	15.51	1748	1 : 1.46

Table 5 show monthly extents of scholarly communications that have file attachments during the period of study, the percentage of communications having file attachments, and extent of files attached. On the observation of table 5, it has been found that 1194 scholarly communications (15.51%) were having file attachments. The highest number of file attachments observed in the month of January (146 scholarly communications) with 208 files; and the least number of file attachment seen in the month of May (70 scholarly communication) with 91 files. The amount (extents) of files is more than the extent of scholarly communications that have file attachments. Furthermore, on an average per month 99.5 scholarly communications observed having file attachments with 145.66 files on an average per month. There are total 1748 files found in 1194 scholarly communications. The ratio between the extent of scholarly communications that have file attachments and extent of files have been calculated monthly; and on an average, for three years scholarly communications, 1 : 1.46 ratio found between both of them. The highest ratio observed for the month of February (1 : 1.7) whereas the least ratio observed for the month of September (1 : 1.27).

Table 6: Extent of File Attachments with File Types

Months	Extent of File Attachments	Extent of Files	File Types									
			PDF	Image	Excel	Word	PPT	Audio	Video	Others	Zip	HTML
January	146	208	109	52	1	21	0	0	0	24	0	0
February	97	165	78	57	0	19	0	0	0	10	1	0
March	82	118	58	40	0	9	0	0	0	11	0	0
April	98	163	74	66	1	15	0	0	0	8	1	0
May	70	91	39	23	0	10	6	0	0	9	3	1
June	83	118	39	39	0	20	6	0	0	8	3	4
July	98	134	55	50	0	18	0	0	0	11	0	0
August	118	183	67	63	1	41	1	0	0	9	0	1
September	110	140	53	49	1	16	0	0	1	19	1	0
October	101	161	66	64	0	13	0	0	0	15	1	2
November	81	110	36	30	0	13	0	0	0	29	0	0
December	110	157	75	52	0	13	0	0	0	16	1	0
Total	1194	1748	749	585	4	208	13	0	1	169	11	8
Percentage		100	42.84	33.46	0.22	11.89	0.74	0	0.05	9.66	0.62	0.45

Table 6 displays the extents of file attachments and file types. There are 10 file types have been identified by Shukla & Dawngliana (2017) in their study for grouping the file types appeared in the scholarly communications over online forums. There is lack of audio files during the three years of study period whereas 4 Excel files, 13 PPT files, 1 video file, 11 Zip formatted files, and 8 HTML files have been observed in the scholarly communications of the group *NMLIS*. The highest numbers of file attachments were found in the form of PDF files (749, 42.84%) followed by Image files (585, 33.46%), and MS-Word files (208, 11.89%). There are 9.66% files could not identify due to non-availability of proper documents and keep under "Others" category. From the observation of table 6, it has been an inference that PDF, Image, and MS-Word are most communicated file types which covers 88.21% of total files as attachments.

e) Degree of JOB & LSC Posts Contribution & Most Prolific Job Posts Contributor

Table 7: Degree of JOB & LSC Posts Contribution & Prolific Contributors

Months	Extent of Scholarly Communications	JOB Posts		LSC Posts	
		Extent of Communications	Top Contributor	Extent of Communications	Top Contributor
January	725	97	AMR (34)	157	AMR (18)
February	671	75	NLR (19)	159	AMR (15), NLR (15)
March	539	62	NL (33)	161	PJ (25)
April	554	58	NL (15)	124	AMR (17)
May	504	79	NL (40)	113	NL (44)
June	630	79	NL (37)	102	PJ (23)
July	677	88	NL (21)	132	NL (21)
August	651	77	NLR (24)	131	PJ (25)
September	691	136	LIS (56)	148	LIS (33)
October	762	178	LIS (75)	175	LIS (44)
November	640	137	AMR (89)	157	AMR (35)
December	651	91	AMR (48)	137	PJ (22)
Total	7695	1157	AMR (171), NL (146), LIS (131), NLR (43)	1696	PJ (95), AMR (85), LIS (77), NL (65), NLR (15)

