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Awareness and Use of Online Public Access Catalogue (OPAC) by Scientists of DRDO Libraries in India: A Study.

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Abstract

This research delved into the familiarity and use of the OPAC by scientists affiliated with DRDO laboratories in India. A survey was administered to 885 Scientists (B, C & D) across different DRDO libraries in the country. Out of the distributed questionnaires, 720 were collected and utilized in the analysis. The results showed that 78.75% of the respondents were acquainted with OPAC services. The paper explores several facets of OPAC, including awareness levels, utilization for searching documents in Technical Information Centers (TICs), frequency and purpose of use, as well as reasons for lack of familiarity with OPAC.

Keywords: OPAC, online public access catalogue, DRDO libraries, awareness, Technical Information Centres (TICs).

Introduction

The advent of the OPAC has transformed the conventional means of accessing the resources of the, especially in academic libraries. Serving as an interface for information retrieval systems, OPAC facilitates users in exploring library resources through multiple access points. Historically, its emphasis has been on seeking and retrieving bibliographic records for information items rather than the complete text of the resources. This technology has greatly optimized the procedure, enhancing the speed and efficiency of searching for and retrieving bibliographic records[1].

The adoption of technology in India's libraries has led to the automation of numerous operations and services, catering to the diverse needs of their user base. Among these services, the public catalogue, a crucial aspect of library functionality, has seamlessly integrated with computer technology, giving rise to the Online Public Access Catalogue (OPAC). Functioning as an information retrieval system, OPAC represents a transformative leap in accessing bibliographic information, offering users advanced search capabilities.

In the contemporary landscape, several libraries in India now provide OPAC services to empower users in efficiently locating their desired documents. Recognizing the importance of user satisfaction with this service, libraries find it essential to conduct periodic assessments. These evaluations aim to gauge the comfort levels users experience with OPAC, enabling timely initiatives for improvement. Consequently, a study has been initiated to explore the utilization of OPAC by users in DRDO libraries in India, with the goal of enhancing and optimizing this service[2].

OPAC (Online Public Access Catalogue): Definition

OPAC, which stands for Online Public Access Catalogue, serves as the virtual repository or online database housing all the resources within a library. It serves as the library catalog, enabling users to search for books and offering details on the availability of items, indicating whether they are presently in the library or on loan, along with their corresponding call numbers.[3].

An Online Public Access Catalog (OPAC) is essentially a computerized database that encompasses a library's materials and is often integrated into a broader library management system or software. It serves as a comprehensive resource for users to explore and access the library's holdings[4].

DRDO: A Brief Profile and Objectives:

DRDO is a prominent national research and development institution with a strategic focus on defense-related research. Operating through a network of 52 laboratories across various states in India, DRDO is actively involved in the advancement of critical defense technologies spanning various disciplines.

The significant contributions of DRDO include the establishment of an ecosystem conducive to cutting-edge technology development, marked by extensive infrastructure and partnerships with academic and research institutions.

The core goals of DRDO laboratories, where science and technology information are pivotal, include advancing cutting-edge defense technologies, attaining self-sufficiency in defense technologies and systems, and promoting collaboration among research and development organizations, ordnance factories, public sector units, academia, and industries to achieve autonomy in defense systems.

DRDO TICs/Libraries

Recognizing the paramount importance of timely information, DRDO laboratories have established robust library facilities and, in some instances, have also instituted specialized information centers known as Technical Information Centres (TICs). The provision of such information in a timely and appropriate manner is crucial for enhancing the efficiency and productivity of research and development endeavors. The Defence Research and Development Organization (DRDO) laboratories have astutely acknowledged the critical role of timely information and, accordingly, have set up well-equipped library facilities along with dedicated Technical Information Resource Centres (TICs). These TICs, positioned as central hubs for information delivery and deployment, play integral roles in the collection, processing, storage, acquisition, and dissemination of scientific and technical information tailored to the specific interests of each DRDO laboratory. They cater to the information requirements of scientists engaged in specialized defense-related subject areas within these laboratories. The 25 TICs considered for this study are detailed in Table -1.

