A quantitative analysis of Lis Links discussion forum

Mohit Garg[a] and Uma Kanjilal[b]

[a]Assistant Librarian, Indira Gandhi National Tribal University, Amarkantak, Madhya Pradesh, India, Email: mohitji@igntu.ac.in

[b]Professor, Department of Library and Information Science, Indira Gandhi National Open University,
New Delhi, India, Email: ukanjilal@ignou.ac.in

The paper presents the quantitative analysis of the Lis Links discussion forum. A total of 10,286 posts on the Lis Links discussion forum were extracted using a program coded in the R language on May 31 2020. The study reveals that interest in Lis Links discussion forum is declining. The discussion forum was most active between 09:00 AM to 08:59 PM in terms of the number of posts (9056; 88%) published. Although the Lis Links forum has 12 categories for users to post information, the analysis found that majority of posts (10060; 97.80%)were posted under "Other Discussion". An analysis of the ten most viewed and replied posts was carried out to obtain the common theme of discussion. The results showed that most posts were related to UGC NET examination and study materials.

Keywords: Web2.0;Discussion forum; Lis Links

Introduction

In recent times, the advancement of the Internet and WWW (World Wide Web) technologies have brought about a phenomenal transformation in communication. It has facilitated people with easy access to information[1]. This has drawn a keen interest in web-based information services platforms that can provide answers to questions[2]. Among Q&A sites, discussion forums and email lists are quite popular for obtaining information that is not readily available. Some of the popular platforms are Quora, Stack Overflow, Trip Advisor, Yahoo Answers, Google answers (which is no longer accepting questions) and many other domain-specific forums like Lis-Forum, Lis Links etc. One of the main reasons for the popularity of these platforms is that they can provide domain-specific information.

Discussion forums are asynchronous web 2.0 based collaborative platforms where people discuss wide ranges of issues related to their profession; share their perceptions, experiences and provide latest information to support the members of the community[3,4]. People post their queries on these platforms in a natural language and expect replies from the community. These interactions are termed user-generated data. The analysis of this data gives us a better understanding of people's information seeking behaviours and opinions[5].

Lis Links discussion forum is one such platform related to library and information science (LIS) started in 2008[6]. Lis Links is a web-based social platform for sharing job posting, recent events like conferences, workshops, seminars, admission notifications, chat room discussion with other members, online discussion on various topics, etc. It is India's most widely used communication channel for LIS professionals[7] and was included in the 200 tech success stories in the year 2010[8]. Presently, it has more than 28,000 registered members[6].

The present study aims to analyse the posting of online discussion forum related to Lis Link.

Review of literature

This literature review accounts for various studies that explore the different aspects of the discussion forum. Pujar et al[3] explored 9734 posts of email discussion list on LIS-forum to understand the type of message posted on the forum. The authors analysed each message based on seven categories. The study found that the majority of the messages falls into two categories, i.e. announcement (41.46%) & information dissemination (23.26%). Berntzen[10] performed a content analysis of the local government of Norway discussion forum: demokratitorget. no. They investigated three popular discussion threads related to specific issues like "Traffic", "Youth" and "Education". The authors developed a content

categorisation schema and found that no new ideas were discussed on the forum.

Gizaw et al.[11] categorised the content of 116 threads (3,064 messages) from eight online technical support forums into three main categories. Chen et al.[12] analyzed 8155 posts and 145284 replies from ZhongBuJueQi Forum to study the different parameters of human behaviour. The authors showed the user's one-day activity, and one-post interest follows a power-law distribution.

Pengetet al[4] conducted a content analysis of 270 posts on online breast cancer forums to understand the behaviour of the patients related to clinical trials. Hwang et al[13] analyzed the 97 and 123 tourism posts related to South Korea and Japan on Lonely Planet's thorn free forum. Palosse Cantaloube et al[14] examined 115 questions and answers related to drugs and pregnancy on the ten French websites. Sindorf[15] investigated 388 samples of comments posted on the online forum of a community newspaper, i.e. *Greeley Tribune*. The study found some elements of deliberation in the comments made on local and national topics.

Hanna and Gough[16] conducted thematic analysis on 415 posts of a UK-based forum related to men's infertility. Davis and Marone[17] examined the data of gaming affinity space, TUG ("The Untitled Game") online discussion forum.