Table 7 represents the degree of JOB & LSC posts contributions and prolific contributors of such scholarly communications. On the observation of table 7, it has been found that 1157 JOB posts were shared in the group. The JOB posts share 15% scholarly communications out of total scholarly communications of the group during the study period. The month October is recorded for sharing the highest JOB posts communication whereas April is recorded for lowest communications of such posts. The contributor AMR (A Madhava Rao) has contributed the highest number of JOB posts (171) during the study period as well as contributed the highest number of posts in the month of November also. During the study period, contributor NL (Naglaxman) contributed 146 JOB posts followed by LIS (131) and NLR (43). Out of the total JOB posts communicated in the group, AMR (A Madhava Rao) shares 14.77% JOB posts followed by Naglaxman (12.61%), and LIS (11.32%). Further on the observation of table 7, it has been found that 1696 LSC posts were communicated to the group which is 22.04% of total scholarly communications. From the observation, the highest number of LSC posts were communicated in the month of October (175) and the lowest LSC posts were communicated in the month of June (102). The contributors PJ (Pralhad Jadhav) and AMR (A Madhava Rao) contributed four times as top contributor of LSC posts. Overall Pralhad Jadhav is the topmost contributor of LSC posts (95) which is 5.6% of total LSC posts communicated in the group followed by A Madhava Rao (85 posts, 5.01%) and LIS (77 posts, 4.54%).

Findings of the Study

Following are the findings derived from the present study:

- There are 7695 scholarly communications took place in a three-year longitudinal study.
- The categories CON, JOB, and LSC were the major focus of scholarly communications in *NMLIS* group that shares 54.87% scholarly communications together after excluding GIC. The categories CON, FDM, JOB, and LSC are directly related to the development of LIS professionals and together shared 56.03% scholarly communications.
- As per extent of scholarly contribution, PJ (Pralhad Jadhav) is the topmost prolific contributor amongst all followed by NL (Naglaxman), NLR (Prof. N. Laxman Rao), and AMR (A Madhava Rao). On the observation of frequency of contributor's contribution, three contributors namely NL, NLR and PJ have the highest frequency of contribution. Prof. N. Laxman Rao contributed 37.58% scholarly communications using three distinct usernames followed by Pralhad Jadhav (26.28%). There are 12 contributors which have contributed 75.68% scholarly communications and rests of the contributors (99.15%) have contributed only 24.32% scholarly communications.
- Out of total 7695 scholarly communications, 1194 scholarly communications (15.51%) were having file attachments. There are total 1748 files found in 1194 scholarly communications. The ratio between the extent of scholarly communications that have file attachments and extent of files have been observed 1 : 1.46.

- e) The highest numbers of file attachments were found in the form of PDF files (42.84%) followed by Image files (33.46%), and MS-Word files (11.89%).
- f) Total 1157 JOB posts were shared in the group during the study period. The contributor AMR (A Madhava Rao) has contributed the highest number of JOB posts.
- g) Total 1696 LSC posts were communicated to the group which is 22.04% of total scholarly communications. Pralhad Jadhav is the topmost contributors to LSC posts followed by A Madhava Rao.

Conclusion

In the modern technological world, Library and Information Science (LIS) professionals are using the various electronic medium to share their views and other information with fellow professionals as well as their users. Online forums are one of the best information and views sharing platform. *NMLIS* group is also one of such kind of online platform to post individuals ideas, views, and information etc. It is evident that, when a LIS professional communicates in the group, he shares scholarly knowledge (Shukla & Dawngliana, 2017). *NMLIS* group is made for the development of LIS profession and self-development of library professionals' via sharing different kinds of professional information. *NMLIS* group is having the highest number of group members with the significant number of scholarly communications. The major focus of the scholarly communications in the group is inclined towards professional development. "From the general kind of information to library-specific information, from job-related information to faculty development information and from greetings to obituaries kind of information has been shared in the group" (Shukla & Dawngliana, 2017). It is also evident from the present study and earlier study (Shukla & Dawngliana, 2017) conducted on the group *NMLIS* that very few members of the group contributing highest percentage of the scholarly communications and vice versa. Moreover, some sort of scholarly communications has file attachments for sharing valuable information over the online forum in different file formats. The group *NMLIS* proves its worth amongst group members by sharing more than 200 scholarly communications per month in the field of LIS for professional development.

