"INDIAN INSTITUTE OF MANAGEMENT LIBRARIES WEB-OPAC: AN EVALUATIVE STUDY"

Thesis Submitted to the Faculty of Science and Technology,

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DOCTOR OF PHILOSOPHY

IN

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Submitted By

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2021

Dedicated To

My Beloved Parents
Teachers and Friends
For their love and concern throughout my career

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Declaration

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     I hereby declare that the thesis entitled **"INDIAN INSTITUTE OF MANAGEMENT LIBRARIES WEB-OPAC: AN EVALUATIVE STUDY"** submitted by me to the Kuvempu University, Jnana Sahyadri for the award of the Degree of **Doctor of Philosophy in Library and Information Science,** is the result of the original work carried out by me in the Department of P.G. Studies and Research in Library and Information Science, under the able guidance of **Dr. P. Dharani Kumar,** Associate Professor, Department of P.G. Studies and Research in Library and Information Science, Kuvempu University, Jnana Sahyadri, Shankaraghatta. I further declare that, the results of this thesis have not been previously submitted for any other degree.

Place: **Jnana Sahyadri**

Date: 23/12/2021

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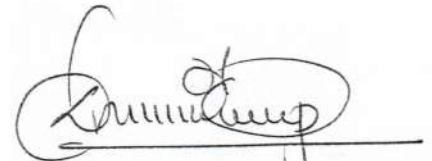Fax: (08282) 256255
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I certify that the thesis entitled **"INDIAN INSTITUTE OF MANAGEMENT LIBRARIES WEB-OPAC: AN EVALUATIVE STUDY"** submitted by **Mr. Shankaranand Hiremath,** for the award of the Degree of **Doctor of Philosophy in Library and Information Science,** is his original work carried out under my guidance. This thesis or any part thereof has not been submitted for any other degree.

Place: **Jnana Sahyadri**

Date: 23/12/2024

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ABSTRACT

ABSTRACT

The transformation of library collections from 'non-machine-readable' to 'machine-readable' style leads to implementation of computerized library. This allows the library to direct its human resources from routine work to service oriented functions of the library and providing the online access to library catalogue is often primary motive of library automation. As very few researches have been undertaken in this field despite the fact that academic libraries are plenty in number, the researcher is interested in conducting the research study to find the competency of Web-OPACs of business management educational institutes in the country, which will activate the refinement of the library online catalogues.

It is required to test availability of salient search features of web OPACs as per renowned checklists, relevancy of search results usability and user awareness assessment about online catalogues and their search tasks, catalogue search purposes, respondents' cosiness with OPACs designs, new suggestions from users on the problems and satisfactory level etc. This will help to improve performance of web-OPAC systems, In addition, with regard to findings, conclusions made from the results of this study may be helpful for librarians who are planning to introduce or improve current web-based OPAC's and useful for enhancing library networks or consortia models and also for software vendors who wish to improve the functionality of their products.

This research intended to assess the web-OPACs of IIMs in India those are twenty in numbers situated in different states but study limited to thirteen IIMs. The total population of students (3661) and research scholars (554) was 4215 (2015-16 year batches) only 1300 respondents were taken into consideration and representing target community which was scattered among different departments such as FPM, PGPM,FABM, PGPX, FDP, PGP, EPGP and MDP etc.

The methodology for collecting the data was carried out in three crinkles; evaluation checklists were used to assess the availability of search features, precision and relative recall formulas are used to find relevancy ranking of search results and online

questionnaire (google form) was used to assess the respondents' responses on their respective library web OPACs. The collected data has been analysed in the SPSS Software at department of statistics, Karnatak University, Dharwad, Karnataka.

In case of salient search features 'search limits' category leads with highest cumulative score of 100%, followed by 'access points' and 'bibliographic display category' with 99.37% and 96.66% respectively. Whereas, 'bibliographic and screen display' and 'linguistic features' are possessed least by the web OPACs with an average cumulative score of 40% and 50% respectively. Related to OPAC 2.0 search features under 07 broad groups, of which 'search parameters' leads with highest cumulative score of 98.15%, followed by 'result page and navigation parameters', 'user profile and personalization' and 'basic parameters' with 65%, 58.12% and 55% respectively. While 'enriched content and recommendations' and 'others trends' are possessed only to 46%, 'user participation' recorded least cumulative score 10%. Further, it is suggested to each IIM library web OPACs to incorporate the lacunas are found in the study and it is recommended to recruit a digital marketing manager for handling web OPACs to make more users interactive in web 2.0 scenario.

Evaluating the retrieval efficiency of the web OPACs, in terms of relative recall and precision is vice-versa among the IIM library web OPACs, such web OPACs have received highest precision are not adequate in relative recall. To achieve more precision and flawless recall it is required to improve in the syntax and semantics of vocabulary management at the LMS. While designing the web, OPACs software developer should be insisted to adopt B-Tree or B+ Tree indexing technique in the library management system (LMS) which would enhance the relevancy rate.

The survey results are concerned it is found that, more than 50% of respondents expressed that there is no links from web OPACs to search engines, digital libraries, auto keyword generation facility and automatic indexing facility and 60% of respondents stated that non-availability of multi-lingual catalogues and links to other IIM web OPACs. 21.8% of users use the web OPAC once in a week, an average usage of web

OPAC of respondents with an experience of 4-6 years and 7-10 years is more compare to those with an experience of 1-3 years.

The search behaviour is concerned laptop (30.2%) is more preferable and desktop is least used devices; Campus is most preferable place (52.8%) for all the respondents of all the institutes. The 'workplace' is considered as second preference except IIM-Kashipur and IIM-Rohtak they prefer other places which includes hostel, cafeteria, and lawns etc. From the multiple comparison tests found that average usage of web OPAC of respondents with an experience of 4-6 years and 7-10 years are more compare to those with an experience of 1-3 years.

The purposes of accessing the web OPAC among the selected IIMs; 'to check available source', 'to know the transactions status' and 'to browse the online books and journals are major. It is also found that problems such as 'No on screen help, Lack of internet connectivity and lack of knowledge on how to broaden/precise search query' are the accepted common problems among all the IIMs from the users end. It is understood that, topical keywords are used most to search and it is found that cosiness of respondents are vary among the IIMs. Finally, it was extracted that preferable style on OPAC's screen, which is also differ among the different IIMs.

Then it is revealed that, IIM-Bangalore and IIM-Calcutta respondents are more satisfied, Further, from all the age groups the 41-50 years age group respondents are more satisfied compare to age group 21-30 across selected IIMs; it is noticed that older respondents are more satisfied with web OPAC at their respective libraries than the youngest respondents.

It is recommended to adopt all parameters from checklist especially, at IIM-Rohtak, Ranchi and Bodh Gaya libraries not yet done. The dense indexing technique for improve search strategy, to customise the web OPACs with more user centric, &user friendly features in the web OPACs. It is required to conduct periodic user information literacy program into three categories such as Induction program, OPAC instruction sessions, and web OPAC hands on training. It is instructed to facilitate self-guide tool or

online tutorial in multiple languages, which helps the users not use 'trail and error method' at first effort. It is recommended to each institution to understand their patrons' minor and major purposes and plan accordingly for improvements. Urged to improve CGI (common gateway interface; standard way of running the programs from web server) technology for speedy navigation at web OPACs.

It is proposed to each IIM to add important features which are suggested by the respondents on their respective library web OPACs, based on the relevancy and applicability. It is projected to IIM-Kashipur, IIM-Lucknow, IIM-Bodh Gaya, IIM-Ranchi, IIM-Rohtak, IIM-Sambalpur and IIM-Udaipur to take the proper feedbacks to improve the satisfaction level of respondents on their web OPACS. It is commonly expected from all IIMs for obligating few new facilities on the OPACs such as Spell checking mechanism, automatic error correction, hyperlinks for online resources, provision for instructions on each type of search, and option for search history, allocating 'tag clouds' and 'Add this' features etc. The search process in OPAC is more or less the same like the card catalogue but with increased access points; varieties of search features, and complexity of process.

Now, it is demanded to triangular coordination of three major decision making authorities to work together; library professionals should understand the users expectations insist to library software developers, the software designers should meet the expectations of library professionals and design accordingly, at the field level users must interact with the products and should give appropriate and judicious feedback to library professionals for continuous improvement.

Chapter-01

INTRODUCTION

1.1   Background to the Study

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Chapter-01

INTRODUCTION

"A reader may know the work he requires; but he cannot be expected to know all the peculiarities of different editions, and this information he has right to expect from the catalogues" - Antonio Panizzi.

Normally, we hear the words 'Searching something' and 'Looking something' in one and other behaviours. Sometimes these may be used as one and same in different situations or circumstances. 'Looking' is the act of directing the eyes towards something and perceiving it visually and 'Searching' is trying to locate, discover, or try to establish the existence of thing which is away from eyesight due to many reasons. 'Looking something' can be more casual, when looking for people and 'Searching something' is used when we have a very specific target, whereas 'Looking something' is used when we are not as serious about it, or we are not as sure.

For Instances; I am looking for Mr. Jones. (I want to find him and talk to him) I am searching for Mr. Jones (he got lost in the crowd). I am looking for the number in the telephone book. I am searching through a telephone book for the right number. People search for many things for many reasons only situation matters; it shows our demand, thirsty, needfulness, seriousness and urgency of the requirements for that point of time. As we know 'Information' is a commodity, product, resource and can be transferable from one to many places and formats through many channels, when it is systematically organised, analysed, synthesised as a source/a product in Library and Information centres, where again people/users

need to search for it, which leads to searching pattern or methodology. There is no any library or database without searching procedure.

1.1.   Background to the Study

Library reading sources are an important portion of every library. However, the recording of those in the public catalogue, what-ever its layout, has always encountered special experiments. Here some of the issues relating to reading sources that ought to be measured when a library is formulating an online public access catalogue. Last two decades ago one of the main anxieties of libraries was the impact of AACR2 on their catalogue cards, such as rendering of all the headings be changed? Old and new forms are mix? Should the catalogue be closed and whether to implement an online catalogue etc. Further interrelated questions among the library professionals were common dialogues in the professional conferences and workshops about users' problems to search in two catalogues and from two places in the same library. Another was, as is so often the case, what about these subscribed journals so on.

Next to practical aspects for deciding on a record 'date' which would be included imprint date or cataloguing date, or date of receipt. However, a material is published over time; it is 'ancient' and 'fresh' at the same time. The patron would not be necessarily required when the material was published and procured they simply want to find a particular book. At the same time, even with only catalogue, all needed reading materials are often not available in one search (Landesman, 1987).

Some titles may not be compiled fully or at all. Journals titles may be listed separately from other materials. If you include all titles into same catalogue with other titles, holdings may not be recorded at all access points due to burden of work. The user may be directed to 'Leading Entry', other holdings information is probably in still another place in the manual catalogue cabinet. The location of the specific volume or issue sought may be determined by arrangement or library practice. It might be found in one of numerous places, depending on whether it is in card or machine readable, or whether or not it is bound (Landesman, 1987).

Further, retrospective conversion process demanded the libraries to request archival tapes from alliance for MARC records for the titles. These include having library staff search for matching records contained in its bibliographic utility's database or in a commercially available database based on LC MARC records or entering search keys (LCCN, ISBN, ISSN, **author, title, and publication date**) into a micro-computer for a vendor to execute a mechanise against its MARC database (Landesman, 2008).

But all these problems did not start with the advent and development of the web, Reports on catalogue's poor functionality and difficult use can be traced continuously for more than 20 years (for example : Markey, 1984; Borgman, 1986; 1996). Through time, the catalogue did change, but most of the modifications were made on the surface and not in the core functionality that would truly affect the user experience (Borgman, 1996 and Tennant, 2005).

1.2. Perspective to the Study

Today's libraries are spinning their attention to online public access catalogues. Many cases during LMS procurements importance is given to Online

Catalogue module also, where patrons can search entire collection of group of institutions.

The technical capabilities of keyword searching and online indexing of non-traditional search fields make users knowing and even one of these two elements non-essentials also sometime. The Truncation practices can overcome spelling mistakes and incorrect citations. The Boolean operators and search limiters can enlarge or enhance a search. The Filing procedure, Non-arranged cards, and choice and form of entry are no way obstacles in the pursuit for information about a library's collection. So, the online catalogue is more than just an overvalued card catalogue, It provides information to a patron that was formerly unavailable at the early point of search.

In the online catalogue, data from separate places, sources can be dragged into a single display from all access points. Bibliography and status are linked together to enable the user before going to the stacks. An online catalogue affords the ability of gaining in one place, precise, latest information about a library's collections (Calhoun, 2004).

Now, it is time to libraries to achieve the Charles Cutter defined the first objective of a library's general catalogue 'is as enabling a person to find a book about which either by the author, the title, or the subject is known'.

1.3. Statement of the Problem

The present research work is confined under the title, "Indian Institute of Management Libraries web-OPAC's : An Evaluative Study".

1.4. Historical Development of the OPAC

There is a huge literature published and available for re-search on and about online catalogues, there were questions and assumptions made in an article that appeared ten years ago: 'Why are online catalogues hard to use?; Lessons learned from information retrieval studies' (Hildrith, 1995; Borgman, 1986). Subsequently we can find various research studies continue to report for instance studies on patrons' access behaviour, library transactions log analysis, usability studies, task based interviews and observations, arithmetical analyses, precision and relative recall studies, comparative studies on value added surveys and features customisations into Library management systems so on.

As already stated 'search' word comprises a long practice, which would be conducted over a number of times with different information sources and services, both online and off-line, selection and electing from numerous routes to answer a question or explore a topic. Yet the designs of most working online catalogues adopt patrons' expressions query that signifies a stable aim for the search and each search session is independent.

In the first generation online catalogues shadowed the two-fold design replicas such as 'Online Card' catalogue system matching with the card catalogue, and "Boolean searching system" matching with information retrieval scheme; DIALOG or MEDLINE. The record construction, content, and primary search fields are adopted from card catalogue design models, and the searching utilities and many of the interfaces design features are taken from retrieval system schemes.

To get the results, lack of knowledge on information retrieval process, constructing queries, system handling problems, difficulties in subject searching and Boolean operators were the most problematic areas. No online thesaurus aids or alternative formulations of the search statements. In addition to that, Boolean logic in query formulation was hard for the user.

```
GV943      Brenner, Richard J., 1941-
. 25              Make the team. Soccer : a heads up guide to super
. B74            soccer! / Richard J. Brenner. -- 1st ed. -- Boston :
1990            Little, Brown, c1990.

                 127 p. : ill. ; 19 cm.

                 "A Sports illustrated for kids book."
                 Summary: Instructions for improving soccer skills.
                 Discusses
            dribbling, heading, playmaking, defense, conditioning, mental
            attitude, how to handle problems with coaches, parents, and
            other players, and the history of soccer.

                 ISBN 0316107514 : $12.95

                 1. Soccer -- Juvenile literature. 2. Soccer. II. Title: Heads
                 up
            guide to super soccer. II. Title.

Dewey Class no.: 796.334/2 -- dc 20              89-48230/AC/r91
                                                              MARC
```

Source: https://www.isko.org/cyclo/opac

Figure 1.1. First generation catalogue

In Second generation online catalogues merged these two and enriched access ideas, search abilities, and demonstration opportunities. Maximum online catalogues presently in use are offering second-generation functionality (Hildreth, 1987; 1993). While patrons' effort is modest and display is much richer and better-looking, the basic functionality of online catalogues has transformed slight since the late 1990s.

Source: https://www.isko.org/cyclo/opac
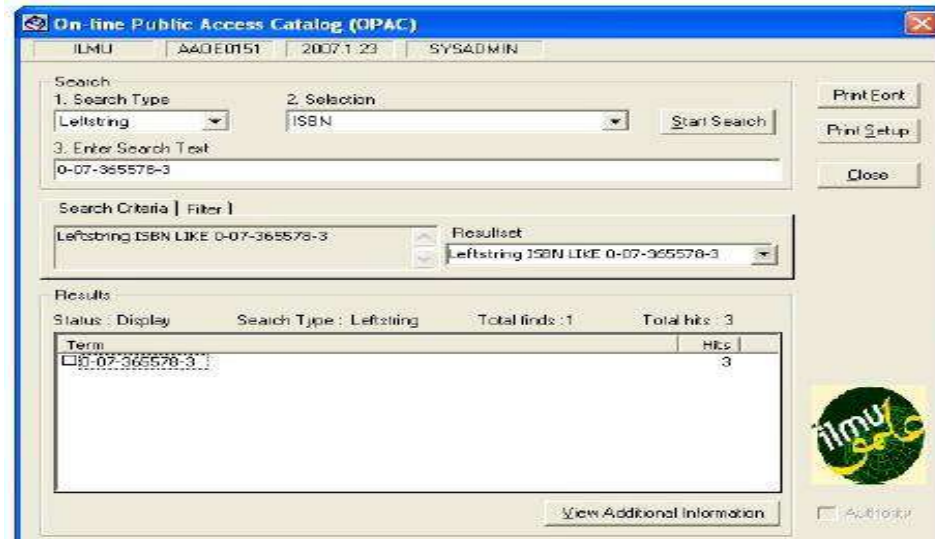
Figure 1.2. Second generation catalogue

In the recent-fast libraries' online public access catalogues (OPACs) have been competing with Google, if not threatened by, Search engines. Although, it has not yet been approved which way this peril should be countered–it is confident that search engines are now competing with libraries and their catalogues. As a moment, some libraries have taken challenges towards search engines and equipping their OPACs with new technologies in order to run and sustain faster access to desired content (Nahotko, 2020).

In 1988, Hildreth outlined his vision of the third generation catalogues, especially the functional improvements such as natural language searching, browsing, ranked result sets, expanded coverage and scope, relevance feedback methods ('more like this', 'not interested'), user-popularity tracking, and different aids (spelling corrections, synonyms, automatic term conversion). But, except for some prototypes, the third generation catalogues as described by Hildreth, 1988; 1995 which did not appear for more than a decade.

Researchers (Hildreth, 1995; Borgman, 1996; Large and Beheshti, 1997; Antelman, Lynema and Pace, 2006) one by one reported that library catalogues still offered mostly only second generation functionality and that the changes had been made merely on surface and not in the core functionality where they were most needed.

Source: https://www.isko.org/cyclo/opac
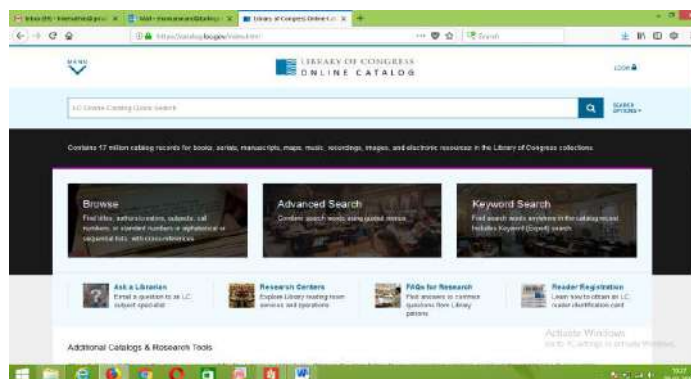
Figure 1.3. Third generation catalogue

1.5. Present Challenges of the Online Catalogues

Here, libraries primarily ask which search route the users wish to follow. Do they want to start searching in the native resources and then enlarge to supplementary collections when required? Would they wish a 'top-down attitude' whereby the users pledge their search in a library earlier being directed to the nearby accessible stock in a successive step? The retort to this is essential.

Today user's expecting to easier and quicker ways of finding information, even if they are beginners neither skills for searching nor the knowledge how the system works. Services on the web became more and more sophisticated with search engines and sites incorporating new features, many of which (Yu and Young, 2004; Antelman, Lynema and Pace, 2006) and other researchers had declared missing in the library catalogues.

Due to the common practice on the web, users got accustomed to natural-language searching and typing multiple search terms (keywords) on a single line without connecting them with Boolean operators. They started to expect library online catalogues to function as internet search engines or online bookstores, interpreting broad keyword searches they entered and sorting results according to relevance (Novotny, 2004).

This has caused a declining percentage of correct syntax and an increasing percentage of keyword searches with zero results in library online catalogues (Blecic *et al.,* 1998). Finding library catalogues hard to use, unintuitive and ineffective in comparison to search engines and other popular sites, library users chose to look for information elsewhere and the catalogue ceased to be the most important retrieval system (Fast and Campbell, 2004). But, it is somewhat encouraging that, even though users preferred to use the web over the library catalogue and still do so, studies have continuously proven that users still see the catalogue as a trustworthy, well-organised and impressive tool (Fast and Campbell, 2004; OCLC, 2005; Paw, 2007).

In the last couple of years, library catalogues have been faced with yet another trend that has influenced users' expectations and the way they use the web: that is the advent of Web 2.0 principles, have made trendy web services even more attractive for users and put libraries in the position where they need to reconsider their services and role in new generation information environment, Only possible by identifying and understanding the needs and behaviours of end-users libraries can develop better user-centred catalogues.

The technical improvements are taking place in every aspects of the library however; we may find many problems related to online catalogues such as structure, layout, features functionality, relevancy results and so on.

The online catalogue is an important part of reference library users and an important service area for the reference librarian. Users are able to search online catalogues with multiplicity of parameters that ranges to known to unknown.
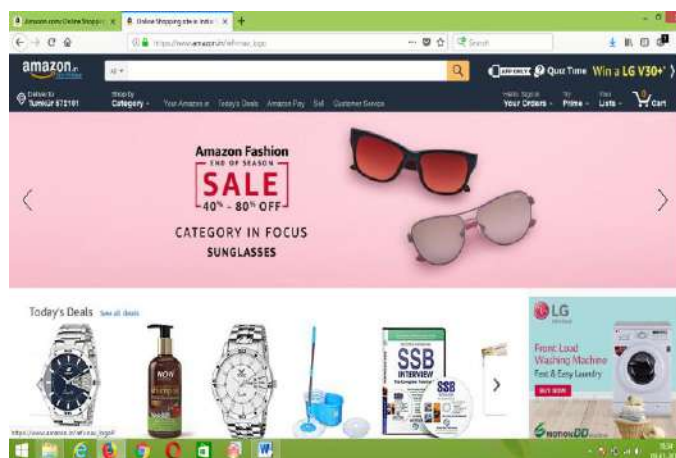
Figure 1.4. Fourth Generation Catalogue

Unfortunately, many patrons have worry in using online catalogues Now computers and computer interfaces are no longer new, these difficulties cannot be attributed to absence of practical knowledge; the difficulties are more likely Graphic User-interface or patron-interaction problems. Being able to fruitful search an online catalogue is very significant because if patrons cannot catch the item they are looking for, they will not come to library and also library OPAC service will inactive and stagnant (Klein, 2003).

The library online catalogue is the tool to connect the users with the resources and primarily has bibliographic information, but the library users approach is entirely different because of their experience in the Internet. If the

catalogues are capable of handling all type of resources and able to provide information as per the aspirations of the library users, these processes could be accomplished without much complication.

It is also meant that despite the technological advantage and the improved content in the library catalogues, there is no assurance that patrons will recognise that the OPAC as their main or, indeed, only tool for academic activities. In order to achieve this, it would be necessary to understand the new challenges in the software modules, and required to assess the catalogue records, relevancy results and patrons' behaviours to satisfy their information needs continuously.

1.6.   Aim of the Study

The transformation of library operations from 'non-machine-readable' to 'machine-readable' style influenced on users different information skills and needs than previous generations. They are web-savvy and can no longer be seen just as patrons, but also as clients and buyers: being aware of alternatives in information provision, they are behaving as customers and taking an active role in choosing their information provider (Žumer, 2007).

This allows the library to redirect its human resources from routine work to service oriented functions of the library. Providing online access to library catalogue is often primary motive of library automation. However, design of the library online catalogue needs to follow the actual information seeking behaviour of users that has been strongly influenced by the web.

In fact a lot of attention has been dedicated to younger generations of users, who are or will become any library's most important customers. They visit the

library more than any other age group (Pew Internet and American Life Project, 2007) and at the same time indicate the characteristics of future generations of users. Generations born roughly between 1980 and 2000 have been given many names; Millennial, Y generation and Net generation etc. Many so called 'digital immigrants' are quickly catching up with the digital native generation in becoming web-savvy users with high expectations.

Knowing this has forced librarians to rethink and redesign their services and technologies, because even though library resources are considered more trustworthy, convenience and credible to cross the divide libraries need to bring trends and quality together in the online services (Sadeh, 2007).

As very few researches have been undertaken through assessing evaluation parameters checklist designed by various experts and researchers despite the fact that academic libraries are plenty in number.

The researcher is interested in conducting the research study to find the competency of Web-OPACs of business educational institutes in the country, where huge amounts of funds are invested by the libraries to build up their collection in multidimensional formats. To develop state-of-art online catalogues and valuable resources should be used by the library patrons for their information requirements.

It is required to search features assessment of online catalogues, their effectiveness, accessibility, search tasks, catalogue functions, search techniques such as subject tag maps, faceting of search filters, indexing from several sources, URL linking, spelling corrections, new inventions at rendering entries in the

MARC formats and best practices related to online catalogues etc., So keeping in mind that any changes at IFLA guidelines or at world catalogues are need of present information society.

It would be interesting to find out IIM's libraries embedded such capabilities, services and also to find out users perception on Web-OPAC's.

1.7. Objectives of the Study

The objectives of this study are categorized under three fold visions :

I. Availability of search feature

- To assess the available salient search features of web OPACs of 13 IIMs by using evaluation parameters checklist.

- To measure the proportion of availability of OPAC 2.0 new generation catalogue search features among 13 IIMs by using evaluation parameters checklist.

II. Relevancy of results

To evaluate retrieval effectiveness of web OPACs in terms of Precision and relative recall.

III. Users Survey

1. To understand user awareness level on their library web-OPAC search features in different library software packages are available at different IIM Libraries.

2. To describe users attitudes/behavior towards use of their library Web OPACs at IIM libraries.

3.   To determine users purposes to use and their coziness on library Web

        OPACs

4.   To survey on the users to explore their constraints while searching the web

        OPACs.

5.   To represent the users satisfaction level and opinion about their Library

        web OPACs.

1.8.   Research Questions of the Study

The research was intended by following research questions;

1.   What are different IIMs library web OPACs adopted search features/
        parameters framed by the different experts in the field?

2.   What are the new generation search (OPAC 2.0) features currently
        available in different IIMs web OPACs?

3.   How the different IIMs web-OPACs are performing in respect to relevancy
        ranking of results?

4.   What are the different attitudes or behaviours of users on web OPACs
        search?

5.   What are the major purposes and feelings on their library web OPACs?

6.   What are the difficulties are being faced by the patrons on Web-OPACs?

7.   What are the users' suggestions to add important search features on web
        OPACs?

8.   What is the degree of satisfaction among the respondents on Web-OPACs?

1.9. Hypotheses of the Study

1. There is no significant difference in the availability of salient search features among the different IIMs.

2. There is no significant difference in the availability of OPAC 2.0 search features among different IIMs.

3. There is no significant difference in the precision and relative recall of search results among different IIMs.

4. There is no significant difference in the usage of web OPAC among respondents from different IIMs.

5. There is no significant difference in the usage of web OPAC among respondents from different age groups.

6. There is no significant difference in the usage of web OPAC among respondents different gender.

7. There is no significant difference in the usage of web OPAC among respondents of different user category.

8. There is no significant difference in the usage of web OPAC among respondents with different OPAC usage experience.

9. There is no significant difference of opinion among respondents from different IIMs regarding each constraint while using web OPAC.

10. There is no significant difference in satisfaction levels of respondents from different IIMs regarding the web OPAC at their libraries.

11. There is no significant difference in satisfaction levels of respondents from different age groups regarding the web OPAC at their libraries.

1.10. Scope and Limitation of the Study

Providing required information in an easy way is the responsibility of the library online catalogues. The library online catalogue should be designed to handle all types of information resources. All the search features should be customised as per the standards given by the experts in the library and information science field. Also users' expectations must be fulfilled and there must be a provision for the continuous developments of the library online catalogues to meet the upcoming needs.

These attributes are not fully met by the library online catalogues in the current circumstances. Therefore, it is necessary to conduct a comprehensive research study to address problematic areas of information retrieval tools at different IIM libraries located in different parts of India.

Present study is confined only thirteen (13) Institute of Management libraries with having web-OPAC facility, two (02) IIM libraries working with only OPACs in the campus and five (05) IIM libraries serving through web discovery tools. Due to this reason researcher concentrated to conduct the study only where Web-OPACs already functioning. The total twenty (20) IIMs are established in India those are listed in below table in order of establishment year. Among the 20 IIMs for the present study 13 IIM Libraries are selected.

Totally 1800 questionnaires were distributed for user survey, 1500 received from the respondents and 1300 respondents were targeted. Those were expressed that, they use web-OPAC at their respective institute libraries.

Table 1.1. Indian Institutes of Management in India

Sl. no	Name	Short Name	Established	Location	State/UT	Website
7	Indian Institute of Management Shillong	IIM-S	2007	Shillong	Meghalaya	iimshillong.ac.in

Source: (https://en.wikipedia.org/wiki/Indian_Institutes_of_Management)

Table 1.1. Indian Institutes of Management in India

Sl. no	Name	Short Name	Established	Location	State/UT	Website

1.11. Significance of the Study

The researcher predicted that the anticipated study would be of beneficial in many ways. To begin with, it was wished that the outcomes and suggestions of the study will be useful to the library policy-makers, definitely in planning Library Management Systems such as library automation, open access, circulation of material, exchanging of bibliographical details and resources sharing among other libraries. This will help to improve search performance and functionality of Web-OPAC systems by addressing the research suggestions in relation to online catalogues.

In addition, policy development, conclusions made from the results of this study may be helpful for librarians who are planning to introduce or improve current web-based OPAC's and this would be helpful for establishing library networks or consortia models. And also for software vendors who wish to improve the functionality of their products.

Keeping in the mind these issues there is an urgent need to conduct this kind of studies in Library and information science domain to improve search facility, effective and competitive library Web-OPAC's.

1.12. Operational Terms and Concepts used in the Study

The definitions the terms used in the study are mentioned as following with the brief concepts.

IIMs: The Indian Institutes of Management (IIMs) are a cluster of 20 community, self-governing organizations of administration schooling and research in India. They mainly offer post grade, doctoral and executive teaching programmes.

Institute Library: A typical library includes largely on Occupational literature, Administration, and its associated parts. Resource improvement rules and facilities are instructed by Organisation's teaching; research and education objectives of Indian institutes of Management in India.

Web OPAC: "An OPAC uses the World Wide Web protocol to act as Web-OPAC, is an independent program designed separately. It is programmed to facilitate members to access the OPAC, through their own search, for the ease of borrowing, instead of searching through the card catalogue. In addition, members can also request for the information about borrowing, reservation, automatic reservations etc."

An Evaluation: is the logical valuation of merits and demerits of an object. This description is hardly immaculate in evocative studies, application investigations, and influential assessments. In this study Web-OPACs of the Indian Institutes of Management are evaluated.

Relative Recall: is an ability of a retrieval system to obtain all or most of truly relevant documents in the collection.

Precision: is the fraction of a search output relevancy for a particular query in the retrieval system.

Study: The term, 'study' means, smearing attention to the knowledge and accepting a subject, a state of thoughtful intellectual fascination, giving a cautious deliberation to something. It is also a detailed critical inspection considered in detail or a close analysis in order to discover essential features or meanings.

Users: The term "user" means persons who make use of a thing/library. In this study, the researcher focussed on Students and Research Scholars.

Parameter Checklist: A tilt of things you need to confirm, check or review. These are used in every thinkable field likewise it is used to verify the Web-OPACs, which is designed by the library science experts.

1.13. Chapterization

The present study will be divided into seven chapters;

Chapter-01: Present study: This chapter will include Introduction, Historical background of the topic, Need, Objectives, Scope of the study, Hypothesis, Abbreviations and definitions & concepts used in the study.

Chapter-02: Review of literature: In this chapter an attempt has made to conduct review of literature pertaining to this research topic and have been summarized into four categories such as Parameter checklist based, Survey based, Observation based and Task/Usability studies etc.

Chapter-03: Research methodology: This chapter explains the Research design, Area and population of the study, Sampling Technique and size, Questionnaire structure, and Data collection and Analysis mode etc.

Chapter-04: Profiles of IIMs & Libraries: This chapter covers brief history of individual IIM's Library history, sources, services and software packages with special reference to Web-OPAC's which are selected for the scope of the research.

Chapter-05: Data analysis and interpretation: This chapter written in four parts, Part-A on Evaluation of web OPACs salient search features by the renowned experts checklist, Part-B also deals with evaluation OPAC 2.0 search

features by the parameter checklist designed by experts, Part-C focuses on relevancy of search results in web OPACs and Part-D describes about web OPAC users survey. All the observations, interpretations, testing of hypothesis and explanation of data related to the study are presented in the tables and graphs with the help of SPSS.

Chapter-06: Findings and Suggestions: In this unit researcher has tried to trace out the findings from the study, what are things are variance each other among thirteen web OPAC's and suggested for the improvements.

1.14. Summary

This research has tried to concede the key findings of previous works and proposes new framework to abolish the known problems for developing the next generation web-OPACs. The background work has covered all necessary elements as per the research ethics and also clarified the way of implementation to develop the Web-OPACs with all required functionalities and areas for further developments have been enumerated in this thesis with real justifications are written based on the observation during the research. Most importantly, this work elaborates how the latest techniques can be used to develop the Web-OPACs with all required qualities and features. Suggestions have also been pointed out for future research based on the research outputs.

Chapter -02

REVIEW OF LITERATURE

2.1   Introduction

2.2.   Evaluation (Parameter) Checklist Based Studies

2.3.   Survey (Questionnaire) based Evaluation Studies

2.4.   Observations Based Evaluation Studies

2.5.   Usability test/ Tasks base Studies

2.6.   Research Gap

2.7.   Summary

Chapter-02

REVIEW OF LITERATURE

2.1.   Introduction

A methodological review of past literature is a crucial endeavour for any academic research (Webster and Watson, 2002). The need to uncover what is already known in the body of knowledge prior to initiating any research study should not be underestimated (Hart, 1998). Review of literature provides information about previous investigations and procedure of previous researches. There are many evaluation methods for evaluate a phenomenon, thing, circumstance or a task, an activity. Hereby researcher found three methods of evaluation of OPAC and Web-OPACs from the existed works available in the library and information science domain.

The checklist based assessment is not yet popular in Library and Information Science as in Medical sciences. This method of study helps the researcher to find the true value from the field which is scattered among the plat form to present systematic and justified results in the form of symbols instead of numbers, This method of study also known for bias free results and conclusions which are occurred in the other style of study some extent.

Another widely used research method is survey or opinion based research through questionnaire tool. Which is also accepted by psychologists also due to highest occurrence of variables in the study leads to conclusion of the any research work. This test helps to understand realities of community practice on given task or infrastructure, builds on existing measures of theoretical arguments and links to generate subscales of a concept.

The observation and task base study is also widely used in all branches of knowledge, in this style of study all the theories are tested with valid reason and explained effects with examples of a cause. It compiles the information and involves observations, measurements and demonstrates the relationships among the variables to draw the conclusions. In the current study the researchers has studied only those considered which are related to the theme of the research from overseas and India. The abstracts of all the collected papers have been taken and reported accordingly, few studies are directly related and some are related indirectly. The reviews are grouped under three sub-themes such as Checklist based OPAC evaluation studies, Users opinion survey based evaluation studies, Observations based evaluation studies and Usability test or Tasks base Studies.

2.2.   Evaluation (Parameter) Checklist Based Studies

Babu, Ramesh and O'Brien (2000) have examined six popular web OPAC's of UK academic libraries in remote access by users and interfaces, features and functions based on checklist of 67 criteria's work already published (Cherry,1994 and Dwyer, 1984]. The presence and absence of features in six library systems Talis, Innopac, Webcat, Voyager, Geoweb and ALEPH are discussed in detail.

Ibrahim (2005) evaluated the passivity of multilingual Arabic scripts in web OPACs of ten Gulf Co-operative Council University Libraries and prepared evaluation checklist to highlight the challenges facing in exchange of bibliographical records, resources in Arabic script in Web OPAC's. The revised guidelines of OPAC shows available in literature (Cherry and O'Brien) were used

with slight change into. The study sparked to scheme and functions of an Arabic version of OPAC upon absence of Z39.50 protocol, MARC standards, consensus in some crucial aspects such as accuracy, appropriateness and meaningfulness of wording and terms used for labels, more pleasing display, and implementation of AACRII rules for electronic bibliographic data exchange.

Kapoor, Kanta and Goyal (2007) have carried out comparative analysis on functionalities of the Five web based OPACs (Libsys, VTLS, iPortal, New Genlib, Troodon and Alice) available in Indian academic libraries by three researchers at GGS Indraprastha University, Delhi who accepted to carry searches for a number of things counting books searches. Most of the OPACs used by the selected libraries offer the basic search features; searching by author, title, control number, keywords. But absence of federated searching across the libraries is highlighted. It is found that users are unable to customize the display (MARC) format; searches are usually not graded so the user may have to scroll through the entire list of retrieved items to select an appropriate item.

Mahmood, Khalid (2008) studied the features, functions of indigenous web OPACs of Academic, Special and National libraries of Pakistan, the assessment of 16 OPACs is based on a 91-item checklist developed with help of available literature and previous studies conducted in other countries. The paper finds out indigenous Web OPAC are at initial stage of development and only few offer basic facilities, they don't offer MARC formats and Z39.50 protocol and only few OPACs can accommodate non-Roman scripts like, Urdu and other local scripts etc.

Luong, Truong Dai and Liew, Chern Li (2009) have investigated usability features of 13 libraries web OPACs in New Zealand are analyzed also makes a comparison of how libraries using the same library software are customizing their interfaces through a (usability infection evaluative method) an altered checklist based on the Cherry and Ibrahim checklist. All the features have been discussed in scores; bibliographic display, text, layout, labels, and user assistance secured high scores. Many new structures that are related with search engines such as word cloud, faceted navigation, most popular ranking and related items are however, not found.

Yang, Sharon Q and Wagner, Kurt (2010) have examined and compared the characteristics of the open source and proprietary finding tools to find out how much finding tools are eligible to become next generation catalog. The checklist of 12 features was tested against each of 07 open source and 10 proprietary discovery tools to determine features are present or absent. It is revealed that discovery tools have many next generation catalogue features; 'merged searching' and 'relevancy based on circulation' are the two areas that both tools are absent.

Madhusudhan, Margam and Aggarwal, Shalini (2011) have tested various features and components of Web OPACs of six IIT Libraries (IIT-Delhi, IIT-Madras, IIT-Guwahati and IIT-Roorkee) in India. The assessment approach taken was similar that of Luong and Liews study with slight alteration, comprising 122 dichotomous queries with 174 features and considered as 11 comprehensive groups. The study shows that almost all the OPACs were lacked federated search, adjunct thesaurus help and spell check facilities. It is suggested to adopt OPAC 2.0 search features to balance subsequent developments and generations' demands.

Yang, Sharon and Hofmann (2011) have conducted a study aims to contribute a model current online public access catalogue in academic libraries. The study conducted in USA and Canada based on next generation catalogue features. The random samples of 260 colleges were selected from colleges guide book. A checklist of 12 features of the NGC (next generation catalogue) was used to evaluate the OAPCs of 260 libraries but only 233 OPACs were taken into consideration for the analysis due to other accessible reasons. The data were collected from September 2009 through July 2010. It is found that libraries still have an extended system to go towards next generation catalogues. About 16% of OPACs in the sample did not display progressive features of NGC. Only 3% of the OPACs in the sample verified seven to ten out of 12 functionalities of NGC. The federated search is the very weak area where to improvements should happen.

Mercun Tanja and Zumer Maja (2013) have described some of the problems and issues faced by the OPACs of six libraries. This aims to establish how libraries have undertaken the mission of developing the next generation catalogue compared to new tool i.e., Amazon. An expert study was carried out in January 2008, based on the framework (checklist) from a study undertaken earlier in July 2007 by Mercun. Here six libraries online (COBISS, Ann Arbor district library, Hennepin county library, Queens library, Phoenix public library and World cat) catalogues were compared with Amazon features based on checklist. In case of 'search and presentation of results' Queens and Phoenix library catalogues have easier and more intuitive compared other catalogues and WorldCat was slowly applying some of the more important features (relevance, clustering) while Ann Arbor, Hennepin and COBISS catalogues have not made much progress in

this area. 'Reviewing the additional content' category, except for WorldCat and COBISS, other library catalogues have done quite well enriching the plain bibliographic information with covers, reviews, summaries, excerpts, and tables of contents. Ann Arbor and Hennepin library catalogues have been among the first to adopt some of the social features that invite user participation. The selected catalogues do not yet have the sophisticated systems to offer personal recommendations and nor do they support building rich personal profiles that would help users connect with each other. In 'other trends' category except for WorldCat and COBISS, other libraries have responded quite well.

Chatterjee Swarnali and Sarkhel (2016) have evaluated the five major library management systems and their web-OPACs. The selected five LMS softwares are Koha, Libsys, and Alice for windows, NewGenLib and Virtua. The study focussed on OPACs attributes, properties, search features and functionalities. The study was conducted on the checklist of OPACs features and compared with each other. It is found that Koha is highest score secured LMS among five softwares but more or less NewGenLib and Virtua are also stand next to Koha in case of all the parameters listed for the evaluation.

Chandrappa and Sunil (2017) have made different effort to evaluate the OPAC 2.0 search features among ten universities. The study is based on the works by Mercun and Žumer (2008), Ballard and Blaine (2011), Luong and Liew (2009), Naun (2010), Tam and Bussey (2009), Yang and Wagner (2010) and Yang and Hofmann (2011). A modified parameter evaluation checklist was designed and compared with Phoenix Library. The study revealed that 'basic features and the display of bibliographic records' are considerably well established in all the

OPACs, Koha has good search and display facilities which is not in the other commercial softwares. It is observed that none of the Indian universities provided the effective navigation facility to access the resources (both hard and electronic). In Enriched contents and recommendation category the performance of OPACs used in Indian universities is highly worrying. The User participation, User profiles and Personalisation categories as key activities which make the users to spend time with their library OPACs, but Indian universities failed to cater even though the feature is available at the University of Mysore, the Karnataka University and the Osmania University.

Sharma, GK (2017) examined the various features and components of Online Public Access Catalogue in University Libraries at Guwahati City. The four University Libraries (Guwahati University, Krishna Kanta Handiqui State Open University, Assam Don Bosco University, and National Law University & Judicial Academy, Assam) have been offering web-OPAC facility. The study is conducted by viewing and examining the web-OPACs physically and also using checklist. It is found that National Law University & Judicial Academy has secured highest scores and having all the features in the Web-OPAC mentioned in the checklist.

Chandrappa and Harinarayana (2018) found the quality of online catalogue records in the web OPACs at six management libraries and compared with library of congress online catalogue. A set of 60 books on different core subjects of management were chosen and tested based on the Zeng's error type codes in all the institutions (LoC, Christ Institute of management-Bangalore, Birla Institute of Management Technology-Greater Noida, IIMA, IIMB and Institute of

Management-Ahmadabad). The data collected from the each libraries were meticulously examined the entry of ISBN (MARC Tag 020), Classification Number (MARC Tag 082), Main Entry (MARC Tag 100), and Title, Author tags etc. The results shows LoC records are error free and other institutions 1093 errors were found from 251 records amounting to 4.35 errors per record/search. It suggested that consider the bibliographical data entry more seriously.

Harinarayana and Chandrappa (2018) applied same methodology to assess errors in subject headings assigned to sampled 52 books. Out of the 52 titles in the sample, there were 34 (65.38%) management books and 18 (34.62%) economics books. These books are available in University of Mysore-Mysore (UML), Bangalore University-Bengaluru (BUL), Gulbarga University-Kalaburagi (GUL), and Mangalore University-Mangaluru (MUL). The result showed that the subject access to the holdings of the university libraries needs to be improved.

2.3. Survey (Questionnaire) based Evaluation Studies

Kim, Heesop and Others (1999) studied the correlation between user characteristics (age, gender, qualification, computer skills and OPAC usage experience) and their preferred features (Interaction style, browsing and navigation styles, etc.) on selected 264 university libraries web OPACs (availability of information and quality of information) in UK. Based on a small scale survey it was recommended that system designer should make a more considerations on users' demographical characteristics in the design of OPAC i.e., user-tailored interactive web-based OPAC system.

Ariyapala and Edzen (2002) investigated the foreign students use behavior of OPAC in the university of Malaya. The study involves 43 foreign students

ability to usage of OPAC, their information about OPAC and the aims for the effective use of OPAC. It is found from the study that 'Title' searches are most frequently used but students are temperately successful in locating items. Most of them did not receive any guidance from the library end and those are unaware about available other facilities of OPAC.

Ortiz-Repiso and Others (2006) evaluated the usages by researchers of the OPACs of the library network of the Spanish Council for Scientific Research, the largest research institution in Spain. The questionnaire was drafted and data was also gathered from the transaction logs. The study revealed that users are still challenged by common glitches information overload and faults in subject searching, finally suggested to introduce feedback system and display of results should arrange according to relevancy or in clusters.

Ansari, MA and Amita (2008) have established users' opinion on their awareness, utilisation satisfaction level with use of OPAC at five libraries (IIT, JNU, Dr. Zakir Husain Library-Jamia Millia Islamia, NISCAIR, DESIDOC) in New Delhi. A Questionnaire method was adopted for this study to around 128 respondents including undergraduate and post graduate students and MPhil, PhD scholars. Regarding results users face problems of recall and precision, some users are not able to find relevant documents on account of various factors. The utilization of OPAC is highly used and the satisfaction level was also high with the OPAC facility.

Mulla and Chandrashekara (2009) have conducted a survey to determine the effective use of online public access catalogue at the libraries of engineering

colleges in Karnataka. 128 engineering colleges, 03 deemed universities and 02 university constituent colleges are the part this survey and around 1338 questionnaires were filled by the respondents. It is found that Lack of awareness, non-user friendly software and lack of information technology competencies are major reason to not to use the OPAC's of their colleges, Further, suggested to educate the user community to overcome these problems.

Ozel, Nevzat and Cakmak, Tolga (2010) conducted web based survey of 179 OPAC's users (students and faculties) to determine their expectations about adaptation or restructuring OPACs by social network applications at Ankara university and Hacettepe university libraries of Turkey. The survey conducted with 10 questions was pre-tested with 6 participants in May 2010, which was redesigned and applied to 179 participants via e-mails, listserv messages. The conclusions obtained from this study revealed that, Turkish users want to benefit from social network applications in OPACs.

ShivKumar and Vohra, Ranjana (2011) conducted a questionnaire based survey on use of OPAC at A C Joshi library, purpose, ease of use, satisfaction level etc., among faculty members, research scholars, PG students; lack of basic skills among users was found to be the major reason for not utilizing full features of OPAC. The study indicated that OPAC System is difficult to use because DOS-based system, it does not offer various essential features such as spell-check software, online reservation and renewal of the materials, new arrivals and book cover display facilities. Finally, it is suggested to incorporate these features to improve the utilization.

Maidul-Islam and Zabed-Ahmed (2011) assessed Dhaka university students perceptions of ease of use and their satisfaction with University libraries OPACs. A survey was developed and used to collect the data. In order to analyze the influences of students demographical and individual characteristics on their perceptions the Mann-Whitney and Kruskal-Wallis tests are used for the results. The study suggested for consistency in OPAC interface, incorporating individual characteristics differences in OPAC design to avoid the computer navigation on the OPAC screen and support for learnability and memorability techniques in the OPAC and making the actions visible, reversible also to offer informative feedback from users.

Shivkumar (2011) conducted a survey on users search behavior in OPACs of three certain universities of the Punjab region and also discussed how the web searching effects on the OPAC search. A semi-structured questionnaire was planned to collect the data from faculty members, research scholars and post graduate students of three universities. The study indicated that, users executed searches on the OPAC like popular search engines. Same way users expected OPAC's to work like 'Google', concurrently; they were not well versed with how information is organized in the OPAC. They would like to have utilities similar to those of common search engines had and hyperlinks to online resources.

Devendra and Khaiser Nikam (2012) studied the 256 users (LAW students and staff) perceptions towards the use of OPAC in law university libraries in Karnataka state, India. A questionnaire was developed and distributed to 300 users, which is applied five scale point Likert's Scale. The survey displays that, not all the patrons are fully satisfied with the existed OPACs. Only 17.29% users

indicated 100% rate of accomplishment in locating the document of their interest. The respondents positively responded to affirmative perception towards OPAC search, affirmative post perception towards OPAC search and many more.

Ahmed, Hilal and Others (2012) studied the usage of search strategies in OPACs of IIT-Delhi, IIT-Kanpur, and Kashmir university comparatively. In order to find the out the user search strategies, in OPAC the investigators have adopted the survey (questionnaire and interview) method. The study revealed that a large number of users are using simple search. It is worthwhile to note that advance search enhances the user's satisfaction, although there is no significant difference in using simple search among the selected libraries but it is there in advance search.