Table – 1: List of 25 TICs of DRDO Establishments

S. No.	Name of the Labs & Location	Abb. as	Year of Estd.
1.	Laser Science And Technology Centre, Delhi	LASTEC	1950
2.	Naval Physical Oceanographic Laboratory Kochi	NPOL	1958
3.	Defence Scientific Information and Documentation Centre (DESIDOC). Delhi	DESIDOC	1958
4.	Institute for Systems Studies and Analyses, Delhi	ISSA	1959
5.	Aeronautical Development Establishment ,Bangalore	ADE	1959
6.	Gas Turbine Research Establishment ,Bangalore	GTRE	1959
7.	Solid State Physics Laboratory Delhi	SSPL	1960
8.	Defence Electronics Research Laboratory , Hyderabad	DLRL	1961
9.	Defence Food Research Laboratory, Mysore	DFRL	1961
10.	Electronics and Radar Development Establishment Bangalore	LRDE	1962
11.	Defence Metallurgical Research Laboratory, Hyderabad	DMRL	1963
12.	Aeronautic Development Agency ,Bangalore	ADA	1980
13.	Defence Research and Development Laboratory, Hyderabad	DRDL	1980
14.	Integrated Test Range, Balasore, Orissa	ITR	1982
15.	Defence Bioenginering and Electromedical Laboratory , Bangalore	DEBEL	1982
16.	Microwave Tube Research & Development Center , Bangalore	MTRDC	1984

17.	Centre for Airborne Systems , Bangalore	CABS	1985
18.	Centre for Artificial Intelligence and Robotics , Bangalore	CAIR	1986
19.	Defence Avionics Research Establishment, Bangalore	DARE	1986
20.	Advanced Numerical Research and Analysis Group , Hyderabad	ANURAG	1988
21.	Research Centre Imarat , Hyderabad	RCI	1989
22.	Centre of Fire, Explosive & Environmental Safety, Delhi	CFEES	1992
23.	Centre For Military Airworthiness & Certification , Bangalore	CEMILAC	1994
24.	Proof & Experimental Establishment , Balasore,	PXE	1995
25.	Advanced Systems Laboratory ,Hyderabad	ASL	2001

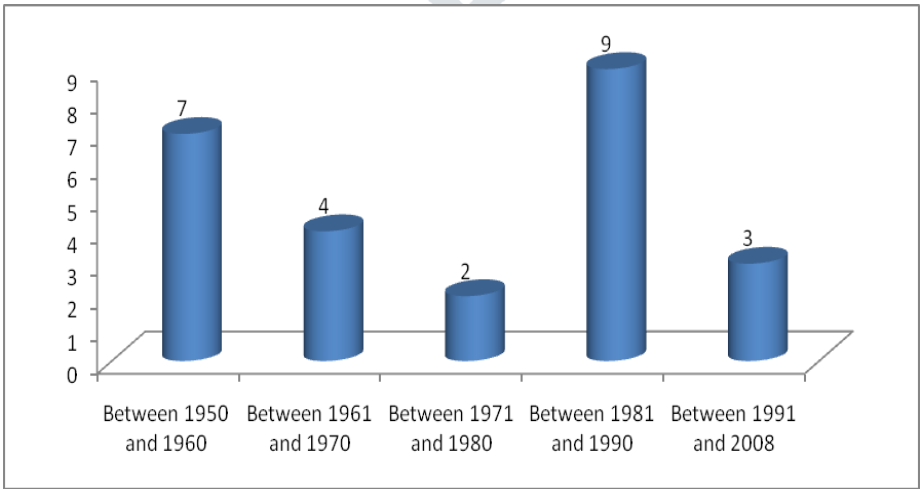
Establishment of TICs of DRDO laboratories.

Table - 2 provides a decade-wise breakdown of the number of Technical Information Centres (TICs) established in each of the 25 DRDO laboratories since 1950. Analysis of the data reveals that a higher number of DRDO TICs emerged during the periods of 1950-1960 and 1981-1990. This trend may be attributed to the imperative of bolstering the nation's armed forces and enhancing modern defense capabilities during those specific decades. The data underscores the active involvement of all DRDO scientists in research and development activities, necessitating access to pertinent R & D information for their projects and technological initiatives. In order to fulfill this need, TICs play a crucial role by efficiently harnessing available electronic resources and carrying out their functions effectively across all 25 laboratories.

Table – 2: Year of Establishment of TICs of DRDO in India

Year of establishment	Name of TICs	No. of TICs
Between 1950 and 1960	LASTEC, NPOL, ISSA, ADE, GTRE, SSPL, DESIDOC	**7**
Between 1961 and 1970	DLRL, DFRL, LRDE, DMRL	**4**
Between 1971 and 1980	ADA, DRDL	**2**
Between 1981 and 1990	ITR, DEBEL, MTRDC, CABS, CAIR, DARE, ANURAG, RCI, CFEES	**9**
Between 1991 and 2008	CEMILAC, PXE, ASL	**3**
Total		**25**

Figure – 1: Year of Establishment of TICs of DRDO in India



Need and Objectives of the study

This study is centered on investigating the information-seeking behaviors related to research and development activities among scientists at DRDO laboratories in India. Specifically, the research aims to assess the awareness, frequency, and purpose of utilizing the Online Public Access Catalogue (OPAC) facilities and services provided by DRDO libraries, focusing on user categories such as Scientists B, C, and D.