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Do Online Professional Forums Promote Professional Contents Effectively? An Analytical Study of New Millennium LIS Professionals (NMLIS)

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***Abstract** -Paper deals with the analytical study of communications posted in the online professional forum using content analysis technique. The study analyses 13062 communications posted in the NMLIS forum during five year period. Total extents of communications have been calculated and further Core Contents (Professional Contents) and Non-Core Contents (Non-Professional Contents) have been identified based on eight categories of scholarly communications. The "Degree of Effectiveness" and "Levels of Effectiveness" have been proposed to measure the effectiveness of online professional forums. The study found that Core Contents was the major focus of communications among group members and thus NMLIS promote professional contents effectively.*

Keywords: Professional Forum, Online Forum, Professional Content, Professional Growth, Scholarly Content, Library Professionals, Content Analysis, NMLIS.

1. Introduction

The evolution of the Internet and World Wide Web has changed the way of communication among peers across the world. In the present scenario, online forums have changed the way of communication among peers and crossed the limits of geographical boundaries. It is a web-based communication tool that gives opportunities to peers to post their views/message as well as react to other's posts. Online forum plays the very much significant role in terms of dissemination of professional information as well as sharing of digital information resources. Library and Information Science (LIS) is the profession which deals specifically with the dissemination of information content to the users; and in this regard, LIS professionals disseminate the professional content available in the various physical forms. Ebner et al. (2010) advocates that it is not the "transfer of information or status messages that are crucial factors, but rather, the opportunity to be part of someone else's process by reading, commenting, discussing or simply enhancing it" that leads to being part of a "murmuring community" (p. 98).

There are numbers of online LIS discussion forums, out of which *New Millennium LIS Professionals (NMLIS)* group is widely accepted and used by the Indian LIS professionals among all other online discussion forums. The *NMLIS* created on 22nd October 1999 by Prof. N. Laxman Rao on Yahoo! The group is sharing the different varieties of professional as well as general kind of knowledge and experience to the members of the group. This is the biggest discussion group in Library & Information Science discipline in India, in terms of group

members (3111) as well as in terms of communications posted (more than 33269) on the group as on 16.03.2017. There are many online professional forums in different disciplines. There exists online discussion on the topic related to field specific as well as others also. LIS online forums also do the same. The question arises in the mind that whether these online professional forums discuss more on professional growth effectively or not? It has been observed that online forums discuss professional contents as well as other contents also (Shukla & Dawngliana, 2017; Dawngliana & Shukla, 2018). To check the effective use of online professional forums in the promotion of professional growth, it is imperative to analyze the contents of communications posted in the forum. Prasad (2008) described the content analysis "...as the scientific study of the content of communication. It is the study of the content with reference to the meanings, backgrounds, and purposes contained in messages". White & Marsh (2006) defined "content analysis is a method which can be used qualitatively or quantitatively for systematically analyzing written, verbal, or visual documentation". A detailed description of content analysis has been described by Berelson (1952) as "the researcher quantify and analyze the presence, meanings, and relationships of such words and concepts, then make inferences about the messages within the texts, the writer, the audience, and even the culture and time of which these are a part. Texts can be defined broadly as books, book chapters, essays, interviews, discussions, newspaper headlines and articles, historical documents, speeches, conversations, advertising, theater, informal conversation, or really any occurrence of communicative language".

2. Review of Literature

There are numbers of literature available in content analysis but the limited number of literature available in the area of online forums content analysis. Out of that literature, some very specific literature has been reviewed for the purpose which is as follows:

Dawngliana & Shukla (2018) conducted a longitudinal study on content analysis of NMLIS forum and found that the group communicated more professional information content. In another study by Shukla & Dawngliana (2017) on content analysis of online forum has given an impression that professional communication was highly preferred in the forum, and they identified as well as classified the communicated messages into eight different categories. Pujar et al. (2014) analyzed messages posting on a prominent LIS electronic discussion forum and found that the average posting of the message is about 1600 per year during the study period, out of which an "announcements" are forming the major posting. Gala (2013) in her study reported that blog contents comprised of 30% blog posts and 25% response & comments. Jackson-Brown (2013) found that professional development was a major focus of the blog content. Dhanvandan & Tamizhchelvan (2012) analyzed the e-mail discussion forums and concluded that Library and Information Science forums play an important assistant role for the profession and a very simple and efficient way to communicate with the forum members. Seker & Duzyol (2011) analyzed content analysis of ACRLog and found the major focus communications were "technological aspects of LIS", "LIS service activities", "others" (conference announcements, information, and announcements about ACRL, personal ideas, and experiences, etc.) and "scientific and professional communication". Analysis conducted by Nor et al. (2010) found that students actively processed and review the postings in online discussion forums. From their study, it is observed that the students are working collaboratively in order to respond to the postings base on the topics presented during the lecture.

