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Web-OPAC and Lending Behaviour of Library users during COVID19: A Study of University in Delhi

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The paper analyses the behaviour of 6631 library users during the pandemic years 2020 and 2021 with the help of 8164 web-OPAC and 7778 lending records. The records have been collected using library management software for the Central Library of Netaji Subhas University of Technology (NSUT), New Delhi. Web-OPAC is an example of remote library service whereas the lending service is that of on-site library service. The NSUT is a leading state University of the Government of National Capital Territory (GNCT) of Delhi in India. The statistical methods with the set theory have been used to analyse the behaviour of library users. The web-OPAC log records and the book lending log records are related to 1195 (18%) and 2174 (32.8%) library users respectively. The share of user successfully availed web-OPAC service, in any one year by login to software is 10.3%. This share in the year 2020 is 1.3% and that in 2021 is 9.9%. The share of successful users of web-OPAC service in both the years is 0.8%. The maximum 11.9% of undergraduate engineering students have successfully availed web-OPAC service during the two years. The share of users benefited either by the web-OPAC service or by the book lending service during the two years at the University is about 40.9%.

Keywords: *Online Public Access Catalogue; Library services; Academic Library; Netaji Subhas University of Technology; State University; Pandemic years*

0 INTRODUCTION

The World Health Organization (WHO) Chief Tedros Adhanom Gebreyesus described the worsening situation due to Covid-19 as a pandemic on 11th March 2020. The disease ripped around the planet which put countries into action. Most of the times during these two years, selected services have

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been allowed to function with standard operation practice (SOP). Educational activities at University have been kept running with the help of remote and on-site activities including the library services. Netaji Subhas Institute of Technology has been upgraded to Netaji Subhas University of Technology, a state University of Government of National Capital Territory (GNCT) of Delhi, India in the year 2018. The library services have been computerised with the help of e-granthalaya 4.0 software. The software has many features relating to online remote service and on-site service. It manages the log of many activities e.g. login to web-OPAC, books issued to a user etc. The requirement for study on remote and on-site library services in pandemic years of COVID-19 has been felt necessary towards improving library service subsequently.

Through web-OPAC services the library users have been allowed to search catalogue, browse once transaction, access to the digital library and many more. The users have the choices to search the library catalogues either through login or without login. But for the personalised library services, a user needs to login the web-OPAC. Access to library catalogue or OPAC service is assumed as prerequisite service of the library lending service, but a library user is not bound to avail lending service if he/she has availed web-OPAC service. For reducing the physical contacts during the years 2020 & 2021, the library users have been allowed to retain the books beyond due date without any over-due charge. The different categories of library users have used the library lending and web-OPAC services even in the pandemic years 2020 & 2021 after facing many constraints, imposed due to the Covid-19 situation but many could not avail these services in these years. The library services, availed have exhibited the affinity of users for library services. On the other hand the users, where library services could not reach in these years will show the areas to work more. This behaviour of library users will be the indicator for other universities in improving library services.

1 LITERATURES REVIEW

Scholars have studied the usage of online public access catalogue (OPAC) of libraries using the survey methods. The lack of basic skills among users has been found as major reason for not utilizing full features of OPACat¹. The experts have identified different types of documents, required by library users for their academic activities. The print books have been required for literature and recreational readings². The reading habits in passing out undergraduate engineering students have been found decreasing and 44.6% students have availed library lending service³. The pandemic effect on research output of Netaji Subhas University of Technology has been studied⁴. The challenges and opportunities of academic libraries in India because of COVID-19 have been studied and found a decrease for in-person service and increase in remote & online service⁵. The diversities in aims of library users have been studied

and found that the students have preferred to textbooks, the research scholars to state-of-art research materials, and the government officials to official documents⁶. At Noakhali Science and Technology University (NSTU), Bangladesh it has been found that only 7.5% of faculty members searched library catalogue& library repository, and 3.4% consulted to librarian as research information seeking activities⁷.

Scholars have used the survey method to the study the attitude of users for information technology. The requirement of training programmes on the know-how of IT systems has been listed in a study for Himachal Pradesh University, Shimla and Panjab University, Patiala⁸. Many of the government libraries in Delhi are using e-Granthalaya library management software⁹.

Study on behaviour of library users for web-OPAC and book-lending services in the pandemic years at university of GNCT of Delhi has not been made.