The integration of OPAC has significantly transformed library practices, facilitating easy access to the library collection beyond physical constraints. Regular evaluation of OPAC usage is essential to initiate necessary measures for optimizing this service. This study concentrates on understanding the awareness and utilization of OPAC within DRDO libraries by Indian scientists. Additionally, it endeavors to uncover the information requirements of end-users and assess the extent to which OPAC meets these needs.

The primary objectives of this study include:

- To Investigate the utilization of OPAC.
- To assess scientists' awareness regarding the advantages of OPAC facilities.
- To determine the frequency of OPAC usage.
- To identify the purposes for which OPAC is utilized.
- To assess the current status of OPAC usage.
- To investigate the reasons for a lack of familiarity with OPAC services.

Methodology

This research employed a survey methodology based on questionnaires. A total of 885 questionnaires were crafted and distributed to scientists across various DRDO laboratories in India. The study received filled questionnaires from 720 respondents, constituting 81% of the target population. To ensure clarity, accuracy, and precision in responses, scientists were also personally assisted and interviewed. The gathered data underwent organization, analysis, tabulation, and interpretation using straightforward statistical methods. The study also incorporates graphical representation of the data.

Scope and Limitations of the Study

The scope of this study is delimited to scientists categorized as B, C, and D. It aims to explore the awareness and utilization of Online Public Access Catalogues (OPAC) in DRDO libraries, assessing the automated facilities and services implemented in these libraries. The study specifically focuses on selected DRDO libraries under the Ministry of Defence in India. While the availability and utility of OPAC services in DRDO libraries are extensive, this research is confined to the chosen DRDO libraries in India. The paper's scope is further limited to scientists from DRDO laboratories among the 25 libraries in India, specifically targeting user categories of Scientists (B, C & D) within DRDO laboratories.

Literature Review

Literature holds a pivotal role in the realm of research, serving as the initial stepping stone in any research endeavor. A comprehensive review of literature is an integral component within the context of the chosen topic, and its systematic conduct is imperative for achieving optimal results. This study endeavors to encompass various works undertaken both in India and abroad.

Mulla K. R and Chandrashekara, M. (2009) explored the usage and satisfaction levels of users regarding Web Online Public Access Catalogue (Web-OPAC) in engineering college libraries in Karnataka. Their findings indicated the tool's utility, emphasizing the need for user orientation to enhance document retrieval[5].

Islam M (2010) examined the utilization of the library catalogue by undergraduates at Dhaka University Library in Bangladesh. The study revealed a lack of awareness and usage among the majority of respondents, prompting a recommendation for a user education program to facilitate effective utilization of the catalogue[6].

Ebiwolate P. B (2010) investigated the use of library catalogues by undergraduate students at Niger Delta University Library, suggesting the implementation of regular user education programs and widespread publicity on Online Public Access Catalogue (OPAC) to enhance awareness among library users[7].

Kumar S and Vohra R (2011) delved into the use of Online Public Access Catalogue by users at Guru Nanak Dev University Library, Amritsar. The study covered aspects such as awareness, frequency of use, commonly used access points, and satisfaction levels. Findings highlighted challenges faced by users, recommending special training for increased familiarity with OPAC[8].

Velmurugan V. S. and Amudha G. (2012) investigated the impact of computerization in Libraries and Information Centers, emphasizing the user-friendly nature of Online Public Access Catalogue (OPAC) in comparison to traditional card catalogues. The study underscored the flexibility and modernity that OPAC brings to information access[9].

Narang Asha and Singh Sukhdev (2013) explored the use and opinions about OPAC in Bhai Gurdas Library, Guru Nanak Dev University, Amritsar, among research scholars. The study revealed that OPAC significantly expedited document retrieval for users[10].

Devendra and Nikam, K. (2013) focused on the attitudes of law university library users towards the use of OPAC/Web OPAC in Andhra Pradesh. Findings indicated positive attitudes among users, with a significant portion utilizing OPAC/Web OPAC independently of library guidance[11].

Research Design

Questionnaires were meticulously crafted and distributed among scientists within the chosen R&D institutes with the aim of gathering evidence on their awareness and utilization of the online open access catalogue (OPAC). The objective was to discern the patterns of practices employed by scientists in retrieving essential information. Through a comprehensive analysis and critical evaluation of the collected data, a holistic portrayal emerged, shedding light on the scientists' awareness and usage of OPAC and their information retrieval skills.