Moradi & Dokht (2009) analyzed content analysis of the electronic discussion group of Ferdowsi University of Mashhad, Iran and found that majority of the messages covers Library and Information Science related information followed by subscription request and congratulations and condolence messages. Moreover, messages related to Library and Information Science confirmed that 25.82% messages were related to news/events about LIS; and 22.90% posts were related to conferences and workshops. Bar-Ilan (2007) studied the use of blogs by libraries and librarians and found that blogs posts have the influence of activities of information professionals and become the good medium of communication for information dissemination. The content analysis conducted by Guan et al. (2006) found that most frequently involved interaction type was the direct response and the most regularly used cognitive skill was elementary clarification. The study also specifies that the way which participants used cognitive and meta-cognitive skills during the discussions was associated with the forum. They concluded that the moderators' guidance would be more influential in determining the quality of online discussion on a non-course-based discussion forum. Hara et al. (2000) conducted a study on the online discussion in an applied educational psychology course shows that, while student tended to post one required comment per week in a conference, their messages were lengthy, cognitive and indicative of a student-oriented environment. The analyses also indicate that student electronic comments became more interactive, however, the level of communication was highly dependent on the direction of how the conversation was started.

3. Scope of the Study

This study covers professional communications (13062 messages) posted by the group members of *New Millennium LIS Professionals (NMLIS)* during the five year period from 1st January 2012 to 31st December 2016.

4. Objectives of the Study

The main objective of the study is to analyze the effectiveness of professional contents communicated over online professional forum *New Millennium LIS Professionals (NMLIS)*. Further, the specific objectives of the study are:

1. To assess the extent of communications carried over an online forum.
2. To assess the extent of professional contents communicated over an online forum.
3. To find out the Degree of Effectiveness and Level of Effectiveness of professional contents carried over an online forum.

5. Data Collection Methods and Procedures

The online survey and observation methods have been applied to conduct the study. The primary data collected from the Yahoo! group *New Millennium LIS Professional (NMLIS)*. The data have been collected to know the level of involvement, type of their activity and number of communications (postings) with description. The communications carried out during the periods of 1st January 2012 to 31st December 2016 have been collected from the archived database; categorized and transcribed appropriately using already defined categories of scholarly communications identified by Shukla & Dawngliana (2017). The study involves a combination of qualitative and quantitative methods for the description of analysis and result. The MS-Excel has been used for data collection, coding, analysis, and its interpretation during the study.

6. Data Analysis and Interpretation

a) Extent of Communications

Table 1 display the extent of communications took place during five year period over *NMLIS* forum. There are 13062 communications took place during the study period. The table display year wise and month wise breakups of total communications. On the observation of table 1, it has been found that the highest number of communications (2840) have been posted during the year 2015 whereas the least communications (2403) took place in the year 2016. On an average, more than 2600 communications per year carried over *NMLIS* forum. The average monthly communications for the years 2012, 2013, 2014, 2015, 2016 were 220.58, 226.67, 204.33, 236.67, and 200.25 respectively. In the month of September, the highest number of communications (1251) took place cumulatively for five years whereas month of May had least (905) number of communications. For the five year window, from the total communications carried over the study period, it has been found that on an average 1088 communications took place per month.

Table 1: Extent of Communications

Months	Extent of Communications					Total	%
	2012	2013	2014	2015	2016		
January	233	224	228	262	235	1182	9.05%
February	189	222	208	233	230	1082	8.28%
March	236	240	184	192	163	1015	7.77%
April	233	234	169	171	214	1021	7.82%
May	255	157	157	155	192	916	7.01%
June	233	214	187	211	232	1077	8.25%
July	209	145	243	207	227	1031	7.89%
August	221	347	264	222	165	1219	9.33%
September	237	270	187	272	232	1198	9.17%
October	231	258	240	374	148	1251	9.58%
November	186	228	199	282	159	1054	8.07%
December	184	181	186	259	206	1016	7.78%
Total	2647	2720	2452	2840	2403	13062	100%
Average	220.58	226.67	204.33	236.67	200.25	1088.5	8.33