The literature review shows that many investigations have been done in different domains and very few in the library domain. There is a need to analyse more discussion forums related to the libraries. In this study, we have quantitatively analysed the postings of Lis Links discussion forum.

Objectives of the study
- To study the year, day and time-wise distribution of post on LIS-Links;
- To examine the most discussed and most viewed posts; and
- To identify the active users in terms of the number of posts.

Methodology
The user-generated data of the discussion forum, social media platforms like Quora, Twitter, Facebook, etc., can be accessed and extracted through the use of different API (Application Programming Interface) written in a high-level programming language. The Internet Archive (www.archive.org) also provides the

data dump of some of the platforms. But there was no dedicated API, and the data dump was traced for Lis Links discussion forum. A crawler program written in R language was used to extract data from the server of Lis Links discussion forum. The program was executed between May 31 2020, 10:00 PM to June 1 2020, 05:00 AM.

The time slot was decided based on the findings of the pilot study, where very less posts were shared in the nighttime. R is an open-source software used for statistical analysis. The packages "rvest", "stringi", "stringr", "ggplot2", were used for data extraction, pre-processing, and analysis. The eight metadata of each post was extracted. These are PostTitle, PostCategory, PostURL, PostDate, PostTime, PostUser, PostViews, and PostReplyCount. The study employed quantitative techniques for the analysis.

As one of the objectives of the study was to know the posting time on the discussion forum, we have defined the following six groups of post timing:

- Early Morning: 06:00 AM to 08:59 AM
- Morning: 09:00 AM to 11:59 AM
- Afternoon: 12:00 PM to 02:59 PM
- Evening: 03:00 PM to 05:59 PM
- Late Evening: 06:00 PM to 08:59 PM
- Night: 09:00 PM to 05:59 AM

Ethical considerations
The analysis of online internet data raises many ethical issues like consent, confidentiality, and privacy ofparticipants[18]. One of the ethical questions that arise is whether the data is in the public or private domain.

Eastham[19] in the context of the blog, has defined public and private online spaces. A discussion forum can be treated as public if it doesn't require any password to access the content. If it requires a password, it can be understood that some type of privacy is secured by the admin of the forum. Publicly posted forum data doesn't require ethical approval[19, 20].

The Lis Links doesn't require any login, password for accessing the content. However, a login is required for posting the content on the forum. Moreover, it is seen that some of the posts are viewed by non-registered members of the Lis Links. So, it can be deduced that participants of the Lis Links forum have been aware that the posting on the forum is done in public space.

The present study has used publicly available data which doesn't require any login and password.

However, an email consent was taken from the developer and administrator of Lis Links.

Results

Ten thousand two hundred eighty-six messages were posted on the Lis Links discussion forum from its inception in Feb 2008 to May 31, 2020, with a rate of 2 (~2.27) posts per day. Table 1 shows the year-wise distribution of the number of posts.

Fig. 1 shows that there was an exponential growth in terms of the number of posts up to the year 2012 and a steep decline thereafter. It has been observed that the most number of posts were shared in the year 2012 (2429), with a rate of 6(~6.64) posts per day. Since the year 2015, the rate of posts per day declined.

To understand the day-wise distribution of the number of posts, the year-wise data was divided into two classes, one class from 2008 to 2014 and another from 2015 to 2020. Figs. 2(a) & 2(b) show the distribution of the day-wise number of posts from 2008 to 2014 and 2015 to May 31 2020.

In the year 2008, after the launch on February 26, 2008, the first message was posted on September 16, 2008 (Tuesday), followed by the second post on December 5, 2008 (Friday). The visual scan confirms that the interest in posting on the Lis Links discussion forum was started in July 2011. In Fig. 2(a), the pink and blue squares in the year 2012 show the highest number of posts in a single day. The maximum number of 32 posts in a single day was posted on September 19, 2012 (Wednesday), followed by December 19, 2012 (Wednesday) with 25 posts, November 7, 2012 (Wednesday) &September 18, 2012 (Tuesday) with 24 posts.