Shivkumar (2012) investigated the impact of user's demographic features on the impact of habit of search engines and OPACs of three major universities (Punjab university-Chandigarh, Punjabi University-Patiala and Guru Nanak Dev University-Amritsar) of northern India. The study originates important difference between OPAC using patterns and demographic characteristics of user classes and age groups. Noteworthy differences were noticed among the user age groups for awareness about differences between the inner mechanisms of the OPAC and Web search engines. Further, no significant differences were observed between actions of users after fruitless searches and the strictures relating to their age group, categories, academic majors and gender.

Shivkumar (2012) has done comparative study on use of computers, internet, and library OPAC among rural and urban postgraduates in Indian Universities. The survey method was applied as a main data assemblage tool.

However, the interview method and general observations were also used to make information more explicit. The results focused that there is no weighty difference between rural and urban students for the use of computers, internet and OPACs. The only major differences found among both groups were for their reactions during unsuccessful searches.

Shivkumar (2012) found the impact of internet search engines on OPAC searching by the students, research scholars and faculty of Punjab university library, Patiala. Data was collected through questionnaire to get information on the influence of web search engines on OPAC search. It is found from the study that majority were used the both search engine and OPACs but, the OPAC is used as a search engine manner. Thus, it is added a battle of existence and sustainability for the OPAC against search engines. This study would help to suggest for designing a user friendly OPAC in Indian universities.

Shivkumar and Vohra, Ranjana (2013) designed the structure questionnaire for the investigation methodology to know purposes for search the Online Public Access Catalogues (OPACs) in the university libraries of India. This study was limited to three universities located, in the Union Territory of Chandigarh and Punjab, a northern state of India. There were 384 (76.8 per cent) defendants who returned the filled-in surveys. The data, thus collected, accumulated, and examined in SPSS package (version 14.0). It was found that regular use of OPAC in three libraries, this usage frequency was notwithstanding the fact that the patrons had met a number of difficulties while doing this etc., are discussed.

Vasudavan and others (2013) focused on providing OPAC service to University (Asia Pacific University Technology Park, Malaysia) students via

mobile phone and further they discussed about students opinion, mobile content design guidelines for developing MOS, prototype application for non-smart phone users. The questionnaire and interview techniques were the research instruments to gather the data. The survey derived that 73% of the pupils desired to access the OPACs via mobile phone, it is discovered that 71% of pupils are non-smart phone users based on this, it recommended to plan a mobile OPAC service model application for the university pupils.

Fabunmi and Asubiojo (2013) verified the 800 prints of survey which were circulated to learners at all levels in Obafemi Awolowo university to investigate the awareness and use of Online Public Access catalogue (OPAC). The study discovered that 68.7% of the defendants were conscious of the OPAC services; students who were aware used OPAC independently only 3.2%. The respondents accessed library resources from their hostels, homes 0.2%. Similarly, common of the defendants lacked information searching aids while lack of consciousness, unequal power supply, net failure and insufficiency of computer terminals labelled among the problems identified as factors inhibiting the use of library OPAC were discussed in the paper in detail how to overcome above problems.

Madhusudhan (2014) conducted a study on the 'Use of web-based online public access catalogue by foreign students at the university of Delhi' in order to know their knowledge about usage, problem faced by them during usages, purpose and method of using for searching documents in the web OPAC. It is found that most of the respondents are about search more by title followed by subject and authors and language difficulty, lack of training, and unaware of facilities available at OPAC are highlighted. A review was accompanied through a

structured survey from 100 overseas pupils of Delhi university and analysed in simple calculation method.

Kaur and Kathuria (2015) conducted a survey to identify whether the library user education programmes helps to use of OPAC, to know the consumers' consciousness and their happiness level with Web-OPAC, to classify aims for usage of library OPAC, to find out the utmost used approaches and access points in OPAC and to recognize the problems during search OPAC at Bhai Kahn Singh Nabha library and Punjab university. The questionnaire method was used and presented the results percentage wise and suggestions also discussed based on the problems found.

Shamima and Zabed (2015) conducted the comparative study of Koha online public access catalogue (OPAC) and its discovery tool Vu-Find. An entire of 175 pupils replied to a questionnaire-based survey through which their demographic data, duration (years) of computer use and their self-reported levels of computer skills were acquired. The results presented that there were no major variances among pupils in terms of their grades on either the OPAC or Vu-Find interfaces. This study helps the researchers to conduct task-based usability studies with various categorization outfits and this could produce new and enhanced interface strategies for library catalogue searching.

Msagsti, Nelson (2016) conducted a survey to know the awareness and use of OPAC by distance learners in university of Tanzania. The methodology is used to collect data by questionnaire method. The 300 respondents were selected by stratified random sampling method. This work shows about low level of awareness

(24.78%) and use of OPAC among is (2.6%). The majority (85.65%) retrieved learning resources from library using shelves technique. Due to less number of CPUs with internet access, insufficient searching skills, and little bandwidth and frequent power outages were specified as some of the limitations that affect against effective use of OPAC.

Soroya, Saira-Hanif and Mahmood, Khalid (2017) conducted the survey about 'Awareness, use and searching behaviour of virtual OPAC from 100 users in Lahore University of Management Sciences (LIMS)'. The questionnaire method is used to collect data to know the awareness of OPAC, and their searching strategy with in it. This study shown that users were not conscious about OPAC; but those who were mindful is using basic features only. It is suggested that compulsory information literacy programme should be conducted.

Siddagangaiah and Muthuraj (2017) have studied on *'The Degree of Satisfaction of Undergraduate Students on their College Library OPAC at Bukkapatna, Tumkur District of Karnataka'*. The questionnaire method was used to approach 100 students. The shows that (45.55%) of students male and (54.45%) of students are female. The 31% of the users says problems of inadequate number of CPUs for OPAC search. The supreme 45% of the users says they neither happy nor unhappy with the existing OPAC search abilities.

Vasishta and Dhingra (2017) studied the *'Usage of Library OPAC in PEC University of Technology, Chandigarh (India)'*. It was outcome of standard survey process of the structured questionnaire to gather the data from the patrons using OPAC. A sample of 176 patrons comprising UG and PG students and research

scholars was taken. The study tells that there is an increasing development towards the use of library OPAC as a useful tool for searching the library collection, but only a few patrons are making use of other techniques available in OPAC such as to probe whether the exact document is already issued or not; or to make proper use of innovative search feature of the OPAC.

Shankaranand and Dharani Kumar (2018) evaluated the *'Web-OPAC of Indian Institute of Management, Bangalore'*. This is first effort to judge the web-OPAC functionality and search features based on two fold techniques i.e. checklist of Ramesh Babu and Ann O'Brien and author designed questionnaire. The hundred users were targeted and taken the data. It is found that users' happiness level is 'Good' rather 'Excellent'. Lack of search knowledge, limited search features, absence of training, poor database index, and non-accessibility of other IIMs OPACs are reported as the difficulties being faced in IIMB.

Krishnamoorthy and Muthusamy (2018) found the *'Survey of 48 Faculty Members of Jeppiaar Maamallan Engineering College, Chennai for Understand the Usage of LIBRARY OPAC'*. Questionnaires (96.00 %) were received from the respondents through these questionnaires it is found that the OPAC does not provide varied essential options like spell-check code, fast search, online reservation and renewal, new arrivals, book cowl show facilities etc. it is also highlighted that OPAC system is tough to use due to OPAC is DOS-based system.

Eugene (2018) inspected the *'Online Public Access Catalogue (OPAC) at the Head Library-University of Cape Coast as an Information Seeking Tool'*. Survey was the main data collection tool used with a mixture of closed ended and

open ended questions. The populace of the study comprised all categories of users who used the Sam Jonah library. A sample size of 110 representing 11% of the population was selected to represent the population through a simple random sampling technique; study exposed that the OPAC ability does not appreciate widespread use. Infrastructural matters and lack of pertinent skills were deemed to be some of the challenges avoiding an ideal use of the OPAC.

Mahadevan and Vijaya Kumar (2019) surveyed the *'30 Pharmacy Colleges in Karnataka'.* The paper looks at the outcomes from the pharmacy colleges around 400, questionnaires were dispersed among the faculty and 350 were analyzed. The Two way ANOVA test was applied to understand the degree of utilizing OPAC, gender wise insightful, reason for utilization and fulfillment level while utilizing OPAC etc.

Mariithi JN (2019) submitted a project on *'Weigh Up the Efficiency of the Online Public Access Catalogue (OPAC) in Meeting User Information Needs at the University of Nairobi (UON) Library'.* For the present study, the principle of least effort was used for supporting the study and qualitative and quantitative methods were applied in the research design. Semi-structured questionnaires were used to gather data from the respondents. The targeted population was the University of Nairobi College of Architecture and Engineering Library users. The study determined that the OPAC that was being used by the university library was not meeting user information needs of all its users. The biggest limitations of OPAC is non-availability to offsite access, non-accessibility through mobile phones, lack of inter-library resource linkages, lack of user notifications of reserved materials, poor friendly user interface, low literacy skills on OPAC and

location problems of materials due to miss-shelving, The study also addressed solve the above mentioned problems.

Rajinder and Joginder (2019) have conducted the *'Survey Based Study at Different University Libraries of Haryana'*. To find out awareness among the users, inspect the purpose, frequency of use and various searching facilities in OPAC. The paper also highlighted the difficulties faced by the patrons in the use of OPAC and sustainable suggestions; OPAC must be user friendly, offline tutorial facilities must be uploaded in OPAC terminals and those terminals must be hyperlinked with e-resources, respectively.

2.4. Observations Based Evaluation Studies

Borgman, Christine (1996) analysed on *'Why online catalogue are still Hard to Use?'*. Based on the implications of card catalogue design, the observations on works or the available published work in recent past is tool for this study. Where the problems with search query matching, analysis of card catalogue searching, and understanding users' behaviours are discussed to implication or reset the online catalogues (OPAC's) with examples. It is concluded that searching either in card or in OPAC searching requires theoretical knowledge of information recovery process, how and when to use system features; syntax of entering query and basic computing skills are play important role.

Sridhar (2004) in his *'Comparative Evaluation Study on Use of the Online Public Access Catalogue (OPAC) With a Study of 1985's Card Catalogue of the ISRO Satellite Center Library'*, reported critical incident observations about users approaches on searching of ISAC Library OPAC. This effort closes that moving

from old-style card catalogue to a current OPAC has not made subject searching more good-looking and further suggested to resolve the traced problems.

Zheng, Qinghua and Others (2004) have analyzed the *'Key Technical Issues of Sharing, Integration of OPAC Characteristics and E-Learning Resources respectively in a Single Platform at XJTU Library'*. The data exchange format, searching interfaces, system functions, resource storage mode and supporting platforms were discussed, and tested on the heterogeneously finally F-search is found for the both the purposes to satisfy the two way resources demand in a single platform.

Bennett, Michael (2007) performed the *"Longitudinal Study to OPAC Strategy Enhancement and their Effects on Material Movement and Sharing them within the Library Consortia Situation"*. The observation of transactions log analysis method is used to collect the circulation and Inter Library Loan data of sixteen libraries covering seven years period, which were compared among member libraries to determine the degree of patrons' utilizations. The consequences directed that while Inter Library Loan sums improved OPAC ominously after each enhancement, such advances did not effect in important consistent changes in total material movement and flow.

Moulaison, Heather (2008) conducted study on *"OPAC Queries at the College of New Jersey (TCNJ)"*, with the help of two library groups through observing transaction logs to know the search characteristics by the users in the college OPAC, Further discussed about searching behaviour which could be used to advance the catalogue interface and suggests to modernize the library's OPAC

website. The transactions logs tested finally with the predetermined two hypotheses such as; are library patrons carrying out complex searches employing advanced search features? (Search limitations and Boolean operators) and what is the response of library patrons when they search in OPAC that gets zero hits?

Zainal, Haliza-Binti and others (2013) found the *"Multi-way Evaluative Criteria to Understand the User's Satisfaction on Web-OPACs"*. Those are; observing previous studies of library science and Information systems used in the field based on the Expectation Disconfirmation Theory (EDT).

Shimrey, SR and Ahmed, JH (2017) have discussed the *"Search Strategies in OPACs of Integrated Library Management Software between Koha and Libsys"*. Authors have studied in depth about Boolean search operators, truncation search, proximity search and free-text search in both the softwares. Further, they discussed systematically on differences in the search techniques, search facilities provided, tag cloud and basic and advance searches of Koha and Libsys. The OPAC modules are shown in the figures and presented comparatively on each aspect.

Nabi and Shafi (2017) observed the *"Precision and Relative-Recall of Five Web OPACs of Northern Indian Universities (AMU, University of Delhi, JNU, University of Kashmir, and Punjab)"*. Thirty three typical search queries related to Economics are selected and searched in the five university OPACs and recorded for the evaluation. The initial 20 outcomes relating to each 'search query' considered for assessment of relative recall and precision. The study exposes that 'Mean Relative Recall' drops in a low range in relation to precision in all five universities.

Shaobo and Dan (2019) undertaken study on *"Users' Diversity in Using the Different Channels such as Personal CPUs, iPads, and Smart Phones they can Access to OPAC".* This task was accompanied by observing the comprehensive OPAC log from Wuhan University's academic digital library, straddling six months from February to October in 2015. There are 1, 61, 40,509 records. It is assumed that action and period interval on the primary device are additional vital for expecting the user's following activity and the device.

2.5. Usability test/ Tasks base Studies

Hildreth, Charles (1997) in the paper on *'Usage and Understanding of Keyword Searching by Patrons into Online Catalogue at University of Oklahoma'* is out-come of dual way investigation about the OPAC. Two fold data collection methods were used to collect data i.e. transactions log and a small task base questionnaire. The major effort of this study was to understanding of regularity of query searching in university OPAC comparing to the regular-style searches such as author, title, and subject headings. It is found that keyword search is more often search and most of them don't know how the system routes their queries. The patrons also had spoken about strong interest in search aid from the system while steering their searches.

Bernd Harmsen (2000) discussed practical knowledge about the migrating library software from TINlib to STAR for 18 libraries of Fraunhofer Gesellschaft, which is the foremost establishment of applied research in Germany operating 47 research institutions with more than 9,000 workforces, about part of them are experts or engineers.

The paper steps are given in detail how they implemented new products on Web-OPAC such as full-text or hypermedia documents corresponding to a certain citation, And suggested for further research on creating the links to publishers, corporate sources, journal titles and provision for tables of contents, and sometimes also offer shortest access to full text documents for subscribers from OPAC itself.

Tamal and Veena (2005) have explored *"How Library Members have Cooperated during the Implementation of OPAC Searches, and Whether they were Happy or Unhappy or Confused"*. This is based on a sample of 18 OPAC users total of 32 users at the British Council Library in Kolkata. The "think out loud" or "concurrent verbalization" technique was applied; the members were requested to "think out loud" about their searches, keys used and responses to the information on the screen, it was exposed that maximum of the patrons articulated disappointment and were jumbled while using the online catalogue. Those who did express pleasure have really not used it for very lengthy, whereas most of the members who stated displeasure have used the system for more than two years and were graduates and involved in different professions.

White, Hayley and Others (2006) performed the *"Usability of Evaluation of Four Library Catalogues of New Zealand Universities (Canterbury University, Lincoln University, Massey University, and University of Auckland)"*. It was requested to reply a set sequence of eight queries by the three participants to each catalogue. It was used a video splitter to acquire a live screen capture of the library interface, which was combined with a video feed of the participant in real time using a digital mixer. The issues or problems were discussed into six categories such as Layout, ease of use, functionality, terminology and feedback and help.

Kani-zabihi, Elahe and Ghinea, Gheorghita (2007) conducted the *"Tasks Based Study to involve the Users in OPAC Interface Design and Suggestions for Three UK Universities OPACs"*. An experiment (four tasks and six steps) was carried out to find out the features and after each user asked to complete a questionnaire on that user prefer to have in OPACs. This experiment has highlighted that user often struggle in accomplishing their tasks and expressed insufficient support from 'Help', further suggested to have 'inter library loan' facility on all three OPACs.

Malliari, Aphrodite and Kyriaki-Manessi D (2007) presented *"Actual Period Patrons Searches in a Greek Academic Library OPAC (University of Macedonia Library) in Connection to Patrons' Profile"*. A system implanted a task base questionnaire and transaction logs of the University are the tool for the data collection and which handled and analysed using multiple numerical examination practices. A sequence of inquiry related to everyday library work was asked to participants to answer along with their logs. The paper built upon the design of techniques of data collection and analysis (multivariate statistical analysis techniques) and how it would be recycled in a many of library operations, which is also can be used in presenting snappy horizontal data in the form of arithmetical occurrences to allow all relations among sets of variables.

Mi, Jia and Weng, Cathy (2008) explored study on *"Uplifting the Library OPACs Interface, Searching and Demonstration Experiments Comparing with the Internet Search Engines"*. The authors examined the interfaces of 123 Association of Research Libraries' five major integrated library systems. The mental model searching method has applied to develop the study and discussed the query search

issues and bibliographical display format in OPACs comparatively search engines, further recommended to rectify the library system limitations, functionality, and MARC Standard unsuitability to compete with search engines performance.

Carmel Denholm and others (2009) described the *"Process of Developing Web-OPAC with Migrating in Library Management System from TALIS to TALISPlus for Building New Generation OPAC at State Library of Tasmania"*. This process purely implemented on "Find" and "Get" model of service, during this Library found the patron discussion and response, that procedure of item finding within the new OPAC was unfinished unless attended by new means that guaranteed that the anticipated entry could in turn be easily originate and actually opened by patrons. These responsibilities however, the touched levels of customer approval with the new OPAC reinforcing and validating this approach.

Karl Suhr, (2009) discussed about *"Modifying the Current Bookmark-Let, Which is a Tool (Button) that Enhances Functionality to a Web Browser"*. This change allows searching a library's OPAC by ISBN, ISSN, Title and Author etc. A brief procedure has given by the author how to implement this by copying from http://weblog.infoworld.com/udell/stories/2002/12/11/ librarylookup.html. This is useful to library users as a finding tool for locating books and could be used to mechanize the daily library operations.

Thomas, Bob and Buck, Stefanie (2010) aimed to define the *"Consequences of a Usability Test Accomplished at Western Washington University to Decide Whether Patrons were as Fruitful Performance Common Catalog Associated Tasks in OCLC's World Catalog Local interface"*. The

usability team established an examination based on responsibilities commonly performed in the library catalogue. They then verified 24 members of changing ranks of understanding and each asked to complete 20 shared catalogue tasks in either the web OPAC interface in currently in use or the world catalogue local interface. The aim of the test was to determine if there are common patron tasks that patrons are fewer or more confident at execution in the WCL situation. A number of tasks were recognized where patrons were knowingly less successful in the WCL situation, refuting the unique assumptions that patrons would be able to achieve common tasks in WCL as well as or improved than in the older Web OPAC interface. While the outcomes originated that there were tasks in which members were more positive in WCL than in the Web OPAC, they also recognized common tasks in which patrons were far less successful in WCL than in Web OPAC.

Waller, Vivienne (2010) underwent a study aiming to *'Accessing Collection of a Large Public Library and Analysis of Its of OPAC Usage at State Library of Victoria in Australia'*. The four years Data were collected and presented based on the users' transactions log in library of Victoria from main catalogue. The paper focused on an analysis of search strategies, settings, successes and reasons for search failures. The paper also highlighted the concept of abandonment rates to online catalogue search, defining a metric that adds to the useful information that can be determined form the transaction logs. It is also suggested to how the libraries users can be assisted to find what they are looking form OPAC.

Ruzegga, Mboni (2011) the aim of this paper on the *'Usability of OPAC Interface Features with Respect to 44 PG Students of IT and Library Science*

Departments at International Islamic University Malaysia' (IIUM). A 14-item task base questionnaire and usability test methods were applied to the variables that impact on usability and extent of the interface characteristics can boost search and informational retrieval for the patrons. This effort also focused to realize patron's awareness on the success of OPAC's inner design, and whether or not students are satisfied. The Collected data were analysed by use of SPSS software shown that use of OPAC interface user friendly (73.3%) followed by unfriendly (26.7%) expressed barriers about use of OPAC by accessibility, usability, navigation in OPAC.

Christiansen (2015) conducted a *"Usability Test for Realising the University of Alberta Students' Opinions about the NEOS Consortium Catalogue (NEOS) during They Used the Device Called 'Tablet'*. Further, it was intended to how the patrons used tablets and whether or not NEOS played an important role in the patrons' academic research activity. Four students from the University were selected and each told to use NEOS to finish a set of simple timed usability tasks on a tablet computer of their choice. The patrons also cracked a variety of semi-structured interview questions relating their tablet usage, internet browsing behaviours, device efficiency, and general opinions of NEOS. Only one patron was receptive to the idea of a NEOS application, while the other 03 patrons said tablets were not helpful to leading academic research and that they chose web interface on their laptop or desktop.

Bravo and Paris (2017) undertaken the task to define the exhaustiveness of the related outcomes, refining outcomes and/or expansion of searches, asking into the presence value, document form and language of the first 25 related sites, and

determine the actuality and use of references of related materials and assistances/calculations from patrons in the method of tags, remarks and rankings through similar inquiring at OPACs and RDSs applied in Spanish universities. The differences between the RDS and OPAC were discussed briefly entire the paper along with the suggestions.

DanWu and Renmin Bi (2017) conducted the reasonable study based on extensive library OPAC log data to discover the differences in search design transitions for mobile phone, tablet and desktop devices by the patrons at Wuhan University. The data were composed from April to October 2015, which are 9 GB in size and contain 16,140,509 records. The numerical technique was used to focus the variances in the devices. It is found that Search field changeover shapes are prejudiced by the patrons' inputs and interfaces of different devices.

Nasir Ismail and others (2018) investigated new trend of understanding the patrons' information literateness between students who were educated in three dissimilar instructional approaches. These instructional approaches are the Web OPAC Self Training Tool with Guided Exploration (WSTTG), Web OPAC Self Training Tool without Guided Exploration (WSTT) and Web OPAC Traditional (T) method were practiced in the Malaysian public university. This strategy was established according to Ausebel's Instructional Design Theory and Gagne's Nine Events of Instruction which contain of constructivist learning tool and mental hypermedia learning tool. The findings of this study suggest that WSTTG is favoured associated to WSTT and T methods in developing patrons' information literateness at both logical thinking levels.

Rosalien R (2018) provided the theoretical searching outline based on ontology to benefit patrons in question creation and making subject searching more active in OPAC. This GUI model symbolized the library of congress subject headings (LCSHs) in an ontological method which exposes the grading of the subject headings as well as all stated relatives among those. It was facilitated the context-based searching by substituting the keyword-based search and help patrons to articulate their inquiry in such a setup that, it will be more approachable for information retrieval.

Amit Nath (2019) found way to how to connect the social networking site users at Web-OPAC, designed and implemented on the Koha through AddThis software. Step by step procedures are given with the snapshots. Finally discussed the how Web-OPAC would be social network interface and practical reality of the library, a place where one can not only search for reading materials, but interact with a public, a librarian, and part of knowledge and accepting with them.

Peerasak and Chainarong (2019) designed framework for experiment for improving the unknown-item (keyword, subject etc.) and enhance a user's known-item keywords (author, title), the outline will select other applicable terms in a domain-related ontology, and subjects articulated in course explanation are used as book indexing. The preliminary research shows that the planned outline gives suitable outcomes in terms of the statistics and the accuracy scores of the retrieved books. Additionally, the planned interesting-score degree can ease to lift the precision levels.

2.6. Research Gap

There are many studies undertaken throughout the years in different dimensions and those results further roomed many gaps. This study highlighted on Web-OPACs of the IIMs are evaluated through the evaluation checklists, relevancy results of search results and patrons' behaviour, attitudes towards the excavation of search features available among the 13 IIMs, further their suggestions to betterment of usage of Web-OPAC.

This would help to prepare institute OPACs according to users mind set and areas of customer oriented search features would be the concluding tips for software developers to customise their library software products. Finally not only making the online catalogue is as central access point for library materials but also designing its functionality to google level.

2.7. Summary

The research is not static many scholars contributed to the field on the various issues. Some have focused on the patrons' attitudes, awareness, and effective usages. Some scholars highlighted on the search features, search strategies, and relevancy and recall. Some professionals worked on internal design and external layout of OPACs. Few people had taken case studies on usage statistics of the OPACs within a particular time and found cause and effects for the least and highest usages. Many experts stated the usability studies in mathematical comparisons or interpretations. But we would say that objectives of all these efforts made for the betterment of OPACs service in accordance with patrons expectations only.

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Chapter-03

RESEARCH METHODOLOGY

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3.1   Introduction

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Chapter-03

RESEARCH METHODOLOGY

3.1. Introduction

The role of the libraries is still predominant in the academic environment even in the information age. All types of users including alumni can get the necessary information from libraries. The library online catalogues irrespective of its type help to obtain information about the particular library collections. The web-OPACs of esteemed 13 IIMs of India have been taken for this research and main objectives of this research were drawn to analyse OPACs critically, systematically and elaborately by four empirical methods to find the capabilities and flaws for their effective functioning in the google era.

3.2. Research Design

The present study is about assessing the web-OPAC search features as per the parameters (checklists) designed by various experts, authors and research scholars in library and information science field. The comprehensive checklist comprises 15 main groups with 67 parameters, and also effort to trace out adaptation of OPAC 2.0 search features at the online catalogues with comprehensive checklist of 07 main groups with 37 parameters. Further study focuses on relevancy of OPACs search results mechanism through formulas of precision and relative recall.

Finally, discussed about patrons use attitudes; the descriptive research design was used to collect data whereby semi-structured questionnaire was used to

gather data from the respondents. According to Kothari (2004) "quantitative research design enables a researcher to tackle the quantitative data attained from the primary sources of information".

The descriptive study was prudently intended to make sure there was minimal bias in the data collection and to lessen the possibilities of error while interpreting data. However this study would get the numerical data with quantitative research and also qualitative research data from patrons' behaviour, attitudes and opinions. This is study systematically designed to evaluate the web OPACs majorly through three experimental methods.

3.3.   Study Area

This research intended to assess the Web-OPACs of IIMs in India those are twenty in numbers situated in different states. The study was limited to only thirteen IIM libraries Web-OPACs, because five IIMs have introduced web discovery tools and two IIMs having only OPACs in the campus there were no Web-OPACs but works towards making them access from outside the campus are under progress.
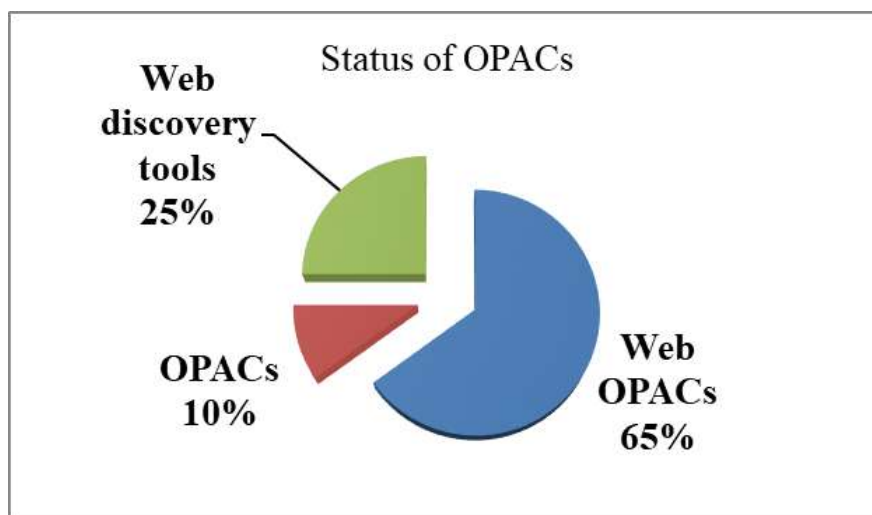
Figure 3.1. Status of OPACs

3.4. Study Population

The Students, Research Scholars of these institutes are the respondents since, those are the direct, effective and regular users of the Web-OPACs in the institutes for their various information needs, the faculty group was eliminated which was found hard to meet them. The total population of Students and Research Scholars was 4215, Researcher reached both the target groups and only 1300 respondents were responded as 'Yes' to use of web OPAC out of 4215 whom researcher taken into consideration as representing target community which was scattered among different departments such as FPM, PGPM, FABM, PGPX, FDP, PGP, EPGP and MDP chosen as biasfree.

Table 3.1. Total Population break-up

Students		Research Scholars	Total
Institutes	**Strength**	**Strength**	
IIM Ahmedabad	287	20	307
IIM Bangalore	414	65	479
IIM Calcutta	512	30	542
IIM Indore	624	33	657
IIM Kashipur	123	22	145
IIM Kozhikode	363	64	427
IIM Lucknow	405	62	467
IIM Bodh Gaya	173	48	221
IIM Rohtak	160	70	230
IIM Ranchi	165	30	195
IIM Sambalpur	160	50	210
IIM Trichy	120	35	155
IIM Udaipur	155	25	180
Total	3661	554	4215

Source: *Institute's NIRF Data*

Table 3.2. Targeted Population break-up

IIMs	Courses / Departments								
	FPM	PG PM	FA BM	PG PX	FDP	PGP	EP GP	MDP	Total
Ahmadabad	16	26	22	16	20	00	00	00	100
Calcutta	00	50	00	50	00	00	00	00	100
Indore	16	26	22	00	20	16	00	00	100
Kashipur	16	26	22	00	20	16	00	00	100
Kozhikode	21	22	00	00	17	00	20	20	100
Lucknow	50	50	00	00	00	00	00	00	100
Bodh Gaya	16	26	22	00	20	16	00	00	100
Rohtak	53	00	00	47	00	00	00	00	100
Ranchi	16	26	22	00	20	16	00	00	100
Sambalpur	00	50	00	00	00	50	00	00	100
Trichy	50	50	00	00	00	00	00	00	100
Udaipur	00	50	00	00	00	50	00	00	100
Bangalore	71	29	00	00	00	00	00	00	100
Total	325	431	110	113	117	164	20	20	1300

Note : *FPM=Fellow Program in Mgt, PGPM= Post Graduate Program in Mgt, FABM=Post Graduate Program in Food and Agri Business Mgt, PGPX=Post Graduate Program in Mgt for Executives, FDP=Faculty Development Program, PGP=PG Programme in Mgt, EPGP=Executive PG Program in Mgt, MDP=Mgt Development Program.*

Table 3.3. User-wise population break-up

Institutes	Status			
	Research Scholar		**Student**	
Ahmedabad	26	26.00%	74	74.00%
Calcutta	27	27.00%	73	73.00%
Indore	16	16.00%	84	84.00%
Kashipur	22	22.00%	78	78.00%
Kozhikode	29	28.00%	71	71.00%
Lucknow	28	28.00%	72	72.00%
Bodh Gaya	47	47.00%	53	53.00%
Ranchi	28	28.00%	72	72.00%
Rohtak	68	68.00%	32	29.00%
Sambalpur	47	47.00%	53	53.00%
Tiruchirappalli	31	31.00%	69	69.00%
Udaipur	23	23.00%	77	77.00%
Bengaluru	30	30.00%	70	70.00%
Total	422	32.46%	878	67.54%

3.5. Data Collection Methods

Four fold evaluation methods have been applied to assess the search features of web-OPACs and OPAC 2.0 features.

3.5.1. For evaluation of web-OPACs salient search features

Cherry (1998) established procedures to evaluate OPAC and the check list is confined to display, design comprising of labels, and layout, text and

instructional information, whereas Babu and O'Brien (2000) have developed a check list pertinent to the functions and capabilities of present day web-based OPACs. Later with slight changes Ibrahim (2005), Kapoor and Goyal (2007) were redesigned the check list while a comprehensive list to weigh up the features of web based OPAC with the assistance from previous studies and also by incorporating IFLA's guidelines for OPAC display was built up by Mahmood (2008).

Further, Kumar and Bansal (2012); Luong and Liew (2009); Madhusudhan and Aggarwal (2011) have also evolved a 'check list' with certain modifications for assessing OPAC display designs and the features of web based OPACs.

In the present study, researcher planned to adopt above all the checklists and made comprehensive to appraise the search features and services of different 13 IIMs Web-OPACs.

3.5.2. For evaluation of (OPAC 2.0) next generation catalogue search features

The works by Mercun and Žumer (2008), Ballard and Blaine (2011), Luong and Liew (2009), Naun (2010), Tam and Bussey (2009), Yang and Wagner (2010), Yang and Hofmann (2011) and Chandrappa and Sunil (2017) have found the appropriate search functionalities of different web OPACs to assess users' expectations at present web 2.0 age. There were many works carried out comparing the library web OPACs with Amazon site, Google, Phoenix public library etc to understand the users expectations which are entirely different.

In this study, researcher reviewed all the above research papers and applied above all evaluation parameter checklists comprising OPAC 2.0 search features in it.

3.5.3. For relevancy ranking of search results

Cherry (1992) analyzed the records in protocols for OPAC search sessions in the University of Toronto Libraries and examines the zero hit subjects, Xu and Lancaster (1998) have analyzed 205 records selected at random from Online Computer Library Centre (OCLC) and reported the overlapping in the subject access points, Carstens and Buchanan, 2004) shown importance of subject search, Guo and Huang (2011) suggested to adopt tagging technology in OPAC that helps users find popular materials. Nabi and Shafi (2017) observed the precision and relative recall of five web OPACs of northern universities in India.

These many contributions inspired the researcher to apply the formulas of precision and relative recall to find out the relevancy of ranking of search results in the web OPACs. Due to time constraint, broader room for data analysis and interpretation purpose the researcher reduced the book titles (search queries) to only one, i.e. '#Financial Management' and same title only searched at entire web OPACs of selected for the study and to rate relevancy.

3.5.4. For web OPAC users' survey

For this purpose researcher designed a comprehensive questionnaire, which included demographic profile, awareness level, usage frequency, search behavior, search purposes, their observations of ease-of-use, display style, constraints and their complete happiness with the Web-OPAC's etc., which was received from users of individual IIMs libraries through online surveys i.e., google forms. These google forms used as data collection tools and retrieved data was analyzed with help of SPSS software at department of statistics, Karnatak University, Dharwad, Karnataka, India.

3.6.   Sampling Strategies and Techniques

According to O'Leary (2014) studied on "Sampling is the process of selecting part to represent the whole population". The sampling assures that few factors of a population are chosen to be representation of whole. In this study also it was maintained in systematically 30.84% of population was taken into data collection process. Due to widespread geographical area it was planned to fix the sampling number as 100 from each institute and restricted only to students and research scholars. This process was carried out during 2015-16, 2016-17 academic years.

3.6.1. Sampling strategy

The sampling strategy is hereby setting the goals to draw the results which we expect from the whole population. In this study probability sampling method and checklist based evaluation methods were applied. The probability sampling method has some form of random selection in choosing the elements it ensures larger assurance was placed in the representation of the probability samples. The study applied stratified random sampling which was used to sample the Student and Research Scholar communities.

3.6.2. Sampling technique

According to Creswell (2013) "Stratified random sampling technique helps to ensure that an equal representative sample is resultant from a population as every segment of the target population is assured of having a representation in the study". In the study, stratified random sampling method was accommodated for two types of library clients and targeted in the various departments. Stratified random sampling is a probability sampling technique whereby a population is separated into equally selected groups or strata.

3.7. Sample Size

According to Taderdoost (2017) "A sample frame is a documentation listing the specific participants from which the sample size would be drawn and this sample frame has to reflect representation of the larger population". A sample of 100 respondents formed the sample size of this study. This sample size was again subdivided into two types like; research scholars and students. This stratification was used to assure probability of inclusion of all the categories of study sample in the sample size. Further, students and research scholars are subdivided into their respective departments such as FPM, PGPM, FABM, PGPX, FDP, PGP, EPGP and MDP. Each stratum was presented based on their percentage composition of the targeted population as illustrated in Table 1 above.

3.8. Research Instruments

According to Annum (2017) "Research instruments are applied by a researcher for data collection in a specific area of research work". It is essential to ensure the tools selected are suitable and consistent since the validity and reliability of every research study depends mainly on the appropriateness of the instruments employed.

3.8.1. Pilot study

The researcher conducted the pilot study at IIM-Bangalore during 2016-17 academic years, which was very reachable and visited by the researcher several times, and it was known that difficulty of reaching other IIMs due to vast geographical areas of study. Around 150 questionnaires were distributed among the students and research scholars of FPM and PGPM departments. 100 filled questionnaires taken into consideration with scrutinising all the errors. The final paper also published in the reputed library science journal.

3.8.2. Validity

As explained by Bryman (2012) "Validity means the degree where a tool measures what it should measure". It is also considered as the extent to which the variations found with an evaluation instrument reflects the true differences between the ones tested. The study objectives and pilot study results are guaranteed the validity of this study.

3.8.3. Reliability

According to Silverman (2010) "Reliability of the study can be determined through undertaking a pilot study while using a 10 percent of the sampled population". In addition, reliability was controlled by enhancing rigor in checking similar questions with different respondents with a view to detect arising variations in their responses.

3.9. Data Collection Procedure

3.9.1. For evaluation of web-OPACs salient search features

The four book titles related to management subjects were chosen those are common subjects at all stream of management courses. Such as;

Table 3.4. Book titles

#01	Financial Management
#02	Human Resource Management
#03	Business Ethics
#04	Organizational Behavior

were searched and this was performed at each library web OPAC's by the researcher himself and the results analysis has been done with symbols; √ and x. The symbol '√' indicates that parameter is available and 'x' indicates absences of that parameter, sum of the scores are discussed in analysis part.

3.9.2. For evaluation of (OPAC-2.0) next generation catalogue search features

To evaluate the next generation online catalogue search features available in selected IIMs libraries web OPACs. Researcher searched four book titles related to management subjects were chosen those are common subjects in all streams of management courses. Such as;

Table 3.5. Search queries

#01	Financial Management
#02	Human Resource Management
#03	Business Ethics
#04	Organizational Behavior

Further, researcher adopted five point scales to describe the presence and absence of Next Generation OPAC features among all the selected IIM libraries. The scales table is as below;

Table 3.6. Five point scale

Scale	Rank	Meaning
0	No	Un acceptable or No
1	Poor	Feature is not up to the mark
2	Acceptable	Feature with minimum or basic information
3	Good	Application with sufficient feature
4	Excellent	Above expectation/with additional feature/Yes

Finally, total scores are discussed about stuff of each web OPACs in analysis part.

3.9.3. For relevancy ranking of search results

To find out the relevancy ranking of search results researcher limited the search query to only one i.e. **'# Financial Management'**. The one search query entered in all IIM web OPACs and verified results displayed. The precision and relative recall of 13 Web OPACs is estimated by applying two formulas;

Precision:

$$\text{Precision} = \frac{\text{Sum of the scores of relevant documents retrieved by a web}}{\text{Total number of documents evaluated OPAC}}$$

Relative Recall:

$$\text{Relative Recall} = \frac{\text{Total number of documents retrieved by a web OPAC}}{\text{Sum of documents retrieved by all thirteen web OPACs}}$$

3.9.4. For web OPACs users' survey

The researcher selected the all the twenty IIMs in India, and verified with their websites and contacted with professional colleagues those who are working there. Further researcher sent a request letter to all the twenty IIMs library heads for seeking prior permission to use their institute OPACs, Many institutes replied positively and shared the guest login credentials to the researcher for limited time period. This initial effort given the clear status about how many libraries are providing the Web-OPAC service.

Based on this small survey the research area was limited to only thirteen IIMs which are situated in different states of India. Three IIMs are very old such as IIM Ahmedabad, IIM Bangalore and IIM Calcutta, which are called first generation IIMs, remaining all 05-10 years back establishments.

Over this short period, researcher felt hard to reach target groups for collecting the data through the questionnaires, due to vast geographical area. Further researcher planned to contact through Google form questionnaires, but it could not work because of many campus are having email popup blockage systems for the outsiders emails, which leads to contact the each IIM library heads requested to share the patrons email ids from their databases. Total 1800 questionnaires were distributed, 1500 questionnaires were received from the respondents through google forms with great effort by the library staff and somewhere representatives of students clubs.

Finally, researcher scrutinised incomplete questionnaires finalised to 1300 questionnaires where respondents responded 'Yes' to use of web OPACs of their library.

3.10. Design and Structure of Research Questions

3.10.1. Structure of evaluation (parameter) checklist

As already discussed, to examine the search features of web OPACs study used the comprehensive evaluation checklist from different experts and authors. This consists of 15 main divisions with 67 parameters, the below table 3.7 gives clear idea.

Table 3.7. Comprehensive Checklist

Sl. No.	Checklist Parameters
I-General	
1	Requires log on/user ID/password if desired
2	Customization of the features as per the library requirements
3	Has time out feature, if desired
4	Facility for updating or adopting later versions
5	Explains the contents and coverage in the OPAC
6	Provides log off instruction, if desired
II-Type of Searches	
7	Offers several types of searches such as Simple, complex or advanced
8	Has full search capability on conventional access points such as keyword/author/ subject heading/class number/ ISBN/ ISSN, etc.
9	Provision of browsing capabilities
10	Provision of phrase searching
11	Provision for Boolean search
12	Provision for truncation i.e. - * % $
13	Provision for word adjacency and/or word proximity operators
14	Hypertext links in full bibliographic record display
III-Access Points	
15	Author (personal name/corporate name)
16	Title
17	Key word
18	Subject heading
19	Keyword in Title

Sl. No.	Checklist Parameters
20	Keyword in Subject
21	combined search such as author /title; author/keyword
22	Class Number
23	ISBN
24	ISSN
25	Series
26	Barcode Number
27	Provides name authority control
28	Provides subject authority control
29	Supports cross-references
30	Provision for copy location
IV-Search strategy	
31	Displays search strategy
32	Provides examples under each type of search
33	Option for search history
V-Search limits/search refinement features	
34	Provision for comprehensive search limits i.e. year, language, type of publication, location, publication status, etc.
35	Facility for sorting records
36	Ranks output by relevance
VI-Display	
37	Provision for brief/long bibliographic displays or both.
38	Display levels (customizable display screens)
39	Limiting the number for the display of records (output control)

Sl. No.	Checklist Parameters
VII-Data Entry structure	
40	Support for MARC formats
41	Provision for library-structured entry format
42	Both MARC formats and library structured format
VIII-Output	
43	Provision for exporting/downloading of retrieved records
44	Provision for the transmission of retrieved records through e-mail.
45	Provision for storing retrieved records
IX-External links	
46	Links to electronic sources
47	Access to Z39.50
48	Links to external sources
X-Services/facilities	
49	Interface with the circulation system
50	Provision for options such as ILL, renewal, reservations, etc.
51	Provision of online mailboxes for user comments or suggestions
XI-Linguistic capabilities	
52	Facility to accommodate multilingual libraries, if desired
53	Provision to accommodate non-Roman scripts, if desired

XII-User assistance	
54	Provision of contextual help messages
55	Provision for procedural learning/Training
56	Requires little intervention by the staff
XIII-Layout	
57	Simple layout
58	Instructions on the screen are simple, clear and inviting
59	Use of less technical jargon and codes
XIV-Physical features	
60	Frames version
61	Non-frames version
62	Both frames and non-frames versions
63	High graphic version
64	Low graphic version
65	Both high and low graphic versions
XV-Others	
66	Provision for drop-down menus or pull- down menus
67	Provision for shadow catalogue, if desired

For assessing the new generation catalogue features (OPAC 2.0) researchers utilised Mercun and Žumer designed parameter checklist with slight modifications. It comprises 07 main divisions 37 parameters same thing presented in the table 3.8 below.

Table 3.8. Structure of evaluation (parameter) checklist for OPAC 2.0 search features (NGC)

Sl. No.	Comprehensive OPAC 2.0 Search features
I-Basic Features	
1	MARC 21
2	ISBD
3	Normal view
4	General view
5	Types of material catalogued
6	Unicode language access points
II-Search	
7	Simple search box as available in general search engines
8	Spell checking & Suggestions
9	Begin search by browsing
10	Full-text searching
III-Result page and navigation	
11	Relevance ranking & Clustering
12	Navigation
13	Recommendation to other resource available on open or subscribed e-Resources
IV-Enriched content and recommendations	
14	Cover art images collected from Google books, etc.
15	Sharing of resource on social networking platforms like Facebook, twitter, etc.
16	Summaries/annotations
17	Excerpts (author review, reviews on social networking platforms, etc.)
18	TOC and indexing of resources

19	New items, most popular, recently retuned items and recommendations lists.
20	More like this
21	Audio in video content
V-User participation	
22	Ratings and reviews
23	Comments
24	Tags
25	Forum
VI-User profile and Personalization	
26	Automatic log-in
27	Saved searches
28	Recent activities
29	Overview and editing of created content
30	Saved items lists
31	Personalized web page
32	Personalized e-mail notices
33	Personalized recommendations
VII-Other Trends	
34	RSS feeds
35	Blogs
36	Downloadable e-media
37	Instant messaging (user-employee)

Table 3.9. Search term for relevancy ranking

#01	Financial Management

3.10.2. Structure of questionnaire for users survey

The researcher designed the questionnaire into five parts viz., A, B, C, D, and E with 19 main questions and 138 sub questions. Part-A comprises the demographic details, Part-B covers respondents OPAC usage attitudes such as frequency of use, preferable devices, places methods and major purposes to access the OPAC. Part-C includes most entries use in searching the OPAC and available features, respondents' satisfaction level on OPAC and their feelings about it. Important features respondents would like to add on their OPAC. Part-D comprises preferable OPAC Style of Interaction. Part-E includes what are the major constraints faced by the respondents.

3.11. Data Analysis Process

The gathering of the data from users of individual IIM libraries through online survey called (except IIM Bangalore, where researcher visited personally) Google form which has been analyzed with help of SPSS software at department of statistics, Karnatak university, Dharwad, Karnataka, India. The results are presented in the form of tables and graphs and chi square, ANOVA tests were applied wherever required.

3.12. Research Ethics

The research ethics shown in this study were in data collection and plagiarism checking of the report. Researcher did not force any respondent to attend the research questionnaires, he left freeness to attend and decline while answering the each questions at online surveys researcher also given brief introduction in written form at questionnaires about the purpose of research. In

addition, the researcher obtained a prior permission letter from the institutes with introduction and objectives of research study. Finally whole research report was examined with renowned anti-plagiarism checking software Urkund in the library and information centre affiliated to Kuvempu University, Karnataka, India. The similarity index is below 10%.

3.13. Summary

This study started with positive energy and objectives of the research without thinking about the impossibilities of the work, especially data gathering process. Everything was well planned with the timely suggestion of the research guide and librarians of esteemed IIM institutes. The researcher's commitment towards research process in the pilot study as well as support of the authorities of the IIMs the way how they helped at each stage. Even other professionals of the IIMs also have shown personal interest for arrangements of reach vivid departments respondents in various times and at different platforms. All these factors are made the researcher to convert his research into scientific research.

Chapter-04

PROFILE OF IIMs AND LIBRARIES

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4.22.   Indian Institute of Management, Vishakhapatnam

Chapter-04

PROFILE OF IIMs AND LIBRARIES

4.1. Introduction

The higher education system in India and western countries are in emerging each other with healthy competitions, Indian students are studying in abroad and also many western students are coming to India. In India Universities, IITs, IIMs, and NITs are running under advises, directions and standards framed by UGC and AICTE. The IIMs and IISCs are globally applauded for their standard of education and research. The enrolment of students to IIMs annually is about 10000 and the alumni also have contributed to growth of private and public sectors of India. There are many researches have proven that Information Technology has improved students learning and sophisticated teaching methods. This exposer leads to students' achievements, especially in skills of Knowledge sharing, practical and presentation skills.

The areas such as Mathematics, Computer science and Language proficiency have become essential part of life. Thus transformation enhanced the library services and performance of librarians in the discharging their duties. In today's world libraries can't function without computers and information technologies. These technologies have acquired do-or-die prominence; those who go with advances will survive and others will become absolute. A well-resourced library with contemporary comforts could satisfy maximum demand of technology cognizant users. In same way all IIMs of India developing with advanced technologies in their routine works, which leads us to evaluate each IIM's and their adaptation of ICT tools at Web-OPACs facility.

There is a rich literature source on studies conducted in library and information science field since before ICT and till now. The many studies conducted on effective use of ICTs in libraries, usage of ICT tools by libraries and patrons. Users' behaviour studies and evaluation of their performances, there are many surveys are conducted on library networking, resources sharing, and adaptation of ICT tools, e-resources management, usage of OPACs & databases, institutional repositories, LMS evaluations, library websites comparisons so on.

4.2.   Historical Background

After free India in 1947, the Planning Commission was responsible to supervise and direct country's growth. India grown rapidly in the 1950's, The IIMs are a community of 20 public, self-governing institutions of Indian management education and research and in late 1950's the commission started to facing problem in appointing competent managers for these public sector enterprises.