To supplement the quantitative data, qualitative information was gleaned through in-depth interviews with information professionals from the R&D institutes and a select group of DRDO scientists. These interviews sought to uncover factors influencing the accessibility, awareness, and use of OPAC by DRDO scientists. Scientists made observations during these interviews, capturing additional information not disclosed through the questionnaires and interviews.

The triangulation of data from questionnaires, interviews, and observations facilitated thorough and ongoing comparisons, enhancing the depth of the study. The incorporation of diverse research methods aimed to bolster the validity and reliability of the findings[12].

Data Collection and Analysis

Data Collection

The survey employed a mixed-method approach for data collection, utilizing questionnaires and interviews to gather information from a sizable number of respondents selected through various sampling methods. To enhance data reliability, a combination of instruments such as questionnaires, interviews, and observations was employed.

Data Analysis:

The analysis of data stands as the pivotal concluding phase in the research process, bridging the divide between raw data and meaningful outcomes that contribute to conclusions. This outcome-focused analysis is geared towards achieving objectives and testing hypotheses, involving a summarization of procedures that might entail some level of detail sacrifice. Frequencies and columns are consolidated into tables, with averages and percentages converted into indices or attention scores for subsequent analysis, as highlighted by Richard Budd.

The gathered data underwent systematic organization, classification, coding, and analysis. Quantitative data obtained through questionnaires underwent analysis using the Statistical Package for Social Sciences (SPSS version 16), while qualitative data derived from interviews and observations underwent content analysis.

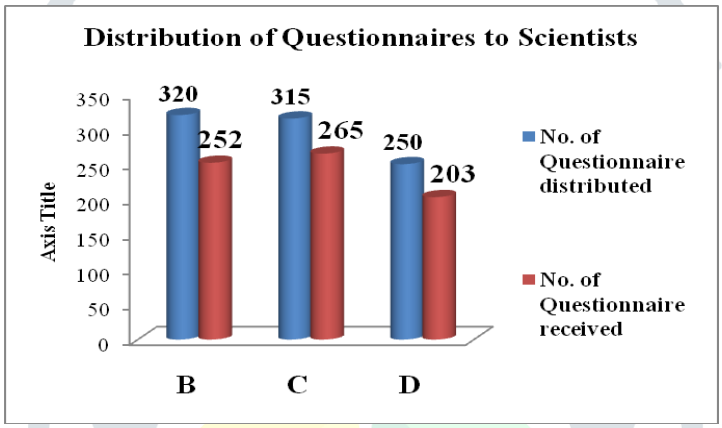
Distribution of Questionnaires to Scientists:

For the survey, 885 questionnaires were prepared and distributed among scientists categorized as B, C, and D in DRDO laboratories in India. The questionnaire distribution targeted the (B, C & D group) scientists, resulting in 720 questionnaires returned, achieving a response rate of 81.36%. This response rate is considered substantial for a questionnaire survey. The researcher's continuous engagement with individual scientists facilitated this significant response, as the researcher visited and maintained ongoing contact to ensure timely questionnaire submissions.

Table-3: Distribution of Questionnaire to Scientists

	Scientists			
Distribution of Questionnaires	**B**	**C**	**D**	**Total**
No. of Questionnaires Distributed	320	315	250	885
No. of Questionnaires Received	252	265	203	720
%	**78.75%**	**84.12%**	**81.20 %**	**81.36%**

Figure 2: Distribution of Questionnaire to Scientists



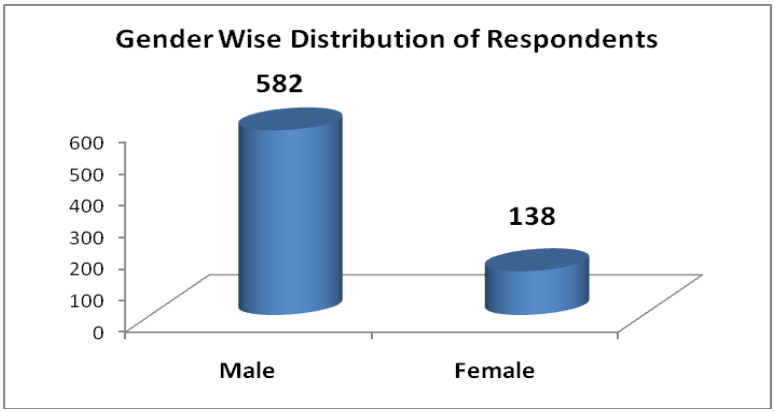
Gender wise distribution of respondents

Gender-wise grouping has been one of the relevant factors in examining the use of electronic information resources and services. The Table-4 present the gender-wise distribution which shows that 582 (80.83%) respondents are male and 138(19.17%) are female. It can be inferred from Table-4 that male respondents dominate over female respondents under the study.