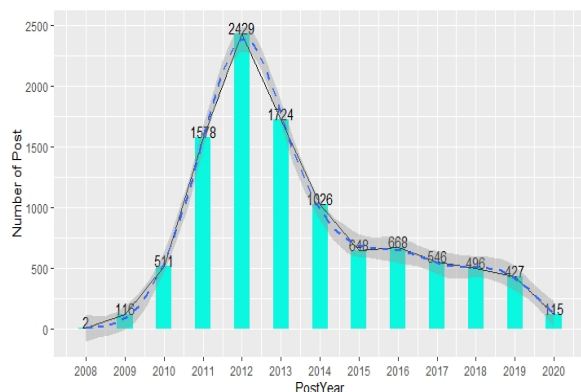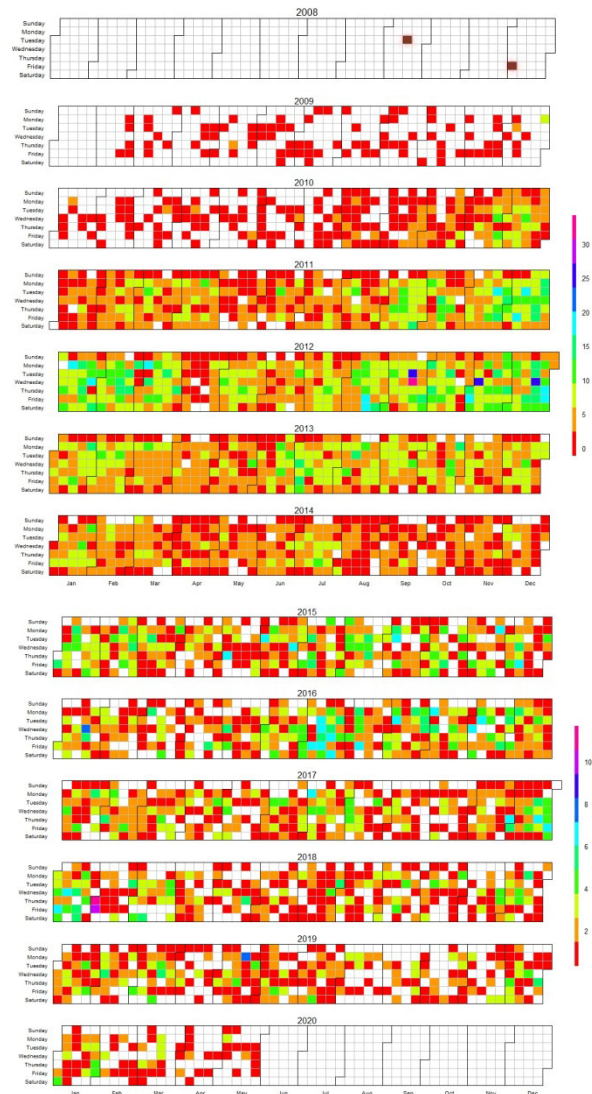| Table 1 — Number of posts per year		
Year	Number of posts	Cumulative no. of posts
2008	2	2
2009	116	118
2010	511	629
2011	1578	2207
2012	2429	4636
2013	1724	6360
2014	1026	7386
2015	648	8034
2016	668	8702
2017	546	9248
2018	496	9744
2019	427	10171
2020	115	10286

Fig. 1 — Number of posts (2008-2020)

Fig. 2a — Day-wise number of posts 2008-2014, 2b Day-wise number of posts 2014-31st May 2020
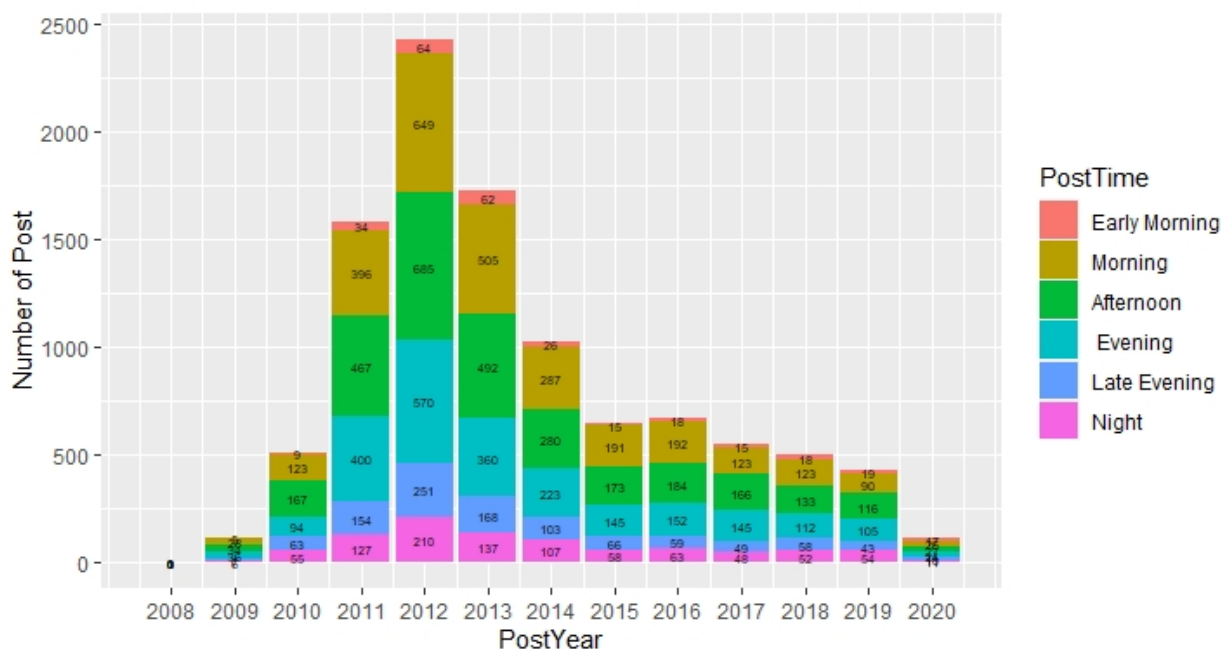
Fig. 3 — Distribution of posts