To solve this problem, in 1959 the planning commission invited the Professor George Robbins from University of California to assist in establishment of an All India Institute of Management Studies. Government of India decided to establish 02 elite management institutes in Ahmadabad and Kolkata by our first Prime Minister of India.

All the IIMs are registered as societies under the Indian Societies Registration Act but individual IIM are free to practice their day to day activities. However, the administration of all IIMs and overall planning of IIMs are monitored by Council of IIM led by ministry of HRD. The Union Cabinet, on 24 January 2017, approved the Indian Institute of Management Bill, 2017 which

declares IIMs as Institute of national importance and enables them to grant degrees and further bring many other important changes to the institute, after receiving the presidential assent, the IIM bill has become an Act on 31 December 2017.

The IIMs are classified under three generations, initial three comes under first, and after ten institutions established under second and recent seven institutions comes under third generation. The detail profiles of these institutions are discussed below.

Source: *https://www.quora.com/How-many-IIT-and-IIM-in-India*
Map 4.1. IIMs in India

4.3. Indian Institute of Management, Ahmedabad

4.3.1. About institution

The decade 1947 India independence was witnessed to a flow of advanced thoughts to shape an inexperienced sovereign country into a perfect independent state dedicated to progress with fairness. The foundation of the Indian Institute of Management Ahmedabad (IIMA) was the result of only pioneering enterprise, Headed by space scientist Dr. V. Sarabhai and well-known entrepreneur and humanitarian Shri Kasturbhai, and actively reinforced by the then Chief Minister of State, also group of progressive persons found IIMA in 1961.

This team skilfully worked together an alliance of five factors - administrations at the both the governments, local business persons, and more. IIMA was started as an organization was governed by a Society, the IIMA Society, shaped under the government Act. The Establishment was led by a Panel Councils, recognized by the IIMA Society; Panel had supported from all the related communities so as to reflect the various needs of an emerging country.

IIMA was consequently considered as a Board-managed organization, free from the exclusive control of any one electorate. IIMA has been regularly graded as the best management school in the country by numerous national agencies. IIMA courses are also graded extremely in numerous worldwide positions. In 2008, IIMA became the first management school in the nation to be rewarded EQUIS (European Quality Improvement System) authorised by the EFMD (European Foundation for Management Development).

Figure 4.1. Indian Institute of Management Ahmadabad

4.3.2. About library

The Vikram Sarabhai Library (VSL) is termed after Dr. V. Sarabhai, famous physicist and institution Mentor of IIMA which was established in 1962 and is one of the finest management libraries in Asia.

The centre remains open 24x7 and completely computerised with Koha 3.22 library automation software. The goal is to enable suitable, patron approachable, and access to global information to help the information desires of the scholarly community of IIM.

The asset of the information Centre is its electronic resources of 150+ databases, reachable from any networks within and outside the campus, which provides scholarly, company & industry databases, accessible through EBSCO Discovery tool. The other resources are searchable remotely with login ids. Newly the Library has presented Kindle E-Book Readers and DSpace for its internal repository, its New Arrivals services on books and journals are popular at campus.

4.3.3. About Web-OPAC

The IIMA web-OPAC offers the ability of accessing and reserving printed materials existed at library, patrons can check-in and check-out, know availability of the issued books, suggestion, fines, etc.

Figure 4.2. Web-OPAC of IIMA

4.4. Indian Institute of Management, Amritsar

4.4.1. About Institution

The IIM Amritsar is the fifteenth Management institution in India, being started by the MHRD with the care of Punjab state. It is governed by the instruction and guidance of IIM Kozhikode. The initial course was offered by IIM Amritsar is the Post Graduate Program in Management in 2015. The course has been conceived to provide top-notch education to meet the necessities of initiatives across segments by manufacturing the skilled professionals.

Figure 4.3. Indian Institute of Management Amritsar

IIM-A shall begin its operations in the transit campus situated inside the Punjab Institute of Technology, Government Polytechnic Compound till its own infrastructure and premises. The amenities comprise of laboratories, leisure space, movement rooms, library, computer and sporting amenities. The Hostel rooms are available at different places for boys and girls separately.

4.4.2. About Library

IIM Amritsar Library has all kind of reading resources to its reading community and computerisation is under process with Koha software. E-resources and online catalogue accessibility are not yet implemented, major procurements and ICT innovations related library are taken care by IIM-Kozhikode

4.5. Indian Institute of Management, Bangalore

4.5.1. About Institution

Indian Institute of Management Bangalore is a foremost research-favoured business school in Asia with nearly 200 permanent faculties, more than 1500

students across various full duration courses and around 5000 annual Executive Education members. The institute symbol represents a declaration in Sanskrit, (Tejasvi Navadhitamastu), which means as 'let our study be enlightening'. The fundamental morals include being intellectual, having admiration for knowledge and proud in work, organisation and the country. The vision is to formulate leaders and entrepreneurs by transformative and inventive learning. Which is located in India's high technology capital i.e. Bangalore. The course are FPM, the Post Graduate Programme in Public Policy (PGPPM), the one year full-time Executive Post Graduate Programme (EPGP), the Post Graduate Programme in Enterprise (PGPEM), and the Post Graduate Programme in Management (PGP). Apart from this five excellence centres, three recruiting centres, study centres are running successfully. IIMB is the first management school in India to coordinating institute for management education with SWAYAM, Government's online education platform.
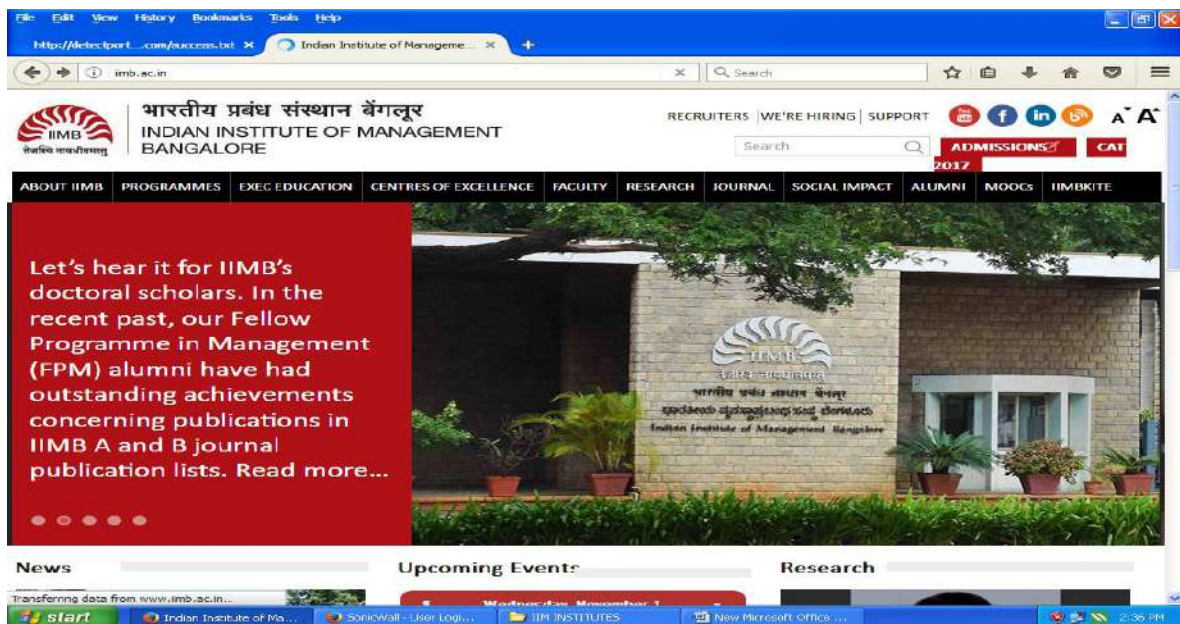
Figure 4.4. Indian Institute of Management, Bangalore

4.5.2. About Library

The IIMB Library is accommodated in an autonomous building of 55000 Sq. Ft. built across four phases adjoining the amphitheatres. Its resources contain mainly literature on Business, Administration, and the related subjects; collection building rules and instructions are managed by Institute's core objectives. All basic operations are computerised using State-of–the-art library management system. Its electronic databases about 79 accessible 24 x 7 on and off campus to its reading community. The IIMB provides the new arrivals as 'New Accessions' service.

Figure 4.5. Web-OPAC of IIMB

The library has computerized most of its facilities and happenings through KOHA "OPAC" service provide search facilities for library resources. Online catalogue is reachable from the selected stations. The library subscribes more than 55 electronic databases and hundreds of e-journals. It conducts regular training programs on all databases in the every batch commencement.

4.6. Indian Institute of Management, Bodhgaya

4.6.1. About Institution

The Indian Institute of Management Bodhgaya was started in 2015, which is being setup under the guidance of IIM Calcutta. From its establishment IIM Bodhgaya has exactly followed its advisers' advice. Structuring on the outstanding inheritance of the IIM image, IIM Bodhgaya seeks to encourage a values which can generate communally accountable managers and passionately developed business leaders. In a less time IIMB has positioned in group of famous business schools. It follows same ethics of the overall development is built under IIM Calcutta.

Figure 4.6. Indian Institute of Management, Bodhgaya

4.6.2. About Library

IIM-BG Library has all type of reading materials to its user community and automation is under process with virtual VTLS integrated library software.

E-resources and online catalogue accessibility are not yet implemented, which is under the guide ship of IIM, Calcutta.

4.7. Indian Institute of Management, Calcuatta

4.7.1. About Institute

The Indian Institute of Management Calcutta (IIMC) was started as the initial nationwide organization for PG education and study in managing sciences with the action government of India in November 1961 in association with Alfred P. Sloan, the West Bengal state, The Ford Foundation. Throughout its initial ages, many protuberant staff had taken part of it, Jagdish Sheth, Sengupta, among others. After the years, IIM-C has matured lot and established with international status towards communicating excellence education. It is disseminating innovative ideas in students by its courses.

Currently, the institute helps as self-directed unit, repeatedly developing to reach its aims in an ever-changing business world. The dream of the Organisation is to appear as global hub of excellence in all sides of education, entrenched in ethics and societal standards of India. Over the periods, it has bloomed into one of Asia's premium schools. Now, IIM-C entices top talent in India - and tendering part of commerce academy.

The gaining knowledge is a basic of the IIM-C culture, comprises cooperation and the construction of enduring associations. From the fundamental prospectus of general skills to progressive electives the students have brilliant access to an outstanding faculty of thinking leaders, all of whom teaching in the MBA course.

Figure 4.7. Indian Institute of Management Calcutta

4.7.2. About Library

Library of IIM-C was started in March, 1962 and termed as B. C. Roy memorial Library in the remembrance of Dr. Bidhan Chandra Roy, the foremost chairman of the Organisation. The centre is in an isolated building of carpet area of around 30000 sq.ft. spread over three floorings.

It performs as the learning resource centre and occupies an exclusive place in academic activities. It has a fully computerised modern Library and Information Centre which offers recent, accurate and reliable information from print & electronic sources, it has dominant and user accessible web-OPAC along with Virtua-VTLS Version 1.135.2. The system includes a word-based search ability using Boolean operators that can thin down a query to meet very precise requests. Library also initiated platform for accessing the e-resources through Remote-XS.
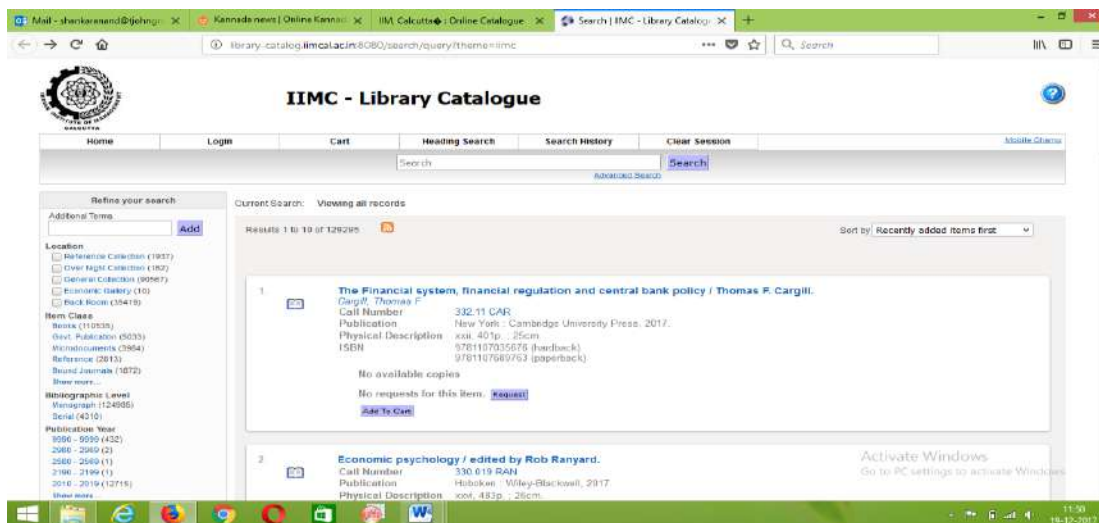
Figure 4.8. Web OPAC of IIMC

4.8. Indian Institute of Management, Indore

4.8.1. About Institute

With the purposes of communicating value added training and schooling, the Department of Higher Education, MHRD, and Government of India initiated Indian Institute of Management Indore in 1996. The Organisation is known as leading administration body, similar to the finest in the world for education. IIM-I is the 6th in domestic local administration supported schools, since its beginning, IIM-I is moving in front line for education, industry, government sector and PSUs. IIM Indore is recorded as a Society under Societies Registration Act, 1973. It is located at top an attractive hillock; the 193 acre campus of IIM-I delivers model background for thoughtful education. IIM-I has the newest in instruction aids, rich learning resources, a strong technical support, sports compound and cafeteria as well as fashionable substructure. IIM Indore deals multidisciplinary teaching and research in its courses by offering publicity by their practices to solve ongoing problems.

Figure 4.9. Indian Institute of Management, Indore

4.8.2. About Library

The IIM-I Learning Centre is rich with its resources of knowledge, innovative information amenities. It satisfies vital obligatory in the scholarly quests for its community. IIMI-LC, a hub with modern technological instruments to handle knowledge resources largely related to required subjects.

The whole library collects books, print journals/magazines along with its wide range of e-collection those are reachable through the LAN and Wi-Fi. Library building has an extensive space of about 27000 sq. ft., with vital air-conditioning. Few areas are designated for diverse divisions of the IIM-I Learning Centre; especially children section is highly appreciated.

The Learning Centre concentrates lot on purchasing to electronic sources than physical books. Last recent years, sources of the IIM-I LC added significantly in relation to number and subject coverage. Whereas introducing regular services Learning Centre provides also documents, those are not available in the IIM-I LC,

are arranged from other (IIMs, IITs) institutions in the country through a vigorous ILL system. Non institute members, Business, industrial and government firms as well as academics and IIM-I Alumni are treated as visitors. Library also initiated platform for accessing the e-resources through EZ-proxy and new arrival service named as Shelfari.

4.9. Indian Institute of Management, Jammu

4.9.1. About Institute

IIM-Jammu is a community, self-governing school located in Jammu, Jammu & Kashmir, India, Started in 2016. IIM-J is the twentieth school established by MHRD with the consent of the Union Cabinet, headed by the PM Narendra Modi on 13th October 2016. It is guided by the IIM-Lucknow. IIM-J is provisionally positioned at the Old Govt. College of Engineering & Technology, IIM-J till it moves to its own campus of roughly 200 acres, for which detailed Project Report is at ground working. The institute is offering PGDP in Management which is equal to MBA.

Figure 4.10. Indian Institute of Management Jammu

4.9.2. About Library

The IIM-Lucknow, one of the best and most old business schools in India is supporting IIM Jammu library processes and actions. The library is adopting the Koha automation software for its routine works. The Web-OPAC is not yet been customised which is under progress.

4.10. Indian Institute of Management, Kashipur

4.10.1. About Institute

The Indian Institute of Management Kashipur is a new school in the leading group of IIMs. IIM Kashipur began setups from July 2011 supervision by IIM Lucknow. The organisation desires PGPM, a two year full time course. The rigorous syllabus pursues to inspire an appetite for knowledge, that to ongoing situations. The teaching exposes on overall personality growth and instructs the values of headship and honesty. The organisation is sited in one of the most tightly commercial areas in the nation with over 180 trades having greenery in and around. These places have made 'Learning by Doing' via everyday industry relations and conscious missions.

Figure 4.11. Indian Institute of Management, Kashipur

4.10.2. About Library

IIM Kashipur, learning resource centre (LRC) provides the information requirements of the patron community. The LRC owns around 5000 books, many e-resources covering the all themes of Management and its related units. The LRC holdings also include printed specifications, globes, trademarks and back volumes of periodicals, audio/video cassettes and compact discs etc. The Learning Resource Centre is an associate of e-Shodh Sindhu. It has been purchasing e-journals of Springer, Emerald, EBSCO Host, ABI/INFORM, and several digital databases. It is also a member of Developing Library Networks. All operations are automated, including patron cards and On-line Public Access Catalogue stations to distinguish the existence of books at any time. The LRC has executed RFID for safety of LRC substantial assets.
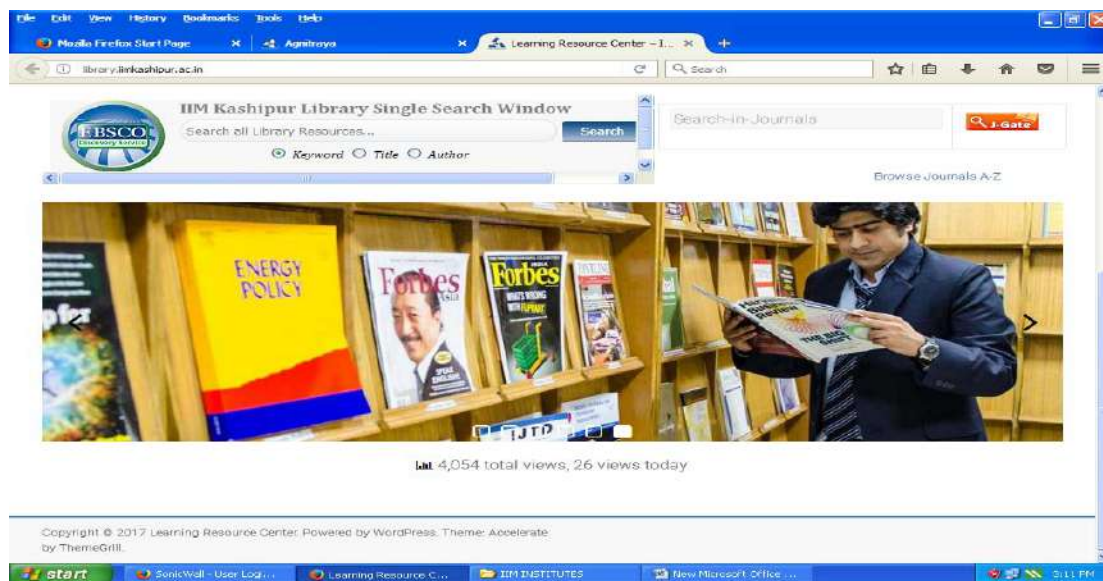
Figure 4.12. IIM Kashipur Library

The LRC installed Libsys library management software it is combined multi-user product that ropes all internal processes of the Centre. The LMS contains of components on acquiring, mapping of sources, charging and

discharging, periodical, article indexing and OPAC. The record of books available in the resource centre is being updated on regularly basis including new arrivals, records of all the library patrons have also been created in the LMS web OPAC.

4.11. Indian Institute of Management, Kozhikode

4.11.1. About Institute

The IIM-Kozhikode is located on two mounts in the Kunnamangalam Area of antique city of Calicut in Kerala, Boasting of one of the most picturesque and oxy-rich campuses in the country. The improvised the amenities at IIM-K residency are very attractive and known for efficient administration well maintained balance sheet and the entire stake holder are happy; it is because of dedicated staff members' governance. Its roots back to 1997; the IIM-Kozhikode started with strength of 42 aspirants but has grown-up extremely over the years. This Institute opened its Doctoral course in 2007 to complete full swing of higher education activities in the field. It is dedicated over 30000 sq. ft. in library space and generating around 300 people strong volume for staying and housing amenities in all seasons. The institute always busy with conducting various symposia's and trainings to meet global causes. The development of digital library and an incubation centre are widely appreciated.

Figure 4.13. Indian Institute of Management, Kozhikode

4.11.2. About Library

The IIMK library has made name and fame from its well-maintained library and its world class services, the accessibility arrangement has been made through all the way at the OPAC. IIM-Kozhikode took an initiative in the establishment of IIM-Consortia, and its first meeting held at Calicut. The formal approval of the consortia came from the IIM directors meet held in August 2001. IIM-K is also planning stage to provide library membership to its alumni, corporates, institutes and individuals on charges basis. The Remote-XS discovery tool and DSpace are being used in the campus for remote access and repositories. IIM-Kozhikode is the only library that is on Facebook and provides information about institute news and activities.

Figure 4.14. Web OPAC of IIM, Kozhikode

4.12. Indian Institute of Management, Lucknow

4.12.1. About Institute

The IIM-Lucknow is 4th in admired IIMs family of management schools to be started in India. Institute was established in the year 1984 since then it reached

million souls directly and indirectly. IIM Lucknow framed their students into highly driven managers in global perspectives. In 2005 IIM Lucknow enlarged its influence over the education with the satellite based. NCR region positioned in city recognised for traditional inheritance; the campus is spread over more than 190 acres of attractively redesigned space. There is special provision for 'Children Section in the library.

Figure 4.15. Indian Institute of Management, Lucknow

4.12.2. About Library

The library is in 30,000 sq. ft. spacious in single location with air-cooler, built on most advanced styles, equipment; highly appreciated furniture moreover monitored by appropriated, qualified library staff to cater wide range of IT based services towards user community. This has given the institute to grow up in different divisions and shapes.

Around 60000 learning materials are housed with high idea of mapping and classification systems. The library is also using Athens software for remote access

of its e-resources also it has excellent initiative for creating reading habits among the children named as "Reading Beyond Curriculum', this service development by the library in consultation with faculty members of the institute and optimise the usage to library resources.

Figure 4.16. IIM Lucknow Library Website

4.13. Indian Institute of Management, Nagpur

4.13.1. About Institute

IIM-Nagpur established in 2015 supervised by IIM-A, IIM-Nagpur is situated inside the property of VNIT Nagpur till it changes to its own premises 135 acres premises later. The institute opened its first set of Post Graduate Program (PGP) in Management on 23rd July 2015 as a new group IIM-Nagpur goal creatively report on desires of a present India, concerning ambitions truths to achieve standards appreciated globally.

Figure 4.17. Indian Institute of Management, Nagpur

4.13.2. About Library

IIM Nagpur is growing under the supervision and guide ship of Indian Institute of Management Ahmedabad, Library has rich collection in all areas of management sciences. E-resources are referred from IIM-Ahmedabad, and Koha is the automation software at progressive stage.

4.14. Indian Institute of Management, Raipur

4.14.1. About Institute

Indian Institute of Management Raipur (IIMR) was established by the Govt. of India, Ministry of HRD in 2010 at Raipur, the capital of Chhattisgarh. Chhattisgarh is one of the fastest rising states of India with its rich environmental resources. Organisation faiths at making moral businessmen's, in market and trade but are also informally mindful to their involvement in country developing and bringing name for the country globally. Currently IIM-Raipur functions from the Govt. Engineering College Campus, Raipur. The Govt. of Chhattisgarh has selected over two hundred acres of terrestrial for future IIM-R campus in Naya Raipur.

Figure 4.18. Indian Institute of Management, Raipur

4.14.2. About Library

The learning resource centre is heat of the organisation. It has been serving the patron community since 2010, with all demands coming from the users as well as commands from policy makers. It has been taken care to disseminate the required information in time and up to date and it would be nascent information. Hence, it has become an indispensable resource service centre. Library serves its patron's right access to the best of management related electronic sources into their e-databases and e-journals.
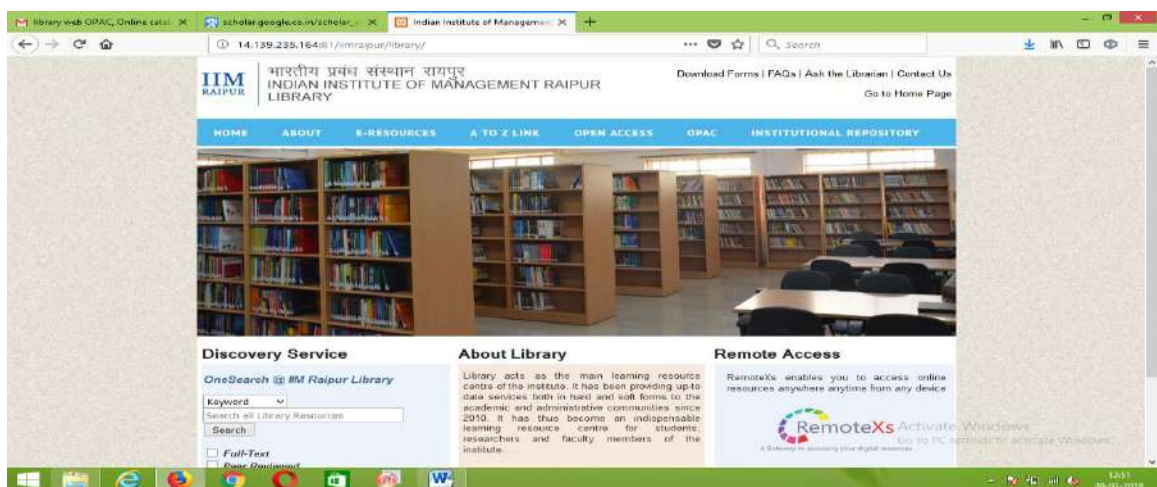
Figure 4.19. IIM-Raipur Library Website

4.15. Indian Institute of Management, Ranchi

4.15.1. About Institute

The 9th IIM-R was established at Ranchi in 2010. This was made successive with the wide backing of the IIM-Calcutta and the Govt. of Jharkhand, running under the supervision of Ministry of HRD, Government of India. The situation was not good for the commerce education that time. The strongest challenge was to revive the traditional schooling by the ICT based education. The importance was given to redesign the syllabus to fill the gap between the class room and boardrooms, now it offering full-time courses, fellow courses and diplomas also recently started course to trigger the livelihood skills among the school drop outs and illiterate farmers.

4.15.2. About Library

The IIM-R library also called as "Athenaeum – The Learning Resource Centre". This centre is also one among the centres offering best services in the campus. Library is fully equipped by the all the facilities as other IIMs offering services are introduced here also, as e-sources are concerned tagged with IIM consortium membership. Library holdings comprise not only the printed regular material but also purchased databases.

Figure 4.20. IIM-Ranchi Library Website

4.16. Indian Institute of Management, Rohtak

4.16.1. About Institute

IIM-Rohtak is a community occupational school located in Rohtak, Haryana, India. Founded in 2009 as the 8th IIM, it is the first IIM in North India and the only IIM in national capital region. It offers all the courses which also available in other IIMs. IIM-R has its own vision and mission to provide and develop corporate world, The patron who are graduating from here expressing their views about the organisation in their contributions to the society. IIM-R always busy with shaping the leader manages with a pulse of discovery, strong societal reformation and passion for efficiency.
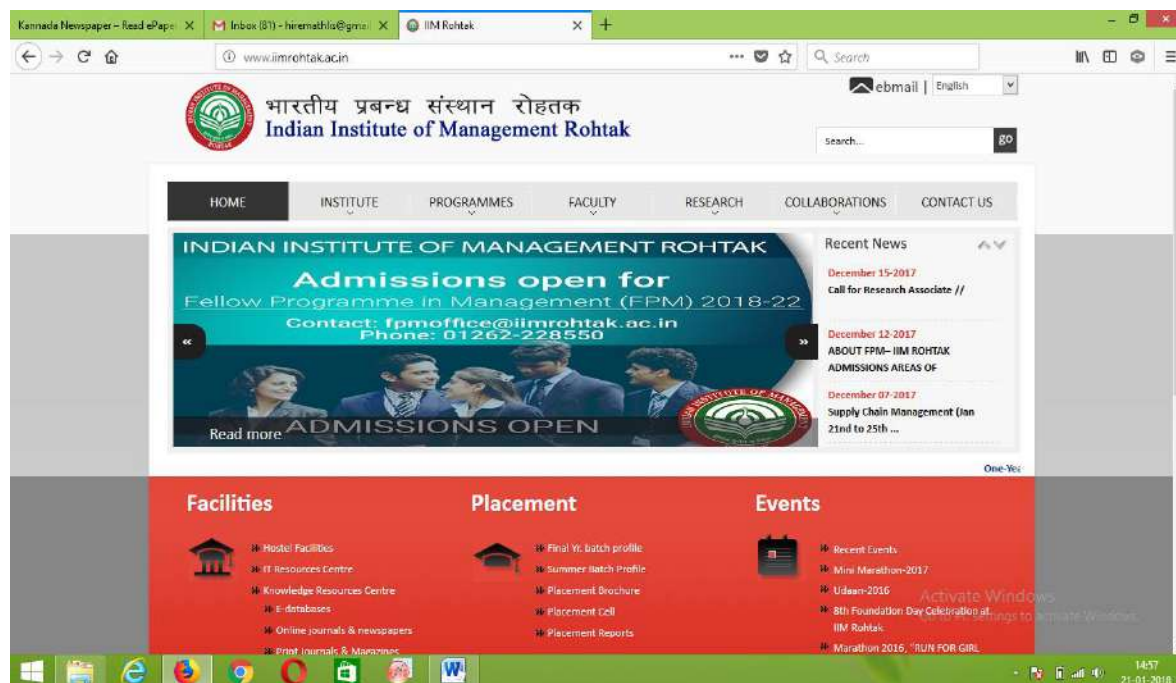
Figure 4.21. Indian Institute of Management, Rohtak

4.16.2. About Library

IIM-Rohtak library is well known for its reference collections starting form newspapers to various discipline encyclopaedias are available in one roof. There

many more e-content sources disseminating the patrons information thirsts and there is no source which has neglected everything was well maintained and arranged with classification system and made it ready for use by OPAC. Library purchasing many more databases apart from three thousand full text periodicals also especially twenty nine thousand full text dissertations, business papers, cases and more than six hundred industry reports are waiting for the service.

Figure 4.22. IIM Rohtak Library

4.17. Indian Institute of Management, Sambalpur

4.17.1. About Institute

The 2014-15 Budget is the source for this IIM along other five new organisations planned to start by the Indian Govt. IIM-Sambalpur was started as society act, XXII of 1861 on 19th August 2015. Present IIM-S has been found at Sasona, Odisha and land allocation also happened in Bashantpur for future premises cover around two hundred thirty seven acres.
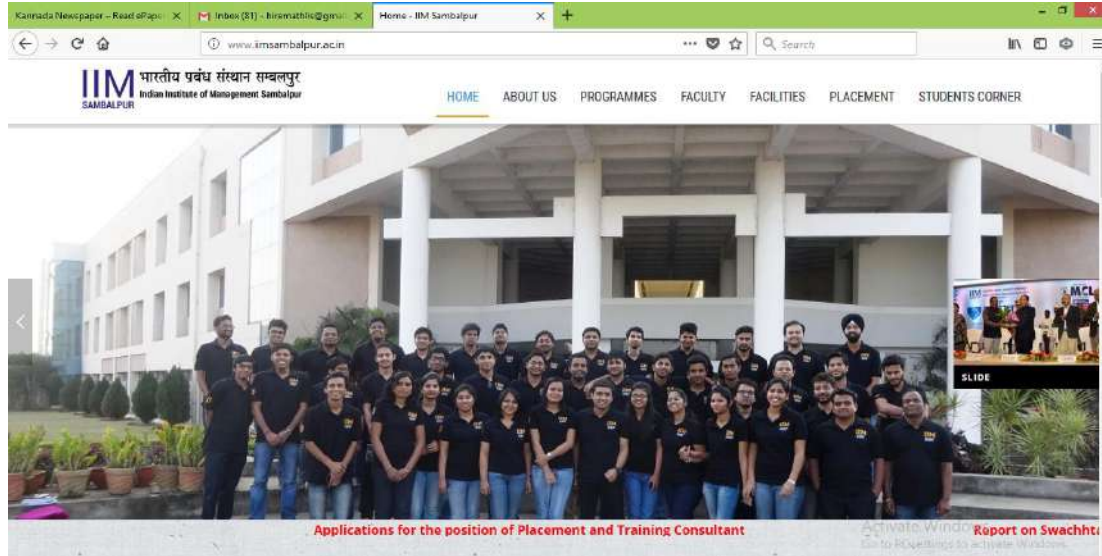
Figure 4.23. Indian Institute of Management, Sambalpur
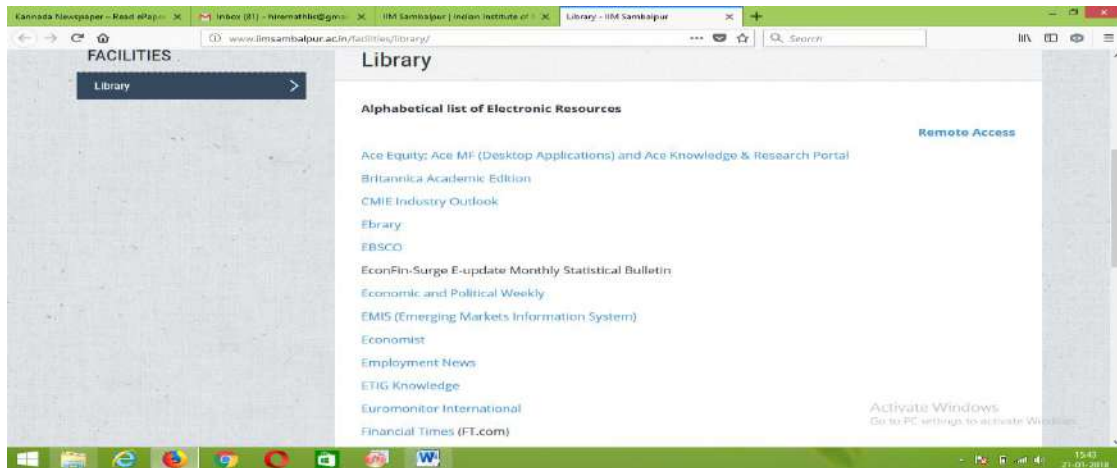
Figure 4.24. IIM Sambalpur Library Website

4.18. Indian Institute of Management, Shillong

4.18.1. About Institute

IIM-Shillong also known as RGIIM (Institute of Rajiv Gandhi) was started with same motto of global education at north eastern part of the country. In 2004 North East was universally booked by the Union Minister of Human Resource Development along with the Chief Ministers of the North Eastern States in the Assessment Assembly held at Shillong, the place is very greenery and perfect

match for the nature reading, Maintaining eminence ideals and speculative objectivity, which are measured as the symbol of an IIM.

Figure 4.25. Indian Institute of Management, Shillong

4.18.2. About Library

The information community hub of RGIIM, which is one of the esteemed and ICT adopted libraries in the nation, started serving since from time of origin of the organisation. The major aim of the community is to the library world class vivacious and creative branches of the IIM-S that it would involve to coup up with international technology enabled learning age, and reach the requirements of its end customers. Keeping this in mind, within a little time IIM-S library gathered excelled holding.
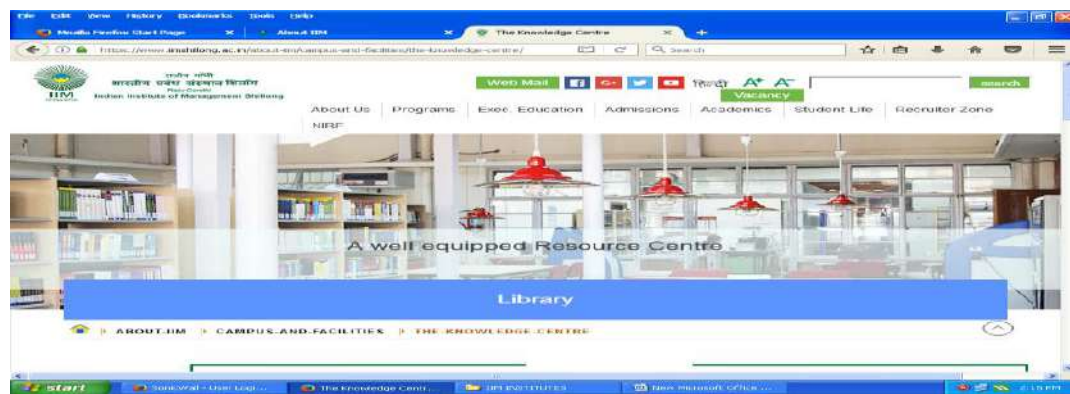
Figure 4.26. Knowledge Centre (library) of RGIIM

IIM-Shillong is also planning stage to provide library membership to its alumni, corporate, institutes and individuals on charges basis. VTLS Virtua is Library management software, and effort have been taken place to start IR and IIM Shillong also implemented the RFID technology in the library book circulation.

4.19. Indian Institute of Management, Sirmaur

4.19.1. About Institute

The IIM-Sirmaur was established in 4th September 2015 in cooperation of IIM-Lucknow. IIM-S is a civic business college in the Sirmaur region of Himachal Pradesh, India. This is also one among the 20 IIMs run by independent organisations, personalities as instructors for policy making activities. IIM-S also competing with the global problems into resolving directions but it did not neglect the shaping of students according to present world market scenario.
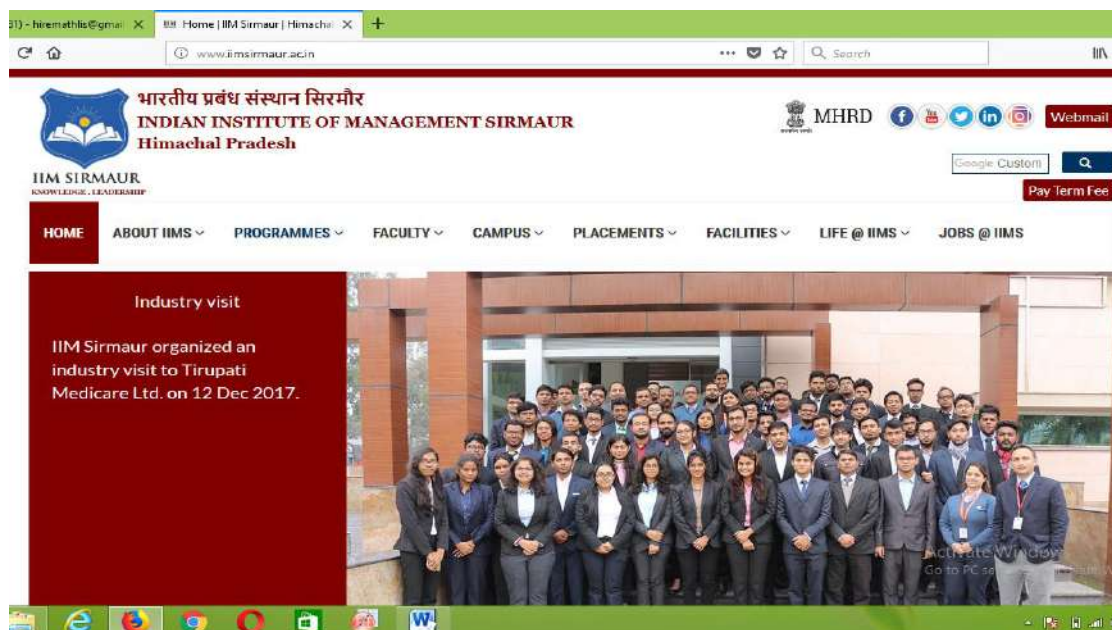
Figure 4.27. Indian Institute of Management, Sirmaur

The government of Himachal Pradesh has fixed over two hundred acres of land in Nahan city for the unchanging buildings of the foundation. The foundation of IIM-S was intended to see the growing requests of professionals for public sector initiatives that were recognised in India as a part of its trade plan. IIM-S comprise combination of learning with native and worldwide ambitions, to educate to trust that schooling is not just upholding values of job seeking, it is more about learning to serve common anxieties. The main dream of IIM-S is to refinement skills, blow possible and show route to mix out experts who all the time recall main objectives of plateful demands and encouraging the essence to make civilisations better places to perform sincere business.

4.19.2. About Library

Library of IIM-S works as community centre for their college clients and teachers to beneficially contribute in the progression of knowledge formation and knowledge feeding. IIM-Sirmaur in its effort to become best management institution is dedicated to develop an attractive library; it has an in-house library well-fortified with all kind of resources.
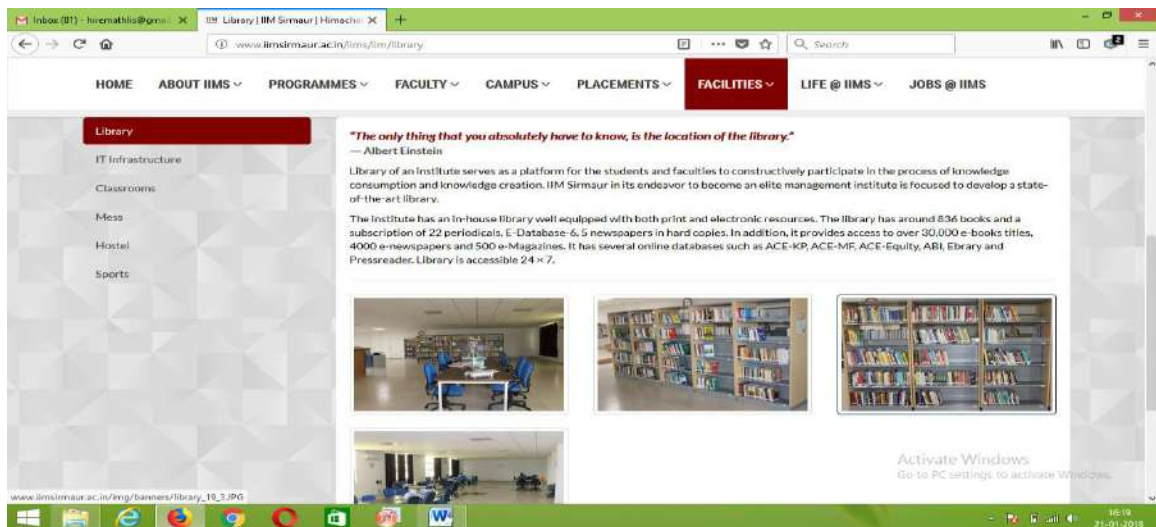
Figure 4.28. IIM Sirmaur Library Website

The library has around eight hundred books and a contribution of twenty two periodicals; In addition, it offers access to over thousand electronic books, four thousand electronic newspapers and five hundred electronic Magazines. It has digital resources for 24X7 accessible such as ACEKP, ACEMF, AC Equity, ABI, Ebrary and Press reader.

4.20. Indian Institute of Management, Tirucharappali

4.20.1. About Institute

IIM-Tiruchirappalli is the 11th IIM started on 4th January 2011 by the HRD and Telecom departments. Tiruchirappalli is pleasant city for cultural activities. IIM-T is infrastructure its extensive enduring premises covered over one hundred and seventy acres of land on Trichy-Pudukkottai highway, twelve kilometre from Tiruchirappalli International Airport and in the temporary building is working from NIT Tiruchirappalli. IIM-T is working according to policy of IIM-B, it has created yardstick in quality in all its activities targeted to achieve its own grip in catering competent managers for the today's industry.
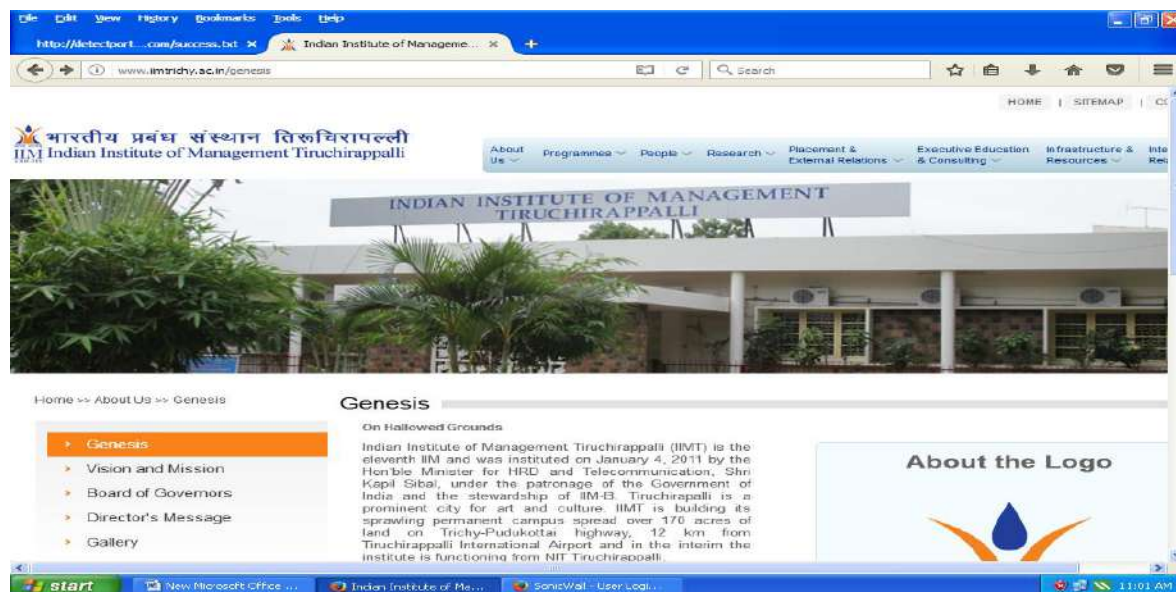
Figure 4.29. Indian Institute of Management, Tiruchirappalli

4.20.2. About Library

LRC is the Centre for educational and specialized knowledge materials. LRC enables knowledge formation through its automated search platter and access to a widespread arrangement of research sources on and off site. It gives a lively and contemporary learning atmosphere comprising of an enthusiastic related resources. It goals to be a source of information and knowledge to all stakeholders of IIM-Trichy, it serves with all the needful sources and databases to its end users. It has successfully installed RFID device for hassle free circulation, the centre is roofed by cameras to provide safe reading situation to the patrons.

The customers in the library can search the ISBD records and catch precise information online. The search facility also describes the patron about the existence of each query for flow, including recent position of multiple copies of a title and reservation status. Online catalogue assistances to search the books and periodicals subscribed in the LRC & Chennai Centre.