Table – 4: Gender-Wise Distribution of Respondents

Sl. No.	Gender	No. of Respondents	%
01	Male	582	80.44%
02	Female	138	19.56%
TOTAL		720	100%

Figure 3: Gender wise distribution of respondents



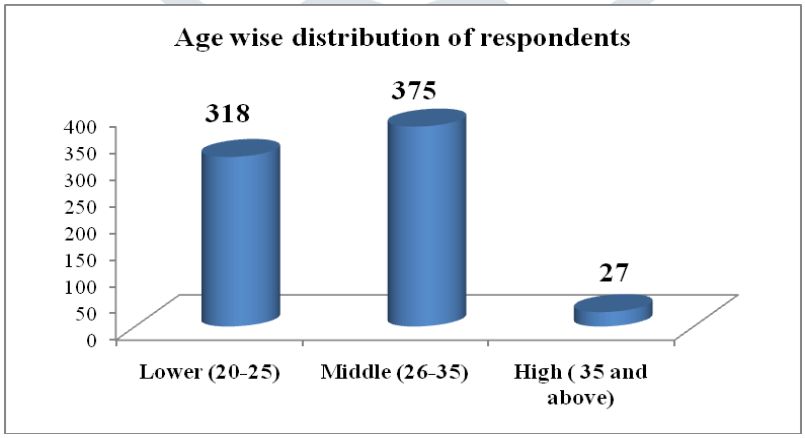
Age wise distribution of respondents

Table-5 below portrays the results of the respondents' age wise, and it can clearly be seen that the majority of the respondents (52.09%) were in the age range of 26-35 (middle), while 44.16% were between 20 and 25(lower) years, and only a few respondents 03.75% were 35 and above. It appears that these results are fairly typical of the age distribution found amongst Scientists of DRDO Laboratories in India.

Table-5: Age wise distribution of respondents

Age	No. of Respondents
Lower (20-25)	318 (44.16%)
Middle (26-35)	375 (52.09%)
High (35 and above)	27 (03.75%)
Total	**720**

Figure-4: Age wise distribution of respondents



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Awareness and Use of Online Public Access Catalogue (OPAC):

The Online Public Access Catalogue (OPAC) is the gateway to library's collection. OPAC offers clear and user-friendly search facilities to all categories of users. OPAC is an electronic database that contains the bibliographic information about the information resources held by a library that includes variety of bibliographic details such as author, title, subject, publisher, place of publication, cost and availability and so on.

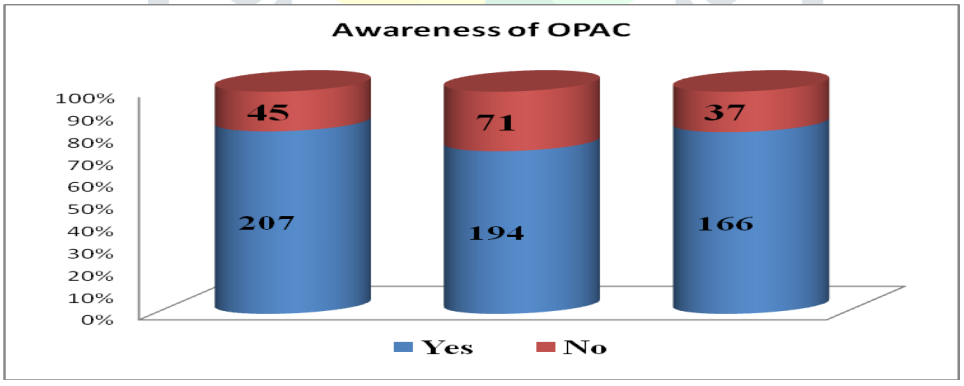
The library catalogue in a traditional library provides information about what is available in the library. The new format of library catalogue in computer readable form is the present day OPAC reflects print as well as electronic collections available in library. OPAC serve as authoritative source of access to information resources of a library. An attempt is made here to know the awareness and Use of OPAC by the users of DRDO Laboratories. The data are presented under Table-6 and Figure-5.