The stacked bar plot in Fig. 3 to discover trends of posting time shows the year-wise post timing in six categories. The majority of posts (88%) were shared between 09:00 AM to 08:59 PM with a maximum during the afternoons (2925 posts) followed by mornings (2734 posts) and late evenings (1031s). Nine percent of the messages were posted at night (928 posts), followed by the minimal number of 3% posts in the early mornings (302).

Lis Links has a pre-defined category for organizations of the posts. The registered user who wishes to post has to select one category mandatorily. Table 2 shows the category-wise number of posts posted on the Lis Links discussion forum. Based on the analysis, it has been observed that the majority of posts were posted under "Other Discussion" (97.80%, 10060).

Table 3 shows the list of the top ten users who have posted the most number of posts on the Lis Links discussion forum. Badan Barman, the leading contributor with 251 posts is also the administrator of the forum. The analysis revealed that the other nine users have posted between 50 and 100 posts.

Table 4 shows the list of the top 10 most viewed posts. The post "UGC Approved List of Journals in All Subjects 2019" by Badan Barman has received the highest number of viewership with 1,44,603, which is more than five times the number of registered users of the Lis Links. The popularity of the post should be

Table 2 — Category of posts

Post category	Number of posts	Percentage	Cumulative
Other discussions	10060	97.80	10060
Book reviews	2	0.02	10062
Call for articles for publication	22	0.21	10084
KVS / NVS examination	20	0.19	10104
Admission notification	68	0.66	10172
UGC NET / SET examination	46	0.45	10218
Award/Fellowship notification	10	0.10	10228
Call for tender	2	0.02	10230
Circular of importance to LIS	24	0.23	10254
News and broadcast from LIS Links	3	0.03	10257
Questionnaire for research	28	0.27	10285
Reports of an event	1	0.01	10286

Table 3 — Top 10 Users

Sl. no.	Post user	Number of posts	Percentage
1	Badan Barman	251	2.44
2	AbilashAchuthan	96	0.93
3	Munesh Kumar	92	0.89
4	Rajpal Purohit	91	0.88
5	ManavtaJugeshh	60	0.58
6	Jasmer Singh	56	0.54
7	Ghante Pradipkumar	55	0.53
8	Manjunath K S	55	0.53
9	Anil Kumar Dewangan	54	0.52
10	Nirendra K Pachauri	52	0.51

because the information provided in the post is useful to researchers in all disciplines.

The other nine most viewed posts were related to LIS exams, with eight posts concentrating on the theme of the UGC NET exam and one post related to the study material of professional examination. Despite having a pre-defined category as "UGC NET / SET Examination", the posts were posted in "other discussion".