Figure 4.30. IIM Tiruchirappalli Library Website

4.21. Indian Institute Management, Udaipur

4.21.1. About Institute

The IIMs were formed by the Indian Govt. with the goal of recognising the pupils ability existing and producing a group of top administrators to lead the numerous areas of the Indian economy. In the span of 50 years, IIMs have become developed as foremost management institutions, similar to the finest in the globe in industry. In 2009, the Indian Government permitted the formation of IIM-Udaipur; the organisation publicly started in 2011. In October 2016 IIM-U shifted to its allotted premises on three hundred acres of land in the Balicha of Rajasthan. IIM-U attempts to make a real change in the field, fixing healthy associations with local NGOs, government and industries on live schemes, placements, invitee speeches, and many events during the academic year.
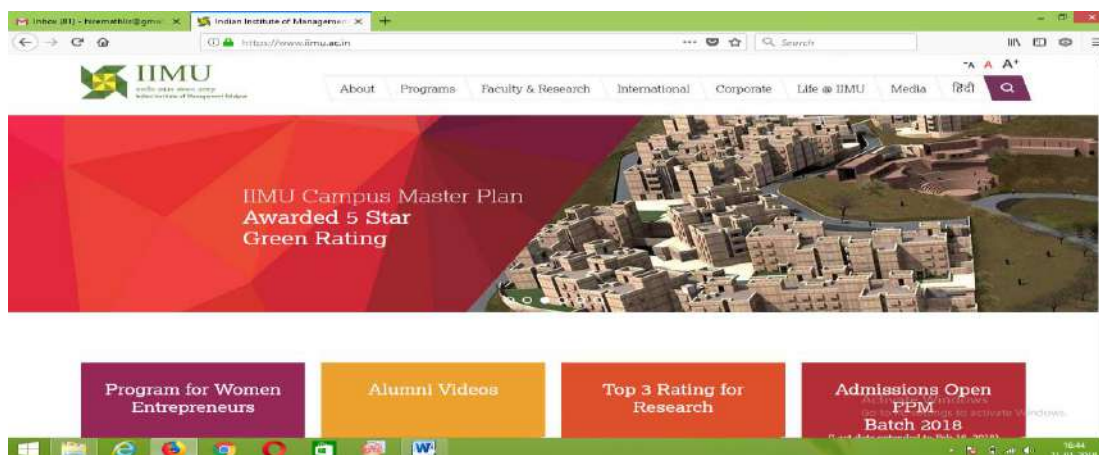
Figure 4.31. Indian Institute of Management, Udaipur

4.21.2. About Library

The library at IIM-Udaipur is an obligatory source that delivers wide-ranging and confident information on related, associated subjects as well as collection building on the societal and common interest. The library deals on

widespread collection of physical and digital resources comprising databases, reference titles, case studies, and other materials. The library is fully computerised using the maximum radical LMS.
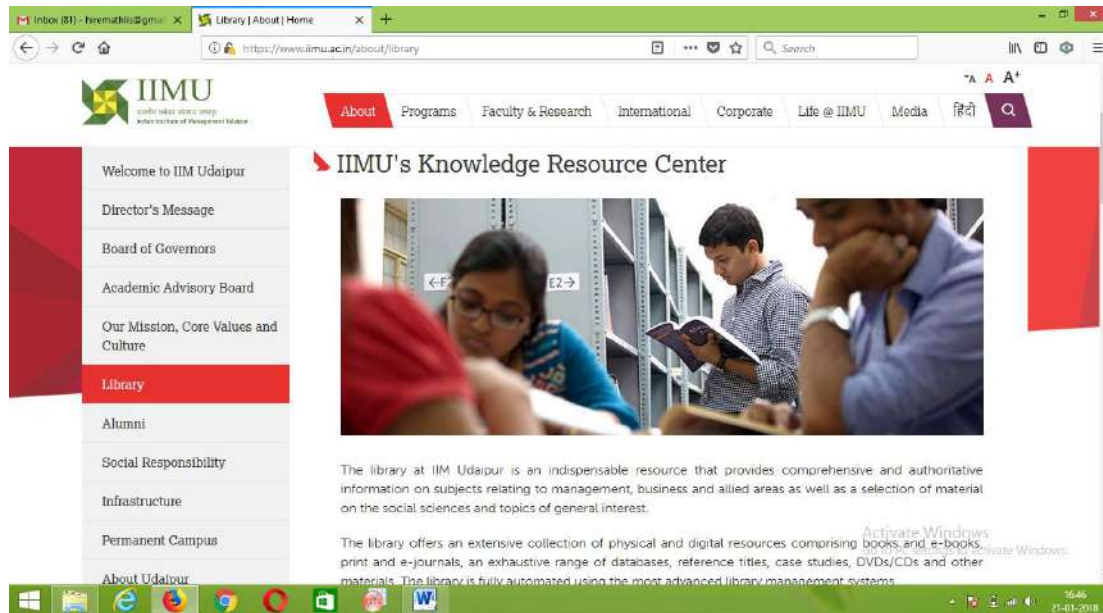
Figure 4.32. IIM Udaipur Library Website

Once new building comes up, the library will be the architecturally remarkable central point of the new premises, offering not just a learning area but a heart for lively communications, workspaces for cluster meetings, minor colloquium quarters etc.,

4.22. Indian Institute of Management, Vishakhapatnam

4.22.1. About Institute

IIM-Vishakhapatnam is among the 06 new IIMs started by the HRD Ministry in the year 2015. The IIM-V within the short span gained the confidence its stakeholders, created immense contribution towards imparting need based education in the field. IIM-V is supervision under the IIM-Bangalore. It offers

PGP course in the college which was recognised everywhere to train the youngsters based on dynamic pedagogic implements on the Indian context under the supervision of eminent faculty from IIMB.

Figure 4.33. Indian Institute of Management, Vishakhapatnam

4.22.2. About Library

The IIMV library is a hybrid library comprising databases, e-books and a print collection. The library also provides information services such as circulation, inter-library loans, document delivery, and orientation to access electronic resources and other library services, apart from reference and referral services for summer internships. The Norman Cousin's statement has come true in case of IIM- Vishakhapatnam library i.e. "A library, to modify the famous metaphor of Socrates, should be the delivery room for the birth of ideas - a place where history comes to life."
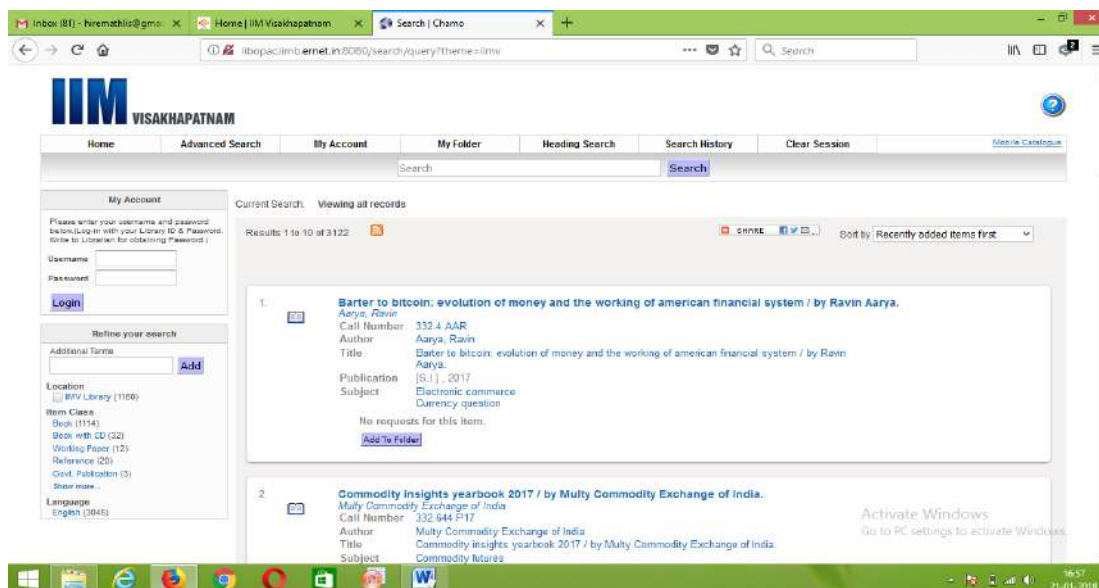
Figure 4.34. IIM Vishakhapatnam Library Web-OPAC

Chapter-05

DATA ANALYSIS AND INTERPRETATION

5.1   Introduction

5.2.   Part-A: Evaluation of Web OPACS Salient Search Features

5.3.   Part-B: Evaluation of Web 2.0 OPAC Search Features

5.4.   Part-C : Precision and Relative Recall of Web opac Search Results

5.5.   Part-D: Users Survey on Usage of Web OPACS

5.6.   Summary

Chapter-05

DATA ANALYSIS AND INTERPRETATION

5.1. Introduction

This chapter consists of four parts dealing with different aspects of evaluation, Part-A on web OPACs salient search features evaluation, Part-B on OPAC 2.0 (NGC) search features evaluation, Part-C on Precision and Relative Recall of web OPACs and Part-D on users survey. An attempt has been made to discuss and interpret the material collected during the study to understand the retrieval effectiveness of Web OPACs from different perspectives. Each part is further amplified under different subsections to look into the intricacies of each aspect at a micro level to bring forth deeper analysis of the morphology, structure and strategy of the OPACs in providing effective services.

5.2. Part-A: Evaluation of Web OPACS Salient Search Features

The following thirteen libraries make use of web-OPAC out of twenty IIMs in India are selected for the study.

The IIM libraries use different software packages for managing Web OPACs. Six (Ahmadabad, Bodh Gaya, Kozhikode, Ranchi, Rohtak, Sambalpur and Udaipur) use KOHA (open source software). Keeping in view collection, size and services, the other libraries use Libsys and Virtua (commercial packages). Different versions of Libsys and Virtua are used by IIM-Bangalore, Calcutta, Indore, and Kashipur, Lucknow and Tiruchirappalli respectively.

Table 5.1. Number of IIMs in India

Sl. No	Names	Short names	LMS used	Web OPACs URL
1	IIM-Ahmadabad	AHM	Koha 17.11	https://vslopac.iima.ac.in/cgi-bin/koha/opac-main.pl
2	IIM-Bangalore	BAN	VTLS Virtua 3.1HF1	http://libopac.iimb.ac.in:8080/ search/query?theme=iimb
3	IIM-Bodh Gaya	BOD	Koha 14	http://14.139.203.165/cgi-bin/koha/opac-main.pl
4	IIM-Calcutta	CAL	VTLS Virtua 1.135.2	http://librarycatalog.iimcal.ac.in:8080/search/ query;jsessionid=57F409B92F906C93634599E029096E6E?theme=iimc
5	IIM-Indore	IND	VTLS Virtua 1.135.2	http://opac.iimidr.ac.in:8080/search/ query;jsessionid=86D910D2A689D 48F7AF6B09588D658D8?theme=iimi
6	IIM-Kashipur	KAS	Libsys 10	http://223.31.174.9:8380/opac/
7	IIM-Kozhikode	KOZ	Koha 19.05.02	http://libraryopac.iimk.ac.in/
8	IIM-Lucknow	LUC	Libsys 10	http://libraryopac.iiml.ac.in/
9	IIM-Ranchi	RAN	VTLS Virtua	http://112.133.201.138:8000/ cgi-bin/gw/chameleon/
10	IIM-Rohtak	ROH	Koha 16.11	http://192.168.1.231:8080/webopac /GwtOPAC/GwtOPAC.html
11	IIM-Sambalpur	SAM	Koha 16.05	http://223.31.121.29/cgi-bin/ koha/opac-main.pl
12	IIM-Trichy	TRI	Libsys	http://14.139.182.62:8380/opac
13	IIM-Udaipur	UDA	Koha 15.1	http://iimu-koha.informindia.co.in/

The full description of library management systems has given in the table 5.11. The following sections/tables from 5.2 to 5.17 discuss various salient search features of the web OPACs selected for the purpose designed by different experts. The last section takes overall view of the evaluation to throw light on the ranking of these OPACs on the basis of parameters chosen for the study.

5.2.1. General parameters

The general parameters provide quick access to Web OPAC operations from different angles. The parameters of a Web OPAC vary from package to package and even the same package employed by different libraries is customized in accordance with the requirements of the institution.

These parameters are grouped with six features; initial four present 100% at IIM-Ahmadabad, Bangalore, Calcutta and Trichy. Sixth feature 'log off instruction, if desired' is customized by 11 (84.61%) IIM libraries, the feature 'content coverage explanation' is not available in 09 (69.23%) IIMs library web OPACs. This feature gives information to user on scope and limitation of web OPAC related to sources, databases, subjects in the library and it should be addressed seriously.

Table 5.2. Availability of general parameters

Parameters	Requires logon/ user ID/ password if desired	Customisation of the features as per the library requirements	Has time out feature, if desired	Facility for updating or adopting later versions	Explains the contents and coverage in the OPAC	Provides log off instruction, if desired	P=6
IIMs							
Ahmadabad	√	√	√	√	√	√	6 (100)
Bangalore	√	√	√	√	√	√	6 (100)
Bodh Gaya	√	√	√	√	X	√	5 (83.33)
Calcutta	√	√	√	√	√	√	6 (100)
Indore	√	√	√	√	X	√	5 (83.33)
Kashipur	√	√	√	√	X	X	4 (66.66)
Kozhikode	√	√	√	√	X	√	5 (83.33)
Lucknow	√	√	√	√	X	X	4 (66.66)
Ranchi	√	√	√	√	X	√	5 (83.33)
Rohtak	√	√	√	√	X	√	5 (83.33)
Sambalpur	√	√	√	√	X	√	5 (83.33)
Trichy	√	√	√	√	√	√	6 (100)
Udaipur	√	√	√	√	X	√	5 (83.33)
N=13	**13 (100)**	**13 (100)**	**13 (100)**	**13 (100)**	**4 (30.76)**	**11 (84.61)**	

Note : *Figures given in parentheses indicate the percentage; √= Available, X= Not available*

5.2.2. Type of searches

Table 5.3. Availability of different type of searches

Parameters	AHM	BAN	BOD	CAL	I ND	KAS	KOZ	LUC	RAN	ROH	SAM	TRI	UDA	Total Score
Offers several types of searches such as Simple, complex or advanced	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
Has full search capability on conventional access points such as keyword/author/ subject heading/class number/ ISBN/ ISSN	√	√	√	√	√	√	√	√	√	√	√	X	√	12 (92.30)
Provision of browsing capabilities	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
Provision of phrase searching	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
Provision for Boolean search	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
Provision for truncation	√	√	X	√	√	√	√	√	√	X	X	√	X	9 (69.23)
Provision for word adjacency and/or word proximity operators	√	√	√	√	√	√	√	√	X	√	√	√	X	12 (92.30)
Hypertext links in full bibliographic record display	√	√	√	√	√	X	√	X	X	√	√	X	√	9 (69.23)
P=8	8 (100)	8 (100)	7 (87.5)	8 (100)	8 (100)	7 (87.5)	8 (100)	7 (87.5)	6 (75)	7 (87.5)	7 (87.5)	6 (75)	6 (75)	

Note : *Figures given in parentheses indicate the percentage; √= Available, X= Not available*

The vital and most important function of a web OPAC is a "query search". The searching feature includes logical or matching operation on specified search terms for identifying relevant document (records) from a library collection. This searching evaluative framework comprises 08 access features, different LMS's offer wide range of search options. At all the IIMs provision for 'several types of searches', 'capability for browsing' and 'Boolean search', are 100% available and 92.30% provision for 'conventional accesses and 'word proximity' is found.

But offer for 'truncation' and 'hypertext links in full bibliographic record display' is limited to 69.23%. Truncation feature play significant role in broadening our search to include word endings and spellings and hypertexts to navigate the users to other sources of information, where all the IIM libraries should give the attention to change their web OPAC through customization.

Access points satisfy the users, different approaches to a particular topic search; it determines the thinking of information seekers on the subject or source. This group has 16 parameters it is found that 'author, title, keyword, subject heading, and key word in title/subjects' are all present 100% at all the selected library web OPACs followed by 'combined search is 84.61% , class number, ISBN, ISSN, 76.92%'. Series, barcode number 69.23%, name and subject authority control comes next 53.84%, location of the document information 38.46%, support for cross references is recorded 23.7%. Wherever institution-wise access points consideration IIM-Kashipur and Lucknow were recorded least (37.5%) parameters suggested to adopt the more access points into their web OPACs.

5.2.3. Access Points

Table-5. 4 Availability of access points

Parameters	AHM	BAN	BODH	CAI	IND	KAS	KOZ	LIIC	RAN	ROH	SAM	TRI	IIDA	N=13
Author, personal/corporate name	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
Title	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
Key word	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
Subject heading	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
Keyword in Title	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
Keyword in Subject	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
combined search such as author /title; author/keyword	√	√	√	√	√	X	√	X	√	√	√	√	√	11 (84.61)
Class Number	√	√	√	√	√	X	√	X	√	√	√	X	√	10 (76.92)
ISBN	√	√	√	√	√	X	√	X	√	√	√	X	√	10 (76.92)
ISSN	√	√	√	√	√	X	√	X	√	√	√	X	√	10 (76.92)
Series	√	√	√	√	√	X	√	X	X	√	√	X	√	09 (69.23)
Barcode Number	√	√	√	√	√	X	√	X	X	√	√	X	√	09 (69.23)
Offers name authority control	√	√	√	√	√	X	√	X	X	X	X	X	√	07 (53.84)
Offers subject authority control	√	√	√	√	√	X	√	X	X	X	X	X	√	07 (53.84)
Supports cross-references	√	√	X	X	√	X	X	X	X	X	X	X	X	03 (23.07)
Provision for copy location	√	√	X	√	√	X	√	X	X	X	X	X	X	05 (38.46)
P=16	16 (100)	16 (100)	14 (87.5)	15 (93.75)	16 (100)	6 (37.5)	15 (93.75)	6 (37.5)	10 (62.5)	12 (75)	12 (75)	7 (43.75)	14 (87.5)	

*The figures given in parentheses indicate the percentage; √= Available, X= Not Available

5.2.4. Search strategy

Table 5.5. Availability of search strategy features

Parameters	Displays search strategy	Provides examples under each type of search	Option for search history	P=3
IIMs				
Ahmadabad	√	X	√	02 (66.66)
Bangalore	√	X	√	02 (66.66)
Bodh Gaya	√	X	√	02 (66.66)
Calcutta	√	X	√	02 (66.66)
Indore	√	X	√	02 (66.66)
Kashipur	X	X	X	00
Kozhikode	√	X	√	02 (66.66)
Lucknow	X	X	X	00
Ranchi	√	X	X	01 (33.33)
Rohtak	√	X	√	02 (66.66)
Sambalpur	X	X	√	01 (33.33)
Trichy	X	X	X	00
Udaipur	√	X	√	02 (66.66)
N=13	09 (69.23)	00	09 (69.23)	

Note : *Figures given in parentheses indicate the percentage; √= available, X= not available*

The provision of search strategy is an important feature to offer quick and speedy retrieval of results. The Web OPACs search strategy options mainly categorized into 03 parameters.

The 'availability of search strategies; 'displays search strategy' and 'option for search history' both recorded highest (69.23%) among the entire selected IIM

library web OPACs. Further, availability of 'providing examples under each type of search' from the data it is clearly indicated that all the thirteen IIMs are not given attention to this feature which shows nil report.

5.2.5. Search limit/search filter features

Table 5.6. Availability of search limit/ filter features

Parameters	Provision for comprehensive search limits i.e. year, language, type of publication, location, publication status, etc.	Facility for sorting records	Ranks output by relevance	P=3
IIMs				
Ahmadabad	√	√	√	03 (100)
Bangalore	√	√	√	03 (100)
Bodh Gaya	√	√	√	03 (100)
Calcutta	√	√	√	03 (100)
Indore	√	√	√	03 (100)
Kashipur	√	X	X	01 (33.33)
Kozhikode	√	√	√	03 (100)
Lucknow	X	X	X	00
Ranchi	X	X	X	00
Rohtak	√	√	√	03 (100)
Sambalpur	√	X	√	02 (66.66)
Trichy	√	√	√	03 (100)
Udaipur	√	√	√	03 (100)
N=13	11 (84.61)	09 (69.23)	10 (76.92)	

Note : *Figures given in parentheses indicate the percentage; √= available, X= not available*

The provision of search limit/search refinement is an important feature to offer instant and precise recall in the database. The data shows that (84.61%) of institutions from the study implemented the search limits by 'Publication year, place, type and status''. The limit option 'ranks output by relevancy' comes next with 76.92%, and the option 'sorting of searched records' reported 69.23%. Nine library web OPACs are having all three search refinement features, But in IIM Lucknow, IIM Ranchi, and IIM Kashipur don't have all three options and need to adopt.

5.2.6. Display

Table 5.7. Availability of display features

Parameters	Provision for brief/long bibliographic displays or both.	Display levels (Customizable display screens, top, right, middle etc...)	Limiting the number for the display of records (output control)	P=3
IIMs				
Ahmadabad	√	√	√	03 (100)
Bangalore	√	√	√	03 (100)
Bodh Gaya	√	√	X	02 (66.66)
Calcutta	√	√	√	03 (100)
Indore	√	√	√	03 (100)
Kashipur	√	√	X	02 (66.66)
Kozhikode	√	√	X	02 (66.66)
Lucknow	√	√	X	02 (66.66)
Ranchi	X	X	X	00
Rohtak	√	√	X	02 (66.66)
Sambalpur	√	√	X	02 (66.66)
Trichy	√	√	√	03 (100)
Udaipur	√	√	X	02 (66.66)
N=13	**12 (92.30)**	**12 (92.30)**	**05 (38.46%)**	

Note : *Figures given in parentheses indicate the percentage; √= available, X= not available*

'Display' refers to a provision of providing bibliographical information of an item/source. Most of the web-based OPACs having option for click instantly display a brief record, which can be further expanded to show more details such as MARC record, holdings, circulation status, location of document etc.

Among the 13 IIMs display features framework option i.e. "provision for brief/long bibliographic displays and "display levels (customizable display screens, top, right, middle etc.)" present equally 92.30%. Third feature 'Limiting the number for the display of records (output control)' is available in IIMs such as Ahmadabad, Bangalore, Calcutta, Indore and Trichy wherever five IIMs included all three at their web OPACs i.e., 100%.

5.2.7. Entry structure

Table 5.8. Availability of entry structure

Parameters	Support for MARC formats	Provision for library-structured entry format	Both MARC formats and library structured format	P=3
IIMs				
Ahmadabad	√	√	√	03 (100)
Bangalore	**X**	√	**X**	01 (33.33)
Bodh Gaya	√	√	√	03 (100)
Calcutta	√	√	**X**	02 (66.66)
Indore	√	√	√	03 (100)
Kashipur	√	√	√	03 (100)
Kozhikode	√	√	√	03 (100)
Lucknow	√	√	√	03 (100)
Ranchi	**X**	**X**	**X**	00
Rohtak	√	√	**X**	02 (66.66)
Sambalpur	√	√	√	03 (100)
Trichy	√	√	√	03 (100)
Udaipur	√	√	√	03 (100)
N=13	11 (84.61)	12 (92.30)	09 (69.23)	

Note : *Figures given in parentheses indicate the percentage; √= available, X= not available*

The international standards for data entry into catalogues are MARC, AACR-II, Unicode, library structured format, and CCF Tags are popular data entry formats. Provision for library-structured entry format' is available at (92.30%) libraries; it is found that only MARC is available in 11 (84.61%) libraries web OPACs. Both MARC and library structured format are absent at 4 libraries (30.76%), Only 09 institute libraries are having all three (100%) provisions for data entry. IIM-Ranchi doesn't have the parameters and required to adopt those at the earliest; IIM-Calcutta and Rohtak have satisfied only two (66.66%) parameters respectively. Wherever data shows that LMS TLS-Virtua is not used MARC format it shows that TLS-Virtua should take it as major issue for further changes into their product.

5.2.8. Output

Table 5.9. Availability of output features

Parameters	Provision for exporting/downloading of retrieved records	Provision for the transmission of retrieved records through e-mail	Provision for storing retrieved records	P=3
IIMs				
Ahmadabad	√	√	√	03 (100)
Bangalore	√	√	√	03 (100)
Bodh Gaya	√	√	√	03 (100)
Calcutta	**X**	**X**	√	01 (33.33)
Indore	√	√	√	03 (100)
Kashipur	√	√	**X**	02 (66.66)
Kozhikode	√	√	√	03 (100)
Lucknow	√	√	**X**	02 (66.66)
Ranchi	**X**	**X**	√	01 (33.33)
Rohtak	√	√	√	03 (100)
Sambalpur	√	√	√	03 (100)
Trichy	√	√	√	03 (100)
Udaipur	√	√	√	03 (100)
N=13	11 (84.61)	11 (84.61)	11 (84.61)	

Note : *Figures given in parentheses indicate the percentage; √= available, X= not available*

'Output features' enable a user to manage retrieved documents in a desirable way (by sorting, saving, printing, downloading, sharing etc.), most web OPACs allow users to sort the results by different options. Among the selected IIM library, web OPACs all three options are available in (100%) institutes. Feature-wise availability recorded that 84.61% is common among all thee parameters. IIM-Calcutta and IIM-Ranchi don't have 'provision for exporting/ downloading of retrieved records and transmission through mail.

IIM-Kashipur and IIM-Lucknow are not having 'Provision for storing retrieved records'. Since both libraries are using LMS Libsys there is provision for introducing such features to get the output results in various methods and channels still not yet done. It is suggested to look into and adopt the techniques to transmission, downloading or sorting the output results.

5.2.9. External links

Table 5.10. Availability of external links

Parameters	Links to electronic sources	Access to Z39.50	Links to external sources	P=3
IIMs				
Ahmadabad	√	√	√	03 (100)
Bangalore	√	√	√	03 (100)
Bodh Gaya	√	√	√	03 (100)
Calcutta	X	√	X	01 (33.33)
Indore	X	√	X	01 (33.33)
Kashipur	X	X	X	00
Kozhikode	X	√	√	02 (66.66)
Lucknow	X	X	X	00
Ranchi	X	X	X	00
Rohtak	√	√	X	02 (66.66)
Sambalpur	√	√	√	03 (100)
Trichy	√	√	√	03 (100)
Udaipur	X	√	X	01 (33.33)
N=13	06 (46.15)	10 (76.92)	06 (46.15)	

Note : *Figures given in parentheses indicate the percentage; √= available, X= not available*

There would be several information resources of a library and information centre where web OPAC is single window for all the resources such as free or subscribed sources, links to table of contents, companion and supplementary materials, links to book review, links to google scholar, book finder, world cat, publishers Site etc.

This facility play important role in serving the various users information needs at one place. "Access to Z39.50" is available at ten (76.92%) institutes library web OPACs and only six (46.15%) libraries incorporated "links to electronic sources" and "links to external sources" which is recorded very least across the IIMs. Further IIM-Calcutta, IIM-Indore and IIM-Udaipur score only one (33.33%) respectively, in case of IIM-Kashipur, IIM-Lucknow and Ranchi libraries don't have any of the three options. It is required to adopt the above features in the web OPACs among these IIMs library web OPACs.

5.2.10. Other services/facilities

Table-5.11. Availability of other services/facilities

Parameters	Interface with the circulation system	Provision for options such as ILL, renewal, reservations, etc.	Provision of online mailboxes for user comments or suggestions	P=3
IIMs				
Ahmadabad	√	√	√	03 (100)
Bangalore	√	√	√	03 (100)
Bodh Gaya	X	X	√	01 (33.33)
Calcutta	X	X	X	00
Indore	X	X	X	00
Kashipur	X	X	X	00
Kozhikode	√	√	X	02 (66.66)
Lucknow	X	X	X	00
Ranchi	X	X	X	00
Rohtak	X	√	√	02 (66.66)
Sambalpur	X	X	X	00
Trichy	X	X	X	00
Udaipur	X	X	√	01 (33.33)
N=13	03 (23.07)	04 (30.76)	04 (30.76)	

Note : *Figures given in parentheses indicate the percentage; √= available, X= not available*

Apart from web OPAC, other user friendly services are play important role in usage point of view, It is clear from the above table 'provision for ILL, renewal and reservation of reading materials" and 'users comments and suggestions' are both incorporated only four (30.76%) institute libraries followed by three (23.07%) for interface with circulation. Shocking issue is 53.86% of libraries (Calcutta, Indore, Kashipur, Lucknow, Ranchi, Sambalpur, and Trichy) not at all adopted any of these facilities.

IIM-Bodh Gaya and IIM-Udaipur incorporated only one option i.e. "Provision of online mailboxes for user comments or suggestions" but remaining two options are not available. It is recommended to customise their individual web OPACs at the earliest.

It is found that IIM-Ahmadabad and IIM-Bangalore satisfied all three features come under additional services group.

5.2.11. Linguistic capabilities

Table 5.12. Availability of linguistic capabilities

Parameters	Facility to accommodate multilingual libraries, if desired	Provision to accommodate non-Roman scripts, if desired	P=2
IIMs			
Ahmadabad	X	X	00
Bangalore	√	X	01 (50)
Bodh Gaya	√	√	02 (100)
Calcutta	X	X	00

Indore	√	X	01 (50)
Kashipur	X	X	00
Kozhikode	√	√	02 (100)
Lucknow	X	X	00
Ranchi	X	X	00
Rohtak	√	√	02 (100)
Sambalpur	√	X	01 (50)
Trichy	X	X	00
Udaipur	√	√	02 (100)
N=13	07 (5.84)	04 (30.76)	

Note : *Figures given in parentheses indicate the percentage; √= Available, X= Not Available*

The 'multi-linguistic feature' is a facility to find resources available in different languages in a particular library. It has become possible with "Unicode" supportive package. The study reveals that only seven libraries (5.84%) of Web OPACs support multilingual feature, in accommodating of non-roman scripts at web OPACs only (30.76 %) available in four IIMs.

IIM-Bangalore, Indore and Sambalpur are having only 'multilingual libraries or materials, but they don't have 'non-roman scripts in the catalogues'. Four libraries (Bodh Gaya, Kozhikode, Rohtak and Udaipur) have implemented both the options (100%). Also it is revealed that IIM-Ahmadabad, Calcutta, Kashipur, Lucknow, Ranchi and Trichy are not lagging both the provisions on their respective web OPACs.

5.2.12. User assistance

Table 5.13. Availability of user assistance features

Parameters	Provision of contextual help messages	Provision for procedural learning/Training	Requires little intervention by the staff	P=3
IIMs				
Ahmadabad	√	X	√	02 (66.66)
Bangalore	X	√	√	02 (66.66)
Bodh Gaya	X	X	√	01 (33.33)
Calcutta	√	X	X	01 (33.33)
Indore	√	X	√	02 (66.66)
Kashipur	√	X	√	02 (66.66)
Kozhikode	X	X	√	01 (33.33)
Lucknow	X	X	√	01 (33.33)
Ranchi	X	X	X	00
Rohtak	√	√	X	02 (66.66)
Sambalpur	X	X	√	01 (33.33)
Trichy	√	X	√	02 (66.66)
Udaipur	X	X	√	01 (33.33)
N=13	**06 (46.15)**	**02 (15.38)**	**10 (76.92)**	

Note : *figures given in parentheses indicate the percentage; √= Available, X= Not available*

Web OPACs offer user assistance/on-screen help on their search interfaces in diverse ways using options like instructions/help message, online tutorials etc. Only six web OPACs (46.15%) have 'contextual help' interface that's reason requirement for majority institutions (76.92%) staff assistance'. It is known that from above table only two (15.38%) IIMs have provided 'little 'procedural learning/training materials on the web OPACs.'

In case of IIM-Ranchi all the three features are not available and eleven (84.61%) libraries web OPACs do not have online training facility, seven (53.84%) libraries don't have contextual help messages. it is suggested to adopt the same. No institute library found with all three features on their web OPACs. The assistance in the form of on-line tutorials helps to more utilization of resources to make them more robust access. But particularly in some institutions which still give less attention to this vital feature.

5.2.13. Layout

Table 5.14. Availability of layout features

Parameters	Simple layout	Instructions on the screen are simple, clear and inviting	Use of less technical jargon and codes	P=3
IIMs				
Ahmadabad	√	√	√	03 (100)
Bangalore	√	√	√	03 (100)
Bodh Gaya	√	√	√	03 (100)
Calcutta	√	√	√	03 (100)
Indore	√	√	√	03 (100)
Kashipur	√	X	√	02 (66.66)
Kozhikode	√	√	√	03 (100)
Lucknow	√	X	√	02 (66.66)
Ranchi	√	X	√	02 (66.66)
Rohtak	√	√	√	03 (100)
Sambalpur	√	√	√	03 (100)
Trichy	√	√	√	03 (100)
Udaipur	√	√	√	03 (100)
N=13	13 (100)	10 (76.92)	13 (100)	

Note : *Figures given in parentheses indicate the percentage; √= Available, X= Not available*

Among page layout options, grouping together of related features are made three (03) first feature 'simple layout' and 'use of less technical jargon and codes' are satisfied by all the library web OPACs i.e. (100%), Only (76.92%) IIM libraries are having the 'simple and clear instruction on the web OPAC screens. In case of IIMs ten institutes are representing (100%) implementation of the listed features, and suggested (Kashipur, Lucknow and Ranchi) rest to customize accordingly

It is found that user friendly interface is present in all the web OPACs, although to call it is a "User friendly" is a relative term and already some exploratory research has been carried out for different global catalogues across the world but still is limited or missing for the web OPACs.

5.2.14. Physical features

Table 5.15. Availability of physical features

Parameters	AHM	BAN	BOD	CAL	IND	KAS	KOZ	LUC	RAN	ROH	SAM	TRI	UDA	N=13
Frames version	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
Non-frames version	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
Both frames and non-frames versions	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
High graphic version	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
Low graphic version	√	√	√	√	√	√	√	√	√	√	√	√	√	13 (100)
Both high and low graphic versions	√	√	√	√	√	**X**	√	**X**	**X**	√	√	√	√	10 (76.92)
P = 6	06 (100)	06 (100)	06 (100)	06 (100)	06 (100)	05 (83)	06 (100)	05 (83)	05 (100)	06 (100)	06 (100)	06 (100)	06 (100)	

Note : *Figures given in parentheses indicate the percentage; √= Available, X= Not available*

In creating a Web site, frames is the use of multiple, independently controllable sections on a web presentation. Web graphics are visual presentations used on a website, to enhance or enable representation more effective. It is found from the above table both the frames are available 100% at all the libraries and in case of graphic version is considered 76.92% libraries are having both low and high versions of graphics. Where IIM Kashipur, Lucknow and Ranchi they don't represent both at time.

Basically three types of formats for graphics are used on the web; JPG, GIP and PNG which are used for specific purposes, some web pages use multimedia it may be the combinations of text with graphics, animation, audio-video. This helps to representation non-text information, charts, photos, animation etc. It is recommended to all the libraries to incorporate effective graphic versions on the web OPACs.

5.2.15. Other features

Table 5.16. Availability of other features

Parameters	Provision for drop-down menus or pull-down menus	Provision for shadow catalogue, if desired	P=2
IIMs			
Ahmadabad	√	X	01 (50)
Bangalore	√	X	01 (50)
Bodh Gaya	√	X	01 (50)
Calcutta	√	X	01 (50)

Indore	√	X	01 (50)
Kashipur	√	X	01 (50)
Kozhikode	√	X	01 (50)
Lucknow	√	X	01 (50)
Ranchi	√	X	01 (50)
Rohtak	√	X	01 (50)
Sambalpur	√	X	01 (50)
Trichy	√	X	01 (50)
Udaipur	√	X	01 (50)
N=13	**13 (100)**	**00**	

Note : *Figures given in parentheses indicate the percentage; √= Available, X= Not available*

A drop-down list (abbreviated drop-down or DDL) also known as a drop menu, pull-down list, picklist etc. It is graphical control element, similar to a list box, which allows the user to choose one value from a list.

The shadow catalogue is a process of making catalogue records hide such as book status 'missing material, weeded out and write off material' etc. Sometimes call number also, but such items are searched only by the library staff in turn patron get message 'unavailable for display' in search results.

The drop down menu provision only used in all 13 (100%) the selected IIMs not shadow cataloguing which is found nil and further recommended to incorporate the same.

Table 5.17. Comparison of web OPAC Salient search features

Divisions	Max Score (N)	AHM	BAN	BOD	CAL	IND	KAS	KOZ	LUC	RAN	ROH	SAM	TRI	UDA	Cumulative Score
General	06	6	6	5	6	5	4	5	4	5	5	5	6	5	60/67 (89.55)
Type of Searches	08	8	8	7	8	8	7	8	7	6	7	7	6	6	80/93 (86.2)
Access Points	16	16	16	14	15	16	6	15	6	10	12	12	7	14	159/160 (99.37)
Search Strategy	03	2	2	2	2	2	0	2	0	1	2	1	0	2	18/30 (60)
Search Limits	03	3	3	3	3	3	1	3	0	0	3	2	3	3	30/30 (100)
Display	03	3	3	2	3	3	2	2	2	0	2	2	3	2	29/30 (96.66)
Entry Structure	03	3	1	3	2	3	3	3	3	0	2	3	3	3	30/32 (93.75)
Output	03	3	3	3	1	3	2	3	2	1	3	3	3	3	30/33 (90.90)
External Links	03	3	3	3	1	1	0	2	0	0	2	3	3	1	22/30 (73.33)
Services/facilities	03	3	3	1	0	0	0	2	0	0	2	0	0	1	12/30 (40)
Multi-linguistics	02	0	1	2	0	1	0	2	0	0	2	1	0	2	11/20 (55)
User Assistance	03	2	2	1	1	2	2	1	1	0	2	1	2	1	18/30 (60)
Layout	03	3	3	3	3	3	2	3	2	2	3	3	3	3	30/36 (83.33)
Physical features	06	6	6	6	6	6	5	6	5	5	6	6	6	6	60/75 (80)
Others	02	1	1	1	1	1	1	1	1	1	1	1	1	1	13/20 (65)
	N=67	62 (92.53)	61 (91.04)	56 (83.58)	52 (77.6)	57 (85.0)	35 (52.2)	58 (86.5)	33 (49.2)	31 (46.2)	54 (80.6)	50 (74.6)	46 (68.6)	53 (79.1)	

Note : The figures given in parentheses indicate the percentage.

AHM =Ahmadabad, BAN=Bangalore, BOD=Bodh Gaya, CAL=Calcutta, IND=Indore, KAS=Kashipur, KOZ=Kozhikode, LUC=Lucknow, RAN=Ranchi, ROH-Rohtak, SAM=Sambalpur, TRI=Tiruchirappalli (Trichy), UDA=Udaipur

The above table 5.17 depicts about evaluation of web OPACs under 15 broad categories, of which 'search limits' leads with highest cumulative score of 100%, followed by 'access points' and 'bibliographic display category' with 99.37% and 96.66 % respectively, while as 'bibliographic and screen display' and 'linguistic features' are possessed least by the web OPACs with an average cumulative score of 40% and 50% respectively.

The maximum score that each Web OPAC receives is 67 with an average score of 19.40%. The IIM Ahmadabad receives highest score of 62 (92.53%), followed by OPAC of IIM Bangalore with 61 (91.04%) features IIM Kozhikode and Indore with 58 (86.57%) 57 (85.7%) features respectively, while OPAC of IIM Ranchi receives the lowest score of 31 (46.27%) followed by IIM Lucknow 33 (49.25%).

The rating scale is designed to rank OPACs from 'excellent' to 'below average'. The ranking of the web OPACs is developed specifically on the basis of four-point rating scale. The scale for the rating is as below mentioned:

i. 52 and above (excellent)   ii. 35-51 (above average)

iii. 18-34 (average)   iv. 01-17 (below average).

The ranking scale helps to sum up the individual score of each OPAC under different categories to generate a composite score and then rate them. Table 5.27 reveals that 08 (AHM, BAN, BOD, CAL, IND, KOZ, ROH, and UDA) web OPACs achieved 'excellent', 02 (KAS, TRI) secured 'above average', 02 (LUC, RAN) limited to 'average' and none 'below average' as per four-point rating scale.

It is recommended to IIM-Lucknow and Ranchi work better towards achieve more scores and still IIM-Kashipur and Trichy performance also show big

difference compared to IIM-Ahmadabad and IIM-Bangalore. That's the reason each feature of web OPACs make great sense to the user community and in turn IIMs for effective and user friendly services.

Hypothesis Testing

Hypothesis 1 : There is no significant difference in the availability of salient search features among the different IIMs.

Table 5.18. One-way ANOVA test results for testing H_1

Factor	F-value	p-value	Conclusions
IIMs	0.65056	0.796 (>0.05)	Hypothesis H_1 is accepted.

There is no significant difference in in the availability of salient search features among the different IIMs (F=0.65056; p=0.796 (>0.05 table 5.28). Thereforem hypothesis H_1 is accepted and research hypothesis is supported.

Research elevation

The studies and research outcomes on the web OPAC search features conducted during last two decades such as Ibrahim (2005), Kapoor, Kanta and Goyal (2007) and Mahmood Khalid (2008) have shown the absence of MARC display format and Z39.50 protocol, but these are overcome by the present study IIM libraries. In Luong, Truong Dai and Liew, Chern Li (2009) study highlighted that, many new functionalities of search engines such as word cloud, faceted navigation, most popular ranking and related items are however not found. Madhusudhan, Margam and Aggarwal, Shalini (2011) study shows that, almost all

the OPACs were lacked federated search, adjunct thesaurus help and spell check facilities etc.

But, it is known from this study IIM libraries have anguished in the 'additional services and facilities on web OPACs'. 'provision for ILL, renewal and reservation of reading materials' and 'users comments and suggestions' are both incorporated only 30.76% and 23.07% for interface with circulation. Shocking issue is 53.86% of libraries not at all adopted any of these facilities.

5.3. Part-B: Evaluation of Web 2.0 OPAC Search Features

With the advent of the concept, 'discovery services' libraries and LMS developers started efforts in assimilating the social web, digitized materials, e-resources, open access resources, IR materials, etc., with web OPAC (Dempsey, 2006). To encourage users to organise and access the existing resources according to their needs, libraries have improved their services using Web 2.0 technologies (Golder and Huberman, 2006). Keeping the users expectations in fore, the present day OPAC called as OPAC 2.0 and expected to offer highly elaborated searching experiences through configuration in it.

The identified thirty seven OPAC 2.0 search features and functionalities are grouped into seven divisions viz., vasic features, search, result page and navigation, enriched content and recommendations, user participation, user profile and personalisation. The performance of each OPAC in these categories, analysis of the scores and grand total is presented in tables below.

5.3.1. Basic parameters

Table 5.19. Availability of basic parameters

Parameters	AHM	BAN	BOD	CAL	IND	KAS	KOZ	LUC	RAN	ROH	SAM	TRI	UDA	Total Score
MARC21view	02	01	04	02	02	02	02	02	00	02	02	02	04	**27**
ISBD view	03	00	03	00	00	00	02	02	00	02	02	02	02	**18**
Normal view	03	02	04	02	02	02	03	01	02	01	02	01	03	**28**
Types of material catalogued	00	04	00	04	04	01	04	01	03	01	00	02	00	**24**
Unicode language access points	00	03	03	01	02	00	02	00	00	01	01	00	01	**14**
Total score	**08**	**10**	**14**	**09**	**10**	**05**	**13**	**06**	**05**	**07**	**07**	**07**	**10**	

As per the above table it is clear that, normal view secured highest score i.e., 28 followed by MARC21 score 27 and type of material catalogued list score 24. Unicode language access points recorded least score 14 across the all five search features. As IIMs are concerned IIM-Bodh Gaya and IIM-Kozhikode have made much progress in all areas.

In case of MARC21 majority assigned the number 02 because MARC21 exist with holding details of a query, where the number 04 (IIM-Bodh Gaya and Udaipur) is assigned MARC21, holding details, and summary of a book also present. Further 0 indicates obviously non availability of the feature.

The ISBD view is not available in five IIMs (Bangalore, Calcutta, Indore, Kashipur and Ranchi) but it is present in six IIMs assigned number 02 but IIM-Ahmadabad and Bodh Gaya given number 03 because we found the ISBD as well as Table of Content of a book at ISBD view.

The normal view is mixer of all the number from 1 to 4, number 02 indicates only basic details with subject headings of a Book, and number 03 indicates normal view, patron ratings, and subject headings also. IIM-Bodh Gaya secured 04 because it provides normal view, subject headings and summary of a book. Number 01 is assigned where (Lucknow, Rohtak, Trichy) basic details of the source only available.

Information on types of material catalogued is available at nine IIMs OPACs, number 01 depicts that type of catalogued materials are mentioned on the OPAC screen at left side, 02 shows that type of catalogued materials and their total numbers in bracket, number 03 assigned to IIM-Ranchi because it provided hyper link to the list, user can access directly. 04 are given to IIM-Bangalore, Calcutta, and Indore reason provision is made available at advance search tab also along with above facility.

In IIM-Bangalore and Bodh Gaya web OPAC Unicode language access points are present, but all the titles of a particular language are not typed in the certain language i. e French, Hindi, Kannaada, and Telagu that is the reason 03 is given. IIM-Indore and IIM-Kozhikode secured 02 because multi-lingual titles are typed in English only, 01 is given to those limited with only two languages, five institutions don't have multi-lingual catalogue.

5.3.2. Search parameters

Table 5.20. Availability of search parameters

Parameters	AHM	BAN	BOD	CAL	IND	KAS	KOZ	LUC	RAN	ROH	SAM	TRI	UDA	Total Score
Simple search box as available in general search engines	04	04	04	04	04	04	04	04	04	04	04	04	04	**52**
Spell checking & Suggestions	03	04	03	03	03	03	03	03	03	03	03	03	03	**40**
Begin search by browsing	04	04	04	04	04	04	04	04	01	04	04	04	04	**49**
Full-text searching	02	02	02	02	02	02	02	02	00	00	02	02	02	**22**
Total score	**13**	**14**	**13**	**13**	**13**	**13**	**13**	**13**	**08**	**11**	**13**	**13**	**13**	

Looking at the four areas of search parameters, we see can that 'simple search box facility as search engines' and 'Begin search by browsing' are present in all thirteen IIM web OPACs and scored highest 52 and 49 respectively.   Spell checking & Suggestions secured third place with 40 score, and Full-text searching provision recorded least score 22 placed at fourth. IIM-Bangalore performed top at all the parameters with highest 14 score followed by ten IIMs scored with 13 and IIM-Ranchi dropped to last place with score 08.

It is clear that simple search box and browsing are available across the IIMs, IIM-Bangalore (04) stands different in relation to spell check and suggestion, other twelve web OPACs provide only spell checking facility (03) IIM-Bangalore provides spell checking with amazing alternative words or assistances in typing the search key words.

Further reading or accessing the full texts from OPACs is available at the eleven library web OPACs, but very rare (02) texts are found during the study, IIM-Ranchi and IIM-Rohtak not at all given provision (00) for downloading or read only full texts on their web OPACs.

5.3.3. Result page and navigation parameters

Table 5.21. Availability of result page and navigation

Parameters	AHM	BAN	BOD	CAL	IND	KAS	KOZ	LUC	RAN	ROH	SAM	TRI	UDA	Total Score
Relevance ranking & Clustering	03	04	03	04	04	00	03	01	01	01	03	03	03	**33**
Navigation	03	04	03	03	01	01	03	02	01	01	02	03	03	**30**
Recommendation to other resources available on open or subscribed E-resources	00	03	00	03	00	00	00	00	00	00	03	03	03	**15**
Total score	**06**	**11**	**06**	**10**	**05**	**01**	**06**	**03**	**02**	**02**	**08**	**09**	**09**	

It is found that from the above table relevancy and clustering of results parameter reached highest score 33, followed by the navigation 30 score and recommendations to external sources recorded very least 12 score.

In case of library web OPACs are concerned IIM-Bangalore, Calcutta, Indore performed well with achieving full score 04, these web OPACs indicating not only relevancy & clustering of results, but also includes newly added items in the results page. Same way six web OPACs secured the score 03 with this minor difference for not displaying of newly added items. IIM-KAS reported nil, LUC, RAN and ROH are lacking with clustering facility.

As navigation is concerned IIM-Bangalore received score 04 which provided the navigation (links) to same author name, call number, publisher, year, place, and subject headings, copy location from the bibliographic display across the library collection, other six libraries who received score 03 limited their navigation to title, author and subject headings. IND, KAS, RAN, and ROH libraries offer navigation to title only and LUC, SAM provided to title & author names fields.

There is no provision for recommendation to other resources available either on open or subscribed module at eight libraries (AHM, BAN, IND, KOS, KOZ, LUK, RAN, and ROH) web OPACs. The libraries IIM-Bodh Gaya, Sambalpur, Trichy and Udaipur made the provision as "Google book information page" at additional information tab in bibliographic display from patron can navigate to external sources whereas they scored 03 each.

5.3.4. Enriched content and recommendations

Table 5.22. Availability of enriched content and recommendations

Parameters	AHM	BAN	BOD	CAL	IND	KAS	KOZ	LUC	RAN	ROH	SAM	TRI	UDA	Total Score
Cover art images collected from Google books,etc	03	02	04	02	03	01	03	01	00	01	03	01	03	**27**
Sharing of resource on social networking platforms like facebook, twitter, etc.	04	03	00	00	03	02	02	04	00	02	02	04	00	**26**
Summaries/ Annotations	03	00	03	03	00	00	03	00	00	00	00	00	03	**15**
Excerpts (Author review, reviews on social networking platforms, etc.)	02	00	00	00	00	00	02	00	00	00	02	02	02	**10**
TOC and linking of resources	02	02	02	02	02	00	02	00	00	00	03	00	03	**18**
New items, most popular, recently retuned items and recommendations lists.	01	01	03	01	01	00	02	01	00	01	00	02	02	**15**
More like this	02	03	02	02	01	01	00	00	00	01	01	02	02	**17**
Audio in video content	02	02	02	02	02	02	00	02	02	02	00	02	02	**22**
Total score	**19**	**13**	**16**	**12**	**12**	**06**	**14**	**08**	**02**	**07**	**11**	**13**	**17**	

From eight parameters towards deciding the range of content enrichment and other user recommendations on the web OPACs are grouped and represented in the above table. Displaying of cover pages of reading materials parameter taken highest score 27, 'sharing of resources through social networking sites' scored 26 followed by the score 22 of 'audio in video content'.

It is found that front page images are taken from google book or other sources by the libraries is vary each other, at the first ten results IIM-Bodh Gaya displayed 8 to 9 books with art cover page hence it has secured score 04 which is highest. Where the results display 5-6 books with cover page have secured score 03, same way scores 01 and 02 have been given to results pages below three books with front cover found in BAN, CAL, KAS, LUC, RAN, ROH and TRI libraries web OPACs.

Resource sharing through social networking sites is not possible in BOD, CAL, RAN, and UDA library web OPACs. It is shown score 02 to KAS, KOZ, ROH and TRI where library web OPACs offering face book and twitter tools to user community to share the results, in case of BAN and IND score mentioned 03 because of facebook, twitter, mail facilities existence. IIM-Ahmadabad and Trichy have (secured full score 04) implemented Facebook, twitter, mail, linked in, delicious tools.