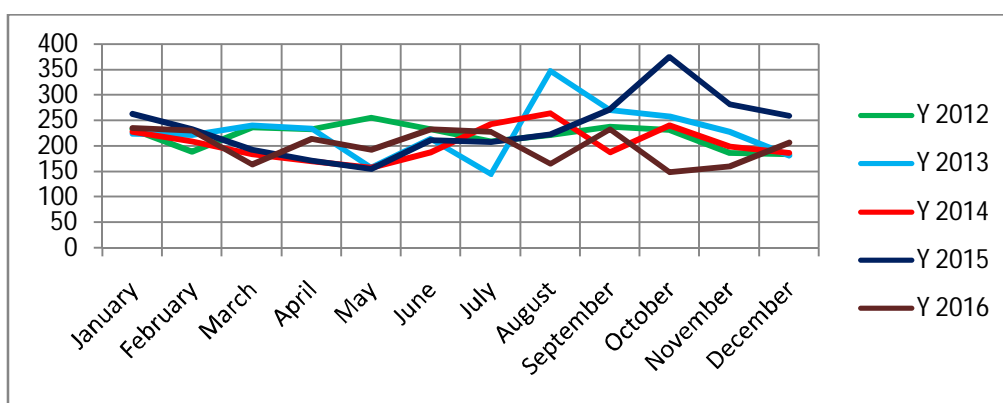


Fig. 1: Extent of Communications – Month wise

Fig. 1 displays the extent of communications month-wise for each year separately. The Fig. 1 clearly depicts that the highest number of communications posted in the month of October 2015 followed by August 2013. The Year 2012 has shown an almost equal distribution of communications for each month whereas the Year 2013 has many ups and down in the number of communications per month.

b) Extent of Professional Contents

Earlier studies conducted by Shukla & Dawngliana (2017) and Dawngliana & Shukla (2018) have clearly mentioned the categories of scholarly communications carried over online professionals forums. In their study, they clearly identified and defined the eight categories of scholarly communications carried over the online forum. These categories are Conference Communications (CON), Faculty Development Communications (FDM), Job Posts Communications (JOB), Library Science Communications (LSC), General Information Communications (GIC), Greetings Communications (GRC), Obituary Communications (OBI), and Other Communications (OTH). From the earlier mentioned categories, the first four categories namely Conference Communications (CON), Faculty Development Communications (FDM), Job Posts Communications (JOB), and Library Science Communications (LSC) focus more on professional development of Library & Information Science (LIS) and thus identified as core categories of professional communications where professional contents related to LIS are categorized. The professional forums which have the higher number of field-specific communications are successful in delivering their purpose to the forum members. More the field-specific communications will lead to the more successful forum.

Table 2: Extent of Professional Contents – Category wise

Months	Extent of Communications	Categories of Professional Contents							
		CON	FDM	JOB	GIC	LSC	GRC	OTH	OBI
January	1182	234	22	154	375	311	57	22	7
February	1082	163	16	121	399	332	11	32	8
March	1015	157	7	148	314	341	22	25	1
April	1021	132	7	111	370	317	28	56	0
May	916	137	19	166	277	260	6	48	3
June	1077	157	20	171	394	239	11	71	14
July	1031	171	15	178	363	239	5	51	9
August	1219	230	13	185	385	341	24	38	3
September	1198	222	6	243	360	302	21	42	2
October	1251	224	10	277	340	327	36	36	1
November	1054	188	10	209	262	303	40	34	8
December	1016	207	17	137	303	261	47	35	9
Total	13062	2222	162	2100	4142	3573	308	490	65
Percentage		17.01	1.24	16.08	31.71	27.35	2.36	3.75	0.49

Table 2 displays the total extent of professional contents (13062) in categorical form month-wise. These categories have been identified by Shukla & Dawngliana (2017). The categories

CON, FDM, JOB, and LSC have been identified as core categories that deal with the professional discussions and professional growth whereas rest of the categories namely GIC, GRC, OTH, and OBI deals with general kind of discussions and information sharing which is not related directly to professional contents. On observation of table 2, it has been found that 31.71% GIC related contents took place which is the highest amongst all categories followed by LSC (27.35%), CON (17.01%), JOB (16.08%), OTH (3.75%), GRC (2.36%), FDM (1.24%), and OBI (0.49%). In a five year window, 2222 CON related contents have been shared which is 17% of total contents shared in the group while 2100 JOB-related contents have been shared (16%) during the time frame. There are 3573 LSC related contents communicated (27.35%) which is the highest amongst professional contents category whereas only 162 FDM related contents have been shared which covers only 1.24% of total contents shared in the group. There are 13062 communications have been shared during five years of the study period, out of which 8057 (61.68%) contents are identified as professional contents (core contents) and rests of the 5005 (38.31%) contents found under non-professional contents (non-core contents). The categories CON, FDM, JOB, and LSC are directly related to the development of LIS professionals as observed by Shukla & Dawngliana (2017) in their study. In this regard, 61.68% contents belong to these four (4) core categories (CON, FDM, JOB, and LSC) identified for professional development. Moreover, out of the non-core categories, GIC related content is shared highly which shares 31.71% alone amongst all the eight categories. Further GRC, OTH and OBI related contents have been shared less but more than FDM category.