Table 5 shows the list of the top 10 most discussed posts. The two posts shared in the year 2012 have received the most number of replies. The majority of posts (06) were related to the UGC NET examination, followed by 03 posts on DSSSB

Table 4 — Top 10 most viewed posts

Sl. No.	Post user	Month and year	Year	Time	No. of views	Title	Post category
1	Badan Barman	Jan-13	2017	11:46	144603	UGC approved list of journals in all subjects 2019	Other Discussions
2	Shadab Ahmad	Dec-30	2012	22:35	76172	The answer key for UGC-NET December 2012 (Paper I)	Other Discussions
3	Manjunath K S	Dec-30	2013	11:52	61675	December 2013 UGC-NET Paper I Answer keys	Other Discussions
4	Amit Kishore	Jan-28	2015	10:27	58800	A complete self-study guide to the library and information professional examination	Book Review
5	Digambar Bhaurao Waghmare	May-28	2012	12:11	50313	Free full-text e-books for UGC NET Exam (MCQ)	Other Discussions
6	Anil Kumar	Sep-01	2012	17:55	45647	UGC-NET June 2012 result will be available on or before 15 SEPT, 2012	Other Discussions
7	Ravish Verma	Jan-06	2013	09:25	43580	Supreme Court Order on UGC NET, June 2012: Published in *Dainik Bhaskar*	Other Discussions
8	Digambar Bhaurao Waghmare	Jun-01	2012	09:50	38308	Free Full-textE-Book for UGC NET/SET Exam Paper - I	Other Discussions
9	Vishal Sharma	Jun-25	2012	12:12	35793	Does someone have answer keys tothe UGC net exam held on June 24, 2012?	Other Discussions
10	Pragati Jain	Feb-28	2017	15:46	34767	Download UGC-NET e-certificate July 2016	Other Discussions

Table 5 — Top 10 most discussed Posts

Sl. No.	Post User	Post Month Day	Post Year	Post Time	Post Reply Count	Post Title	Post Category
1	N. Thasleem Arief	Oct-09	2012	14:38	1223	E-Book for NET/SET/JRF Teaching Aptitude	Other Discussions
2	Digambar Bhaurao Waghmare	Oct-04	2012	15:28	1016	E-Book for NET/SET/JRF Exam	Other Discussions
3	Digambar Bhaurao Waghmare	May-26	2012	15:21	286	E-Books for UGC NET/SET Exam (Objective Questions)	Other Discussions
4	Digambar Bhaurao Waghmare	May-28	2012	12:11	252	Free Full-Text E-Books for UGC NET Exam (MCQ)	Other Discussions
5	V K Sharma	Jul-17	2015	18:44	244	DSSSB Librarian Marks List Displayed	Other Discussions
6	Anant Kulkarni	Jan-27	2014	15:03	217	IGNOU BLIS / MLIS Study Material Download Link	Other Discussions
7	Punit	Mar-15	2016	16:49	169	Regarding joining of librarians through DSSSB	Other Discussions
8	Jasmer Singh	Sep-11	2014	16:47	155	DSSSB Answer Key available on DSSSB website	Other Discussions
9	Shivasharanappa	Sep-20	2012	13:17	153	Those who got UGC NET 2012 marks more than eligible criteria, please cooperate to sue case in the court	Other Discussions
10	Selvam M	Aug-21	2015	10:49	135	UGC NET Paper I Materials UGC NET Paper I Materials	Other Discussions

examination and one post on IGNOU study materials. The analysis revealed that most discussed posts were related to study material. As observed in most viewed posts, these posts were also posted in the "other discussion".

Findings

The results showed that initially, for some time, there was exponential interest in Lis Links discussion forum, and thereafter the interest declined. The average rate of posting on the forum was 2posts per day. The maximum number of posts was posted between 09:00 AM to 08:59 PM. The analysis of the ten most viewed and discussed posts showed that the maximum posts were related to the UGC NET exam and study material. There was high curiosity among LIS professionals about study material as the two posts get more than a thousand replies. Lis Links forums have pre-defined categories for proper organization and search, but except few, all posts were posted in one category, "other discussions". The study found that posting content is not correctly done. This happened even after each post posted on the Lis Links forum requires the approval of the administrator.

Conclusion

Lis Links discussion forum provides open and connected spaces for communication among professionals. This study's results indicate that number of discussions on Lis Links has declined. And it may become obsolete in the future if the reasons for fewer interactions are not explored. Despite the decrease in the number of posts, some of the discussions have been viewed by more than twice the number of registered users. The present study is limited in that it focuses on quantitative aspects only. Therefore, further research is needed to elaborate the picture of the type of discussion on Lis Links. In particular, it would be intriguing to investigate each post and corresponding reply in detail.

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