Summaries/annotations of reading materials are not implemented in BAN, IND, KAS, LUC, RAN, ROH, SAM and TRI libraries. IIM-Ahmadabad, Bodh Gaya, Calcutta, Kozhikode and Udaipur libraries (secured score 03) customized this facility but it is very short.

As we know review of author and reviews from social networking sites on the books (is recorded very least score 10) is not found in eight library web OPACs. Hardly we find two or three reviews on the books at social networking sites in (score 02) AHM, KOZ, SAM, TRI, and UDA IIMs. Remaining libraries should rethink about role of 'Excerpts' at their library web OPACs.

TOC and linking of resources is not found in KAS, LUC, RAN, ROH, and TRI libraries, rather in web OPACs of AHM, BAN, BOD, CAL, IND, KOZ have provided short/ less table of content and it is not linking of resources from table of content that's reason score 02 is assigned each. Linking from content would help the user for faster access of topics.

IIM-AHM, BAN, CAL, IND, LUC, and ROH libraries (scored 01 each) made the provision for 'most popular, recommendations lists' but Trichy and Udaipur libraries introduced 'most popular & newly added items' for search newly arrived materials more important than recommendation list while searching, so researcher assigned score 02 for this parameter. IIM-Bodh Gaya (secured score 04) customized 'newly added items, most popular & recommendations list also. And it is clear that again performance of IIM-Kashipur and IIM-Ranchi is not satisfactory at this stage also.

"More like this" is a buzz word in today's web 2.0 platforms where user can see/open more links from the source. Browse through different types of recommendations, including: Similar items, more by author, similar authors, by readers, same series, by tags, by genre etc.

But it is not yet implemented by any IIM library in full swing. The score 01 represent more like this applied on Title field, score 02 represents application on

Title and Author fields, IIM-Bangalore (secured score 03) applied to title, author, call number, publisher, year, place and subject headings copy location and libraries from KOZ, LUC, RAN recorded nil score.

While searching with search queries in to different IIMs researcher found rare audio video materials related to search terms, it leads to assign the score 02 to the appeared sources irrespective of web OPCs. In IIM-Kozhikode and IIM-Sambalpur we didn't find single audio-video material it shows that less collection of audio-video sources in the library holdings so for.

Finally, we may conclude that no more attention had given to customize the features such as Summaries/Annotations, Excerpts, TOC and linking of resources and "More like this" across the IIMs. And overall performance of libraries OPAC from Kashipur, Lucknow, Ranchi, and Rohtak is not satisfactory at this category.

5.3.5. User participation

Table 5.23. Availability of user participation parameters

Parameters	AHM	BAN	BOD	CAL	IND	KAS	KOZ	LUC	RAN	ROH	SAM	TRI	UDA	Total Score
Ratings and reviews	02	00	02	00	00	00	00	00	00	02	02	02	01	**11**
Comments	01	00	01	00	00	00	00	00	00	01	01	01	01	**06**
Tags	00	00	00	00	00	00	00	00	00	00	00	00	00	**00**
Forum	00	00	00	00	00	00	00	00	00	00	00	00	00	**00**
Total score	**03**	**00**	**03**	**00**	**00**	**00**	**00**	**00**	**00**	**03**	**03**	**03**	**02**	

The user participation evaluation category comprises four parameters, which are known as web 2.0 search features on the google, social networking sites, and commercial online catalogues. The 'ratings and reviews' received highest total score 11 followed by 'comments' total score is 06, remaining 'tags' and 'forum' are not found in any institutions.

We may find the ratings and reviews facility in AHM, BOD, SAM, TRI, UDA libraries and assigned the number 02 each as score, where poor participation of user community to utilise this option. It is urged to above all IIMs to make this more popular among patrons. The comments category also not fully used by any of users and it is found that rarely one or two comments are posted in AHM, BOD, ROH, SAM, TRI, and UDA web OPACs. Further, there are no tags and forum options in the any of the IIM library web OPAC.

Tags are generally used as a sort of user-generated subject heading, sometimes called as 'folksonomy' because it's a taxonomy created by regular folks on web OPAC. The forum is a place on the web OPAC where people can leave messages, discuss on particular subjects with other people at the same time, contacting people with similar interests among the same community. Finally we may conclude that, provision for user participation of IIM libraries in web OPAC is not satisfactory and advised to enhance this area immediately.

5.3.6. User profile and Personalization

Table 5.24. Availability of user profile and Personalization

Parameters	AHM	BAN	BOD	CAL	IND	KAS	KOZ	LUC	RAN	ROH	SAM	TRI	UDA	Total Score
Automatic log-in	02	02	02	02	02	02	02	02	02	02	02	02	02	**26**
Saved searches	04	04	04	04	00	04	00	00	00	04	04	04	04	**36**
Recent activities	00	04	04	04	00	04	04	04	04	04	04	04	04	**44**
Overview and editing of created content	02	02	02	02	02	02	02	02	02	02	02	02	02	**26**
Saved items lists	03	01	03	01	01	03	03	01	03	01	01	03	04	**28**
Personalized web page	00	00	00	00	00	00	00	00	00	00	00	00	00	**00**
Personalized e-mail notices	01	01	01	01	01	01	01	01	01	01	01	01	01	**13**
Personalized recommendations	01	01	01	01	01	01	01	01	01	01	01	01	01	**13**
Total score	**13**	**15**	**17**	**15**	**07**	**17**	**13**	**11**	**13**	**15**	**15**	**17**	**18**	

The user profile and personalization category deals with more personal feelings of the OPAC user on the web, above table highlighted that, 'recent activities' topped with total score 44, 'saved searches' placed at second with total score 36 and 'saved items list' at third with total score 28 followed by remaining parameters total score 26 and 13 respectively except 'personalised web page'.

Automatic login facility is made available at all the library web OPACs but user should opt one time in the web OPAC, later dedicated system would remember the login credentials during next logins. It is still in manual nature not in automated wireless (contact less) browsing system in fact score set to 02 only.

Saved searches are group of search queries/terms we are looking, the LMS will alerts us whenever if new stock has been added that matches our terms to re-run the search in the OPAC. This is an efficient way to save time and typing on each search those we use often. But in the study it is recognised at nine library web OPACs, four libraries (recorded nil) IND, KOZ, LUC and RAN not yet implemented.

The option 'recent activities' is found in eleven library web OPACs, excluding IIM-Ahmadabad and IIM-Indore where user may not find their recent activities. The patrons can overview and edit their profile, created content at profile page in all the library OPACs selected for the study, but it is limited to personal name, login id and passwords only.

The 'saved items lists' is process of saving the source for later use; it is located at below the cart. Later user can also be clicked on it and navigate to read all the details presented about the source, the items placed in this list can be removed any time. The six libraries have made this option in the cart, but in the BAN, CAL, IND, LUC, ROH and SAM library web OPACs not given the provision in cart rather user can save the item (bibliographical information) in the external devices like; desktop, laptop and mobile phone. In case of IIM-Udaipur (secured score 04) user can save directly from (links) display results.

The 'personalized web page' is fully users search attitude and behaviour centric service on the web OPACs, it includes trending headlines, most site visitors names, homepage and other key landing pages are on the first touch point,

call-to-action (Read this/buy this/Grab this etc.), Alumni testimonials, product or plan features, featured blog posts and other content. This web 2.0 application featured OPACs not found in any IIM libraries.

The 'personalized email notice' facility is recent trend of sending alerts to user community based on their demographical details, email about trigger events of library, alerts based on users prospects and interests in the subjects areas, intimation on library existing technologies, visual representation of library products, resolving user grievances and complaints related to library services and activities etc. But presently IIM library web OPACs are offering only introductory mail for library membership and their transaction status alerts.

Personalized recommendations are given based on user search activities such as which items that have been frequently viewed, issued, renewed and time period and which customer is currently considering. So these are possible through large amounts of historical user data. But currently IIM library web OPACs are offering only new arrivals to the library, purchase requests, recently returned books, and their transaction status alerts.

Finally we may remark that under User profile and Personalization category automatic login, editing of created content, personalized web page, email notices and recommendations are not up to expectations of today's IT world user. It is recommended to all the IIM libraries for adopting the above mentioned factors into their OPACs.

5.3.7. Other trends

Table 5.25. Availability of other parameters

Parameters	AHM	BAN	BOD	CAL	IND	KAS	KOZ	LUC	RAN	ROH	SAM	TRI	UDA	Total Score
RSS feeds	00	04	00	04	04	04	00	00	00	00	00	04	04	**24**
Blogs	00	00	00	00	00	00	00	00	00	00	00	00	00	**00**
Downloadable e-media	02	02	02	02	02	02	02	02	02	02	02	02	02	**26**
Instant messages (patron-library staff)	02	02	02	02	02	02	02	02	02	02	02	02	02	**26**
Mobile catalogue	00	04	00	04	04	00	00	00	00	00	00	04	00	**16**
Total score	**04**	**12**	**04**	**12**	**12**	**08**	**04**	**04**	**04**	**04**	**04**	**12**	**08**	

The name itself describes that recent trend in web OPAC services to fulfil the various users' expectations, in different platforms, and different situations are the need of the hour. E-media and instant message facilities have received highest score 26 followed by RSS feeds category score 24, mobile catalogue parameter placed at third place with score 16.

As per the institutions are concerned IIM-Bangalore, Calcutta, Indore and Trichy somehow performed better, RSS feeds are found in only six libraries (BAN, CAL, IND, KAS,TRI and UDA) and seven libraries are not offering this.

The study revealed that e-media content materials are very limited and rare in numbers at the library holdings. Instant messages system also limited to transactions statuses. Only four IIMs (BAN, CAL, IND, and TRI) are having mobile application platform for the OPAC and Blogs are not created and maintained by any of the institute selected for the study.

Table 5.26. Comparison of OPAC 2.0 search features

Divisions	Max Score (N)	AHM	BAN	BOD	CAL	IND	KAS	KOZ	LUC	RAN	ROH	SAM	TRI	UDA	Cumulative Score
Basic parameters	20	08	10	14	09	10	05	13	06	05	07	07	07	10	111/200 (55..5)
Search parameters	16	13	14	13	13	13	13	13	13	08	11	13	13	13	160/163 (98.15)
Result page and navigation parameters	12	06	11	06	10	05	01	06	03	02	02	08	09	09	78/120 (65)
Enriched content and recommendations	32	19	13	16	12	12	06	14	08	02	07	11	13	17	150/320 (46.87)
User participation	16	03	00	03	00	00	00	00	00	00	03	03	03	02	17/160 (10.62)
User profile and Personalization	32	13	15	17	15	07	17	13	11	13	15	15	17	18	186/320 (58.12)
Other trends	20	04	12	04	12	12	08	04	04	04	04	04	12	08	92/200 (46)
	N=148	66 (44.59)	75 (50.67)	73 (49.32)	71 (47.97)	59 (39.18)	50 (33.78)	63 (42.56)	45 (30.40)	34 (22.97)	49 (33.10)	61 (41.21)	74 (50)	77 (52.02)	

Note: *Figures given in parentheses indicate the percentage.*

AHM=Ahmadabad, BAN=Bangalore, BOD=Bodh Gaya, CAL=Calcutta, IND=Indore, KAS=Kashipur, KOZ=Kozhikode, LUC=Lucknow, RAN=Ranchi, ROH-Rohtak, SAM=Sambalpur, TRI=Tiruchirappalli (Trichy), UDA=Udaipur.

The above table 5.26 describes about evaluation of OPAC 2.0 search features under 07 broad groups, of which 'search parameters' leads with highest cumulative score of 98.15%, followed by 'result page and navigation parameters', 'user profile and personalization' and 'basic parameters' with 65%, 58.12% and 55% respectively, while as, 'enriched content and recommendations' and 'others trends' are possessed only to 46%, 'user participation' recorded least cumulative score 10%.

The maximum score that each web OPAC receives is 148 with an average score of 33%. The IIM Udaipur receives highest score of 77 (52.2%), followed by OPAC of IIM Bangalore with 75 (50.67%) features IIM Trichy and Bodh Gaya with 74 (50%) 73 (49.32%) features respectively, while OPAC of IIM Ranchi receives the lowest score of 34 (22.97%) followed by IIM Lucknow 45 (30.40%).

The rating scale is designed to rank OPACs from 'below average' to 'excellent'. The ranking of the Web OPACs is developed specifically on the basis of four-point rating scale. The scale for the rating is as below mentioned:

i.   01-37 (below average)   ii.   38-75 (average)

iii.   76-113 (above average)   iv.   114 and above (excellent).

Table 5.26 discloses that IIM-Ranchi secured 'below average' 12 web OPACs (AHM, BAN, BOD, CAL, IND, KAS, KOZ, LUC, RAN, ROH, SAM, TRI) secured 'average' and only IIM-Udaipur achieved 'above average' and none 'excellent' as per four-point rating scale.

It is recommended to IIM-Lucknow, Ranchi and IIM-Rohtak work better towards achieve more scores and still remaining 08 IIMs should concentration on

customization all the categories into their web OPACs, except IIM-Udaipur and IIM-Bangalore, IIM-Bodh Gaya, IIM-Trichy and IIM-Calcutta comparatively performed better across the IIIMs, But user participation recorded nil at these libraries also.

Hypothesis Testing

Hypothesis 2 There is no significant difference in the availability of OPAC 2.0 search features among different IIMs.

Table 5.27. One-way ANOVA test results for testing H$_2$

Factor	F-value	p-value	Conclusions
IIMs	0.7517	0.696 (>0.05)	Hypothesis H$_2$ is accepted

There is no significant difference in in the availability of OPAC 2.0 search features among the different IIMs. (F=0.7517; p=0.696(>0.05 table 5.27) Therefore Hypothesis H$_2$ is accepted and research hypothesis is supported.

Research elevation

The implications of web 2.0 features in the web OPACs exactly started with the introduction of RSS feeds on the OPACs in the year 2000. Later, many researches were taken place and Web OPACs were renamed as OPAC 2.0, and online catalogues were treated as New Generation Catalogues. Yang, Sharon and Hofmann (2011) study urged that to incorporate 'federated search facility' in USA and Canada based libraries. The Mercun, Tanja and Zumer, Maja (2013) have described requirement of relevancy, clustering of results, personal recommendations and personal profile creation on web OPACs. Further

Chandrappa and Sunil (2017) have made quite clear that Enriched contents and recommendation, User participation, User profiles and Personalisation are not all introduced at Indian Universities.

In the present study also initiations of 'enriched content and recommendations' and 'others trends' are possessed only to 46%, 'User participation' recorded least cumulative score 10% among the IIMs which is highly worrying and IIM libraries have failed to cater even though the feature is available.

5.4. Part-C : Precision and Relative Recall of Web opac Search Results

The OCLC was analysed and suggests online catalogue out performs the card catalogue more in precision than in recall (Xu and Lancaster, 1998). The subject headings provide greater precision in subject search (Carstens and Buchanan, 2004). Some libraries in China have even adopted the tagging technology in their OPAC to find popular materials. However, those are not the controlled vocabulary and therefore may decrease the precision of search results (Guo and Huang, 2011).

Precision is the fraction of a search output that is relevant for a particular query. It is calculation, hence, requires knowledge of the relevant and non-relevant sites in the evaluated set of documents (Clarke and Willet, 1997). Hereby the researcher applied same formula on IIM library web OPACs search results through single search query. The precision of single search term (Appendix4) of common subject (Financial Management) for thirteen IIM library web OPACs is estimated through a formula discussed in methodology in detail (Chapter 3 see section 3.83) and reproduced briefly here.

Precision formula

$$\text{Precision} = \frac{\text{Sum of the scores of relevant documents retrieved by a web OPAC}}{\text{Total number of documents evaluated}}$$

The web OPAC results ranking analysis was carried out during 24-04-2021 to 26-04-2021from each web OPAC selected for the study, the researcher himself entered the search query 'financial management' at web OPAC search box browsed and analysed the initial 100 results displayed, the results with more relevant assigned 03 score, result with relevant assigned score 02, less relevant with score 01 and irrelevant 0, Finally sum of the scores are found and divided into evaluated sites. The same thing recorded and presented in below table;

Table 5.28. Web OPAC results display ranking

IIMs	Total no. of sites retrieved	No. of sites evaluated	More Relevant (3)	Relevant (2)	Less Relevant (1)	Irrelevant (0)	Sum of Scores
AHM	1980	100	38	40	17	05	211
BAN	1325	100	40	26	20	14	192
BOD	71	71	12	12	28	19	88
CAL	898	100	32	40	16	12	192
IND	691	100	39	36	14	11	203
KAS	100	100	20	15	45	20	135
KOZ	883	100	34	44	16	06	206
LUC	765	100	24	10	56	10	148
RAN	880	100	20	20	50	10	150
ROH	961	100	13	19	66	12	143
SAM	17	17	10	07	00	00	44
TRI	453	100	28	16	50	06	166
UDA	97	97	15	15	39	28	114
Total	**9121**	**1185**	**325**	**300**	**417**	**153**	**1992**

It is found from above table 5.28 that 9121 total sites are retrieved and 1185 sites are evaluated from them. 325 (27.42%) sites are more relevant, 300 (25.31%) sites are relevant, 417 (35.18%) sites are less relevant, and 153 (12.91%) sites are irrelevant.

Table 5.29. Web OPACs precision ranking

IIMs	Total no. of sites retrieved	No. of sites evaluated	More Relevant (3)	Relevant (2)	Less Relevant (1)	Irrelevant (0)	Precision
AHM	1980	100	38	40	17	05	2.11
BAN	1325	100	40	26	20	14	1.92
BOD	71	71	12	12	28	19	1.23
CAL	898	100	32	40	16	12	1.92
IND	691	100	39	36	14	11	2.03
KAS	100	100	20	15	45	20	1.35
KOZ	883	100	34	44	16	06	2.06
LUC	765	100	24	10	56	10	1.48
RAN	880	100	20	20	50	10	1.5
ROH	961	100	13	19	66	12	1.43
SAM	17	17	10	07	00	00	2.58
TRI	453	100	28	16	50	06	1.66
UDA	97	97	15	15	39	28	1.14
					Mean precision=22.41/13		**1.72**

The precision of thirteen web OPACs are tabulated and precision values corresponding to the results of single search query and the mean precision is shown at the end.
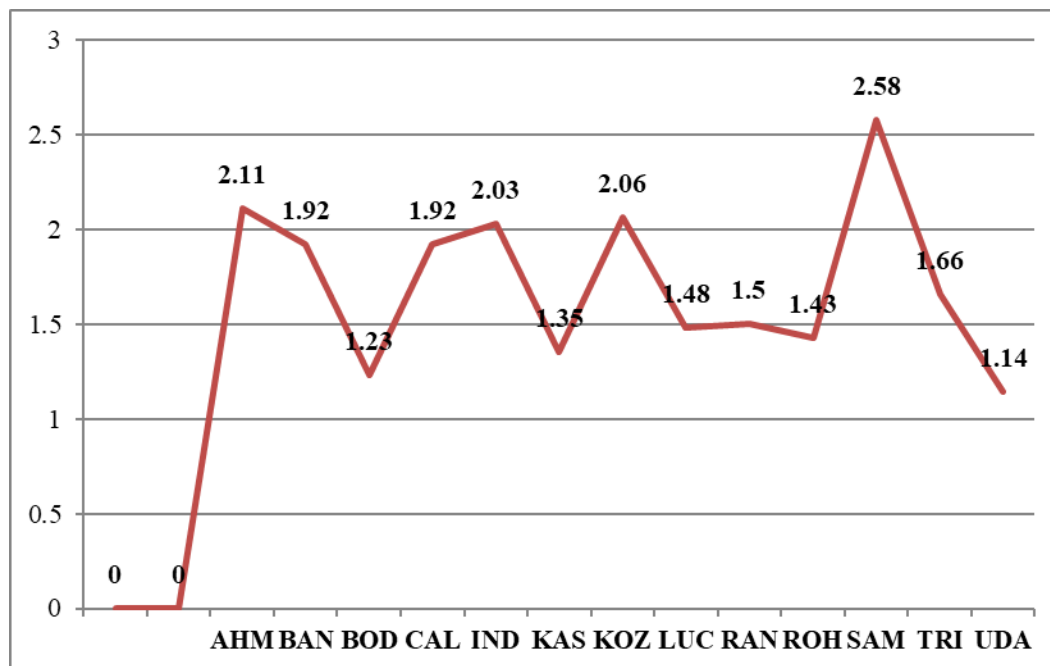
Graph 5.1. Precision of IIMs

Analysis of table 5.29 and graph 5.1 revealed that IIM-Sambalpur shows highest precision 2.58 followed by IIM-Ahmadabad with precision 2.11, IIM-Indore and IIM-Kozhikode shown precision 2.03 2.06 respectively. The study also highlighted that IIM-Bangalore and IIM-Calcutta secured same precision 1.92; also there is no big difference among remaining 06 IIMs (BOD, KAS, LUC, ROH, TRI and UDA) precision and IIM-Ranchi recorded least mean precision 1.5.

Relative recall of web OPACs

The recall is the ability of a retrieval system to obtain all or most of the relevant documents in the collection. The relative recall value is thus defined as :

$$\text{Relative Recall} = \frac{\text{Total number of documents retrieved by a web OPAC}}{\text{Sum of the documents retrieved by all thirteen web OPACs}}$$

Total number of results retrieved by web OPAC for single query and its relative recall of each IIM are presented in table 5.30.

Table 5.30. Relative recall of web OPACs

IIMs	Total numbers of documents retrieved by a web OPAC	Relative Recall
AHM	1980	21.70
BAN	1325	68.97
BOD	71	0.77
CAL	898	9.84
IND	691	7.57
KAS	100	1.09
KOZ	883	9.68
LUC	765	8.38
RAN	880	9.64
ROH	961	10.53
SAM	17	0.18
TRI	453	4.96
UDA	97	1.06
Sum of documents retrieved by all thirteen web OPACs	9121	154.37
	Mean RR=154.37/13	**11.87**
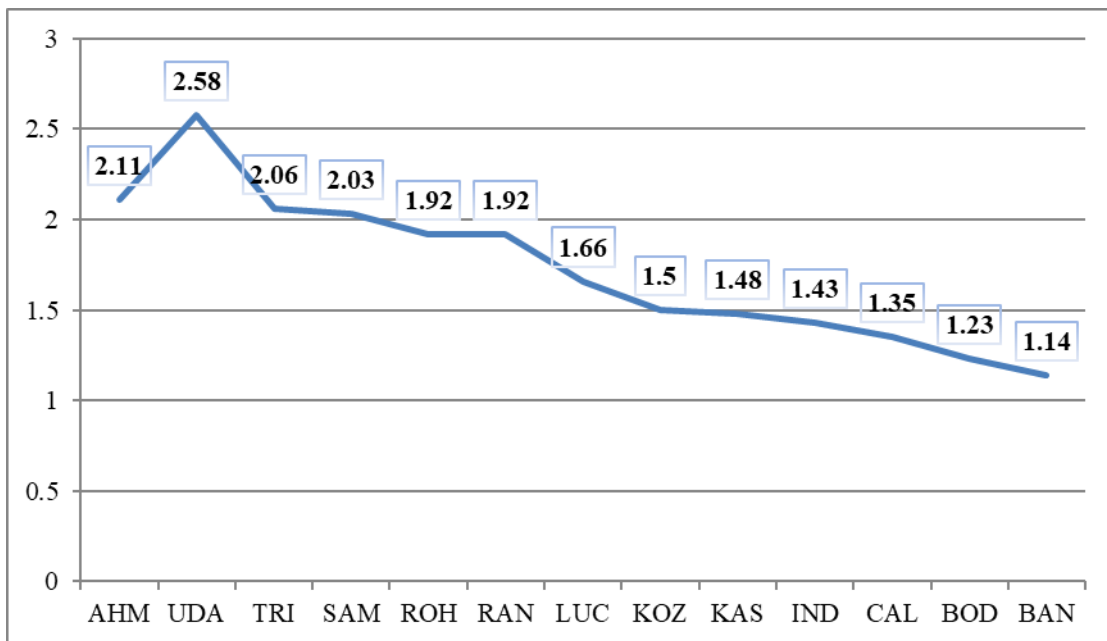
Graph 5.2. Relative recall of IIMs

Analysis of table 5.30 and graph 5.2 revealed that, IIM-Bangalore shows highest mean relative recall 68.97 followed by IIM-Ahmadabad with relative recall 21.70, IIM-Rohatak, IIM-Calcutta, IIM-Kozhikode and IIM-Ranchi are coming next place with above 09 relative recall. The study also highlighted that, IIM-Kashipur and IIM-Udaipur secured almost similar recall 1.09 and 1.06 respectively; also IIM-Bodh Gaya (0.77) and IIM-Sambalpur (0.18) have recorded least relative recall. The remaining IIMs; IND 7.57, KAS 1.09, LUC 8.38 and TRI 4.96 have secured individually.

Findings

It is clear from the above discussions IIM-Sambalpur which is received highest mean precision (2.58) has received least mean relative recall (0.18) The IIM-Indore and Kozhikode which are out perform in precision but not in mean relative recall, IIM-Ahmadabad performed well in both precision (2.11) mean relative recall (21.70) at second highest.

In case of IIM-Bangalore precision recorded 1.92 and taken highest mean relative recall 68.97. The IIM-Udaipur recorded precision 1.14 and 1.06 relative recall. There is a big difference among remaining IIMs especially in Calcutta, Kozhikode, Ranchi, and Rohtak are poor in precision but better in relative recall.

Hypothesis Testing

Hypothesis 3: There is no significant difference in the precision and relative recall of search results among different IIMs.

Since, the Mean precision and relative recall of across IIM web OPACs vary each other, the mean precision among the IIMs recorded 1.72 and mean relative recall is 11.82.

It shows that there is significant difference between both mean precision and relative recall, therefore Hypothesis H3 is rejected and research hypothesis is supported.

Research elevation

The Nabi and Shafi (2017) observed the precision and relative-recall of five web OPACs of Northern Indian Universities. The initial 20 outcomes relating to each 'search query' considered for assessment of relative recall and precision. The study exposes that 'mean relative recall' drops in a low range in relation to precision in all five universities. In the present study, it is appeared in opposite direction like; mean precision drops in low range against relative recall.

5.5. Part-D: Users Survey on Usage of Web OPACS

This part deals with the final segment of evaluation of web OPACs from the end users. As already stated the researcher used the online questionnaire tool for data gathering. Total 1500 questionnaires were received from the Google forms with great effort by the library staffs and somewhere representatives of students clubs. Finally researcher scrutinised incomplete questionnaires finalised to 1300 questionnaires where respondents responded 'Yes' to use of web OPACs of their library.

Do you use web OPAC?

Yes	No
1300	0

5.5.1. Demographic Information

This segment largely defines the demographic physiognomies of sample population. It comprises Age, Gender, Status, experience in using Web-OPAC and area of specialization they belong to.

5.5.1.1. Age of respondents

Table 5.31 indicates the age-wise distribution of respondents belonged to 13 IIMs of 1300 respondents 769 (59.2%) belonged to 21-30 years of age group followed by 31-40 years of age group (30.7%), 41-50 years of age group (10%). Only 02 (0.2%) respondents belonged to 51-60 years of age who are related to IIM-Ranchi.

Table 5.31. Age-wise distribution respondents

Institutes	Age							
	21-30		31-40		41-50		51-60	
	No.s	%	No.s	%	No.s	%	No.s	%
Ahmedabad	55	55.0	36	36.0	09	9.0	00	0.0
Calcutta	59	59.0	30	30.0	11	11.0	00	0.0
Indore	63	63.0	30	30.0	07	7.0	00	0.0
Kashipur	69	69.0	24	24.0	07	7.0	00	0.0
Kozhikode	53	53.0	45	45.0	02	2.0	00	0.0
Lucknow	55	55.0	38	38.0	07	7.0	00	0.0
Bodh Gaya	57	57.0	26	26.0	17	17.0	00	0.0
Ranchi	69	69.0	23	23.0	06	6.0	02	2.0
Rohtak	57	57.0	26	26.0	17	17.0	00	0.0
Sambalpur	57	57.0	25	25.0	18	18.0	00	0.0
Tiruchirappalli	47	47.0	39	39.0	14	14.0	00	0.0
Udaipur	63	63.0	28	28.0	09	9.0	00	0.0
Bengaluru	65	65.0	29	29.0	06	6.0	00	0.0
Total	769	59.2	399	30.7	130	10.0	02	0.2

5.5.1.2. Gender of respondents

Relating to gender-wise distribution of 1300 respondents from all IIMs table 5.32 indicates that the majority of respondents are male (64.80%) except IIM-Sambalpur and IIM-Bodh Gaya and (54%) female,

Table 5.32. Gender-wise distribution of respondents

Institutes	Gender			
	Male		Female	
	No.s	%	No.s	%
Ahmadabad	65	65.00	35	35.00
Calcutta	73	73.00	27	27.00
Indore	70	70.00	30	30.00
Kashipur	65	65.00	35	35.00
Kozhikode	69	69.00	31	31.00
Lucknow	63	63.00	37	37.00
Bodh Gaya	48	48.00	52	52.00
Ranchi	61	61.00	39	39.00
Rohtak	80	80.00	20	20.00
Sambalpur	46	46.00	54	54.00
Tiruchirappalli	72	72.00	28	28.00
Udaipur	68	68.00	32	32.00
Bengaluru	63	63.00	37	37.00
Total	843	64.80	457	35.20
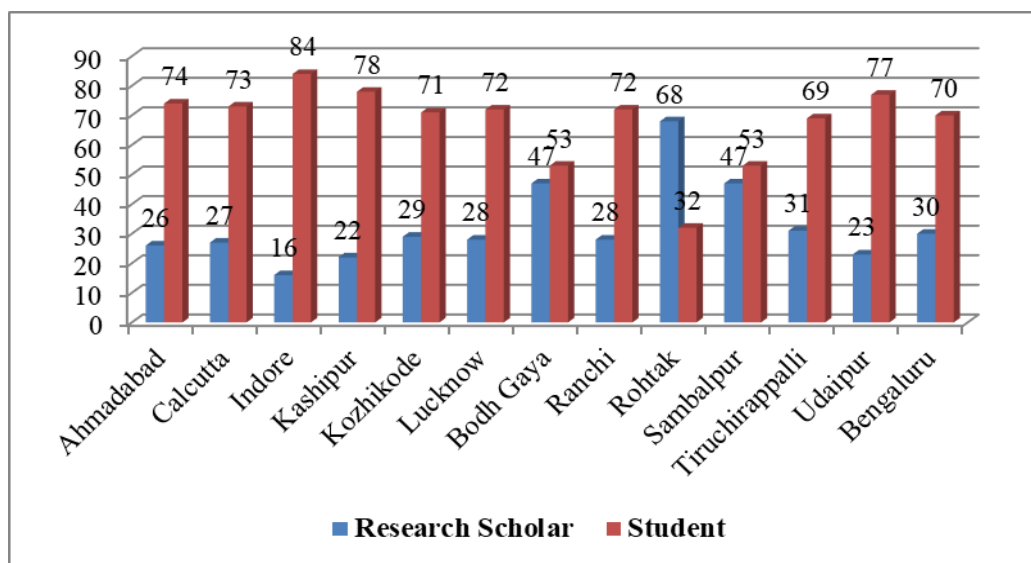
Figure 5.3. Gender distribution

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5.5.1.3. Status of respondents

The user-wise distribution of respondents is presented in table 5.33 of the 1300 respondents from all IIMs, 422 (32.46%) respondents are research scholars and 878 (67.54%) respondents are students. The study received the highest number of respondents from students.

Table 5.33. User-wise distribution of respondents

Institutes	Status			
	Research Scholar		Student	
	No.s	%	No.s	%
Ahmedabad	26	26.00	74	74.00
Calcutta	27	27.00	73	73.00
Indore	16	16.00	84	84.00
Kashipur	22	22.00	78	78.00
Kozhikode	29	28.00	71	71.00
Lucknow	28	28.00	72	72.00
Bodh Gaya	47	47.00	53	53.00
Ranchi	28	28.00	72	72.00
Rohtak	68	68.00	32	29.00
Sambalpur	47	47.00	53	53.00
Tiruchirappalli	31	31.00	69	69.00
Udaipur	23	23.00	77	77.00
Bengaluru	30	30.00	70	70.00
Total	422	32.46	878	67.54

Figure 5.4. Status distribution

5.5.1.4. Course or Department of respondents

The table 5.34 highlights about the respondents' selection from the courses or departments at 13 IIMs such as 25% from fellow program in management (FPM), 33.15% from PG program in management (PGPM), 8.48% from PG program in food, agriculture and business management (FABM), 8.69% from PG program in management for executives (PGPX), 9% from faculty development program (FDP), 12.61% from post graduate programs (PGP), 1.53% from e-post graduate program (EPGP) and management development program (MDP).
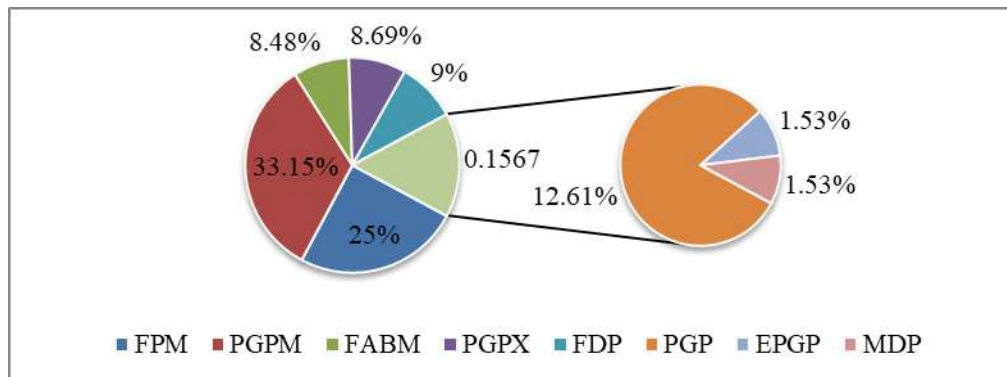
Graph 5.5. Course distribution

Table 5.34. Course/ Department-wise distribution of respondents

Institutes	Courses/ Departments								
	FPM	PGPM	FABM	PGP X	FD P	PGP	EPGP	MDP	Total
Ahmadabad	16	26	22	16	20	0	0	0	100
Calcutta	0	50	0	50	0	0	0	0	100
Indore	16	26	22	0	20	16	0	0	100
Kashipur	16	26	22	0	20	16	0	0	100
Kozhikode	21	22	0	0	17	0	20	20	100
Lucknow	50	50	0	0	0	0	0	0	100
Bodh Gaya	16	26	22	0	20	16	0	0	100
Rohtak	53	0	0	47	0	0	0	0	100
Ranchi	16	26	22	0	20	16	0	0	100
Sambalpur	0	50	0	0	0	50	0	0	100
Trichy	50	50	0	0	0	0	0	0	100
Udaipur	0	50	0	0	0	50	0	0	100
Bangalore	71	29	0	0	0	0	0	0	100
Total	325 (25%)	431 (33.15%)	110 (8.46%)	113 (8.69%)	117 (9%)	164 (12.61%)	20 (1.53%)	20 (1.53%)	1300

5.5.1.5. Respondents experience of using Web-OPAC

The table 5.35 depicts on experience of respondents on using the web-OPACs across all the IIMs. 643 (49.5%) respondents are the 1-3 years of experience and 385 (29.6%) respondents are having 4-6 years of experience about Web-OPAC, 248 (19.1%) respondents are 7-10 years, and only 24 (1.80%) respondents are having more than ten years of experience, especially in IIM-Lucknow and IIM-Ranchi respondents more i.e. (06%).

Table 5.35. Distribution of experience of using Web-OPAC

Institutes	OPAC usage experience							
	1-3 Years		4-6 Years		7-10 Years		Above 10 Years	
	No.s	%	No.s	%	No.s	%	No.s	%
Ahmedabad	51	51.00	28	28.00	21	21.00	00	0.00
Calcutta	55	55.00	27	27.00	13	13.00	05	5.00
Indore	41	41.00	32	32.00	27	27.00	00	0.00
Kashipur	53	53.00	21	21.00	26	26.00	00	0.00
Kozhikode	47	47.00	53	53.00	00	0.00	00	0.00
Lucknow	51	51.00	30	30.00	13	13.00	06	6.00
Bodh Gaya	48	48.00	21	21.00	31	31.00	00	0 .00
Ranchi	57	57.00	21	21.00	16	16.00	06	6.00
Rohtak	48	48.00	21	21.00	31	31.00	00	0.00
Sambalpur	36	36.00	38	38.00	25	25.00	01	1.00
Tiruchirappalli	37	37.00	41	41.00	22	22.00	00	0.00
Udaipur	45	45.00	31	31.00	21	21.00	03	3.00
Bengaluru	74	74.00	21	21.00	02	2.00	03	3.00
Total	643	49.5	385	29.6	248	19.1	24	1.80
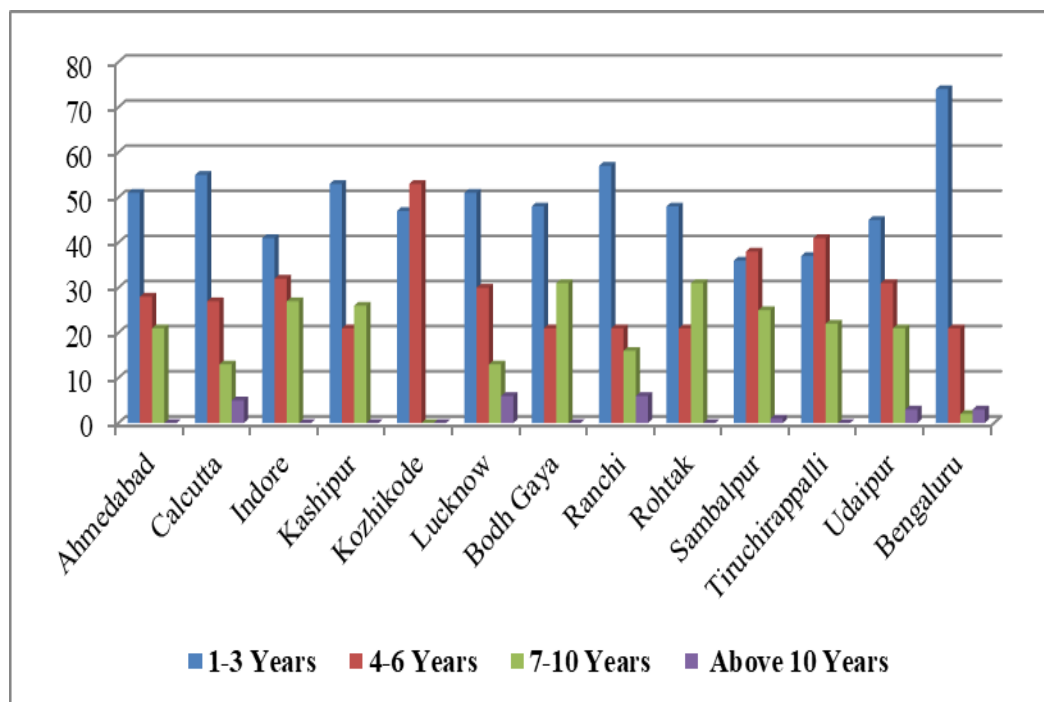
Figure 5.6. OPAC usage Experience

As per above data it is found that 21-30 years of age respondents are more across the IIMs, and Male 843 (64.80%) 457 female 35.20%,. 878 students (67.54%) 422 research scholars (32.46%) and also it is observed that, 643 (49.5%) respondents are having 1-3 years of experience on Web-OPAC.

5.5.2. Web OPAC search features awareness status among respondents

The question was asked to understand the respondents on various search features availability on their respective library web OPACs. The multiple choice question with three answers i.e. Yes, No and I don't know, respondents answered with any one at a time for each question. The following tables show briefly about respondents' awareness on search feature.

Table 5.36. User responses on search features

Sl. No	Search Features	Responses		
		Yes	No	I don't know
01	Content search	35.76	46.30	17.92
02	Proximity search	30.84	45.84	23.30
03	Call Number search	28.61	39.23	32.15
04	Basic search	70.69	16.69	12.06
05	Author search	74.07	15.84	09.06
06	Modify search	59.76	26.76	13.46
07	Keyword search	65.30	20.76	13.92
08	Federated search	21.61	51.07	27.30
09	Boolean search	65.07	21.00	13.92
10	Customized search	35.23	44.15	20.67
11	AACR2 Display format	18.53	46.84	34.61
12	MARC21 Display format	18.53	48.00	33.84
13	Common communication format	22.07	43.64	34.23
14	Links to catalogued items	29.69	37.06	32.61
15	Stop word removal	33.92	41.23	24.69
16	RSS Feeds	27.46	41.23	31.30
17	Stemming of words	31.30	41.76	26.92
18	E-mail options	40.00	37.92	22.07
19	Search save option	43.07	41.61	16.30
20	Links to bibliographic database	31.38	46.69	21.92
21	Links to search engines	25.69	52.69	21.61
22	Links to digital library	30.15	52.61	17.23

23	Multilingual catalogues	14.51	65.53	20.30
24	Current Awareness service	34.69	48.38	16.92
25	Book renewal option	39.07	38.61	22.30
26	Auto keyword generation	20.46	56.53	23.00
27	Links to other OPACs	11.23	64.92	23.84
28	Show similar resources	27.38	53.07	19.53
29	Subject Headings	30.76	39.00	30.23
30	ISBN,ISSN,DOI	55.84	30.69	13.46
31	Automatic Indexing	17.07	56.61	26.30
32	Hyperlinks to e-resources	26.76	47.15	26.07
33	Dublin core display format	19.23	48.46	32.30
34	Book reservation facility	36.53	42.30	21.15
35	Relevancy ranking of results	30.23	47.38	22.38
36	Classified catalogue code	16.06	17.84	35.53

Note: *Figures in the table indicate the percentage.*

It is clear from the study that more than 70% of respondents are aware of Basic Search, Author Search., and more than 30% of respondents don't know about different display formats like; AACR2, MARC21, CCF, Dublin Core display formats. Further more than 50% of respondents expressed that there is no links from web OPACs to Search engines, Digital Libraries, Auto keyword generation facility and Automatic Indexing facility, and 60% of respondents stated that non-availability of multi-lingual catalogues and links to other IIM web OPACs.

5.5.3. Usage Frequency

Table 5.37. Frequency of use web OPAC across IIM libraries

Institutes	How Frequently do you use?									
	Daily		Once a Week		2-3 times a week		Occasionally		Rarely	
Ahmedabad	08	8.00%	22	22.00%	29	29.00%	18	18.00%	23	23.00%
Calcutta	14	14.00%	30	30.00%	19	19.00%	17	17.00%	20	20.00%
Indore	06	6.00%	27	27.00%	24	24.00%	16	16.00%	27	27.00%
Kashipur	06	6.00%	25	25.00%	19	19.00%	15	15.00%	35	35.00%
Kozhikode	19	19.00%	19	19.00%	24	24.00%	16	16.00%	22	22.00%
Lucknow	12	12.00%	32	32.00%	16	16.00%	22	22.00%	18	18.00%
Bodh Gaya	36	36.00%	22	22.00%	17	17.00%	13	13.00%	12	12.00%
Ranchi	09	9.00%	18	18.00%	16	16.00%	29	29.00%	28	28.00%
Rohtak	48	48.00%	16	16.00%	15	15.00%	11	11.00%	10	10.00%
Sambalpur	02	2.00%	15	15.00%	19	19.00%	48	48.00%	16	16.00%
Tiruchirappalli	11	11.00%	15	15.00%	27	27.00%	22	22.00%	25	25.00%
Udaipur	11	11.00%	15	15.00%	22	22.00%	30	30.00%	22	22.00%
Bengaluru	10	10.00%	28	28.00%	20	20.00%	21	21.00%	21	21.00%
Total	192	14.80%	284	21.80%	267	20.50%	278	21.40%	279	21.50%

Summary of responses regarding the frequency of usage of web-OPAC by the respondents is presented in the table 5.37, majority 279 (21.50%) respondents have reported to be using web OPAC rarely while least 192 number of respondents (14.80%) have reported to be using the service daily. Of all respondents, 278 (21.4%) use it occasionally; 284 (21.8%) use it once a week, 267 (20.5%) respondents use the service 2-3 times a week.

The following hypotheses are tested to check for possible difference in usage of Web OPAC among different IIM libraries. To test this hypothesis One-way ANOVA is employed;

Hypothesis 4A: There is no significant difference in the usage of web OPAC among respondents from different IIMs.

Hypothesis 4B: There is no significant difference in the usage of web OPAC among respondents from different age groups.

Hypothesis 4C: There is no significant difference in the usage of web OPAC among respondents different gender.

Hypothesis 4D: There is no significant difference in the usage of web OPAC among respondents of different status.

Hypothesis 4E: There is no significant difference in the usage of web OPAC among respondents with different OPAC usage experience.

Table 5.38. Test results

Factors	F-Value	p-value	Conclusion.
IIMs	10.825	0.000 (<0.05)	Hypothesis H_{4A} is rejected.
Age	6.495	0.000 (<0.05)	Hypothesis H_{4B} is rejected.
OPAC usage experience	8.259	0.000 (<0.05)	Hypothesis H_{4E} is rejected.

Results and Discussions

- **IIMs H4A**

Since the p-value for the factor IIMs with an F-value 10.825 is 0.000 (<0.005) we reject H4A and conclude that "there is a significant difference in the usage of web OPAC among respondents from different IIMs".

To know exactly which two IIMs differ with respect to its respondents' usage of OPAC multiple comparison test (Games-Howell) is employed. Following points are noted from the below table 5.39 based on the mean difference of average usage of respondents from different IIMs.