Here we propose a mathematical formula in line with Subramanyam (1983) formula to measure the degree of effectiveness of professional discussions carried over online forums. We name it “Degree of Effectiveness (DoE)” which will work as given below:

The maximum Degree of Effectiveness (DoE) will be 1 and values of DoE for any forum will range between 0 to 1. The Degree of Effectiveness (DoE) of contents of online professional forums will be calculated using the following formula:

$$\text{Degree of Effectiveness (DoE)} = \frac{N_c}{N_c + N_{nc}}$$

Where, DoE = Degree of Effectiveness, N_c = Number of core contents, N_{nc} = Number of non-core contents.

More the Degree of Effectiveness (DoE) for the professional content tends towards more effectiveness of professional forums and vice-versa.

Further, we propose Levels of Effectiveness (LoE) based on the DoE obtained for the professional forums. The detailed description of LoE is as given below in Table 3.

Table 3: Levels of Effectiveness

Levels of Effectiveness (LoE)	Range of DoE values	Description of LoE
Level -2	0 – 0.259	Unsatisfactory
Level -1	0.26 – 0.499	Satisfactory
Level 0	0.5	Average
Level 1	0.501 – 0.759	Good
Level 2	0.76 – 1.0	Excellent

Table 3 displays the Levels of Effectiveness (LoE) and Table 4 displays calculation of Degree of Effectiveness (DoE) month wise for the five-year data of online professional forum *NMLIS*. The DoE has been calculated for the year 2012-2016. Monthly DoE for five years has been calculated which ranged from 0.545 to 0.673. The highest DoE obtained in the month of November followed by October and September while least DoE obtained in the month of June. Year wise DoE can also be calculated from the above-mentioned formula. For the five year window, Professional Content contribution (Nc) is 8057 and Non-Professional Contents (Nnc) is 5005. The Degree of Effectiveness of the online professional forum (*NMLIS*) for five years is 0.616 and this indicates that *NMLIS* forum has a good level (Level 1) of professional contents over the period and thus disseminates professional contents effectively.

Table 4: Degree of Effectiveness of Online Forum – Month wise

Month	Professional Contents (Nc)	Non-Professional Contents (Nnc)	Total Contents (Nc+Nnc)	Degree of Effectiveness	Level of LoE
January	721	461	1182	0.609	Level 1
February	632	450	1082	0.584	Level 1
March	653	362	1015	0.643	Level 1
April	567	454	1021	0.555	Level 1
May	582	334	916	0.635	Level 1
June	587	490	1077	0.545	Level 1
July	603	428	1031	0.584	Level 1
August	769	450	1219	0.631	Level 1
September	773	425	1198	0.645	Level 1
October	838	413	1251	0.669	Level 1
November	710	344	1054	0.673	Level 1
December	622	394	1016	0.612	Level 1
Total	8057	5005	13062	0.616	Level 1