2 OBJECTIVES

The goal of the study is to identify the quantum of library services and the users in pandemic years 2020 & 2021 for improving the future library services and attracting more users. This is concentrated on -

(i) To identify the users, availed the maximum remote library service, web-OPAC in the years 2020 to 2021. (ii) To identify the share of immediate potential users of web-OPAC service. (iii) To identify the users, availed the maximum library lending service in pandemic years. (iv) To identify the users availed either web-OPAC service or lending service in pandemic years.

3 METHODOLOGY

The log records for web-OPAC service for the period 1st January 2020 to 31st December 2021 have been obtained in spreadsheet. The important fields of the records that have been obtained are (1) date of login, (2) web page visited, (3) success, (4) action by software, and (5) member id. The field, 'member id' scanned and 527 records, without member-id data, have been separated from the study. Further 61 records, with success = "N" and 2 records with member number beyond the scope have been dropped. Thus 7574 log records for web-OPAC service where the data in "member id" field found and that in "success" field either "Y" or "<" were found, have been analysed. On removing the duplicate "member id" and the member beyond the scope 1195 unique members have been identified for further analysis.

The different categories of users registered in LMS for library services during the two years have been identified and given in the scope. The records on library lending service have been exported in spreadsheet for analysis. The records for web-OPAC and the lending records for the categories of users given in the scope have been studied using the statistical methods

4 SCOPE

The resources of information are obtainable in different formats and sources such as - print book & periodical; electronic book & periodical; online & CD-ROM databases; discovery tools, Web-OPAC etc. Here lending of print materials and access to web-OPAC have only been studied. The other Library services are beyond the scope of study.

The types of users, the academic years, and the population studied for OPAC & lending services have been given in table 1.

Table 1: Library Users

S. No.	Types of users	Academic years	Population of users
1	UG engineering	2016-19; 2017-20; 2018-21; 2019-22; 2020-23	5652 (85.3%)
2	PG engineering	2018-19; 2019-20; 2020-21	432 (6.5%)
3	BBA	2019-21; 2020-22	140 (2.1%)
4	Faculty	F	116 (1.7%)
5	Staff	S	106 (1.6%)
6	Research scholar	TRF16; PHD17; PHD18; PHD19; PHD20; PHD21	100 (1.5%)
7	MBA	2019-21; 2020-22	85 (1.3%)
			6631

Note: UG-under graduate; PG – post graduate; BBA –Bachelor of Business Administration; MBA – Master of Business Administration.

5 DISCUSSION AND ANALYSIS

5.1 REPRESENTATION OF DIFFERENT TYPES OF USERS

The shares of different types of library users mentioned in the scope are representation of library users through Library management software eG4.0 used at a library of the University during the years 2020 to 2021. The share of undergraduate engineering students has been found the highest (85.3%) followed by post graduate engineering student (6.5%). The share of MBA (1.3%) has been found the minimum. The undergraduate engineering

students on the basis of different academic years studied have been identified as BE2016-19, BE2017-20, BE2018-21, BE2019-22 & BE2020-22 and their shares have been found 16.6%, 16.8%, 16.4%, 22.8%&27.4% respectively. The undergraduate engineering students BE2020-23 have been admitted in academic year 2020-21 and will pass in the year 2023-24 and their share have been found the maximum.

52 USERS OF WEB-OPAC SERVICE

The 8164 records obtained from the log of library management software on web-OPAC have been identified based on the characters mentioned in table 2. From this number as per the scope and mentioned in research methodology 7574 records have been identified for analysis of web-OPAC service of library during the years 2020 to 2021 with success = 'Y' OR '<>', and users within the scope of the study. Also from the table the number has been found as a result of [(s. no. 3 total + s. no. 4 total) – (s. no. 5 total)].

Table 2: Characteristics with Web-OPAC Records

S. No.	Characteristics of records ↓	2020	2021	Total
1	Records without member number	58	469	527
2.	Records with member number & success = "N"	03	58	61
3.	Records with member number & success = "y"	152	1677	1829
4.	Records with member number & success = <>	130	5617	5747
5	Records with member number & (success = <> OR "Y") and users, beyond scope of the study	0	2	2
	Total 1-4	343	7821	

In the identified 7574 web-OPAC records 3.7% records have been resulted in the year 2020 and the remaining 96.3 % in the year 2021.