Table 5.39. Multiple Comparison tests for testing H4A

(I) Institute	(J) Institutes	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Ahmedabad	Calcutta	.270	.185	.964	-.35	.89
	Indore	-.050	.181	1.000	-.66	.56
	Kashipur	-.220	.185	.993	-.84	.40
	Kozhikode	.230	.190	.992	-.41	.87
	Lucknow	.240	.183	.984	-.37	.85
	Bodh Gaya	.830[*]	.188	.001	.20	1.46
	Ranchi	-.230	.182	.989	-.84	.38
	Rohtak	1.070[*]	.188	.000	.44	1.70
	Sambalpur	-.350	.161	.606	-.89	.19
	Tiruchirapalli	-.090	.181	1.000	-.70	.52
	Udaipur	-.110	.180	1.000	-.71	.49
	Bengaluru	.110	.182	1.000	-.50	.72
Calcutta	Ahmedabad	-.270	.185	.964	-.89	.35
	Indore	-.320	.188	.890	-.95	.31

	Kashipur	-.490	.192	.345	-1.13	.15
	Kozhikode	-.040	.196	1.000	-.70	.62
	Lucknow	-.030	.190	1.000	-.67	.61
	Bodh Gaya	.560	.195	.181	-.09	1.21
	Ranchi	-.500	.189	.292	-1.13	.13
	Rohtak	.800*	.195	.004	.15	1.45
	Sambalpur	-.620*	.168	.018	-1.19	-.05
	Tiruchirapalli	-.360	.188	.788	-.99	.27
	Udaipur	-.380	.187	.711	-1.01	.25
	Bengaluru	-.160	.189	1.000	-.79	.47
Indore	Ahmedabad	.050	.181	1.000	-.56	.66
	Calcutta	.320	.188	.890	-.31	.95
	Kashipur	-.170	.187	.999	-.80	.46
	Kozhikode	.280	.192	.963	-.36	.92
	Lucknow	.290	.185	.938	-.33	.91
	Bodh Gaya	.880*	.191	.001	.24	1.52
	Ranchi	-.180	.184	.999	-.80	.44
	Rohtak	1.120*	.190	.000	.48	1.76
	Sambalpur	-.300	.163	.827	-.85	.25
	Tiruchirapalli	-.040	.184	1.000	-.66	.58
	Udaipur	-.060	.182	1.000	-.67	.55
	Bengaluru	.160	.184	1.000	-.46	.78
Kashipur	Ahmedabad	.220	.185	.993	-.40	.84
	Calcutta	.490	.192	.345	-.15	1.13
	Indore	.170	.187	.999	-.46	.80
	Kozhikode	.450	.196	.522	-.21	1.11
	Lucknow	.460	.189	.428	-.18	1.10
	Bodh Gaya	1.050*	.195	.000	.40	1.70
	Ranchi	-.010	.189	1.000	-.64	.62
	Rohtak	1.290*	.194	.000	.64	1.94
	Sambalpur	-.130	.168	1.000	-.69	.43

	Tiruchirapalli	.130	.188	1.000	-.50	.76
	Udaipur	.110	.186	1.000	-.52	.74
	Bengaluru	.330	.188	.871	-.30	.96
Kozhikode	Ahmedabad	-.230	.190	.992	-.87	.41
	Calcutta	.040	.196	1.000	-.62	.70
	Indore	-.280	.192	.963	-.92	.36
	Kashipur	-.450	.196	.522	-1.11	.21
	Lucknow	.010	.194	1.000	-.64	.66
	Bodh Gaya	.600	.199	.128	-.07	1.27
	Ranchi	-.460	.193	.463	-1.11	.19
	Rohtak	.840*	.199	.003	.17	1.51
	Sambalpur	-.580	.173	.051	-1.16	.00
	Tiruchirapalli	-.320	.193	.908	-.97	.33
	Udaipur	-.340	.191	.858	-.98	.30
	Bengaluru	-.120	.193	1.000	-.77	.53
Lucknow	Ahmedabad	-.240	.183	.984	-.85	.37
	Calcutta	.030	.190	1.000	-.61	.67
	Indore	-.290	.185	.938	-.91	.33
	Kashipur	-.460	.189	.428	-1.10	.18
	Kozhikode	-.010	.194	1.000	-.66	.64
	Bodh Gaya	.590	.193	.114	-.06	1.24
	Ranchi	-.470	.187	.369	-1.10	.16
	Rohtak	.830*	.193	.002	.18	1.48
	Sambalpur	-.590*	.166	.027	-1.15	-.03
	Tiruchirapalli	-.330	.186	.860	-.95	.29
	Udaipur	-.350	.185	.796	-.97	.27
	Bengaluru	-.130	.187	1.000	-.76	.50
Bodh Gaya	Ahmedabad	-.830*	.188	.001	-1.46	-.20
	Calcutta	-.560	.195	.181	-1.21	.09
	Indore	-.880*	.191	.001	-1.52	-.24
	Kashipur	-1.050*	.195	.000	-1.70	-.40

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	Kozhikode	-.600	.199	.128	-1.27	.07
	Lucknow	-.590	.193	.114	-1.24	.06
	Ranchi	-1.060[*]	.192	.000	-1.70	-.42
	Rohtak	.240	.198	.992	-.42	.90
	Sambalpur	-1.180[*]	.172	.000	-1.76	-.60
	Tiruchirapalli	-.920[*]	.192	.000	-1.56	-.28
	Udaipur	-.940[*]	.190	.000	-1.58	-.30
	Bengaluru	-.720[*]	.192	.014	-1.36	-.08
Ranchi	Ahmedabad	.230	.182	.989	-.38	.84
	Calcutta	.500	.189	.292	-.13	1.13
	Indore	.180	.184	.999	-.44	.80
	Kashipur	.010	.189	1.000	-.62	.64
	Kozhikode	.460	.193	.463	-.19	1.11
	Lucknow	.470	.187	.369	-.16	1.10
	Bodh Gaya	1.060[*]	.192	.000	.42	1.70
	Rohtak	1.300[*]	.192	.000	.66	1.94
	Sambalpur	-.120	.165	1.000	-.67	.43
	Tiruchirapalli	.140	.185	1.000	-.48	.76
	Udaipur	.120	.184	1.000	-.50	.74
	Bengaluru	.340	.186	.832	-.28	.96
Rohtak	Ahmedabad	-1.070[*]	.188	.000	-1.70	-.44
	Calcutta	-.800[*]	.195	.004	-1.45	-.15
	Indore	-1.120[*]	.190	.000	-1.76	-.48
	Kashipur	-1.290[*]	.194	.000	-1.94	-.64
	Kozhikode	-.840[*]	.199	.003	-1.51	-.17
	Lucknow	-.830[*]	.193	.002	-1.48	-.18
	Bodh Gaya	-.240	.198	.992	-.90	.42
	Ranchi	-1.300[*]	.192	.000	-1.94	-.66
	Sambalpur	-1.420[*]	.171	.000	-2.00	-.84
	Tiruchirappalli	-1.160[*]	.191	.000	-1.80	-.52
	Udaipur	-1.180[*]	.190	.000	-1.82	-.54
	Bengaluru	-.960[*]	.192	.000	-1.60	-.32

Sambalpur	Ahmedabad	.350	.161	.606	-.19	.89
	Calcutta	.620[*]	.168	.018	.05	1.19
	Indore	.300	.163	.827	-.25	.85
	Kashipur	.130	.168	1.000	-.43	.69
	Kozhikode	.580	.173	.051	.00	1.16
	Lucknow	.590[*]	.166	.027	.03	1.15
	Bodh Gaya	1.180[*]	.172	.000	.60	1.76
	Ranchi	.120	.165	1.000	-.43	.67
	Rohtak	1.420[*]	.171	.000	.84	2.00
	Tiruchirappalli	.260	.164	.933	-.29	.81
	Udaipur	.240	.162	.959	-.31	.79
	Bengaluru	.460	.165	.215	-.09	1.01
Tiruchirapalli	Ahmedabad	.090	.181	1.000	-.52	.70
	Calcutta	.360	.188	.788	-.27	.99
	Indore	.040	.184	1.000	-.58	.66
	Kashipur	-.130	.188	1.000	-.76	.50
	Kozhikode	.320	.193	.908	-.33	.97
	Lucknow	.330	.186	.860	-.29	.95
	Bodh Gaya	.920[*]	.192	.000	.28	1.56
	Ranchi	-.140	.185	1.000	-.76	.48
	Rohtak	1.160[*]	.191	.000	.52	1.80
	Sambalpur	-.260	.164	.933	-.81	.29
	Udaipur	-.020	.183	1.000	-.63	.59
	Bengaluru	.200	.185	.997	-.42	.82
Udaipur	Ahmedabad	.110	.180	1.000	-.49	.71
	Calcutta	.380	.187	.711	-.25	1.01
	Indore	.060	.182	1.000	-.55	.67
	Kashipur	-.110	.186	1.000	-.74	.52
	Kozhikode	.340	.191	.858	-.30	.98
	Lucknow	.350	.185	.796	-.27	.97
	Bodh Gaya	.940[*]	.190	.000	.30	1.58

	Ranchi	-.120	.184	1.000	-.74	.50
	Rohtak	1.180*	.190	.000	.54	1.82
	Sambalpur	-.240	.162	.959	-.79	.31
	Tiruchirapalli	.020	.183	1.000	-.59	.63
	Bengaluru	.220	.184	.993	-.40	.84
Bengaluru	Ahmedabad	-.110	.182	1.000	-.72	.50
	Calcutta	.160	.189	1.000	-.47	.79
	Indore	-.160	.184	1.000	-.78	.46
	Kashipur	-.330	.188	.871	-.96	.30
	Kozhikode	.120	.193	1.000	-.53	.77
	Lucknow	.130	.187	1.000	-.50	.76
	Bodh Gaya	.720*	.192	.014	.08	1.36
	Ranchi	-.340	.186	.832	-.96	.28
	Rohtak	.960*	.192	.000	.32	1.60
	Sambalpur	-.460	.165	.215	-1.01	.09
	Tiruchirapalli	-.200	.185	.997	-.82	.42
	Udaipur	-.220	.184	.993	-.84	.40

* indicates mean difference is significant at the 0.05 level.

1.   Average usage of web OPAC in IIM-Ahmedabad is significantly larger than those of IIM-Bodh Gaya and IIM-Rohtak while there is no difference in average usage with respect to remaining IIMs.

2.   Average usage of web OPAC in IIM-Calcutta is significantly greater than that of IIM-Rohtak and is significantly lesser than that of IIM-Sambalpur while there is no difference in average usage with respect to remaining IIMs.

3.   Average usage of web OPAC in IIM-Indore is significantly larger than those of IIM Bodh Gaya and IIM-Rohtak while there is no difference in average usage with respect to remaining IIMs.

4.   Average usage of web OPAC in IIM-Kashipur is significantly larger than those of IIM-Bodh Gaya and IIM-Rohtak while there is no difference in average usage with respect to remaining IIMs.

5.   Average usage of web OPAC in IIM-Kozhikode is significantly greater than that of IIM-Rohtak and is significantly lesser than that of IIM-Sambalpur while there is no difference in average usage with respect to remaining IIMs.

6.   Average usage of web OPAC in IIM-Lucknow is significantly greater than that of IIM-Rohtak and is significantly lesser than that of IIM-Sambalpur while there is no difference in average usage with respect to remaining IIMs.

7.   Average usage of web OPAC in IIM-Bodh Gaya is significantly lesser than those of IIM Ahmadabad, IIM Indore, IIM-Kashipur, IIM-Ranchi, IIM-Sambalpur, IIM Tiruchirappalli and IIM-Udaipur.

8.   Average usage of web OPAC in IIM-Ranchi is significantly larger than those of IIM-Bodh Gaya and IIM-Rohtak while there is no difference in average usage with respect to remaining IIMs.

9.   Average usage of web OPAC in IIM-Rohtak is significantly lesser than all other IIMs except for IIM Bodh Gaya where the average usage of OPAC is similar to IIM Rohtak.

10. Average usage of web OPAC in IIM-Sambalpur is significantly larger than those of IIM Calcutta, IIM Kozhikode, IIM Lucknow, IIM-Bodh Gaya and IIM-Rohtak while there is no difference in average usage with respect to remaining IIMs.

11. Average usage of web OPAC in IIM-Tiruchirappalli is significantly larger than those of IIM-Bodh Gaya and IIM-Rohtak while there is no difference in average usage with respect to remaining IIMs.

12. Average usage of web OPAC in IIM-Udaipur is significantly larger than those of IIM-Bodh Gaya and IIM-Rohtak while there is no difference in average usage with respect to remaining IIMs.

13. Average usage of web OPAC in IIM-Bengaluru is significantly larger than those of IIM-Bodh Gaya and IIM-Rohtak while there is no difference in average usage with respect to remaining IIMs.

- **Age groups H4B**

    Since the F-value for the factor in age groups is 6.495 with a p-value of 0.000 (<0.05), we may conclude that 'there is no significant difference in the usage of web OPAC among respondents from different age groups'. Following table 5.40 with results for multiple comparison test (Games-Howell in this case) reveals that respondents belonging to age group 31-40 on an average use more web OPAC as compared to other age groups.

Table 5.40. Multiple comparison tests for testing H4B

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
21-30	31-40	-.351*	.082	.000	-.56	-.14
	41-50	-.292	.134	.132	-.64	.06
	51-60	-.008	2.001	1.000	-46.29	46.28
31-40	21-30	.351*	.082	.000	.14	.56
	41-50	.059	.141	.976	-.31	.42
	51-60	.343	2.001	.997	-45.84	46.53
41-50	21-30	.292	.134	.132	-.06	.64
	31-40	-.059	.141	.976	-.42	.31
	51-60	.285	2.004	.998	-45.31	45.88
51-60	21-30	.008	2.001	1.000	-46.28	46.29
	31-40	-.343	2.001	.997	-46.53	45.84
	41-50	-.285	2.004	.998	-45.88	45.31

*. The mean difference is significant at the 0.05 level.

- **OPAC usage experience H1E**

Again, since the F-value for OPAC usage experience factor is 8.259 with a p-value of 0.000 (<0.05) we may reject hypothesis H4E and conclude that "there is a significant difference in the usage of web OPAC among respondents with different OPAC usage experience". And based on the multiple comparison tests table 5.41 below we find that average usage of web OPAC of respondents with an experience of 4-6 years and 7-10 years is more than those with an experience of 1-3 years, It means respondents with more experience use more web OPAC.

Table 5.41. Multiple Comparison tests for testing H4E

(I) OPAC usage experience	(J) OPAC usage experience	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1-3 Years	4-6 Years	-.411[*]	.085	.000	-.63	-.19
	7-10 Years	-.271[*]	.104	.048	-.54	.00
	Above 10 years	-.470	.281	.358	-1.24	.30
4-6 Years	1-3 Years	.411[*]	.085	.000	.19	.63
	7-10 Years	.141	.111	.583	-.15	.43
	Above 10 years	-.058	.283	.997	-.84	.72
7-10 Years	1-3 Years	.271[*]	.104	.048	.00	.54
	4-6 Years	-.141	.111	.583	-.43	.15
	Above 10 years	-.199	.289	.901	-.99	.59
Above 10 years	1-3 Years	.470	.281	.358	-.30	1.24
	4-6 Years	.058	.283	.997	-.72	.84
	7-10 Years	.199	.289	.901	-.59	.99

*. The mean difference is significant at the 0.05 level.

For testing hypotheses H4C and H4D T-test is employed. The results of the test are as presented below table 5.42.

Table 5.42. T-test results for testing H4C and H4D

Factor	t-value	p-value	Conclusion
Gender	-1.572	0.116 (>0.05)	Hypothesis H$_{4C}$ is accepted.
Status	-0.733	0.464 (>0.05)	Hypothesis H$_{4D}$ is accepted.

- **Gender H4C**

Since the t-value for the factor gender is -1.572 with a p-value of 0.116 (>0.05), we accept the hypothesis H4C and conclude that 'there is no significant difference in the usage of web OPAC among respondents different gender'. That is average usage of web OPAC does not differ with respect to gender as user.

- **Status H4D**

    Similarly the t-value for the factor status of the respondent is -0.733 with a p-value of 0.464 (>0.05) we accept the hypothesis H4D and conclude that 'there is no significant difference in the usage of web OPAC among respondents different status'. Hence it is arguable that use of web OPAC does not differ among students and research scholars.

5.5.3.1. Summary

In case of IIMs there is difference while using the web-OPAC across all the institutions taken for the study, Age group 31-40 use 'an average' as compared to other age groups and experience-wise usage recorded that respondents with more experience use more web OPAC especially 4-6 years' experience and 7-10 years experienced respondents. But Gender and status categories don't make any difference in usage.

5.5.4. Respondents search behaviour

There questions were asked in the questionnaire to understand the respondents search behaviour such as Devices used for accessing, preferable places and methods for accessing Web-OPAC; The related data is presented in the following tables.

5.5.4.1. Web-OPAC access channels

The below table 5.53 shows that IIM-Ahmadabad, IIM-Calcutta, IIM-Indore, IIM-Ranchi, IIM-Udaipur and IIM-Sambalpur, IIM-Bangalore respondents used all the devices more compare to other IIMs. Laptop highly used among the respondents from IIM-Kashipur, IIM-Kozhikode, IIM-Bodh Gaya, IIM-Rohtak, and IIM-Trichy, IIM-Bangalore.

In case of IIM-Lucknow Mobile phone used more and iPad/iPod/iPhone are used moderately. It is also observed that Desktop is used least by all the respondents from both places hostel and home.

Table 5.43. Channels used for accessing library OPAC

Institutes	Which device do you use?											
	Mobile Phone		iPad/ iPod/ iPhone		Laptop		Desktop at Hostel		Desktop at Home		Above all	
Ahmedabad	08	8.00%	16	16.00%	25	25.00%	13	13.00%	09	9.00%	29	29.00%
Calcutta	09	9.00%	18	18.00%	18	18.00%	13	13.00%	05	5.00%	37	37.00%
Indore	06	6.00%	28	28.00%	22	22.00%	07	7.00%	06	6.00%	31	31.00%
Kashipur	06	6.00%	7	7.00%	44	44.00%	07	7.00%	06	6.00%	30	30.00%
Kozhikode	16	16.00%	16	16.00%	38	38.00%	22	22.00%	08	8.00%	0	0.00%
Lucknow	32	32.00%	21	21.00%	18	18.00%	07	7.00%	05	5.00%	17	17.00%
Bodh Gaya	05	5.00%	6	6.00%	61	61.00%	07	7.00%	04	4.00%	17	17.00%
Ranchi	24	24.00%	13	13.00%	14	14.00%	15	15.00%	09	9.00%	25	25.00%
Rohtak	38	38.00%	6	6.00%	41	41.00%	01	1.00%	0	0.00%	14	14.00%
Sambalpur	10	10.00%	18	18.00%	9	9.00%	02	2.00%	02	2.00%	59	59.00%
Tiruchirappalli	12	12.00%	16	16.00%	38	38.00%	21	21.00%	13	13.00%	0	0.00%
Udaipur	10	10.00%	21	21.00%	10	10.00%	17	17.00%	15	15.00%	27	27.00%
Bengaluru	0	0.00%	0	0.00%	55	55.00%	07	7.00%	0	0.00%	38	38.00%
Total	176	13.50%	186	14.30%	393	30.20%	139	10.70%	82	6.30%	324	24.90%
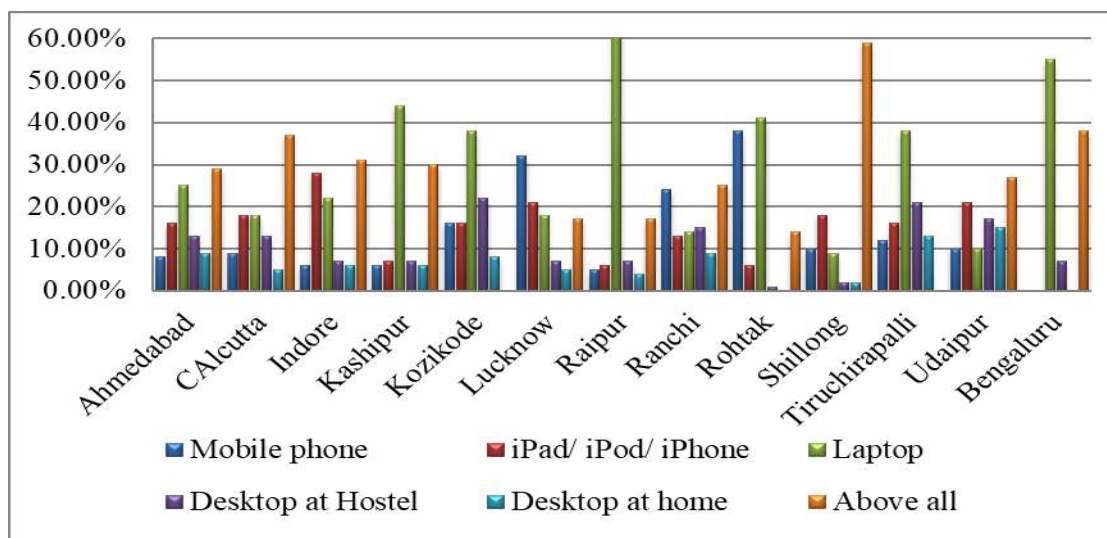
Figure 5.7. Devices for accessing Web-OPAC

5.5.4.2. Preferable Places to access Web-OPAC

The below table 5.44 indicates that preferable places for accessing the Web-OPACs among the IIMs. It is found that Campus is most preferable place for all the respondents of all the institutes. The Workplace is considered as second option except IIM-Kashipur and IIM-Rohtak they prefer other places which includes hostel, cafeteria, and lawns etc.

Table 5.44. Preferable places for access library web OPAC

Institute	Which place do you Prefer?							
	Home		Workplace		Campus		Others	
	No.s	%	No.s	%	No.s	%	No.s	%
Ahmedabad	11	11.00	34	34.00	51	51.00	04	4.00
Calcutta	10	10.00	21	21.00	66	66.00	03	3.00
Indore	15	15.00	22	22.00	51	51.00	12	12.00
Kashipur	13	13.00	12	12.00	39	39.00	36	36.00
Kozhikode	19	19.00	27	27.00	54	54.00	0	0.00
Lucknow	16	16.00	26	26.00	57	57.00	01	1.00
Bodh Gaya	03	3.00	12	12.00	82	82.00	03	3.00
Ranchi	13	13.00	25	25.00	61	61.00	01	1.00

Rohtak	03	3.00	11	11.00	30	30.00	56	56.00
Sambalpur	26	26.00	22	22.00	52	52.00	00	0.00
Tiruchirappalli	19	19.00	32	32.00	45	45.00	04	4.00
Udaipur	26	26.00	22	22.00	52	52.00	00	0.00
Bengaluru	27	27.00	27	27.00	46	46.00	00	0.00
Total	201	15.50	293	22.50	686	52.80	120	9.20
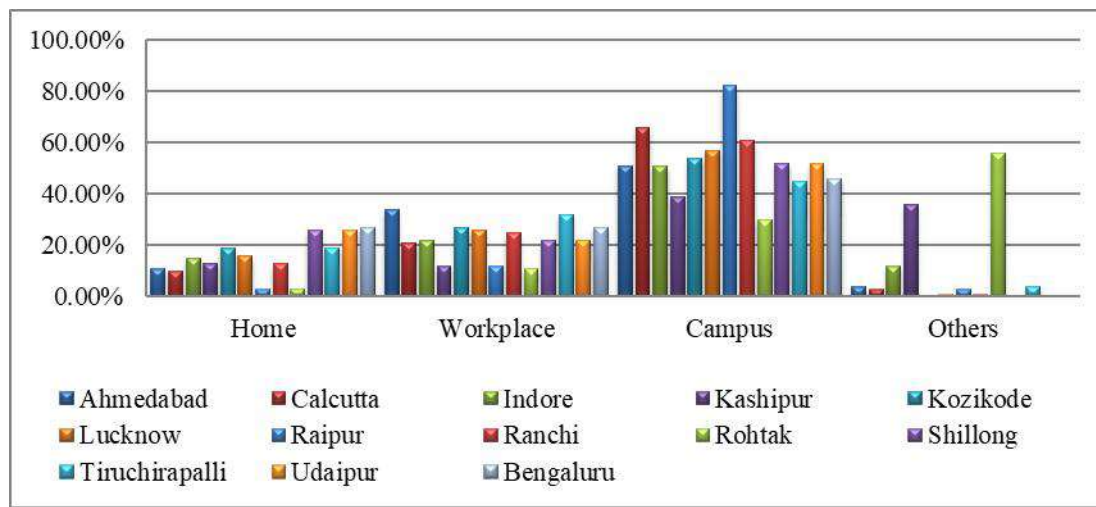
Figure 5.8. Places for accessing Web-OPAC

5.5.4.3. Leads to start using web OPAC

It is observed from the below table 5.45 that majority of the respondents at IIM-Ahmadabad had taken the leads from library orientation 24% and friends guidance 23%. In case of IIM-Calcutta library staff guidance 31% and Library Orientation 27%. Majority (37%) from IIM-Indore and IIM-Bodh Gaya respondents reported trial and error method. Kashipur 34%, Ranchi 30% and Rohtak 44% respondents started accessing through instruction available on the OPAC screen. Guidance from friends and colleague is not that much effectively practicable in IIM-Sambalpur, Udaipur and IIM-Bangalore.

Table 5.45. Leads to start using web OPAC

Institutes	Leads to search web OPAC											
	Library Staff Guidance		Library Orientation		Colleague Guidance		Friends Guidance		Using Tips on screen		Trial & Error	
Ahmedabad	16	16.00%	24	24.00%	04	4.00%	23	23.00%	14	14.00%	19	19.00%
Calcutta	31	31.00%	27	27.00%	04	4.00%	11	11.00%	14	14.00%	13	13.00%
Indore	12	12.00%	17	17.00%	03	3.00%	22	22.00%	09	9.00%	37	37.00%
Kashipur	11	11.00%	14	14.00%	03	3.00%	17	17.00%	34	34.00%	21	21.00%
Kozhikode	14	14.00%	16	16.00%	07	7.00%	18	18.00%	19	19.00%	26	26.00%
Lucknow	15	15.00%	17	17.00%	04	4.00%	16	16.00%	22	22.00%	26	26.00%
Bodh Gaya	09	9.00%	10	10.00%	02	2.00%	15	15.00%	27	27.00%	37	37.00%
Ranchi	06	6.00%	20	20.00%	06	6.00%	10	10.00%	30	30.00%	28	28.00%
Rohtak	09	9.00%	10	10.00%	02	2.00%	15	15.00%	44	44.00%	20	20.00%
Sambalpur	11	11.00%	21	21.00%	15	15.00%	20	20.00%	15	15.00%	18	18.00%
Tiruchirappalli	17	17.00%	18	18.00%	09	9.00%	15	15.00%	21	21.00%	20	20.00%
Udaipur	11	11.00%	21	21.00%	15	15.00%	20	20.00%	15	15.00%	18	18.00%
Bengaluru	24	24.00%	11	11.00%	12	12.00%	17	17.00%	19	19.00%	17	17.00%
Total	186	14.30%	226	17.40%	86	6.60%	219	16.80%	283	21.80%	300	23.10%
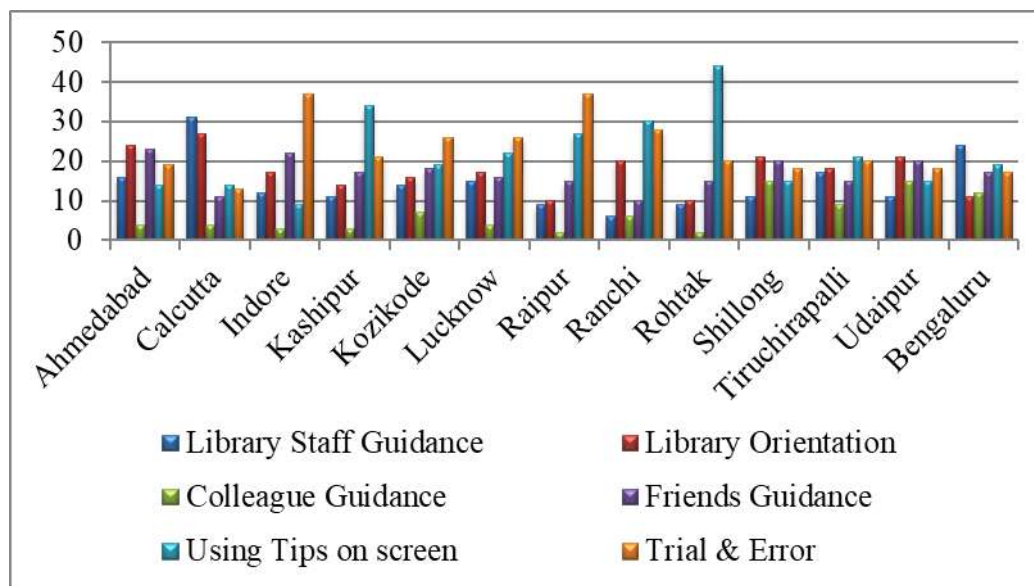
Figure 5.9. Leads to start using web OPAC

5.5.4.4. Summary

It was tried to expose the respondents search behaviour with asking the questions regarding the devices they use for accessing the Web-OPACs and finding the current trend of tools used for searching the library materials, it is found that shifting from the desktops to Laptops.

Next we raised the question on preferable place for the patrons to focus on the infrastructure facilities available and range of benefit into user community towards their academic activities, study shows that campus is foremost preferable place and helped the respondents' lot directly and indirectly.

Further there was question on how they started into Web-OPAC usage, to know inspirations beyond the initial approach towards Web-OPAC. It is revealed that majorly patrons started with the available instructions on the OPAC screen, and many are with trial and error method, herby we could rethink our orientation program and other strategies.

5.5.5. Respondents Search Purposes

The researcher tried to understand the purposes beyond the Web-OPAC search activities among the respondents from different IIMs, the results are shown in the graphs below are individual institution wise;
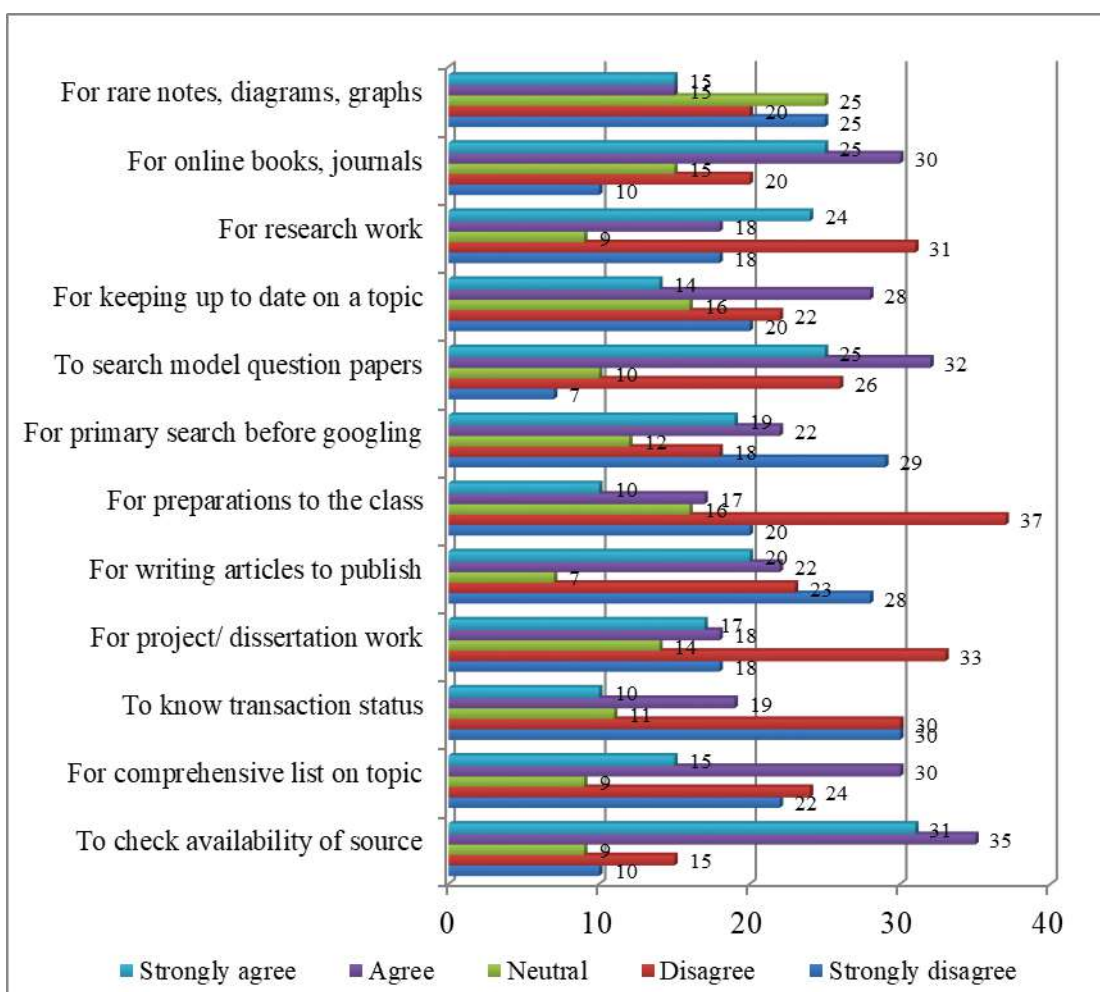
Figure 5.10. Purposes of IIM-Ahmadabad respondents

The graph 5.10 explains that 35.0% of respondents agree with the access the Web-OPAC of their library is for 'To check availability of source' and 'for comprehensive list on topic' is 30% and also 37.0% of respondents denied for 'preparation for the class' and 33.0% 'for project/ dissertation work' purpose.

The IIM-Ahmedabad should focus on denied purposes such as 'For writing articles to publish 28.0%' and 'For primary search before googling 29.0%', to make Web-OPAC more user friendly.
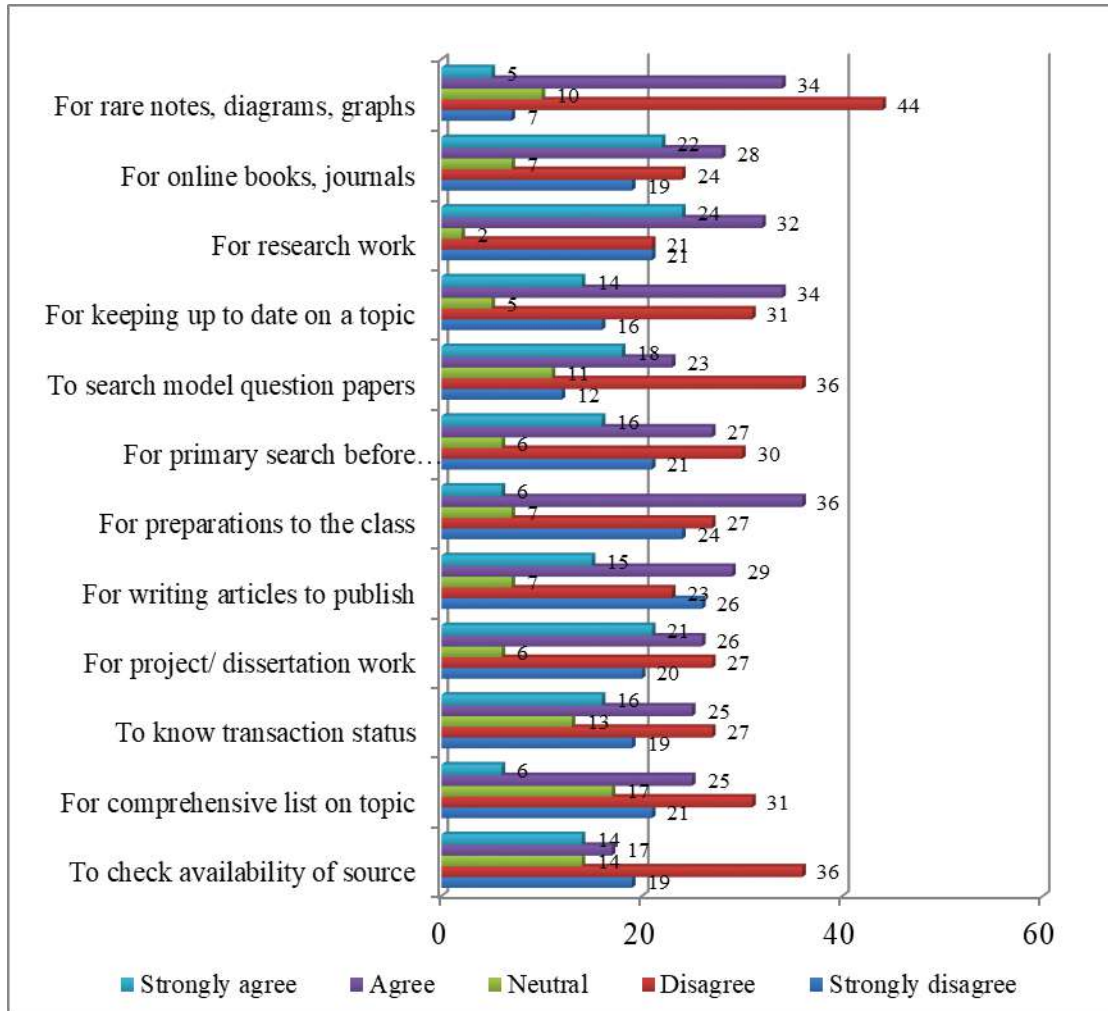
Figure 5.11. Purposes of IIM-Calcutta respondents

The above graph 5.11 depicts that in IIM-Calcutta 36% of respondents access for the 'for preparations to the class', 34.0% of users for 'For keeping up to date on a topic' and 32.0% for research work. But 36.0% of respondents denied for check availability of source, here is the IIM-Calcutta is to address the issue to utilise its other services also.

29.0% of respondents are using the Web-OPAC for the writing the articles to publish and for online books, journals 28.0%, but 44.0% of respondents disagree with this purpose. Hence, major objectives of the OPAC are not fulfilled such as for knowing the availability of source, comprehensive list on a topic and their transaction status. These are the areas IIM-Calcutta should focus to enhance these purposes among the patron community.
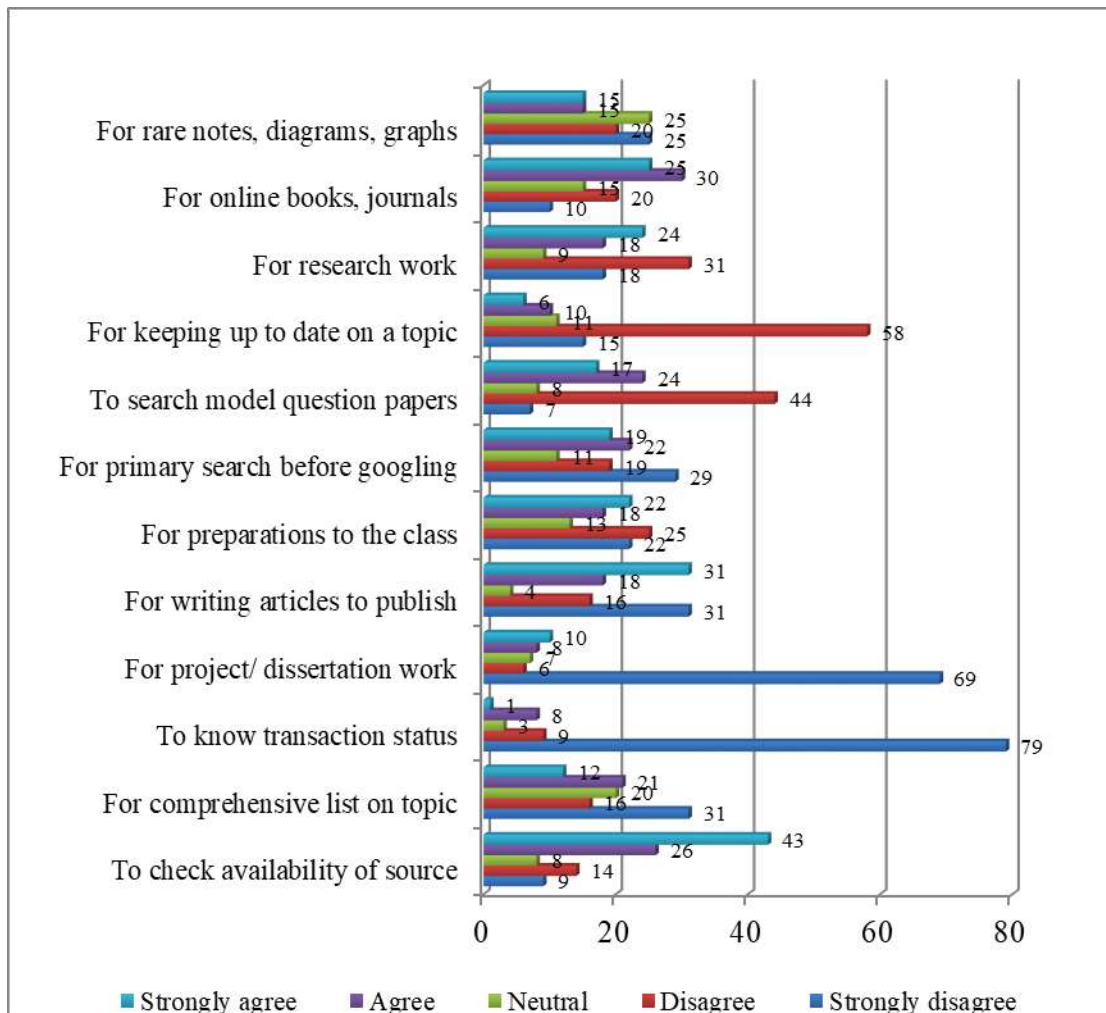
Figure 5.12. Purposes of IIM-Indore respondents

43.0% of respondents strongly agree with 'To check availability of source', 31.0% of respondents are strongly disagree with the purpose 'For comprehensive list on topic', 79.0% with 'To know transaction statuses and 69.0% 'For project/

dissertation work'. It is also found that only 24.0% of respondents strongly agree with 'For research work' and 25.0% for 'For online books, journals'.

Here it is clear from graph 5.12 that, IIM-Indore respondents using the Web-OPAC majorly for 'to check availability of source' remaining purposes are least used. IIM-Indore also like IIM-Calcutta should concentrate other features such as 'to know transaction status', for comprehensive list, and 'For research works' especially, making arrangement for old question papers and before going to google should make them to use Web-OPAC.
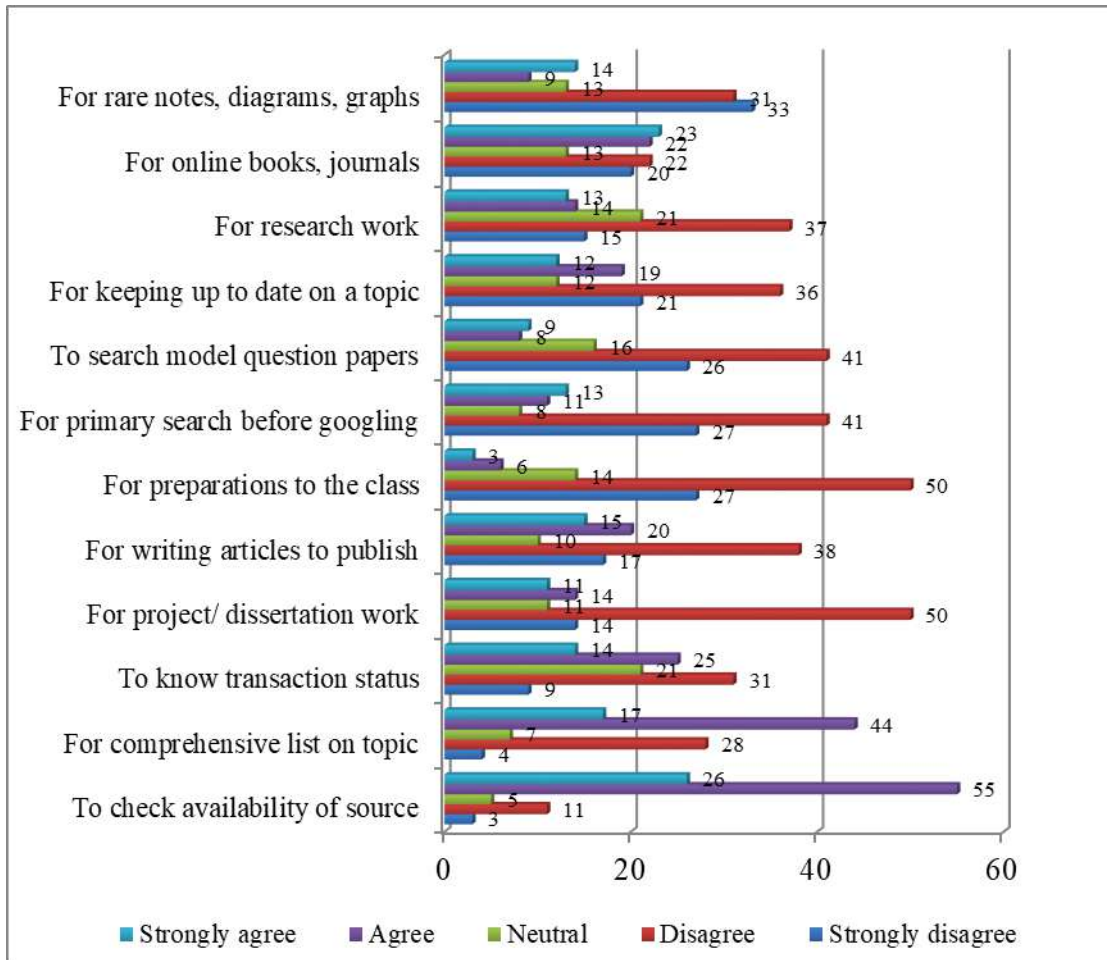
Figure 5.13. Purposes of IIM-Kashipur respondents

The graph 5.13 shows that 55.0% of respondents agree with 'To check availability of source', 44.0% of respondents 'for comprehensive list on topic' 22.0% of respondents 'for online books, journals' and to know transaction status 25.0%. In the same way 50.0% of respondents are disagree with the purposes like 'For project/ dissertation work' and 'For preparations to the classes. And 41.0% of respondents disagree with 'For primary search before googling, to search model question papers.

Here also we can find that, common challenges to IIM-Kashipur like above IIMs, to incorporate the challenges are being faced to make more user friendly to effective use of web-OPAC for research work which was denied by the 37.0% of respondents.
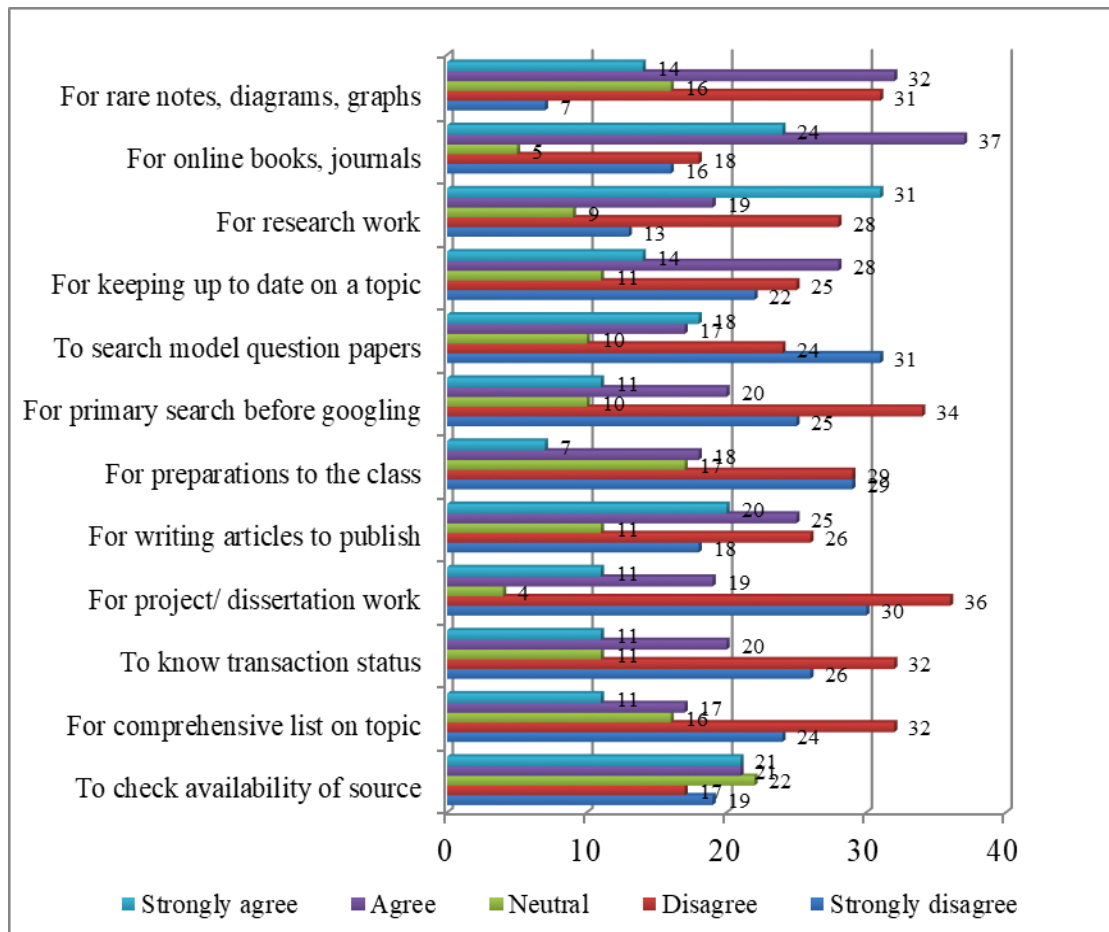
Figure 5.14. Purposes of IIM-Kozhikode respondents

The graph 5.14 indicates the results of IIM-Kozhikode responses 55.0% of respondents agree with 'To check availability of source', 44.0% of respondents 'for comprehensive list on topic' and to know transaction status 25.0% respondents. 23.0% of respondents strongly agree 'for online books, Journals access. 50.0% of respondents are disagreeing with the purposes like 'For project/ dissertation work' and 'For preparations to the classes. And 41.0% of respondents disagree with 'For primary search before googling, to search model question papers. IIM-Kozhikode also has got quite similar responses as IIM-Kashipur received from the respondents; we can say that IIM-Kozhikode respondents majorly use the Web-OPAC for the source availability, transaction status and online databases and resources. The research work related material may be lagging that reason it was denied by the respondents.
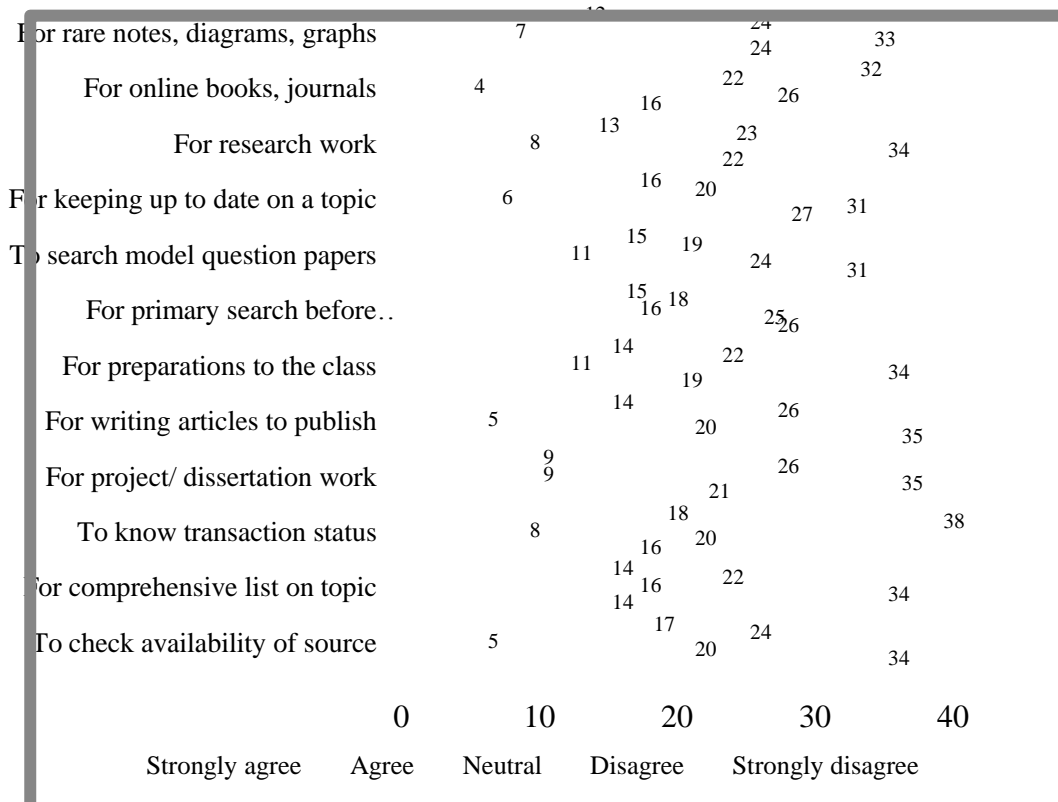
Figure 5.15. Purposes of IIM-Lucknow respondents

The above graph 5.15 highlights the results of IIM-Lucknow responses of their purposes, 32.0% of respondents strongly agree with purpose 'For online books, journals' and 38.0% of respondents agree with the purpose 'To know transaction statuses. 34.0% of respondents disagree with the purposes 'For comprehensive list on topic' and 'Research work'. 35.0% of respondents are disagreeing with the purpose 'For project/ dissertation work' and strongly disagree 'For writing articles to publish'. Around 16.0% of respondents are neutral in 'comprehensive list' and 'search before googling'.