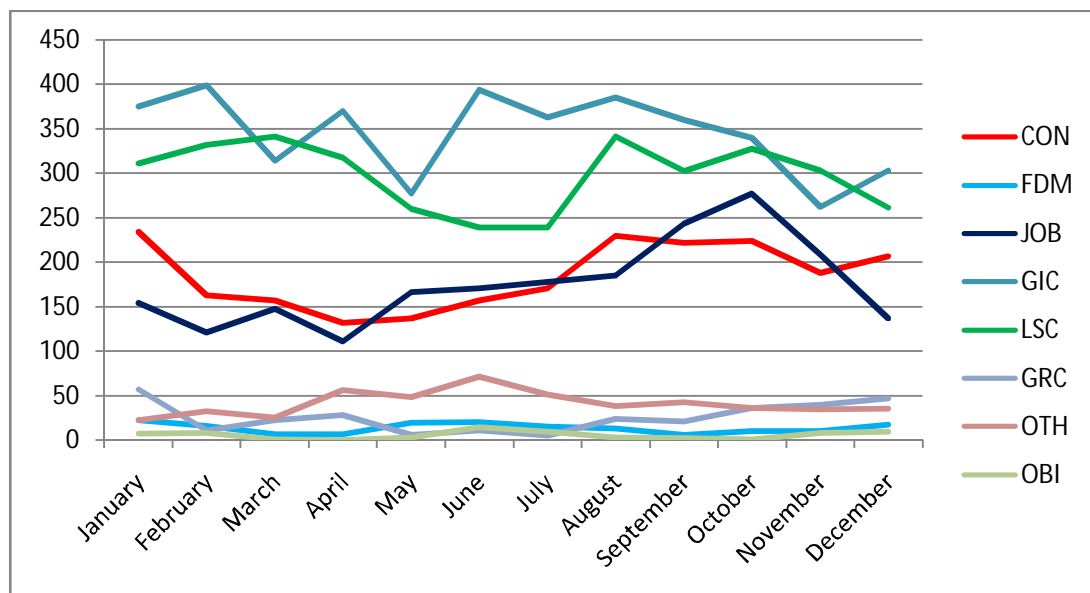


Fig. 2: Extent of Communications – Category wise

Figure 2 represents the total extent of communications carried over online forum categorically. It has been observed from Figure 2 that categories GIC, LSC, JOB, and CON have the higher number of communications every month whereas rests of the categories

FDM, GRC, OTH, and OBI have less than 50 communications most of the time. Further CON and JOB-related communications range between 100-250 per month while LSC and GIC related communications range between 250-400 per month.

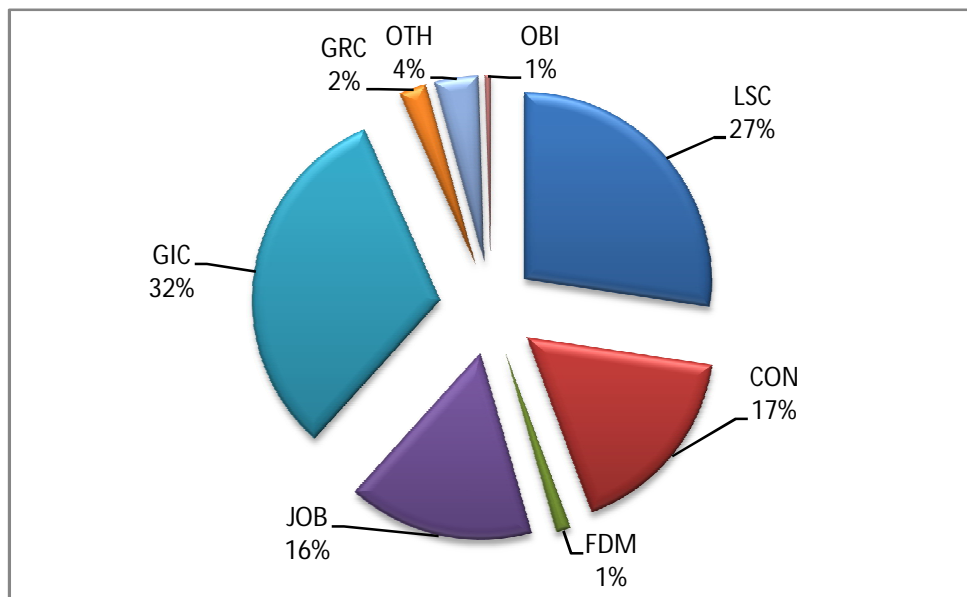


Fig. 3: Share of Core and Non-core Contents – Category wise

Figure 3 depicts the share of each individual category in terms of percentage. On the observation of Figure 3, it has been found that from the Core Contents (Professional Contents) categories, LSC related content is highly shared among group members followed by CON and JOB. The least communicated category amongst Core Contents is FDM. Amongst the Non-Core Contents (Non-Professional Contents) categories, GIC related content has the highest share (31.71%). Majority of the communications belong to Core Contents categories.