Awareness of OPAC:

Table-6: Awareness of OPAC

Aware of OPAC	Yes			Total Resp.	No			Total Resp.	Total Nos.
	User Category				User Category				
	B (252)	C (265)	D (203)		B (252)	C (265)	D (203)		
	207 (82.14)	194 (73.20)	166 (81.77)	**567 (78.75)**	45 (17.85)	71 (26.79)	37 (18.22)	**153 (21.25)**	**720 (100%)**

Figure – 5: Awareness OPAC



The Table-6 shows the awareness about the OPAC by the respondents under the study. It is interesting to note that an impressive number of respondents of different categories i.e., Scientists 'B' (82.14%), Scientist 'C' (73.20%) and Scientist 'D' (81.77%) are well aware of OPAC. Further, a smaller percentage of Scientist groups i.e., B(17.85%), C(26.79%) and D(18.22%) are not aware of OPAC. The result from the above table indicates that on an average of more than 75% of scientists are aware of OPAC and only 21.25% respondents are not aware of OPAC. Hence, it is suggested to the library authorities to take effective measures to educate such user groups about OPAC.

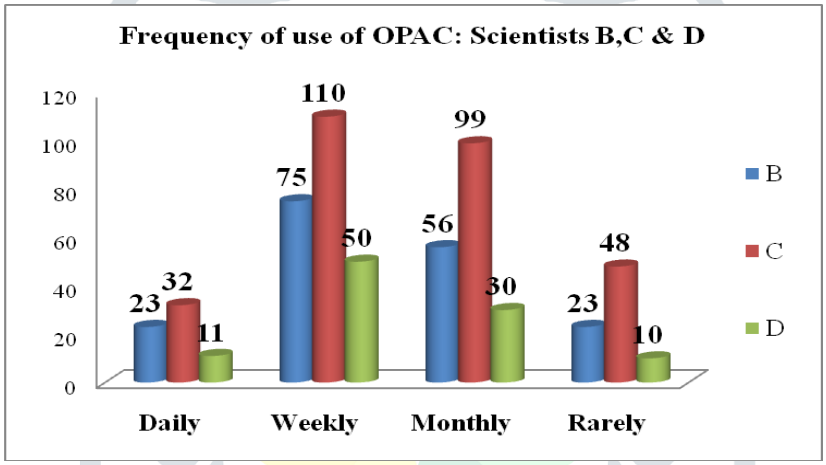
Frequency of use of OPAC:

Table-7 revealed 27.77%(235) respondents used OPAC weekly, followed by 24.44%(185) respondents have the habit to use the OPAC services in a monthly basis. 81(%) (68) respondents used OPAC rarely and very few 7.77%(66) respondents indicated that they used OPAC daily basis only.

Table - 7: Frequency of use of OPAC:

Frequency	User Category			No. of Respondents
	B	C	D	
Daily	23 (4.04)	32 (5.64)	11 (1.94)	66 (11.64)
Weekly	75 (13.22)	110 (19.40)	50 (8.81)	235 (41.44)
Monthly	56 (9.88)	99 (17.47)	30 (5.29)	185 (32.64)
Rarely	23 (4.06)	48 (8.46)	10 (1.76)	81 (14.28)
			Total	**567**

Figure - 6: Frequency of use of OPAC:



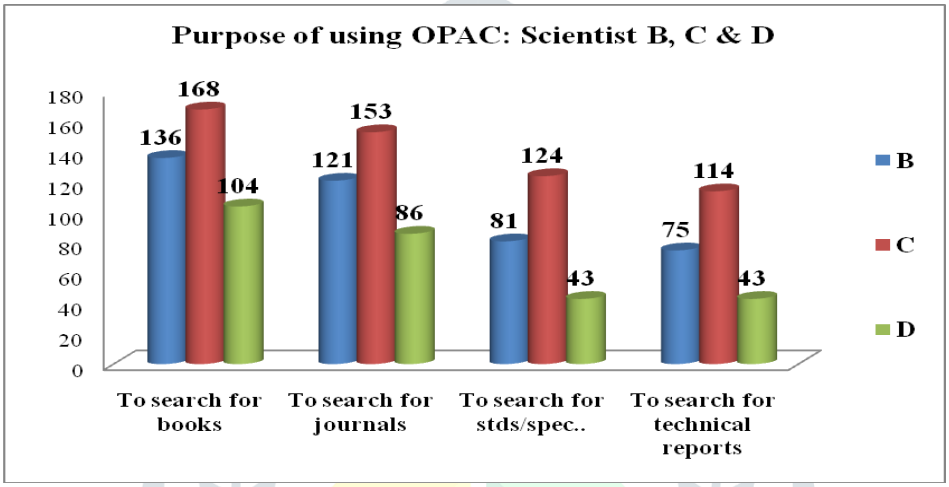
Purpose of Using OPAC

Table-8 shows the purpose of using OPAC is indicated. It depicts that 408 (56.66%) users categories of Scientist B, C and D cadres consulted OPAC to search for books in the library, followed by 360(50%) Scientists consulted to search for journals, 248(34.44%) Scientists of B, C and D consulted to search for standards and specifications and 232(32.22%) of Scientists consulted to search for technical reports in their libraries. It is clear from Table-8 that majority of Scientists consulted OPAC to search for books in their respective libraries. The study also shows that the majority of users category Scientist 'C' were using more in numbers as compared to Scientist 'B' and 'D' cadres.

Table-8: Purpose of Using OPAC

Purpose of using OPAC	User Category			No. of Respondents
	B	C	D	
To search for books	136 (18.88)	168 (23.33)	104 (14.44)	408 (56.66)
To search for journals	121 (16.80)	153 (21.26)	86 (11.94)	360 (50)
To search for standards and specifications	81 (11.25)	124 (17.22)	43 (5.97)	248 (34.44)
To search for technical reports	75 (10.41)	114 (15.83)	43 (5.97)	232 (32.22)

Figure – 7: Purpose of Using OPAC



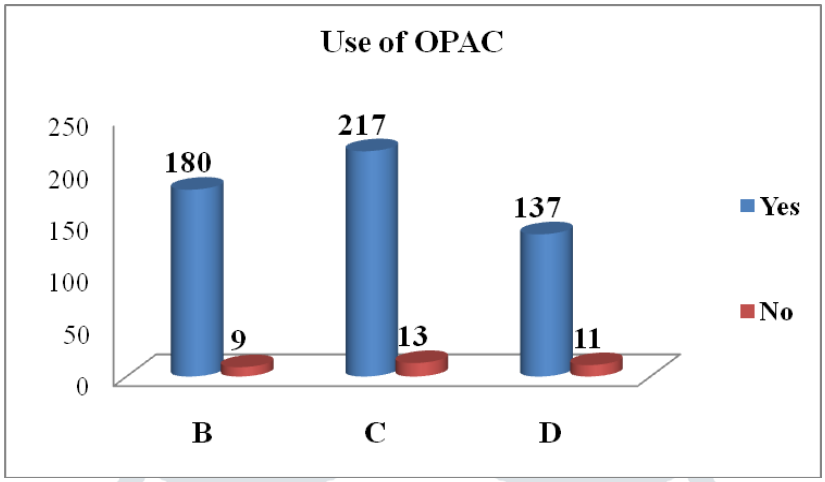
Use of OPAC

Apart from knowing the awareness of OPAC, the users were also asked to indicate the use of OPAC. The data are presented under Table-9 and Figure-8.

Table-9: Use of OPAC

Use of OPAC	Yes			Total Resp.	No			Total Resp.	Total
	User Category				User Category				
	B	C	D		B	C	D		
	180 (71.42)	217 (81.88)	137 (67.48)	**534 (74.16)**	9 (3.57)	13 (4.90)	11 (5.41)	**33 (5.81)**	**567 (78.75%)**

Figure-8: Use of OPAC



The feedback received from the respondents on the use of OPAC shows that they majority of respondents from all the groups i.e., Scientist 'C' =81.88%, Scientist 'B' =71.42% and Scientist 'D'=67.48% are of the opinion that OPAC very useful and they use OPAC is searching documents / information. Further a small percentage of respondents between 3.5% to 5.41% felt that they are not using considering it as not useful.