Finally we could be concluding that, IIM-Lucknow respondents majorly use for online books and journals and to know the transaction status at the Web-OPAC. But the majorly they strongly disagree statement on writing articles to publish and disagree on project/dissertation works. Further hereby making the patrons search Web-OPAC before googling for any information is also challenge for IIM-Lucknow library.
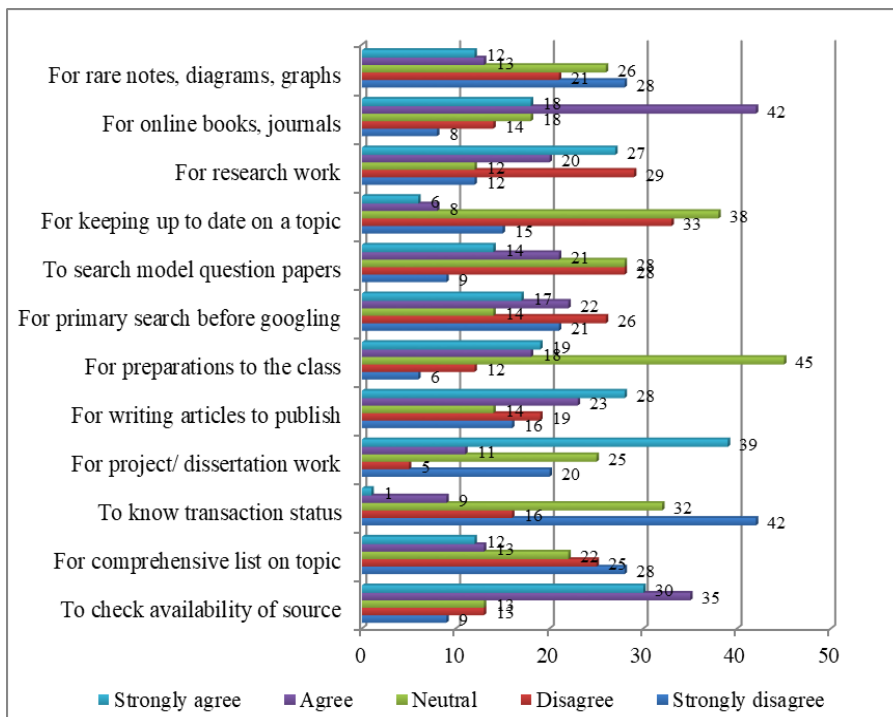
Figure 5.16. Purposes of IIM-Bodh Gaya respondents

The graph 5.16 describes the responses of IIM-Bodh Gaya respondents it is shown that 39.0% of respondents strongly agree with purpose 'For project/ dissertation work' and 31.0% respondents 'For writing articles to publish'. 43.0% of respondents simply agree with 'For online books, journals' and 37.0% of respondents agree with 'To check availability of source'.

43.0% of respondents strongly disagree with 'To know transaction statuses, 36.0% of respondents' neutral 'For keeping up to date on a topic' and 42.0% neutral 'For preparations to the class'.

This neutrality shows that Web-OPAC will not helpful for the patrons to keep themselves up to date on a topic and it is quite clear that students and research scholars will not take a class, that's the reason patrons are neutral on these two purposes. But majority they use the Web-OPAC mainly for project/dissertation work and to check the availability of sources in the library.
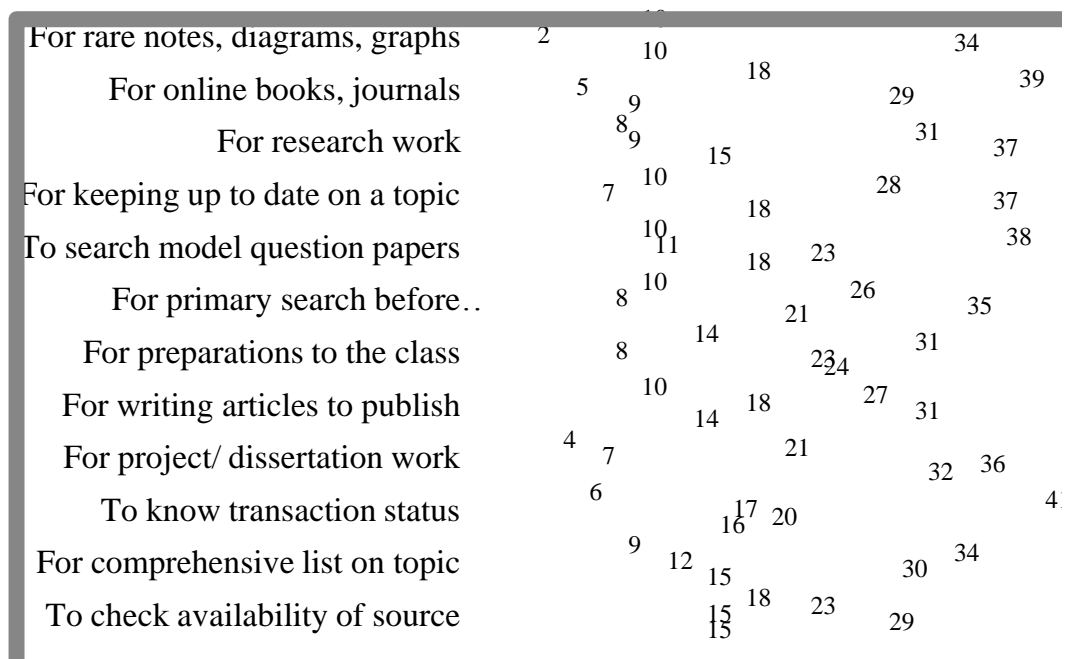
Figure 5.17. Purposes of IIM-Ranchi respondents

The above graph 5.17 states that 44.0% of respondents agree with the statements 'for rare notes, diagrams, graphs' '41.0% of respondents 'To know transaction statuses' and 39.0% of respondents 'for online books, journals and 38.0% of respondents 'To search model question papers'.

In the same way 37.0% of respondents disagree with 'For keeping up to date on a topic' and for research work purposes. 34.0% of respondents for rare notes, diagrams, graphs etc. Around 36.0% of respondents disagree on 'For project/ dissertation work' and 'For primary search before googling'.

It is true from the results that IIM-Ranchi respondents use the Web-OPAC more for the rare notes, diagrams and graphs and to know the transaction statuses. But here respondents use for class preparation also, which was not used by other IIMs and it is not that much helpful for the project/dissertation works. It is clear that in IIM-Ranchi also patron denied the primary search before google.
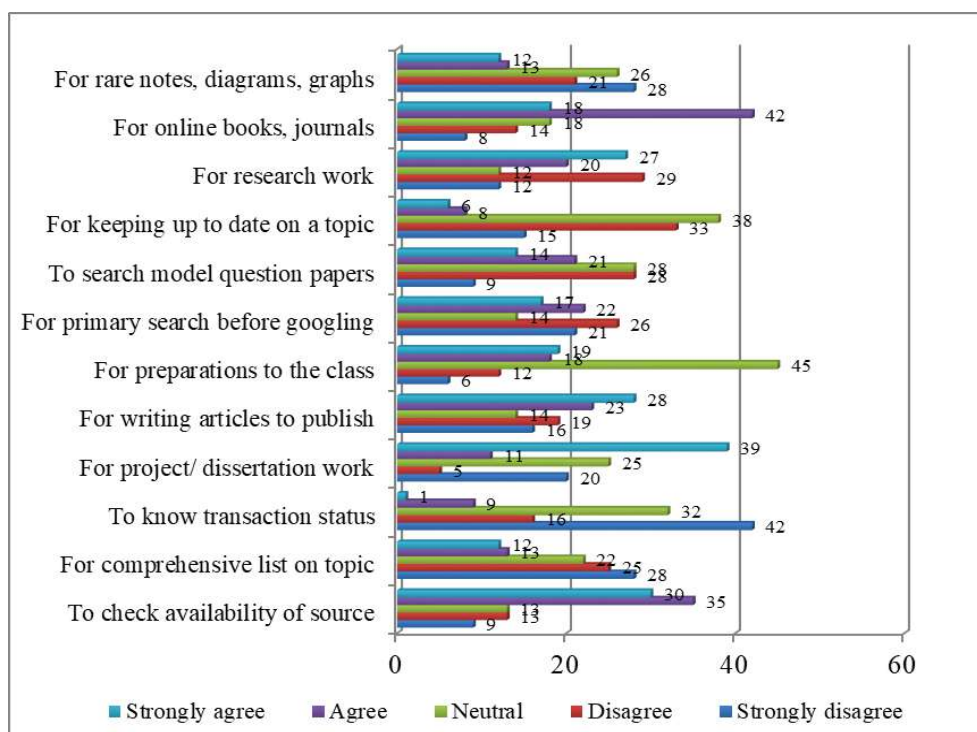
Figure 5.18. Purposes of IIM-Rohtak respondents

The above graph 5.18 shapes that 39.0% respondents from IIM-Rohtak strongly agree the statement 'For project/ dissertation work', 35.0% of respondents simply agree for 'check availability of source' and 42.0% of respondents use the Web-OPAC for 'For online books, journals'. But 45.0% of respondents stood neutral on the purpose 'for preparations to the classes because they will not use for classes engagement. Further 42.0% of respondents strongly disagree for 'knowing transaction statuses' and 33.0% they simply disagree the purpose 'For keeping up to date on a topic' themselves. It is also observed that 28.0% of respondents disagree with purpose statements like 'To search model question papers', for their research work and 'For rare notes, diagrams, graphs' access. Mainly the Web-OPAC of IIM-Rothak is being used for the online books and Journals accessibility.
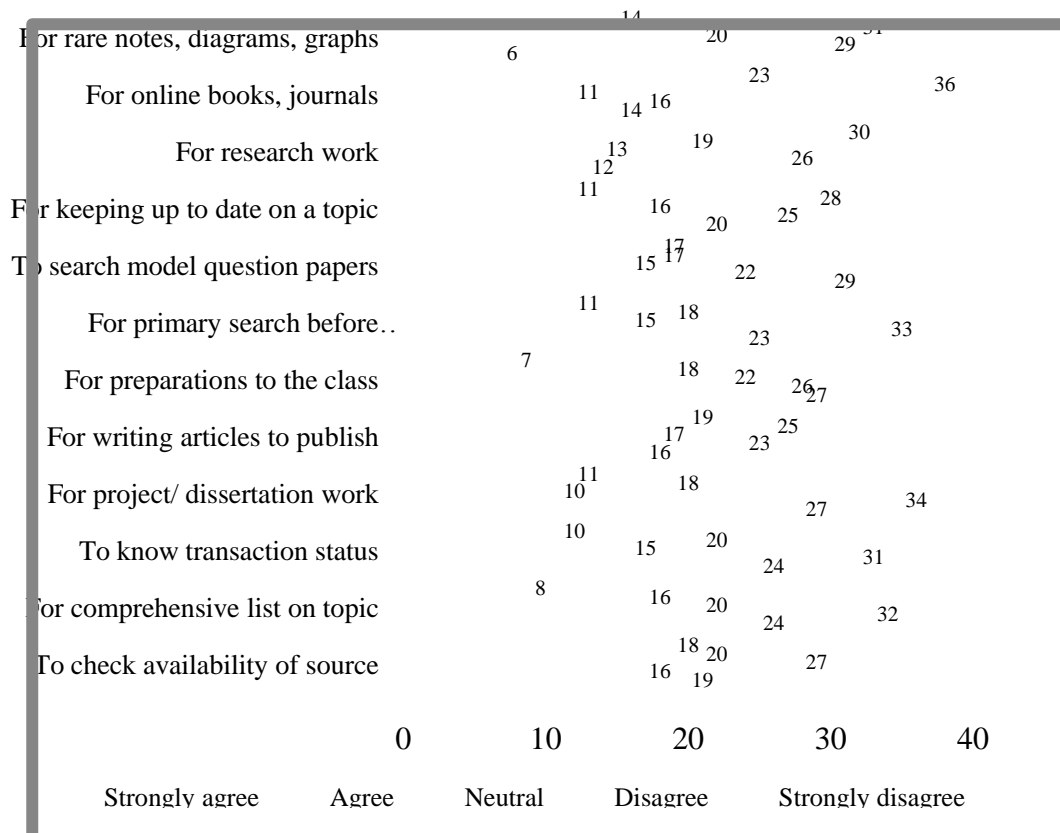
Figure 5.19. Purposes of IIM-Sambalpur respondents

The graph 5.19 describes the results of responses from the IIM-Sambalpur about their Web-OPAC use purposes, 30.0% respondents strongly agree the statement 'For research work', 36.0% of respondents simply agree for 'For online books, journals' and 28.0% of respondents purpose is 'For keeping up to date on a topic' themselves. 27.0% of respondents are neutral on the purpose statement 'To check availability of source', this response should be drawn the cause of effect by the IIM-Sambalpur.

29.0% of respondents answered strongly disagree for 'check availability of source in OPAC, and simply disagree for the purpose 'for accessing rare notes, diagrams, graphs etc.' Further 34.0% of respondents disagree for 'project/ dissertation work' and 33.0% on 'For primary search before googling'. It is found that IIM-Sambalpur patrons focus more on accessing the online books and journals like IIM-Rothak.
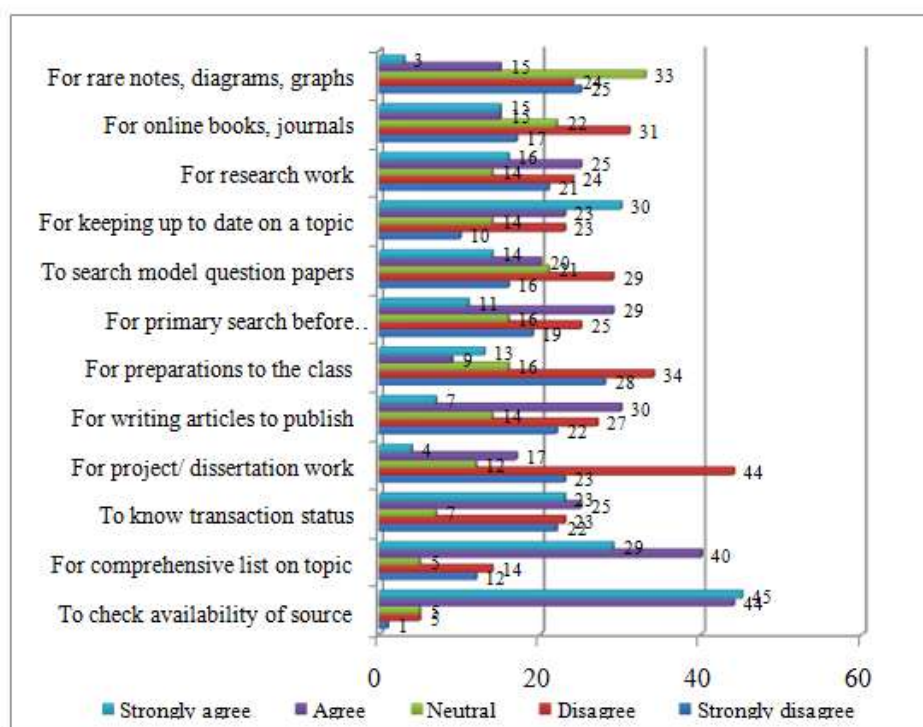
Figure 5.20. Purposes of IIM-Tiruchirappalli respondents

The graph 5.20 outlines that 45.0% of respondents answered strongly agree for 'check availability of source in OPAC, 40.0% respondents agree 'for comprehensive list on topic' from the OPAC. Only 30.0% of respondents agree 'for writing articles to publish'. More than 20.0% of respondents are neutral on the purposes search model question papers and search for online books, journals, But 33.0% of respondents stood neutral on 'For rare notes, diagrams, graphs search' it may be because of non-availability of such materials in the collection.

Further 44.0% of respondents disagree for 'project/ dissertation work', and 34.0% respondents disagree for 'preparations to the class'. 29.0% of respondents disagree for 'searching model question papers' finally we may conclude that IIM-Trichy Web-OPAC is being majorly used for the checking the availability of source, getting comprehensive list on the topic and for writing the articles to publishing purpose.
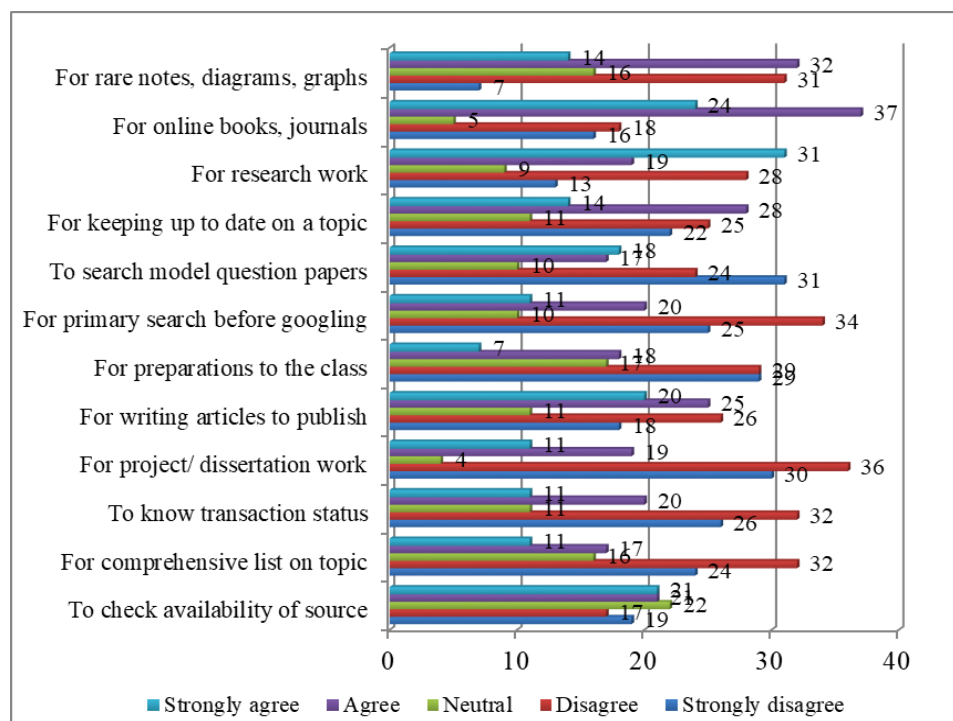
Figure 5.21. Purposes of IIM-Udaipur respondents

The graph 5.21 outlines that 31.0% of respondents answered strongly agree for 'research work', 37.0% respondents agree 'For online books, journals' from the OPAC, further 32.0% agreed for accessing 'rare notes, diagrams, graphs etc.' But 22.0% of respondents neutral on the statement 'To check availability of source', where the IIM-Udaipur should address this problem.

36.0% of respondents disagree with the purpose 'For project/ dissertation work' it means they won't use more for this purpose. And also 34.0% of respondents disagree for 'primary search before googling' and 32.0% disagree for 'comprehensive list on topic and to know transaction status. Finally we may conclude that usage purpose in IIM-Udaipur mainly for online resources to research work, and it is found that they denied the purpose of using for dissertation work, treating as google and comprehensive list on the topics.
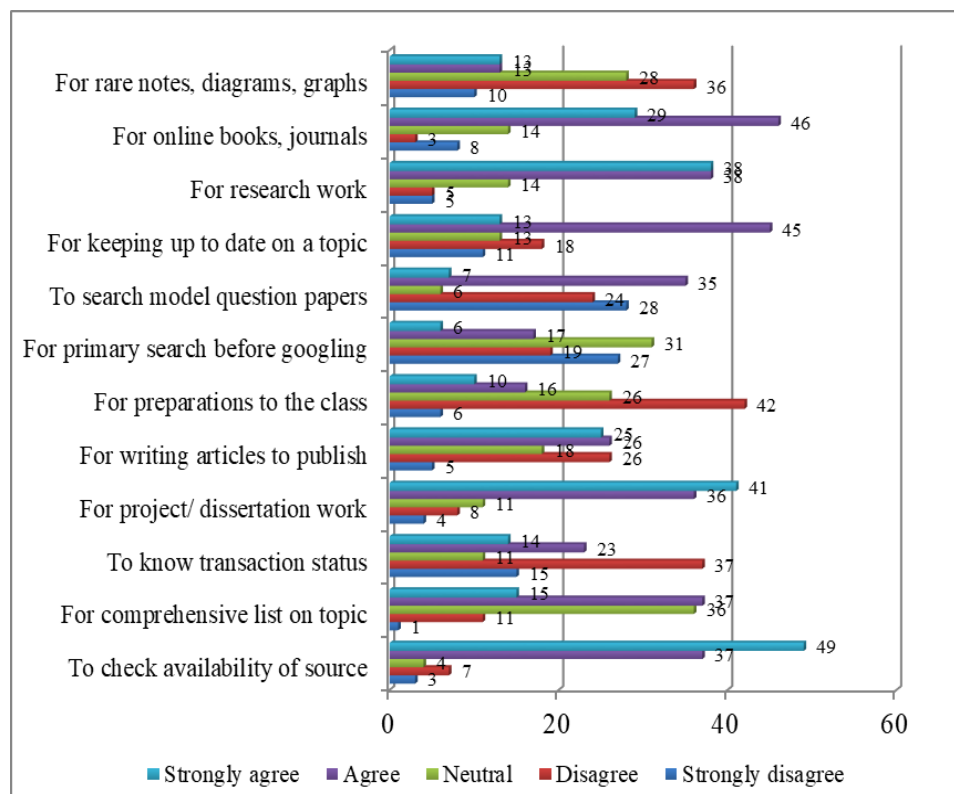
Figure 5.22. Purposes of IIM-Bangalore respondents

The above graph 5.22 illustrates that, 49.0% of respondents strongly agree for the purpose 'to check availability of source from the Web-OPAC, 46.0% of respondents agree for 'for online books, journals', it means these two purposes are the major at the IIM-Bangalore, and 42.0% of respondents denied the statement 'For preparations to the class which is quite common at other IIMs also.

36.0% of respondents rates neutral on 'for comprehensive list on topic' where IIM-Bangalore should address the issue, remaining 36.0% of respondents disagree for accessing rare notes, diagrams, graphs from the OPAC, which shows that non-availability of these materials in the library or not included in the OPAC database. Somewhat around 35.0% of respondents use purposes are for accessing old question papers and research work purpose. Here also, other results are similar as we found at remaining IIMs such as 'For primary search before googling' is not that much used. This is common challenge for the all the IIMs to make their web OPAC as google.

5.5.6. Summary

As per the graphs i.e. 5.10 to 5.22 results it is clear that purposes of accessing the web OPAC among the selected IIMs are vary each other, to check available source is major purpose in IIM-Ahmadabad, IIM-Indore, IIM-Kashipur, IIM-Kozhikode, IIM-Trichy and IIM-Bangalore. The purpose for Comprehensive list on the topic is used as second purpose at IIM-Ahmadabad, IIM-Trichy and slightly used in the IIM-Indore, IIM-Kashipur and IIM-Kozhikode which is also disagreed by remaining IIMs. To know the transactions status purpose is used more in IIM-Bodh Gaya and IIM-Lucknow. In The IIM-Rohtak major use purpose is 'for project/dissertation work'.

Respondents from IIM-Calcutta and IIM-Ranchi majorly use for writing articles. For preparing class, and rare notes/diagram, graphs other materials, and search before googling option, for model question papers purposes are not at all used by any IIMs because of non-availability of these services. It is found that web OPAC of IIM-Sambalpur and IIM-Udaipur majorly used for research work and for online books & journals purpose is the highest used purpose among eight IIMs.

Further, based on these results it is responsibility of the each IIMs to find out factors where the basic objectives of their OPAC are not reached and are disagreed by the patrons, start enhancing their web-OPACs, whether it is technical issue, skilled tasks, behavioural aspects, data harvesting, semantic mapping, ontological improvements or any new customisations should entirely be addressed and focussed on the OPACs screens.

5.5.7. Respondents Search Attitude

In this section efforts are made to highlight that what are most search entries in the Web OPACs by the respondents among the selected IIMs, what are their feeling while searching and in which style interaction they prefer to search the web OPACs.

5.5.7.1. Most search entries in Web-OPACs

There was a question asked to respondents to answer about their most search entry in the web OPAC, the below table explains the results of the question.

Table 5.46. Most search entries in Web-OPAC

Entries	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Total	
Topical keywords	116	08.9%	133	10.2%	51	03.9%	419	32.2%	581	44.7%	1300	100.0%
By title	131	10.1%	320	24.6%	129	9.9%	327	25.2%	393	30.2%	1300	100.0%
By author name	165	12.7%	330	25.4%	160	12.3%	369	28.4%	276	21.2%	1300	100.0%
Subject-wise	185	14.2%	498	38.3%	147	11.3%	293	22.5%	177	13.6%	1300	100.0%
By call Number	282	21.7%	472	36.3%	175	13.5%	216	16.6%	155	11.9%	1300	100.0%
By ISBN/ISSN, Accession Number	255	19.6%	415	31.9%	103	07.9%	289	22.2%	238	18.3%	1300	100.0%
By Publisher name	261	20.1%	329	25.3%	119	09.2%	357	27.5%	234	18.0%	1300	100.0%
By editor	238	18.3%	351	27.0%	96	07.4%	362	27.8%	253	19.5%	1300	100.0%
Year-wise	164	12.6%	368	28.3%	81	06.2%	429	33.0%	258	19.8%	1300	100.0%
By record/ Control Numbers	343	26.4%	342	26.3%	169	13.0%	301	23.2%	145	11.1%	1300	100.0%

1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree

From the table 5.46 we may observe that highest responses (44.7%) to 'topical keywords' are most used entry in the Web-OPACs across all IIMs followed by 'by title" 30.2%, by author name 21.60% year wise 19.8% and by

editor 19.80%. However, the majority of respondents disagreed to record/control number 26.40% and call number 21.70% to be used as most search entries in web OPAC across 13 IIMs.

5.5.7.2. Descriptive statistics of preferences of respondents search entry by 'topical keywords' and 'by title'

Moving on, to know the most used entry in each IIMs OPAC mean responses of respondents are presented in the below tables entry-wise average responses of respondents are also presented.

Table 5.47. Descriptive statistics of preferences of respondents search by 'topical keywords' and 'by title'

By Topical Keywords				By Title			
IIMs	N	Mean	SD	IIMs	N	Mean	SD
Ahmedabad	100	4.29	1.166	Ahmedabad	100	3.93	1.148
Calcutta	100	3.31	1.354	Calcutta	100	2.94	1.384
Indore	100	4.20	0.921	Indore	100	3.52	1.275
Kashipur	100	4.25	0.869	Kashipur	100	2.24	.996
Kozhikode	100	4.33	0.975	**Kozhikode**	**100**	**4.56**	**.574**
Lucknow	100	2.77	1.607	Lucknow	100	3.31	1.461
Bodh Gaya	100	4.25	0.869	Bodh Gaya	100	2.38	.951
Ranchi	100	3.39	1.406	Ranchi	100	3.09	1.173
Rohtak	100	4.18	0.892	Rohtak	100	2.41	.954
Sambalpur	100	3.79	1.409	Sambalpur	100	3.42	1.408
Tiruchirappalli	**100**	**4.79**	**0.686**	**Tiruchirappalli**	**100**	**4.69**	**.631**
Udaipur	100	3.90	1.418	Udaipur	100	3.47	1.432
Bengaluru	100	3.69	1.454	Bengaluru	100	4.29	1.038
Total	1300	3.95	1.277	Total	1300	3.33	1.376

1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly agree

This is known from the above table 5.47 is that preference for "topical keywords" entry in IIM-Tiruchirappalli is significantly greater than other IIMs under study. This means respondents from IIM-Tiruchirappalli prefer more (mean

4.79) "topical keywords" entry more than any other entries available in OPAC. In case of by Title entry again IIM-Tiruchirappalli (Mean 4.69) and IIM-Kozhikode (mean 4.56) have depended more to search. IIM-Lucknow and IIM-Kashipur used these two options at minimum level as compared to other IIMs.

5.5.7.3. Descriptive statistics of preferences of respondents search entry 'by author' and 'subject-wise'

Table 5.48. Search 'by author' and 'by subject wise'

By Author Name				By Subject wise			
IIMs	N	Mean	SD	IIMs	N	Mean	SD
Ahmedabad	100	2.94	1.309	Ahmedabad	100	2.44	1.217
Calcutta	100	2.81	1.398	Calcutta	100	3.11	1.377
Indore	100	2.64	1.202	Indore	100	2.44	1.217
Kashipur	100	3.15	1.218	Kashipur	100	2.35	.968
Kozhikode	**100**	**4.24**	**1.016**	**Kozhikode**	**100**	**3.56**	**1.402**
Lucknow	100	2.99	1.382	Lucknow	100	2.69	1.346
Bodh Gaya	100	3.01	1.267	Bodh Gaya	100	2.33	.888
Ranchi	100	2.93	1.305	Ranchi	100	2.70	1.291
Rohtak	100	3.01	1.259	Rohtak	100	2.40	.876
Sambalpur	100	3.13	1.376	Sambalpur	100	3.04	1.340
Tiruchirappalli	100	3.89	1.197	Tiruchirappalli	100	3.21	1.274
Udaipur	100	3.17	1.436	Udaipur	100	2.99	1.382
Bengaluru	100	3.86	1.045	**Bengaluru**	**100**	**3.63**	**1.002**
Total	1300	3.16	1.351	Total	1300	2.77	1.283

1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly agree

This is identified from the above table 5.48 is that preference for "by author name" entry in IIM-Kozhikode is significantly greater than all other IIMs under study. This means respondents from IIM-Kozhikode prefer (mean 4.24) "by author

name" entry more than any other entries available in OPAC. In case of "subject wise search" IIM-Bangalore (mean 3.63) and IIM-Kozhikode (mean 3.56) uses these two search tools neutral in the Web OPACs. IIM-Indore with less mean 2.64 and IIM-Bodh Gaya with mean 2.33 are the less used both the options 'by author name and by subject wise search'.

5.4.7.4. Descriptive statistics of preferences of respondents search entry 'by call number' and 'by ISBN/ ISSN/Accession number'

Table 5.49. Search 'by call number' and 'by ISBN/ ISSN/accession number'

By Call Number				By ISBN/ISSN/Accession Number			
IIMs	N	Mean	SD	IIMs	N	Mean	SD
Ahmedabad	100	2.50	1.360	Ahmedabad	100	2.97	1.417
Calcutta	100	2.66	1.312	Calcutta	100	2.90	1.382
Indore	**100**	**2.75**	**1.184**	Indore	100	2.67	1.295
Kashipur	100	2.53	1.381	Kashipur	100	2.85	1.473
Kozhikode	**100**	**2.75**	**1.329**	Kozhikode	100	2.68	1.377
Lucknow	100	2.65	1.486	Lucknow	100	2.97	1.446
Bodh Gaya	100	2.65	1.282	**Bodh Gaya**	**100**	**3.04**	**1.595**
Ranchi	100	2.65	1.298	Ranchi	100	2.93	1.430
Rohtak	100	2.64	1.267	**Rohtak**	**100**	**3.02**	**1.583**
Sambalpur	100	2.69	1.253	Sambalpur	100	2.90	1.411
Tiruchirappalli	100	2.46	1.218	Tiruchirappalli	100	2.80	1.326
Udaipur	100	2.67	1.280	Udaipur	100	2.90	1.425
Bengaluru	100	2.16	1.051	Bengaluru	100	2.77	1.270
Total	1300	2.63	1.303	Total	1300	2.89	1.430

1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly agree

This is recognized from the above table 549 is that preference for 'by call number' entry in IIM-Kozhikode, IIM-Indore are significantly greater than all other IIMs under study. This means that, respondents from IIM-Kozhikode and

IIM-Indore prefer more (mean 2.75) 'by call number' entry more than any other entries available in OPAC.

In case of 'by ISBN/ISSN/accession number' IIM-Bodh Gaya (mean 3.04) followed by IIM-Rohtak (Mean 3.02) are neutral in the Web OPACs. IIM-Bangalore with less mean 2.16 recorded in call number search and IIM-Indore with mean 2.67 are the less used option 'by ISBN/ISSN/accession number'.

5.5.7.5. Descriptive statistics of preferences of respondents search entry 'by publisher name' and 'by editor name'

Table 5.50. Search 'by publisher name' and 'by editor name'

By Publisher Name				By Editor Name			
IIMs	N	Mean	SD	IIMs	N	Mean	SD
Ahmedabad	100	3.31	1.390	Ahmedabad	100	3.26	1.411
Calcutta	100	3.04	1.456	Calcutta	100	3.09	1.422
Indore	100	3.31	1.390	Indore	100	3.26	1.411
Kashipur	100	2.74	1.426	Kashipur	100	3.11	1.550
Kozhikode	100	2.80	1.393	Kozhikode	100	2.64	1.314
Lucknow	100	2.75	1.507	**Lucknow**	**100**	**2.44**	**1.366**
Bodh Gaya	100	2.74	1.426	Bodh Gaya	100	3.13	1.495
Ranchi	100	3.09	1.334	Ranchi	100	3.07	1.350
Rohtak	100	2.86	1.400	Rohtak	100	3.13	1.495
Sambalpur	100	3.09	1.478	Sambalpur	100	3.39	1.270
Tiruchirappalli	100	3.07	1.402	Tiruchirappalli	100	3.14	1.371
Udaipur	100	3.14	1.531	Udaipur	100	3.42	1.296
Bengaluru	100	3.00	1.214	Bengaluru	100	2.34	1.224
Total	1300	3.00	1.436	Total	1300	3.09	1.418

1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree

It is observed from the table 5.50 that, nine IIMs have similar or almost equal mean responses that is above three. Hence we may conclude that, the

preference for 'by publisher name' entry in web OPACs is neutral in those nine IIM libraries.

In case of 'by editor name entry' is least used at IIM Lucknow. Hence it may be said that, the preference for 'by editor name' entry in case of IIM-Lucknow is least (mean 2.44) as compared with other IIMs under study, except for IIM-Calcutta (mean 3.09), IIM-Kashipur (mean 3.11), IIM-Kozhikode (mean 2.64) and IIM-Ranchi (mean 3.07).

5.5.7.6. Descriptive statistics of preferences of respondents search entry 'by year wise' and 'by record or control number'

Table 5.51. Search by 'year-wise' and 'by record or control number'

By Year wise				By Record/Control Number			
IIMs	**N**	**Mean**	**SD**	**IIMs**	**N**	**Mean**	**SD**
Ahmedabad	100	3.02	1.371	Ahmedabad	100	2.59	1.288
Calcutta	100	3.08	1.353	**Calcutta**	**100**	**3.24**	**1.272**
Indore	100	3.02	1.371	Indore	100	2.59	1.288
Kashipur	100	3.36	1.227	Kashipur	100	1.95	1.209
Kozhikode	100	3.23	1.510	Kozhikode	100	2.35	1.336
Lucknow	100	2.98	1.363	Lucknow	100	2.92	1.515
Bodh Gaya	100	3.36	1.227	Bodh Gaya	100	1.95	1.209
Ranchi	100	3.26	1.346	Ranchi	100	3.11	1.205
Rohtak	100	3.20	1.198	Rohtak	100	1.95	1.209
Sambalpur	100	3.32	1.413	Sambalpur	100	3.02	1.333
Tiruchirappalli	100	3.25	1.493	Tiruchirappalli	100	2.91	1.334
Udaipur	100	3.36	1.467	Udaipur	100	3.06	1.355
Bengaluru	100	3.07	1.233	Bengaluru	100	3.11	2.197
Total	1300	3.20	1.366	Total	1300	2.64	1.373

1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree

It is observed from the table 5.51 that twelve IIMs have similar or almost equal mean responses that is above three. Hence we may conclude that the

preference for 'year-wise' entry in web OPAC is neutral in all IIM libraries, except IIM-Lucknow. Based on the mean response given in the above table, we make note that, the preference for 'by record or control number' are more in IIM-Calcutta (mean 3.24) web OPAC as compared with preferences in IIM-Ahmedabad, IIM-Indore (mean 2.59), IIM-Kashipur, Bodh Gaya and Rohtak (mean 1.95) and IIM-Kozhikode (mean 2.35).

5.5.7.7. Mean responses of cosiness on web OPACs

There was question to find out how much respondents feel cosiness on their web OPACs while searching, the below table shows the mean results of eighteen factors those represent the overall feelings of the respondents.

Table 5.52a. Viewpoints of respondents on OPAC across IIMs

Statements	AHM	BAN	BOD	CAL	I ND	KAS	KOZ	LUC	RAN	ROH	SAM	TRI	UDA
It is easy and fun to use	2.87	3.45	3.11	2.87	2.74	2.55	2.74	2.78	2.67	3.11	2.92	2.83	2.92
Helps in finding documents faster	2.71	3.68	3.13	2.80	2.75	3.04	3.02	2.82	2.83	3.13	2.27	2.86	2.38
Displays more items than expected	2.57	3.36	2.65	2.73	2.29	2.65	2.63	3.17	3.08	2.65	2.47	2.72	2.61
All features are clear and understandable	2.98	3.43	3.08	2.98	2.79	3.06	3.01	2.30	2.54	2.16	2.45	3.01	2.62
Results are displayed in comfortable format	2.90	3.45	2.75	2.93	2.29	2.28	2.88	2.38	2.89	2.75	2.58	2.58	2.80
Displays inapt results	2.78	3.57	2.38	2.75	2.33	2.62	2.63	2.77	2.72	2.38	2.62	2.67	2.86
I can create my personal profile	2.93	3.31	3.00	2.72	3.18	3.02	2.67	2.98	2.91	3.00	2.51	2.65	2.74
I can check my transactions	3.12	3.08	2.18	2.81	2.44	2.18	2.96	2.85	2.92	2.18	2.61	2.73	2.80
It Displays circulars	3.01	3.31	2.74	2.87	2.85	2.77	2.74	2.65	2.70	2.74	2.71	2.83	2.98

Note : 1. The Numbers are presented as Mean results *1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly agree
   2. AHM=Ahmadabad, BAN=Bangalore, BOD=Bodh Gaya, CAL=Calcutta, IND=Indore, KAS=Kashipur, KOZ=Kozhikode, LUC=Lucknow, RAN=Ranchi, ROH-Rohtak, SAM=Sambalpur, TRI=Tiruchirappalli (Trichy), UDA=Udaipur.

Table 5.52b. Viewpoints of respondents on OPAC across IIMs

Statements	AHM	BAN	BOD	CAL	IND	KAS	KOZ	LUC	RAN	ROH	SAM	TRI	UDA
The RSS feed on OPAC is helpful	2.86	2.86	2.90	2.89	2.67	2.96	3.02	2.71	2.77	2.90	2.76	2.95	3.00
The "Help" link is helpful	2.76	2.98	2.50	2.93	3.03	2.54	2.72	2.83	2.90	2.50	2.59	3.14	2.87
It is difficult to use	2.73	2.73	2.51	2.57	2.46	2.56	2.71	2.84	2.83	2.51	2.38	3.18	3.00
It is confusing to use	2.82	2.44	3.08	2.92	2.88	3.14	2.51	2.66	2.98	3.08	2.64	3.33	3.21
It has limited features	2.93	2.52	3.38	3.14	3.21	3.43	2.78	3.13	2.49	3.38	2.67	3.20	3.31
It should have more flexible interface	3.32	2.91	3.33	3.19	3.67	3.69	3.39	2.71	2.95	3.33	2.45	3.37	3.03
ISBN/ ISSN, call number are not useful	2.88	3.19	3.02	3.31	3.15	3.09	3.03	2.97	2.93	3.02	2.38	2.98	2.87
Provision for feedback is needed.	2.87	3.24	2.98	3.12	2.79	2.98	3.43	2.86	3.26	2.98	2.47	3.51	3.15
It is easy and fun to use	2.87	3.45	3.11	2.87	2.74	2.55	2.74	2.78	2.67	3.11	2.92	2.83	2.92

Note : 1.   The Numbers are presented as Mean results *1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly agree
2.   AHM=Ahmadabad, BAN=Bangalore, BOD=Bodh Gaya, CAL=Calcutta, IND=Indore, KAS=Kashipur, KOZ=Kozhikode, LUC=Lucknow, RAN=Ranchi, ROH-Rohtak, SAM=Sambalpur, TRI=Tiruchirappalli (Trichy), UDA=Udaipur.

1.   The responses for initial five statements IIM-Bangalore has secured highest mean such as "Helps in finding documents faster (3.68)", "displays more items than expected (3.36)", "it is easy and fun to use (3.45)", "all features are clear and understandable (3.43)", "results are displayed in comfortable format (3.45)" and "displays irrelevant results sometimes (3.57)". In the

same way, IIM-Kashipur (2.55), IIM-Sambalpur (2.27), IIM-Indore (2.29), IIM-Rohtak (2.16) and IIM-Kashipur (2.28) are recorded least mean for same statements.

2. IIM-Indore has received highest mean (3.18) on the statement "I can create my personal profile" but IIM-Sambalpur has received least mean (2.51) for the same statement.

3. IIM-Ahmadabad has secured highest mean (3.18) for "I can check my transaction statuses" and three IIMs, IIM-Kashipur, IIM-Bodh Gaya and IIM-Rohtak have received the least mean (2.18) for the same statement.

4. IIM-Calcutta has got (3.26) highest mean on the statement "it displays circulars on the OPAC" and mean (2.65) is the least in the IIM-Lucknow.

5. IIM-Kozhikode has scored highest mean (3.02) followed by IIM-Udaipur (3.00), IIM-Indore scored least mean (2.67).

6. IIM-Trichy recorded (3.14), (3.18), (3.44) highest mean for the statements the Help link is really helpful, it is difficult to use, it is confusing to use respectively. Here, again two negative statements, where the IIM-Trichy should address.

7. IIM-Kashipur reported highest mean (3.43) followed by IIM-Bodh Gaya and IIM-Rohtak mean (3.38) for the statement, it has limited features but IIM-Ranchi has least mean (2.48) in this case.

8.   It should have more flexible interface has received highest mean (3.69) in IIM-Kashipur followed by IIM-Indore mean (3.67), IIM-Sambalpur has least mean (2.45) in this case.

9.   The statement 'ISSN, ISBN and call numbers are helpful' has secured highest mean (3.31) in IIM-Calcutta followed by IIM-Indore (3.15), IIM-Sambalpur has least mean (2.38) in this case.

10.   The statement 'Provision for feedback is needed' has highest mean (3.51) in IIM-Trichy followed by IIM-Kozhikode mean (3.43) and leas mean (2.47) at IIM-Sambalpur.

It is found that, from the above discussions IIM-Bangalore has acquired highest mean for the six encouraging statements and for one adverse statement and few IIMs recorded highest mean for negative statements, it is suggested that, wherever highest means are recorded for the negative statements should be addressed by respective IIMs.

5.5.7.8. Mean response regarding preferable styles of interaction on web-OPAC

There was a question to the respondents in the questionnaire regarding which styles of interaction they prefer on the OPAC screen.

Table 5.53. Preferable Styles of interaction on web-OPAC

Interaction Styles	IIMs											
	AHM	CAL	IND	KAS	KOZ	LUC	BOD	RAN	ROH	SAM	TRI	UDA	BAN
Menu based Style	3.71	2.79	3.83	3.73	**4.40**	**2.54**	3.27	2.78	3.27	3.03	**4.38**	3.03	3.70
Graphical direct manipulation	3.11	**2.73**	3.34	3.30	**4.15**	2.84	2.80	3.10	2.80	3.10	**3.84**	3.10	3.60
Command based Style	2.40	2.71	2.32	2.46	**3.36**	2.93	**2.05**	3.10	**2.05**	2.81	**3.27**	2.81	2.99
Function key Style	2.60	3.01	2.39	2.75	**3.20**	2.77	**2.20**	2.78	**2.20**	2.83	**3.17**	2.83	2.98
Natural language dialogue Style	2.90	**3.15**	3.10	2.73	**2.57**	2.88	2.72	2.74	2.72	**3.13**	2.86	3.13	2.95
Question-answer type	3.31	3.01	3.47	**3.54**	2.86	**2.68**	**3.52**	3.00	**3.52**	2.94	3.30	2.94	2.95
Character and Image on screen	3.09	3.15	**1.50**	1.84	2.87	2.80	1.79	**3.18**	1.79	2.98	**3.19**	2.98	2.65
Browsing and Navigation Style	2.95	3.18	3.19	3.33	**2.58**	3.15	3.29	2.91	3.29	3.18	**3.40**	3.18	**3.55**
Above all	2.93	**3.40**	2.91	2.80	**1.89**	2.89	2.78	3.15	2.78	3.11	2.86	3.11	**3.39**

Numbers are presented as Mean results, *1-Not Preferable, 2-Less Preferable, 3-Neutral, 4-Preferable, 5-Most Preferable

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Table 5.53 depicts following factors :

1. IIM Kozhikode has secured more preferences to menu based interaction style (4.44), graphical direct manipulation style (4.15), command based style (3.36) and function key style (3.20) with highest mean followed by IIM-Trichy for all the initial four interaction styles mentioned.

2. IIM-Calcutta, IIM-Lucknow and IIM-Bodh Gaya have noticed least mean for the above mentioned four interaction styles, where least preference has given by the responses and less used styles by the respondents.

3. IIM-Calcutta has marked highest mean (3.15) followed by IIM-Sambalpur (3.13) for the style 'natural language dialogue style' and IIM-Kozhikode respondents preferred less for this (2.57).

4. IIM-Kashipur has logged highest mean (3.54) followed by IIM-Bodh Gaya and IIM-Rohtak (3.52) for the style 'question-answer type' and IIM-Lucknow respondents preferred less for the same (2.68).

5. IIM-Trichy has chronicled highest mean (3.19) followed by IIM-Ranchi (3.18) for the style 'character and image on screen' and IIM-Indore respondents preferred less for this (1.50).

6. IIM-Bangalore has recorded highest mean (3.55) followed by IIM-Trichy (3.40) for the style 'browsing and navigation style' and IIM-Kozhikode respondents preferred less for this (2.58).

7. IIM-Calcutta has bagged highest mean (3.40) followed by IIM-Bangalore (3.39) for the 'above all styles of interactions' and IIM-Kozhikode respondents preferred less for this (1.89).

5.5.7.9. Summary

It is understood from this effort that topical keywords are use most and it is found that feelings of respondents are vary among the IIMs. Finally it was extracted that preferable style on OPAC's screen, which is also differ among the different IIMs.

5.5.8. Constraints while searching web OPAC

It was asked to the respondents in the questionnaire to rate various problems they face while searching the web OPAC. Hereby responses of respondents from different IIMs while using web-OPAC at their respective libraries are presented. The below table shows the mean response form respondents of each IIMs regarding their opinion for each constraint listed in the first column.