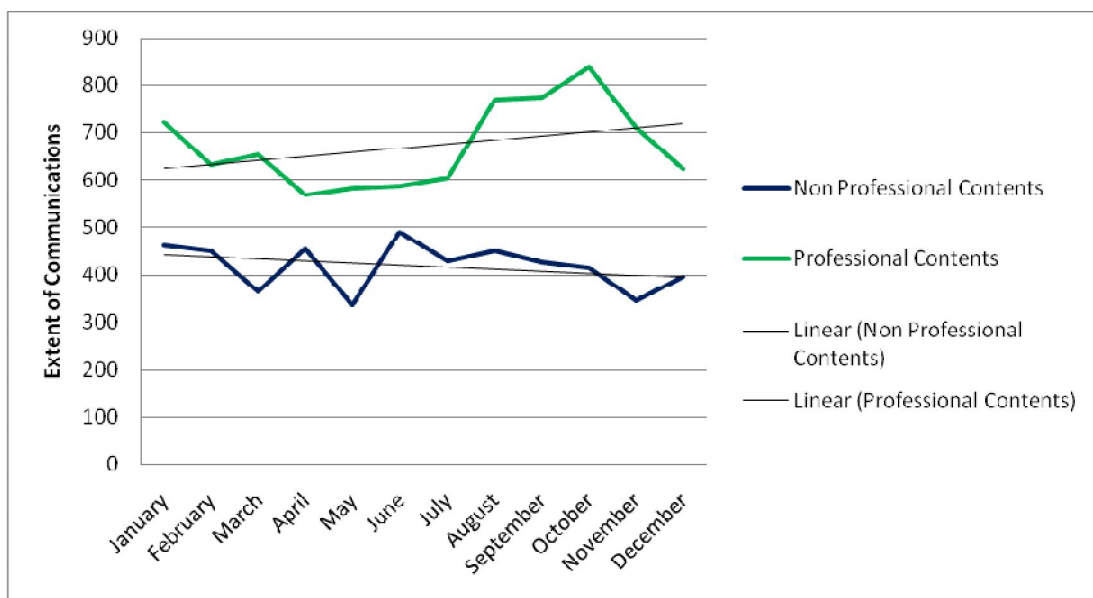


Fig. 4: Extent of Professional and Non-Professional Contents – Month wise

Figure 4 represents the trend of Professional Contents and Non-Professional Contents monthly. From the observation of Fig. 4, it has been found that Professional Contents are

always higher in terms of communication in the group than Non-Professional Contents. The figure 4 shows that 300-500 Non-Professional Contents have been communicated during the study period per month while 600-800 Professional Contents have been communicated per month in the same study period. The Linear Trendline for Non-Professional Contents shows downward movement from the month of January to December which indicates that starts of the year more Non-Professional Contents communicated and goes down gradually until the end of the year. The Linear Trendline for Professional Contents shows upward movement from start to end and denotes the growth of Professional Contents from start to end of the year. The both Linear Trendlines also indicates the difference of both types of communications carried over the online professional forum.

7. Findings and Conclusion

The *NMLIS* group is the biggest online professional forum in the field of LIS in India. It has more than 13000 professional communications during the five year period. The group has on an average more than 1000 professional communications per month for five years and more than 200 professional communications per month on yearly basis. The eight categories have been identified for the grouping of professional communications (Shukla & Dawngliana, 2017). Out of these eight categories, four Core Content categories (Professional Contents) and four Non Core Content categories (Non-Professional Contents) have been identified also by Shukla & Dawngliana (2017). The Core Content (61.68%) categories related communications have been communicated more in terms of number in the forum than Non Core Content (38.31%) categories. Further “Degree of Effectiveness” and “Levels of Effectiveness” have been proposed and calculated for the communications of the forum. For each of the month, “Levels of Effectiveness” calculated and result arrived at “Level 1” which shows “Good” Level of Effectiveness. There has been a remarkable difference observed between Professional Contents and Non-Professional Contents.

LIS professionals share their views and information with fellow professionals using online forums. "Online forums are one of the best information and views sharing platform. *NMLIS* group is also one of such kind of online platform to post individuals ideas, views, and information etc. It is evident that, when an LIS professional communicates in the group, he shares scholarly knowledge” (Shukla & Dawngliana, 2017). The major focus of the professional communications has been found for professional contents (core contents) which proves that online forum *NMLIS* is inclined towards professional development and promotes professional contents effectively. The mathematical calculations of “Degree of Effectiveness” and “Levels of Effectiveness” are supporting the online forum *NMLIS* for promoting the professional contents effectively amongst forum members.

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