Table 3: Users with login Web-OPAC Service

S. no.	Success of Web-OPAC service	Records	Unique Users (% of population)
A	Success = 'Y' OR '<>'	7574	1195 (18.0%)
B	Success = 'Y'	1828	686 (10.3%)
C	Success = '<>'	5746	1075 (16.2%)
	Immediate potential users = C- ($B \cap C$) = $1075 - 566 = 509$ i.e. 7.7%		$B \cap C = 566$ i.e. 8.5% of population

The 18% of the users have tried for the web-OPAC service and 10.3% users have successfully logged in to the service. The average number of successful attempts per successful users of web-OPAC service has been found 2.7 i.e. each successful user has successfully logged in two to three times for remote service of Library.

The successful login has been recorded with two actions (i) with password and (ii) with OTP (one time password). In the analysis for - success = 'Y' OR '<>', 6.9% times successful login has been made with password; 17.2% times successful login has been made with OTP (one time password). Also 16.1% times OTP has been sent by software for MOPAC (Mobile OPAC) and 59.8% times OTP have been sent by software for OPAC but successful login have not been made in two cases.

In the year 2020 only 1.4% of the undergraduate engineering students have successfully logged in, contrary to 11.4% undergraduate engineering students in the year 2021. Collectively in the year 2020 & 2021, 11.9% of undergraduate engineering students have successfully logged in for this service and 0.9% of undergraduate engineering students have successfully logged in both the years. The students from BBA & MBA courses i.e. 3.4% of users have not availed the web-OPAC service during the two years. The types of

users, successfully logged in (success=y), and percentage of population availed the web-OPAC service have been given in Table 4.

Table 4: Users of Successful Logged In

S. No.	Types of users	2020; Y records (% of records)	2021; Y records (% of records)	2020; Y members (% of members)	2021; Y (%) member	2020 & 2021 member(% users) ↓
1	UG engineering	138 (90.8%)	1648 (98.3%)	77 (88.5%)	646 (98.8%)	670 (11.9%)
2	Faculty	0	13 (0.8%)	0	4 (0.6%)	4 (3.4%)
3	Staff	4 (2.6%)	8 (0.5%)	2 (2.3%)	1 (0.2%)	3 (2.8%)
4	PG engineering	9 (5.9%)	7 (0.4%)	7 (8.0%)	3 (0.5%)	8 (1.9%)
5	Research scholar	1 (0.7%)	0	1 (1.1%)	0	1 (1.0%)
	Total	152 (100%)	1676 (100%)	87 (100%)	654 (100%)	686 (10.3%)

The undergraduate engineering students have the maximum share in the population of users (85.3%) and 11.9% of them have availed the web-OPAC service through successful login during the two years. The different categories of undergraduate engineering students and the web-OPAC service have been given in table 5.

Table 5: Web-OPAC service through successful login to UG Engineering Students

S. No.	UG Engineering students	Share	Unique member in 2020 [C]	Unique member in 2021 [D]	C U D (% of users)
1	BE2016-19	937 (16.6%)	70	592	607 (64.8%)
2	BE2017-20	950 (16.8%)	3	44	44 (4.6%)
3	BE2018-21	925 (16.4%)	7	6	13 (1.4%)
4	BE2019-22	1290 (22.8%)	0	4	5 (0.4%)
5	BE2020-23	1550 (27.4%)	0	1	1 (0.1%)
		5652			670

The BE2016-19 undergraduate engineering students have availed the maximum (64.8% of its population) web-OPAC service followed by BE2017-20, in pandemic years. Also the minimum web-OPAC service has been availed by BE2020-23. The BE2016-19 students have admitted in academic year 2016-2017 and were usually passing out the degree in academic year 2019-2020. Also the service has been availed in more number in the year 2021 than that in the Year 2020.

The remaining undergraduate engineering students have either availed this remote service without login or have yet not tried it. Also the said remaining undergraduate students have not tried for personalised library services available with web-OPAC through proper login.