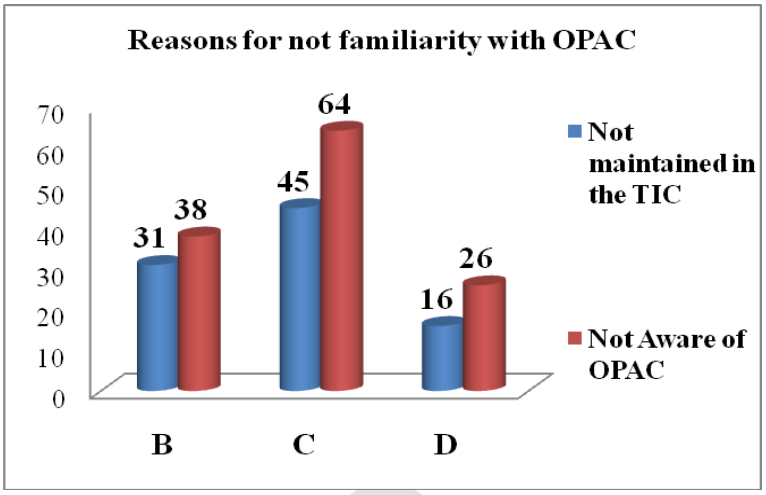
Reasons for not familiarity with OPAC

The study also investigated the reasons not using the OPAC services by the respondents. From the analysis Table-10, it is evident that, out of total respondents, the majority of 45(6.25%) of Scientists 'C' were not maintained in the TIC, followed by 31(4.30%) of Scientist 'B' and 16(2.22%) of Scientist 'D' were not maintained in the TIC. The study further observed from the analysis that, out of total respondents 128(17.77%), the majority of 64(8.88%) of Scientist 'C', 38(5.27%) of Scientist 'B' and 26(3.61%) of Scientist 'D' were not aware of OPAC facilities and services from their respective libraries.

Table - 10: Reasons for not familiarity with OPAC

Not familiarity with OPAC	Not maintained in the TIC			Total Resp.	Not aware of OPAC			Total Resp.
	User Category				User Category			
	B	C	D		B	C	D	
	31 (4.30)	45 (6.25)	16 (2.22)	92 (12.77)	38 (5.27)	64 (8.88)	26 (3.61)	128 (17.77)

Figure - 9: Reasons for not familiarity with OPAC



14. Summary of Finding:

The findings of the study are as follows:

1. The study shows that 78.75 percent of the respondents were aware of the OPAC services. Respondents in the user categories of Scientists B, C & D were not aware (21.25%) of the OPAC services **(Table-6).**

2. It is found that table-7 revealed that 27.77%(235) respondents used OPAC weekly, followed by 24.44%(185) respondents have the habit to use the OPAC services in a monthly bassis. 81(%) respondents use OPAC rarely and very few 7.77%(66) respondents indicated that they used OPAC daily basis only **(Table-7).**
3. It is revealed that 408 (56.66%) users categories of Scientist B, C and D cadres consulted OPAC to search for books in the library, followed by 360(50%) Scientists consulted to search for journals, 248(34.44%) Scientists of B, C and D consulted to search for standards and specifications and 232(32.22%) of Scientists consulted to search for technical reports in their libraries **(Table-8).**
4. It is observed that they majority of respondents from all the groups i.e., Scientist 'C' =81.88%, Scientist 'B' =71.42% and Scientist 'D'=67.48% are of the opinion that OPAC very useful and they use OPAC is searching documents / information. Further a small percentage of respondents between 3.5% to 5.41% felt that they are not using considering it as not useful **(Table-9).**
5. It is observed that, majority of 45(6.25%) of Scientists 'C' were not maintained in the TIC, followed by 31(4.30%) of Scientist 'B' and 16(2.22%) of Scientist 'D' were not maintained in the TIC. The study further observed from the analysis that, out of total respondents 128(17.77%), the majority of 64(8.88%) of Scientist 'C', 38(5.27%) of Scientist 'B' and 26(3.61%) of Scientist 'D' were not aware of OPAC facilities and services from their respective libraries **(Table-9).**.

Suggestions

The study offers several recommendations to enhance the awareness and utilization of OPAC facilities and services in DRDO libraries in India:

1. Increase efforts to raise awareness regarding the functionalities and benefits of the library's Online Public Access Catalogue (OPAC).
2. Offer effective training sessions on information searching skills for users across all Scientist categories, including Scientists at levels B, C, and D.

3. Enhance the user-friendliness of OPAC by incorporating more comprehensive and user-friendly online help features. These features should guide users in initiating searches and provide assistance throughout the search process.
4. Recognizing the study's revelation that users lacked basic OPAC search skills, consider providing assistance from library staff near OPAC terminals. This support can optimize the utilization of OPAC services.
5. Take proactive measures to educate user groups lacking basic OPAC skills, ensuring that they are well-informed about the capabilities and advantages of OPAC services.

Conclusion

The OPAC holds significant importance within any library system, as emphasized by the respondents. According to their statements, OPAC plays a crucial role in aiding users in their information-seeking endeavors. The provision of accurate information at the right time and in the right manner stands as a paramount responsibility for any library aiming to meet the information needs of its user community. To fulfill this commitment, libraries offer various services to enhance user awareness and optimize resource utilization. OPAC stands out as one such service, facilitating users in easily locating and accessing library resources. The expectation is that by ensuring users are fully informed about OPAC and encouraging its use, libraries can anticipate improved utilization of their available resources.

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