53 IMMEDIATE POTENTIAL USERS OF WEB-OPAC SERVICE

The immediate potential user for web-OPAC is the name for group of such users those have tried for the service but could not succeed in proper login to LMS. Also a user tried for web-OPAC service, OTP sent successfully by the software but the users did not logged in successfully. In terms of records, 75.9% of times OTP have been sent by software but successful login has not been made. In term of population of study 16.4 % of the users tried for login but failed, the 10.3% logged in successfully, and the 18% users tried for login. Hence using set theory principle the immediate potential users of web-OPAC

service has been calculated to 7.7% and given in table 3 for three sets A, B & C. Here union of two sets has been given by third set A as $B \cup C = A$; and the value for intersection of two sets has been found using formula $B \cap C = n(B) + n(C) - n(B \cup C)$. Hence the number of users of immediate potential users of the service has been defined as a new set $= n(C) - n(B \cap C)$.

54 LENDING SERVICE IN PANDEMIC YEARS

In the study lending service has been represented by the issuing a book to a library user. Library lending services provided to different types of users of NSUT Central Library during the years 2020 and 2021 have been given in the table-6. The sixty two and half percent (62.5 %) lending service has been provided in the year 2020 and thirty seven and half percent (37.5%) in 2021. The maximum lending service (91.9%) has been provided to undergraduate engineering students followed by postgraduate engineering students (4.5%).

Table 6: Lending Service

S. No.	Types of users	Issued in 2020	Issued in 2021	Issued in 2020 & 2021 (%)	User availed Lending Service □
1	UG Engineering	4507	2642	7149 (91.9%)	1993 (35.3%)
2	Faculty	24	74	98 (1.3%)	28 (24.1%)
3	PG Engineering	251	96	347 (4.5%)	101 (23.4%)
4	Research Scholar	48	45	93 (1.2%)	22 (22%)
5	Staff	16	37	53 (0.7%)	16 (15.1%)
6	BBA	6	18	24 (0.3%)	6 (7.1%)
7	MBA	7	7	14 (0.2%)	8 (5.7%)
	Total	4859 (62.5%)	2919 (37.5%)	7778	2174 (32.8%)

The undergraduate engineering students has the maximum share, i.e. about eighty five percent (85%) in all type of users and their share in lending service has also been the maximum i.e. about ninety-two percent (92%) during 2020 to 2021. During two pandemic years about thirty three percent (32.8%) of total users have availed library lending service. The shares of users other than undergraduate engineering students have not availed the lending service in

higher percentage than their percentage in total users. Again the lending service to different types of undergraduate engineering students has been given in table 7.

Table 7: UG Engineering Student & Lending Service

S. No.	UG engineering students ↓	Unique member in 2020 [A]	Unique member in 2021 [B]	A U B(%)
1	BE2016-19	119	0	119 (12.7%)
2	BE2017-20	361	24	367 (38.6%)
3	BE2018-21	389	119	422 (45.6%)
4	BE2019-22	588	369	690 (53.5%)
5	BE2020-23	0	395	395 (25.5%)
	Total-5652			1993 (35.3%)

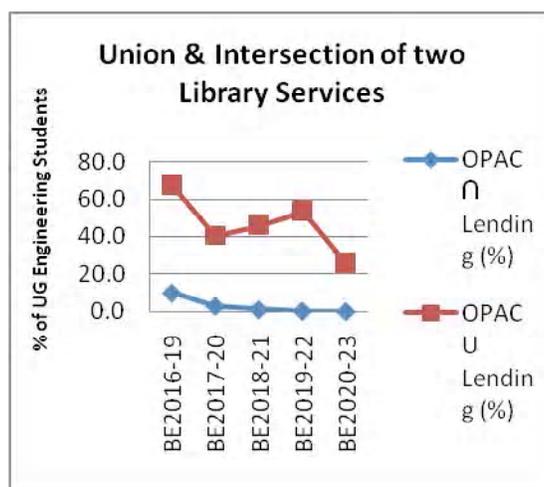
The maximum students i.e. fifty three and half percent (53.5%) of BE2019-22 batch have availed the lending service during the years 2020 & 2021 followed by 45.6% of BE2018-21 batch. The students of batch BE2016-19 have not availed lending service in the year 2021 because their passing out academic year was 2019-2020. Also the students of batch 2020-23 have not availed the service in the year 2020 because they were admitted in academic year 2020-21 and due to Covid-19 the service was not started to them in this year. Also about thirty-five percent (35%) of total undergraduate engineering students have availed the lending service in the pandemic years 2020 to 2021.

55 USERS AND WEB-OPAC OR LENDING SERVICE

In table 4 it is given that about ten percent (10.3%) of library users have availed web-OPAC service and in table-6 it is given that about thirty three percent (32.8%) of users have availed lending service in two pandemic years. In table-8 it has been found that about forty-one percent (40.9%) have either availed lending service or web-OPAC service through successful login during the two pandemic years. Also about fifty-nine percent of users have not availed any of the two library services during said years and 2.2% of users have availed both the services during two years.

Table 8: Users benefited with either of the two services

S.no.	Types of Users	Users in 2020 & 2021 web-OPAC	User with Lending	No of user (OPAC U Lending) [%]	No of user availed (OPAC \cap Lending)
1	UG Engineering	670	1993	2526 [44.7%]	137 (2.4%)
2	PG Engineering	8	101	102 [23.6%]	7 (1.6%)
3	Faculty	4	28	32 [27.6%]	0
4	Research Scholar	1	22	22 [22.0%]	1 (0.9%)
5	Staff	3	16	18 [17.9%]	1 (0.9%)
6	MBA	0	6	6 [7.1%]	0
7	BBA	0	8	8 [5.7%]	0
8	Total = 6631	686	2174	2714 [40.9%]	146 (2.2%)

**Fig. 1: Gaps in services**

The different undergraduate engineering students either availed library lending service or the web-OPAC through successful login during the two years have been given in table-9. The gaps between 'union of two services' and 'intersection of two services' for the different types of undergraduate engineering students have been shown in figure-1.

Table 9: Union and Intersection of two Services

S. No.	UG Engineering User Type	No of user (OPAC \cap Lending)	No of user (OPAC \cup Lending)
1	BE2016-19	94 (10.0%)	632 (67.4%)
2	BE2017-20	28 (2.9%)	383 (40.3%)
3	BE2018-21	10 (1.1%)	425 (45.9%)
4	BE2019-22	4 (0.3%)	691 (53.6%)
5	BE2020-23	1 (0.1%)	395 (25.5%)
	Total =5652	137 (2.4%)	2526 (44.7%)

6 CONCLUSIONS

On most of the days in the years 2020 & 2021 on-site library services could not be provided due to the Covid-19 restrictions in state universities in Delhi. The share of undergraduate (UG) engineering students in total library users was the maximum (about 85%) and among them BE2020-23 have shared the maximum (about 27%). In another study, about forty-four percent (44.6%) of passing out UG engineering students have availed lending service in one year³ and in present study, about thirty-eight percent (38.6%) of BE2017-20 students (4th year student) have availed either lending or successfully web-OPAC service during the years 2020 to 2021. Thus in these two years, library services have dropped tremendously. The maximum percentage of BE2018-21 users have availed any of the two services during the year 2020-2021.

1.4% and 11.4% of UG engineering students have availed web-OPAC service through successful login in the years 2020 and 2021 respectively. Also 6.9% times, the successful login has been made with personal password and 17.2% times with OTP. This has indicated that the use of remote service e.g. library web-OPAC has increased among users due to covid-19 and also they have preferred OTP based service than password based service.

The print books have been required by library users for literature and recreational readings². The students have preferred the text-books⁶. The library users of the university have availed more number of lending service than the successful web-OPAC login service during 2020 to 2021. Thus the text books were required by the undergraduate engineering students at the university even in the pandemic years.

In two years, 11.9% of UG engineering students have availed the successful web-OPAC login service, 35.3% the lending service, 44.7% either of the two services and 2.4% of the students have availed both the services in same period. Hence there is much scope to provide the services to larger percentage of UG engineering students and hence to all types of the users.

The need of training programmes on the know-how of IT systems has been mentioned⁸. The features of LMS keep improving and BE2020-23 students

have not availed web-OPAC service in their 1st year i.e. 2021. Hence with the help of training program the first year UG engineering students may be motivated for Library services.

There is a need to analyse the behaviour of lending service and web-OPAC service with the reading room service provided by the library to its users which may be possible by capturing the data of library users at the entry of the library for the purpose. Also for improving the Library service the Library Current Situation Index (CSI) and the Future Expectation Index (FEI) similar to that of RBI's Consumer Confidence Survey (CCS) should be identified with the provisions of requirements of resources for FEI.

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