Table 5.54. Mean response regarding the constraints faced by respondents while using web OPAC

Constraints	IIMs	N	Mean	Std. Deviation
Limited search features	Ahmedabad	100	2.93	1.430
	Calcutta	100	2.76	1.334
	Indore	100	**3.37**	1.269
	Kashipur	100	**3.63**	1.178
	Kozhikode	100	2.59	1.429
	Lucknow	100	2.71	1.690
	Bodh Gaya	100	3.63	1.178
	Ranchi	100	2.93	1.539
	Rohtak	100	**3.63**	**1.178**
	Sambalpur	100	2.84	1.448
	Trichy	100	3.13	1.587

	Udaipur	100	2.84	1.448
	Bengaluru	100	3.04	1.222
	Total	**1300**	**3.08**	**1.427**
Lack of knowledge on searching	Ahmedabad	100	2.58	1.249
	Calcutta	100	2.65	1.344
	Indore	100	2.28	1.272
	Kashipur	100	2.50	1.124
	Kozhikode	100	2.63	1.300
	Lucknow	100	2.81	1.354
	Bodh Gaya	100	2.50	1.124
	Ranchi	100	2.88	1.313
	Rohtak	100	2.50	1.124
	Sambalpur	100	2.54	1.374
	Trichy	100	2.89	1.377
	Udaipur	100	2.54	1.374
	Bengaluru	100	**3.44**	1.225
	Total	**1300**	**2.67**	**1.300**
Complicated and confused to use	Ahmedabad	100	2.46	1.396
	Calcutta	100	2.88	1.423
	Indore	100	2.47	1.235
	Kashipur	100	2.53	1.235
	Kozhikode	100	2.44	1.290
	Lucknow	100	3.09	1.319
	Bodh Gaya	100	2.53	1.235
	Ranchi	100	3.10	1.219
	Rohtak	100	2.53	1.235
	Sambalpur	100	2.85	1.546
	Trichy	100	2.91	1.342
	Udaipur	100	2.85	1.546
	Bengaluru	**100**	**3.13**	1.203
	Total	**1300**	**2.75**	**1.348**

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No output and null retrieves	Ahmedabad	100	2.65	1.381
	Calcutta	100	2.90	1.460
	Indore	100	2.19	1.354
	Kashipur	100	2.70	1.446
	Kozhikode	100	2.21	1.038
	Lucknow	100	2.55	1.604
	Bodh Gaya	100	2.70	1.446
	Ranchi	100	2.90	1.382
	Rohtak	100	2.70	1.446
	Sambalpur	100	2.99	1.541
	Trichy	100	2.73	1.332
	Udaipur	100	2.99	1.541
	Bengaluru	**100**	**3.00**	1.181
	Total	**1300**	**2.71**	**1.421**
Connectivity problems	Ahmedabad	100	2.78	1.375
	Calcutta	100	2.76	1.545
	Indore	100	2.68	1.428
	Kashipur	100	2.78	1.345
	Kozhikode	100	2.26	1.060
	Lucknow	100	2.41	1.248
	Bodh Gaya	100	2.78	1.345
	Ranchi	100	2.74	1.346
	Rohtak	100	2.78	1.345
	Sambalpur	100	2.82	1.617
	Trichy	100	2.64	1.382
	Udaipur	100	2.82	1.617
	Bengaluru	100	2.94	1.071
	Total	**1300**	**2.71**	**1.378**
Lack of onscreen help	Ahmedabad	100	2.98	1.428
	Calcutta	100	3.05	1.424
	Indore	100	3.16	1.383
	Kashipur	100	3.16	1.383
	Kozhikode	100	2.90	1.425

	Lucknow	100	2.76	1.532
	Bodh Gaya	100	3.12	1.444
	Ranchi	100	2.79	1.395
	Rohtak	100	3.12	1.444
	Sambalpur	100	2.78	1.382
	Trichy	100	3.19	1.308
	Udaipur	100	2.78	1.382
	Bengaluru	100	2.74	1.194
	Total	**1300**	**2.96**	**1.400**
Lack of user-friendliness	Ahmedabad	100	2.79	1.552
	Calcutta	100	2.95	1.417
	Indore	100	2.67	1.596
	Kashipur	100	2.63	1.495
	Kozhikode	100	3.33	1.303
	Lucknow	100	2.78	1.521
	Bodh Gaya	100	2.54	1.514
	Ranchi	100	2.86	1.326
	Rohtak	100	2.54	1.514
	Sambalpur	100	2.99	1.554
	Trichy	**100**	**3.41**	**1.326**
	Udaipur	100	2.99	1.554
	Bengaluru	100	2.86	1.189
	Total	**1300**	**2.87**	**1.472**
Lack of training	Ahmedabad	100	2.72	1.379
	Calcutta	100	2.95	1.493
	Indore	100	3.08	1.542
	Kashipur	100	2.89	1.503
	Kozhikode	**100**	**3.91**	1.190
	Lucknow	100	2.77	1.420
	Bodh Gaya	100	2.78	1.561
	Ranchi	100	2.99	1.418
	Rohtak	100	2.78	1.561
	Sambalpur	100	2.90	1.425

	Trichy	100	3.47	1.218
	Udaipur	100	2.90	1.425
	Bengaluru	100	3.08	1.178
	Total	**1300**	**3.02**	**1.444**
Bandwidth problem/ slow speed	Ahmedabad	100	2.62	1.462
	Calcutta	100	2.96	1.370
	Indore	100	3.00	1.414
	Kashipur	100	2.55	1.473
	Kozhikode	100	2.15	1.048
	Lucknow	100	2.74	1.528
	Bodh Gaya	100	2.48	1.501
	Ranchi	100	2.90	1.460
	Rohtak	100	2.48	1.501
	Sambalpur	100	2.91	1.545
	Trichy	100	2.73	1.384
	Udaipur	100	2.91	1.545
	Bengaluru	**100**	**3.23**	1.286
	Total	**1300**	**2.74**	**1.450**
Item display problem	Ahmedabad	100	2.75	1.395
	Calcutta	**100**	**3.09**	1.319
	Indore	100	2.71	1.266
	Kashipur	100	2.85	1.226
	Kozhikode	100	2.14	.841
	Lucknow	100	3.00	1.414
	Bodh Gaya	100	2.77	1.317
	Ranchi	100	2.72	1.349
	Rohtak	100	2.77	1.317
	Sambalpur	100	2.95	1.424
	Trichy	100	2.67	1.272
	Udaipur	100	2.95	1.424
	Bengaluru	100	2.60	1.287
	Total	**1300**	**2.77**	**1.318**

Language problem	Ahmedabad	100	2.90	1.337
	Calcutta	100	2.96	1.490
	Indore	100	2.72	1.264
	Kashipur	100	2.89	1.197
	Kozhikode	100	2.21	.924
	Lucknow	100	3.11	1.470
	Bodh Gaya	100	2.82	1.282
	Ranchi	100	2.84	1.468
	Rohtak	100	2.82	1.282
	Sambalpur	100	3.12	1.486
	Trichy	100	2.68	1.238
	Udaipur	**100**	**3.12**	**1.486**
	Bengaluru	100	2.57	1.130
	Total	**1300**	**2.83**	**1.338**
Typographic/ orthographic problems	Ahmedabad	100	3.05	1.410
	Calcutta	100	2.91	1.498
	Indore	100	3.28	1.296
	Kashipur	**100**	**3.50**	**1.352**
	Kozhikode	100	2.35	1.114
	Lucknow	100	2.69	1.419
	Bodh Gaya	100	3.35	1.452
	Ranchi	100	3.00	1.393
	Rohtak	100	3.35	1.452
	Sambalpur	100	3.16	1.489
	Trichy	100	2.83	1.240
	Udaipur	100	3.16	1.489
	Bengaluru	100	2.46	1.141
	Total	**1300**	**3.01**	**1.405**
No accessibility to other IIM's OPACs	Ahmedabad	100	3.41	1.457
	Calcutta	100	2.91	1.443
	Indore	**100**	**3.88**	**1.430**
	Kashipur	100	3.79	1.416
	Kozhikode	100	3.70	1.210

	Lucknow	100	2.83	1.621
	Bodh Gaya	100	3.66	1.545
	Ranchi	100	2.83	1.386
	Rohtak	100	3.66	1.545
	Sambalpur	100	3.08	1.412
	Trichy	100	3.41	1.319
	Udaipur	100	3.08	1.412
	Bengaluru	100	2.87	1.269
	Total	**1300**	**3.32**	**1.468**
No links to Facebook, twitter etc.	Ahmedabad	100	2.35	1.266
	Calcutta	100	2.78	1.467
	Indore	100	2.91	1.583
	Kashipur	100	3.02	1.511
	Kozhikode	100	3.35	**1.321**
	Lucknow	100	2.65	1.431
	Bodh Gaya	100	2.96	1.569
	Ranchi	100	2.94	1.441
	Rohtak	100	2.96	1.569
	Sambalpur	100	3.16	1.468
	Trichy	**100**	**3.41**	1.326
	Udaipur	100	3.16	1.468
	Bengaluru	100	3.24	1.248
	Total	**1300**	**2.99**	**1.461**
Database index is very poor	Ahmedabad	100	2.45	1.417
	Calcutta	100	3.22	1.368
	Indore	100	3.24	1.640
	Kashipur	**100**	**3.31**	**1.555**
	Kozhikode	100	3.05	1.274
	Lucknow	100	2.91	1.393
	Bodh Gaya	100	3.23	1.644
	Ranchi	100	3.05	1.381
	Rohtak	100	3.23	1.644
	Sambalpur	100	3.12	1.506

	Trichy	**100**	**3.31**	**1.316**
	Udaipur	100	3.12	1.506
	Bengaluru	100	2.82	1.373
	Total	**1300**	**3.08**	**1.479**
Lack of knowledge on broadening and narrowing search	Ahmedabad	100	2.87	1.397
	Calcutta	100	2.87	1.426
	Indore	100	2.76	1.457
	Kashipur	100	2.62	1.270
	Kozhikode	100	2.54	1.243
	Lucknow	100	2.77	1.536
	Bodh Gaya	100	2.56	1.343
	Ranchi	100	2.82	1.373
	Rohtak	100	2.56	1.343
	Sambalpur	100	2.91	1.443
	Trichy	100	2.72	1.349
	Udaipur	100	2.91	1.443
	Bengaluru	100	2.83	1.288
	Total	**1300**	**2.75**	**1.380**
Can't cancel book reservations on OPAC	Ahmedabad	100	2.73	1.420
	Calcutta	100	2.98	1.537
	Indore	100	3.04	1.392
	Kashipur	100	3.35	1.388
	Kozhikode	**100**	**3.65**	**.999**
	Lucknow	100	2.65	1.366
	Bodh Gaya	100	3.21	1.479
	Ranchi	100	3.29	1.465
	Rohtak	100	3.21	1.479
	Sambalpur	100	3.42	1.415
	Trichy	100	3.17	1.223
	Udaipur	100	3.42	1.415
	Bengaluru	100	3.10	1.259
	Total	**1300**	**3.17**	**1.398**

Can't remit my overdue charges at OPAC	Ahmedabad	100	2.15	1.306
	Calcutta	100	3.14	1.421
	Indore	100	2.92	1.686
	Kashipur	100	2.92	1.686
	Kozhikode	**100**	**3.91**	**.965**
	Lucknow	100	2.79	1.506
	Bodh Gaya	100	2.89	1.729
	Ranchi	100	3.03	1.314
	Rohtak	100	2.89	1.729
	Sambalpur	100	2.60	1.826
	Trichy	100	3.68	1.238
	Udaipur	100	3.27	1.441
	Bengaluru	100	2.83	1.223
	Total	**1300**	**3.00**	**1.541**
Can't take print out and save retrieved records	Ahmedabad	100	2.18	1.192
	Calcutta	100	2.40	1.295
	Indore	100	1.99	1.185
	Kashipur	100	2.58	1.216
	Kozhikode	**100**	**3.86**	.943
	Lucknow	100	2.89	1.449
	Bodh Gaya	100	2.56	1.242
	Ranchi	100	2.87	1.495
	Rohtak	100	2.56	1.242
	Sambalpur	100	2.79	1.961
	Trichy	100	3.71	1.018
	Udaipur	100	3.41	1.518
	Bengaluru	100	3.10	1.235
	Total	**1300**	**2.84**	**1.429**
Transmission of results to E-mail not possible	Ahmedabad	100	2.48	1.337
	Calcutta	100	2.76	1.429
	Indore	100	2.48	1.337
	Kashipur	100	2.71	1.395
	Kozhikode	**100**	**3.65**	**1.048**

	Lucknow	100	2.97	1.553
	Bodh Gaya	100	2.66	1.401
	Ranchi	100	2.84	1.426
	Rohtak	100	2.66	1.401
	Sambalpur	100	2.62	1.780
	Trichy	100	3.58	1.241
	Udaipur	100	3.31	1.376
	Bengaluru	100	3.09	1.223
	Total	**1300**	**2.91**	**1.434**
No provision for abstract of the results	Ahmedabad	100	3.42	1.319
	Calcutta	100	3.11	1.449
	Indore	**100**	**3.90**	**1.322**
	Kashipur	100	3.73	1.179
	Kozhikode	100	3.63	1.089
	Lucknow	100	2.94	1.483
	Bodh Gaya	100	3.73	1.179
	Ranchi	100	3.39	1.246
	Rohtak	100	3.73	1.179
	Sambalpur	100	2.62	1.852
	Trichy	100	3.34	1.130
	Udaipur	100	3.30	1.403
	Bengaluru	100	3.15	1.234
	Total	**1300**	**3.38**	**1.367**
Can't add an item to Basket/ Cart	Ahmedabad	100	2.00	1.082
	Calcutta	100	2.74	1.300
	Indore	100	3.34	1.759
	Kashipur	100	3.87	1.637
	Kozhikode	100	3.73	.941
	Lucknow	100	2.51	1.267
	Bodh Gaya	100	3.87	1.637
	Ranchi	100	3.20	1.348
	Rohtak	100	3.87	1.637
	Sambalpur	100	3.26	1.134

	Trichy	100	3.20	1.137
	Udaipur	100	3.26	1.134
	Bengaluru	100	3.31	1.134
	Total	1300	3.24	1.441

Note : Numbers are presented as mean results

1-Not Preferable, 2-Less Preferable, 3-Neutral, 4-Preferable, 5-Most Preferable.

As seen in the mean column the responses regarding each constraint for a specific IIM is different from other IIMs. So in order to check for possible difference of opinion among respondents from different IIMs regarding each constraint One-way ANOVA analysis is carried out and following hypothesis is tested.

5.5.9. Possible difference of opinion among respondents regarding each constraint V/S. different IIMs

As seen in the results from responses regarding each constraint for a specific IIM is different from other IIMs. So in order to check for possible difference of opinion among respondents from different IIMs regarding each constrain One-way ANOVA analysis is carried out and following hypothesis is tested.

Hypothesis 5: There is no significant difference of opinion among respondents from different IIMs regarding each constraint while using web OPAC. The results of the One-way ANOVA is presented in the below table.

Table 5.55. One-way ANOVA test results for testing H$_5$

Constraints	F-value	p-value	Conclusions
Limited search features	7.068	0.000 (<0.05)	Hypothesis H$_5$ is rejected
Lack of knowledge on searching	5.050	0.000 (<0.05)	Hypothesis H5 is rejected
Complicated and confused to use	4.000	0.000 (<0.05)	Hypothesis H5 is rejected
No output and null retrieves	6.651	0.000 (<0.05)	Hypothesis H5 is rejected
Connectivity problems	1.760	0.051 (>0.05)	Hypothesis H5 is **accepted**
Lack of on screen help	1.616	0.081 (>0.05)	Hypothesis H5 is **accepted**
Lack of user-friendliness	3.414	0.000 (<0.05)	Hypothesis H5 is rejected
Lack of training	5.500	0.000 (<0.05)	Hypothesis H5 is rejected
Bandwidth problem/ slow speed	3.965	0.000 (<0.05)	Hypothesis H5 is rejected
Item display problem	3.275	0.000 (<0.05)	Hypothesis H5 is rejected
Language problem	3.618	0.000 (<0.05)	Hypothesis H5 is rejected
Typographic/ orthographic problems	6.538	0.000 (<0.05)	Hypothesis H5 is rejected
No accessibility to other IIM OPACs	7.770	0.000 (<0.05)	Hypothesis H5 is rejected

No links to Facebook, twitter etc.	4.045	0.000 (<0.05)	Hypothesis H5 is rejected
Database index is very poor	2.685	0.001 (<0.05)	Hypothesis H5 is rejected
Lack of knowledge on broadening and narrowing search	0.988	0.458 (>0.05)	Hypothesis H5 is **accepted**
Cannot cancel book reservations on OPAC	4.064	0.000 (<0.05)	Hypothesis H5 is rejected
Cannot remit my overdue charges at OPAC	8.954	0.000 (<0.05)	Hypothesis H5 is rejected
Cannot take print out and save retrieved records	17.766	0.000 (<0.05)	Hypothesis H5 is rejected
Transmission of results to E-mail not possible	7.926	0.000 (<0.05)	Hypothesis H5 is rejected
No provision for abstract of the results	7.603	0.000 (<0.05)	Hypothesis H5 is rejected
Cannot add an item to Basket/Cart	17.412	0.000 (<0.05)	Hypothesis H5 is rejected

Following are the conclusions arrived at based on the above table.

1. Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **limited search features** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of three IIMs indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM Indore think that this constraint is more severe than their counterparts from the libraries.

2. Since the hypothesis H$_5$ is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **lack of knowledge on searching** constraint of web-OPAC users at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM Bengaluru (3.44) indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents of other IIMs are also same level with the respondents of IIM Bengaluru in this regard.

3. Since the hypothesis H$_5$ is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **complications and confusing** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM Bengaluru (3.13) indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM Bengaluru think that this constraint is more severe than their counterparts from the libraries of IIM Ahmedabad, Indore, Kashipur, Bodh Gaya, Rohtak and IIM Kozhikode while respondents of other IIMs are on a par with the respondents of IIM Bengaluru.

4. Since the hypothesis H$_5$ is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **no output or null retrieves** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM Bengaluru (3.00) indicating

that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM Bengaluru think that this constraint is more severe than their counterparts from the libraries of IIM Indore and IIM Kozhikode while respondents of other IIMs are on a par with the respondents of IIM Bengaluru.

5. Since the hypothesis H_5 is accepted, we may conclude that "there is no significant difference of opinion among respondents from different IIMs regarding **lack of connectivity** constraint of web-OPAC at their respective libraries".

6. Since the hypothesis H_5 is accepted, we may conclude that "there is no significant difference of opinion among respondents from different IIMs regarding severity of **lack of on-screen help** constraint of web-OPAC at their respective libraries".

7. Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **lack of user-friendliness** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest for IIM-Tiruchirappalli (3.41) indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM-Tiruchirappalli opined that this constraint is more severe than their counterparts from the libraries of IIM Indore, Kashipur, Bodh Gaya and IIM-Rohtak while respondents of other IIMs are on a par with the respondents of IIM-Tiruchirappalli.

8. Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **training constraint** of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM-Kozhikode (3.91) indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM Kozhikode stated that this constraint is more severe than their counterparts from the libraries of all other IIMs except for IIM-Tiruchirappalli.

9. Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **bandwidth problem or slow speed** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM-Bengaluru (3.23) indicating that they are most concerned about bandwidth/slow speed of internet. Also from table 5.56 we may note and conclude that the respondents from IIM-Bengaluru think that this constraint is more severe than their counterparts from the libraries of IIM-Kashipur, Kozhikode, Bodh Gaya and Rohtak while respondents of other IIMs are on a par with the respondents of IIM-Bengaluru.

10. Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **item display** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM-Calcutta (3.09) indicating that they

are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM-Calcutta stated that this constraint is more severe than their counterparts from the libraries of IIM-Kozhikode while respondents of other IIMs are on a par with the respondents of IIM Calcutta.

11.   Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **language constraint** of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM-Sambalpur and Udaipur (3.12) indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM-Sambalpur and Udaipur given opinion that this constraint is more severe than their counterparts from the libraries of IIM-Kozhikode while respondents of other IIMs are on a par with the respondents of IIM Sambalpur and Udaipur.

12.   Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **typographic or orthographic** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM-Kashipur (3.50) indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM-Kashipur opined that this constraint is more severe than their counterparts from the libraries of IIM-Kozhikode, Lucknow,

Tiruchirappalli and IIM-Bengaluru while respondents of other IIMs are on a par with the respondents of IIM-Kashipur.

13.   Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **accessibility with other IIM OPACs** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM Indore (3.88) indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM-Indore opined that this constraint is more severe than their counterparts from the libraries of IIM-Calcutta, Lucknow, Ranchi, Sambalpur, Udaipur and IIM-Bengaluru while respondents of other IIMs are on a par with the respondents of IIM-Indore.

14.   Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **links to Facebook and twitter** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM-Tiruchirappalli (3.41) indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM-Tiruchirappalli opined that this constraint is more severe than their counterparts from the libraries of IIM-Ahmedabad and IIM-Lucknow while respondents of other IIMs are on a par with the respondents of IIM-Tiruchirappalli.

15. Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity **of poor database index c**onstraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM-Kashipur and Tiruchirappalli (3.31) indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM-Kashipur and Tiruchirappalli stated that this constraint is more severe than their counterparts from the libraries of IIM-Ahmedabad while respondents of other IIMs are on a par with the respondents of IIM-Kashipur and Tiruchirappalli.

16. Since the hypothesis H_5 is accepted, we may conclude that "there is no significant difference of opinion among respondents from different IIMs regarding severity **of lack of knowledge on broadening/ précising** a search constraint in web-OPAC at their respective libraries".

17. Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **reserved book cancellation** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM-Kozhikode (3.65) indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM-Kozhikode stated that this constraint is more severe than their counterparts from the libraries of IIM-Ahmedabad, Calcutta, Indore, Lucknow and IIM-Bengaluru while respondents of other IIMs are on a par with the respondents of IIM-Kozhikode.

18. Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **remittance of overdue charges** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM-Kozhikode (3.91) indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM-Kozhikode opined that this constraint is more severe than their counterparts from the libraries of all IIMs except for IIM-Tiruchirappalli.

19. Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity **of taking printouts and saving of retrieves** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM-Kozhikode (3.86) indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM-Kozhikode opined that this constraint is more severe than their counterparts from the libraries of all IIMs except for IIM-Tiruchirappalli and Udaipur.

20. Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **transmission of results to E-mail** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM-Kozhikode (3.65)

indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM-Kozhikode stated that this constraint is more severe than their counterparts from the libraries of all IIMs except for IIM Tiruchirappalli and Udaipur.

21. Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **no provision for abstracts of the results** constraint of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM Indore (3.90) indicating that they are most concerned about this constraint of all respondents. Also from table 5.56 we may note and conclude that the respondents from IIM-Indore emphasized that this constraint is more severe than their counterparts from the libraries of libraries of IIM Calcutta, Lucknow, Sambalpur and IIM-Bengaluru while respondents from other IIMs are on a par with IIM Indore.

22. Since the hypothesis H_5 is rejected, we may conclude that "there is a significant difference of opinion among respondents from different IIMs regarding severity of **adding items to the basket/ cart constraint** of web-OPAC at their respective libraries." It is noted from the table 5.54 that the mean response in this regard is highest in case of IIM-Kashipur, Bodh Gaya and Rohtak (3.87) respondents more concerned about this constraint. Also from table 5.56 we may note and conclude that the respondents from IIM-Kashipur, Bodh Gaya and Rohtak stressed that this constraint is more severe than their counterparts from the libraries of IIM Ahmedabad, Calcutta, Lucknow and IIM Tiruchirappalli.

Table 5.56. Mean difference of responses regarding constraints of web-OPAC

Constraints	(I) Institute		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Limited Search Features	Bengaluru	Ahmedabad	.670*	.184	.021	.05	1.29
		Calcutta	.250	.186	.981	-.38	.88
		Indore	.660*	.172	.011	.08	1.24
		Kashipur	.600*	.172	.034	.02	1.18
		Kozhikode	.690*	.176	.008	.10	1.28
		Lucknow	.040	.179	1.000	-.56	.64
		Bodh Gaya	.600*	.172	.034	.02	1.18
		Ranchi	.030	.171	1.000	-.54	.60
		Rohtak	.600*	.172	.034	.02	1.18
		Sambalpur	.280	.196	.968	-.38	.94
		Trichy	.220	.180	.991	-.38	.82
		Udaipur	.280	.196	.968	-.38	.94
Lack of Knowledge on Searching.	Bengaluru	Ahmedabad	.350	.182	.778	-.26	.96
		Calcutta	.100	.188	1.000	-.53	.73
		Indore	.810*	.180	.001	.21	1.41
		Kashipur	.300	.187	.926	-.33	.93
		Kozhikode	.790*	.157	.000	.26	1.32
		Lucknow	.450	.199	.550	-.22	1.12
		Bodh Gaya	.300	.187	.926	-.33	.93
		Ranchi	.100	.182	1.000	-.51	.71
		Rohtak	.300	.187	.926	-.33	.93
		Sambalpur	.010	.194	1.000	-.64	.66
		Trichy	.270	.178	.951	-.33	.87
		Udaipur	.010	.194	1.000	-.64	.66

Complicated and Confusing to Use	Bengaluru	Ahmedabad	.670*	.184	.021	.05	1.29
		Calcutta	.250	.186	.981	-.38	.88
		Indore	.660*	.172	.011	.08	1.24
		Kashipur	.600*	.172	.034	.02	1.18
		Kozhikode	.690*	.176	.008	.10	1.28
		Lucknow	.040	.179	1.000	-.56	.64
		Bodh Gaya	.600*	.172	.034	.02	1.18
		Ranchi	.030	.171	1.000	-.54	.60
		Rohtak	.600*	.172	.034	.02	1.18
		Sambalpur	.280	.196	.968	-.38	.94
		Trichy	.220	.180	.991	-.38	.82
		Udaipur	.280	.196	.968	-.38	.94
No output, null retrieves.	Bengaluru	Ahmedabad	.350	.182	.778	-.26	.96
		Calcutta	.100	.188	1.000	-.53	.73
		Indore	.810*	.180	.001	.21	1.41
		Kashipur	.300	.187	.926	-.33	.93
		Kozhikode	.790*	.157	.000	.26	1.32
		Lucknow	.450	.199	.550	-.22	1.12
		Bodh Gaya	.300	.187	.926	-.33	.93
		Ranchi	.100	.182	1.000	-.51	.71
		Rohtak	.300	.187	.926	-.33	.93
		Sambalpur	.010	.194	1.000	-.64	.66
		Trichy	.270	.178	.951	-.33	.87
		Udaipur	.010	.194	1.000	-.64	.66
Lack of user-friendliness.	Trichy	Ahmedabad	.620	.204	.120	-.07	1.31
		Calcutta	.460	.194	.470	-.19	1.11
		Indore	.740*	.208	.026	.04	1.44
		Kashipur	.780*	.200	.008	.11	1.45

		Kozhikode	.080	.186	1.000	-.54	.70
		Lucknow	.630	.202	.096	-.05	1.31
		Bodh Gaya	.870*	.201	.002	.19	1.55
		Ranchi	.550	.188	.155	-.08	1.18
		Rohtak	.870*	.201	.002	.19	1.55
		Sambalpur	.420	.204	.694	-.27	1.11
		Udaipur	.420	.204	.694	-.27	1.11
		Bengaluru	.550	.178	.105	-.05	1.15
Lack of training.	Kozhikode	Ahmedabad	1.190*	.182	.000	.58	1.80
		Calcutta	.960*	.191	.000	.32	1.60
		Indore	.830*	.195	.002	.18	1.48
		Kashipur	1.020*	.192	.000	.38	1.66
		Lucknow	1.140*	.185	.000	.52	1.76
		Bodh Gaya	1.130*	.196	.000	.47	1.79
		Ranchi	.920*	.185	.000	.30	1.54
		Rohtak	1.130*	.196	.000	.47	1.79
		Sambalpur	1.010*	.186	.000	.39	1.63
		Trichy	.440	.170	.327	-.13	1.01
		Udaipur	1.010*	.186	.000	.39	1.63
		Bengaluru	.830*	.167	.000	.27	1.39
Bandwidth problem/ Slow speed	Bengaluru	Ahmedabad	.610	.195	.093	-.04	1.26
		Calcutta	.270	.188	.967	-.36	.90
		Indore	.230	.191	.992	-.41	.87
		Kashipur	.680*	.196	.034	.02	1.34
		Kozhikode	1.080*	.166	.000	.52	1.64
		Lucknow	.490	.200	.412	-.18	1.16
		Bodh Gaya	.750*	.198	.012	.09	1.41
		Ranchi	.330	.195	.894	-.32	.98

		Rohtak	.750[*]	.198	.012	.09	1.41
		Sambalpur	.320	.201	.930	-.35	.99
		Trichy	.500	.189	.290	-.13	1.13
		Udaipur	.320	.201	.930	-.35	.99
Item display problem	Calcutta	Ahmedabad	.340	.192	.862	-.30	.98
		Indore	.380	.183	.679	-.23	.99
		Kashipur	.240	.180	.982	-.36	.84
		Kozhikode	.950[*]	.156	.000	.42	1.48
		Lucknow	.090	.193	1.000	-.56	.74
		Bodh Gaya	.320	.186	.886	-.31	.95
		Ranchi	.370	.189	.756	-.26	1.00
		Rohtak	.320	.186	.886	-.31	.95
		Sambalpur	.140	.194	1.000	-.51	.79
		Trichy	.420	.183	.525	-.19	1.03
		Udaipur	.140	.194	1.000	-.51	.79
		Bengaluru	.490	.184	.283	-.13	1.11
Language problem	Sambalpur	Ahmedabad	.220	.200	.997	-.45	.89
		Calcutta	.160	.210	1.000	-.55	.87
		Indore	.400	.195	.698	-.25	1.05
		Kashipur	.230	.191	.992	-.41	.87
		Kozhikode	.910[*]	.175	.000	.32	1.50
		Lucknow	.010	.209	1.000	-.69	.71
		Bodh Gaya	.300	.196	.948	-.36	.96
		Ranchi	.280	.209	.981	-.42	.98
		Rohtak	.300	.196	.948	-.36	.96
		Trichy	.440	.193	.538	-.21	1.09
		Udaipur	0.000	.210	1.000	-.70	.70
		Bengaluru	.550	.187	.151	-.08	1.18

	Udaipur	Ahmedabad	.220	.200	.997	-.45	.89
		Calcutta	.160	.210	1.000	-.55	.87
		Indore	.400	.195	.698	-.25	1.05
		Kashipur	.230	.191	.992	-.41	.87
		Kozhikode	.910[*]	.175	.000	.32	1.50
		Lucknow	.010	.209	1.000	-.69	.71
		Bodh Gaya	.300	.196	.948	-.36	.96
		Ranchi	.280	.209	.981	-.42	.98
		Rohtak	.300	.196	.948	-.36	.96
		Sambalpur	0.000	.210	1.000	-.70	.70
		Trichy	.440	.193	.538	-.21	1.09
		Bengaluru	.550	.187	.151	-.08	1.18
Typographic/ orthographic problems.	Kashipur	Ahmedabad	.450	.195	.517	-.21	1.11
		Calcutta	.590	.202	.159	-.09	1.27
		Indore	.220	.187	.994	-.41	.85
		Kozhikode	1.150[*]	.175	.000	.56	1.74
		Lucknow	.810[*]	.196	.004	.15	1.47
		Bodh Gaya	.150	.198	1.000	-.52	.82
		Ranchi	.500	.194	.332	-.15	1.15
		Rohtak	.150	.198	1.000	-.52	.82
		Sambalpur	.340	.201	.896	-.33	1.01
		Trichy	.670[*]	.183	.020	.05	1.29
		Udaipur	.340	.201	.896	-.33	1.01
		Bengaluru	1.040[*]	.177	.000	.45	1.63
No accessibility to other IIM OPACs.	Indore	Ahmedabad	.470	.204	.518	-.21	1.15
		Calcutta	.970[*]	.203	.000	.29	1.65
		Kashipur	.090	.201	1.000	-.59	.77
		Kozhikode	.180	.187	.999	-.45	.81

		Lucknow	1.050[*]	.216	.000	.32	1.78
		Bodh Gaya	.220	.211	.998	-.49	.93
		Ranchi	1.050[*]	.199	.000	.38	1.72
		Rohtak	.220	.211	.998	-.49	.93
		Sambalpur	.800[*]	.201	.006	.13	1.47
		Trichy	.470	.195	.437	-.18	1.12
		Udaipur	.800[*]	.201	.006	.13	1.47
		Bengaluru	1.010[*]	.191	.000	.37	1.65
No links to Facebook, twitter etc.	Trichy	Ahmedabad	1.060[*]	.183	.000	.44	1.68
		Calcutta	.630	.198	.081	-.03	1.29
		Indore	.500	.207	.434	-.19	1.19
		Kashipur	.390	.201	.770	-.28	1.06
		Kozhikode	.060	.187	1.000	-.57	.69
		Lucknow	.760[*]	.195	.008	.11	1.41
		Bodh Gaya	.450	.205	.600	-.24	1.14
		Ranchi	.470	.196	.449	-.19	1.13
		Rohtak	.450	.205	.600	-.24	1.14
		Sambalpur	.250	.198	.988	-.41	.91
		Udaipur	.250	.198	.988	-.41	.91
		Bengaluru	.170	.182	.999	-.44	.78
Database index is very poor.	Kashipur	Ahmedabad	.860[*]	.210	.004	.15	1.57
		Calcutta	.090	.207	1.000	-.60	.78
		Indore	.070	.226	1.000	-.69	.83
		Kozhikode	.260	.201	.986	-.41	.93
		Lucknow	.400	.209	.784	-.30	1.10
		Bodh Gaya	.080	.226	1.000	-.68	.84
		Ranchi	.260	.208	.989	-.44	.96
		Rohtak	.080	.226	1.000	-.68	.84

		Sambalpur	.190	.216	1.000	-.54	.92
		Trichy	0.000	.204	1.000	-.68	.68
		Udaipur	.190	.216	1.000	-.54	.92
		Bengaluru	.490	.207	.475	-.21	1.19
	Trichy	Ahmedabad	.860[*]	.193	.001	.21	1.51
		Calcutta	.090	.190	1.000	-.55	.73
		Indore	.070	.210	1.000	-.64	.78
		Kashipur	0.000	.204	1.000	-.68	.68
		Kozhikode	.260	.183	.970	-.35	.87
		Lucknow	.400	.192	.673	-.24	1.04
		Bodh Gaya	.080	.211	1.000	-.63	.79
		Ranchi	.260	.191	.978	-.38	.90
		Rohtak	.080	.211	1.000	-.63	.79
		Sambalpur	.190	.200	.999	-.48	.86
		Udaipur	.190	.200	.999	-.48	.86
		Bengaluru	.490	.190	.332	-.15	1.13
Cannot cancel book reservation at OPAC.	Kozhikode	Ahmedabad	.920[*]	.174	.000	.34	1.50
		Calcutta	.670[*]	.183	.020	.05	1.29
		Indore	.610[*]	.171	.027	.03	1.19
		Kashipur	.300	.171	.869	-.27	.87
		Lucknow	1.000[*]	.169	.000	.43	1.57
		Bodh Gaya	.440	.178	.404	-.16	1.04
		Ranchi	.360	.177	.712	-.24	.96
		Rohtak	.440	.178	.404	-.16	1.04
		Sambalpur	.230	.173	.982	-.35	.81
		Trichy	.480	.158	.119	-.05	1.01
		Udaipur	.230	.173	.982	-.35	.81
		Bengaluru	.550[*]	.161	.041	.01	1.09

Cannot remit overdue charges at OPAC.	Kozhikode	Ahmedabad	1.760*	.162	.000	1.21	2.31
		Calcutta	.770*	.172	.001	.19	1.35
		Indore	.990*	.194	.000	.34	1.64
		Kashipur	.990*	.194	.000	.34	1.64
		Lucknow	1.120*	.179	.000	.52	1.72
		Bodh Gaya	1.020*	.198	.000	.35	1.69
		Ranchi	.880*	.163	.000	.33	1.43
		Rohtak	1.020*	.198	.000	.35	1.69
		Sambalpur	1.310*	.207	.000	.61	2.01
		Trichy	.230	.157	.962	-.30	.76
		Udaipur	.640*	.173	.018	.06	1.22
		Bengaluru	1.080*	.156	.000	.56	1.60
Cannot take printouts and save retrieved records.	Kozhikode	Ahmedabad	1.680*	.152	.000	1.17	2.19
		Calcutta	1.460*	.160	.000	.92	2.00
		Indore	1.870*	.151	.000	1.36	2.38
		Kashipur	1.280*	.154	.000	.76	1.80
		Lucknow	.970*	.173	.000	.39	1.55
		Bodh Gaya	1.300*	.156	.000	.78	1.82
		Ranchi	.990*	.177	.000	.40	1.58
		Rohtak	1.300*	.156	.000	.78	1.82
		Sambalpur	1.070*	.218	.000	.34	1.80
		Trichy	.150	.139	.997	-.32	.62
		Udaipur	.450	.179	.370	-.15	1.05
		Bengaluru	.760*	.155	.000	.24	1.28
Transmission of results to mail is not possible.	Kozhikode	Ahmedabad	1.170*	.170	.000	.60	1.74
		Calcutta	.890*	.177	.000	.29	1.49
		Indore	1.170*	.170	.000	.60	1.74
		Kashipur	.940*	.174	.000	.35	1.53

		Lucknow	.680*	.187	.022	.05	1.31
		Bodh Gaya	.990*	.175	.000	.40	1.58
		Ranchi	.810*	.177	.001	.22	1.40
		Rohtak	.990*	.175	.000	.40	1.58
		Sambalpur	1.030*	.207	.000	.34	1.72
		Trichy	.070	.162	1.000	-.47	.61
		Udaipur	.340	.173	.753	-.24	.92
		Bengaluru	.560*	.161	.035	.02	1.10
No provision for abstract of the results.	Indore	Ahmedabad	.480	.187	.336	-.15	1.11
		Calcutta	.790*	.196	.005	.13	1.45
		Kashipur	.170	.177	.999	-.42	.76
		Kozhikode	.270	.171	.935	-.30	.84
		Lucknow	.960*	.199	.000	.29	1.63
		Bodh Gaya	.170	.177	.999	-.42	.76
		Ranchi	.510	.182	.207	-.10	1.12
		Rohtak	.170	.177	.999	-.42	.76
		Sambalpur	1.280*	.228	.000	.52	2.04
		Trichy	.560	.174	.074	-.02	1.14
		Udaipur	.600	.193	.099	-.05	1.25
		Bengaluru	.750*	.181	.003	.14	1.36
Cannot add an item on "basket/ cart".	Kashipur	Ahmedabad	1.870*	.196	.000	1.21	2.53
		Calcutta	1.130*	.209	.000	.43	1.83
		Indore	.530	.240	.588	-.28	1.34
		Kozhikode	.140	.189	1.000	-.50	.78
		Lucknow	1.360*	.207	.000	.67	2.05
		Bodh Gaya	0.000	.232	1.000	-.78	.78
		Ranchi	.670	.212	.087	-.04	1.38
		Rohtak	0.000	.232	1.000	-.78	.78

		Sambalpur	.610	.199	.113	-.06	1.28
		Trichy	.670[*]	.199	.050	.00	1.34
		Udaipur	.610	.199	.113	-.06	1.28
		Bengaluru	.560	.199	.206	-.11	1.23
	Bodh Gaya	Ahmedabad	1.870[*]	.196	.000	1.21	2.53
		Calcutta	1.130[*]	.209	.000	.43	1.83
		Indore	.530	.240	.588	-.28	1.34
		Kashipur	0.000	.232	1.000	-.78	.78
		Kozhikode	.140	.189	1.000	-.50	.78
		Lucknow	1.360[*]	.207	.000	.67	2.05
		Ranchi	.670	.212	.087	-.04	1.38
		Rohtak	0.000	.232	1.000	-.78	.78
		Sambalpur	.610	.199	.113	-.06	1.28
		Trichy	.670[*]	.199	.050	.00	1.34
		Udaipur	.610	.199	.113	-.06	1.28
		Bengaluru	.560	.199	.206	-.11	1.23
	Rohtak	Ahmedabad	1.870[*]	.196	.000	1.21	2.53
		Calcutta	1.130[*]	.209	.000	.43	1.83
		Indore	.530	.240	.588	-.28	1.34
		Kashipur	0.000	.232	1.000	-.78	.78
		Kozhikode	.140	.189	1.000	-.50	.78
		Lucknow	1.360[*]	.207	.000	.67	2.05
		Bodh Gaya	0.000	.232	1.000	-.78	.78
		Ranchi	.670	.212	.087	-.04	1.38
		Sambalpur	.610	.199	.113	-.06	1.28
		Trichy	.670[*]	.199	.050	.00	1.34
		Udaipur	.610	.199	.113	-.06	1.28
		Bengaluru	.560	.199	.206	-.11	1.23

* indicates the mean difference is significant at the 0.05 level.

5.5.8.1 Summary

The above two tables 5.54 and 5.56 describe about twenty major constraints which are being faced by the respondents at the different IIMs, many are generally accepted and also rejected by the respondents. But it is clear that, problems are vary among the IIMs, besides 'No on screen help, Lack of internet connectivity and Lack of knowledge of broadening the search query are the accepted common problems among all the IIMs, and remaining problems are only restricted to few IIMs. It is suggested that, each IIM should take care of their mentioned constraint towards rectification. Finally we conclude that, there is no Web OPAC without problem.

5.5.9. Important Features to Add on Web OPAC

In this section respondents were asked about the important features that they would recommend for adding on web OPAC at their respective libraries. The mean response for each IIM is presented in the below table 5.57 that highest and least mean response we can identify the willingness or unwillingness of respondents regarding the respective feature is noted

Table 5.57. Mean response of respondents from different IIMs about features they require to be added to web-OPAC

Interaction Styles	IIMs												
	AHM	CAL	IND	KAS	KOZ	LUC	BOD	RAN	ROH	SAM	TRI	UDA	BAN
Step by step search instructions	2.85	2.65	3.29	3.29	3.66	2.63	3.29	2.72	3.29	**2.42**	3.61	2.75	**3.75**
Search by any words on titles	2.80	2.59	2.78	2.97	**4.13**	2.85	2.97	2.96	2.97	**2.23**	3.57	2.69	3.86
Search by any words on subjects	2.44	3.13	2.91	2.76	3.84	3.03	2.76	3.07	2.76	**2.28**	3.14	2.88	**3.87**
Search by year of publication/sher	2.77	2.84	2.45	2.91	3.52	2.75	2.91	2.60	2.91	**2.29**	3.00	2.89	**3.76**
Limiting the search by language	3.17	2.84	3.26	3.13	**3.46**	**2.60**	3.07	2.80	3.07	2.70	3.00	3.10	3.37
Provision to use abbreviations	3.27	3.11	**3.78**	3.47	3.30	2.46	3.47	2.62	2.51	**2.41**	2.91	2.70	3.49
Information on book locations and status	3.06	2.88	3.37	3.33	**3.96**	2.96	3.33	**2.72**	3.33	2.88	3.45	2.93	3.55
Search results with abstract/ Summary	2.95	2.98	2.94	2.95	3.14	3.06	2.93	**2.76**	2.93	3.33	3.21	3.33	**3.69**
Spelling algorithms	3.04	2.96	3.32	3.15	3.10	**2.58**	3.06	2.92	3.06	2.83	3.12	2.83	**3.64**
Display with relevance rankings	3.01	**2.44**	3.52	**4.00**	2.96	2.84	**3.95**	3.01	**3.95**	2.97	3.01	2.97	3.60
Tag clouds and tagging	2.74	2.85	2.60	3.24	3.00	**2.63**	3.19	2.72	3.19	3.01	3.21	3.01	**3.41**

Provision for personal profile	**2.80**	3.14	**2.80**	2.89	3.47	2.84	2.87	2.77	2.87	2.96	3.20	2.96	**3.66**
RSS feeds and E-Mail notifications	3.05	3.28	3.70	**3.95**	3.28	**3.00**	**3.55**	3.05	**3.55**	3.09	3.17	3.09	3.48
Automatic error corrections	3.26	3.28	3.57	**3.78**	3.45	3.10	**3.76**	**2.73**	**3.76**	3.14	3.22	3.14	3.50
User-friendly on screen help	2.90	2.87	2.84	2.81	3.38	2.52	2.41	2.98	**2.41**	2.98	3.49	2.98	**4.05**
Search results with material image	3.06	3.12	3.06	3.27	4.03	**2.80**	2.86	3.02	2.86	3.34	3.41	3.34	**3.61**
Display of library circulars	2.70	2.98	2.73	2.84	3.09	**2.53**	2.48	2.89	2.48	2.89	3.19	2.89	**3.62**
Links to Google and Google Scholar	2.71	2.87	3.37	3.48	2.98	2.91	3.15	**2.56**	3.15	2.71	3.09	2.71	**3.66**
Links to online vendor catalogues	3.19	3.20	3.39	3.45	2.97	**2.60**	2.89	3.15	2.89	3.01	3.42	3.01	**3.68**
Online tutorials on how to use	3.11	3.02	3.66	3.55	3.31	**2.88**	2.98	3.06	2.98	3.37	3.44	3.37	**3.76**
Provision for suggestions/ feedbacks	**2.90**	3.02	3.45	**3.63**	3.49	3.00	3.21	**2.90**	3.21	3.03	3.27	3.03	3.55
Search by accession number and Call numbers	2.73	3.29	2.77	2.87	3.19	3.10	2.40	3.19	**2.40**	2.93	3.14	2.93	**3.75**
Search results with table of contents	2.97	3.07	3.08	3.22	3.11	2.83	**2.63**	3.29	**2.63**	3.38	2.92	3.38	**3.76**

* Numbers are presented as Mean results, *1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree

Following points are noted based on the above table 5.57

1. Respondents from IIM-Ahmadabad and IIM-Calcutta deemed that least important to be added to web-OPAC such as 'provision for suggestions/ feedbacks (mean 2.90), provision for personal profile (mean 2.80) display with relevance rankings (mean 2.44). IIM-Indore expressed that 'provision to use abbreviations' should be added (mean 3.78) and least expressed by IIM-Sambalpur (mean 2.41).

2. IIM-Kashipur respondents suggested four features to add 'display with relevance rankings' (mean 4.00), RSS feeds and E-Mail notifications (mean 3.95), automatic error corrections (mean 3.78) and provision for suggestions/ feedbacks (mean 3.63).

3. IIM-Kozhikode respondents suggested three features to add 'search by any words on titles' (mean 4.13), Limiting the search by language (mean 3.46), Information on book locations and status (mean 3.96). IIM-Sambalpur, IIM-Trichy and IIM-Udaipur are showing most important provisions are as second highest mean.

4. IIM-Lucknow respondents expressed least importance about eight provisions not to add which are in least mean and IIM-Ranchi has expressed least importance for 'information on book locations and status (mean 3.72), 'automatic error corrections (mean 3.73)', 'links to google and google scholar (mean 2.56), 'provision for suggestions/ feedbacks (mean 2.90) and search results with abstract/ summary' (mean 3.76).

5.   Respondents from IIM-Bodh Gaya and IIM-Rohtak have uttered for adding the features like, 'display with relevance rankings (mean 3.95)', 'RSS feeds and e-mail notifications (mean 3.55)', 'automatic error corrections (mean 3.76)' and least importance for 'Search results with table of contents (mean 2.63)'.

6.   IIM-Bangalore respondents articulated around fourteen features are important to add on the web OPAC which are seen from the table with highlighted mean numbers.

5.5.9.1. Summary

It is found from the above table many important features are suggested by the respondents from each IIMs are different. Presence and absence of a particular feature at respective library web OPACs are discussed. Mandatorily individual institution should address these mean results both if it is highest or least and these are as suggestion too for software customisations wherever necessary. Also IIM-Bangalore has got more suggestions to add, few IIMs are having three to four improvisations and some IIMs have only two to three expectations about their respective libraries.

5.5.10.Satisfactory Level of Respondents on web OPAC

Finally, we are moving on, the satisfaction level of respondents about the web-OPAC at their respective libraries is recorded and the summary of the responses is presented in the table 5.58 below.

Table 5.58. Satisfaction levels of respondents regarding the web OPAC

Institutes	Satisfaction with library Web OPAC									
	Unsatisfactory		Poor		Average		Good		Excellent	
	No.s	%	No.s	%	No.s	%	No.s	%	No.s	%
AHM	12	12.00	12	12.00	50	50.00	0	0.00	26	26.00
CAL	10	10.00	14	14.00	40	40.00	0	0.00	36	36.00
IND	9	9.00	38	38.00	34	34.00	0	0.00	19	19.00
KAS	37	37.00	15	15.00	35	35.00	0	0.00	13	13.00
KOZ	12	12.00	17	17.00	49	49.00	0	0.00	22	22.00
LUC	42	42.00	25	25.00	23	23.00	0	0.00	10	10.00
BOD	24	24.00	10	10.00	57	57.00	0	0.00	09	9.00
RAN	31	31.00	36	36.00	24	24.00	0	0.00	09	9.00
ROH	21	21.00	10	10.00	53	53.00	7	7.00	09	9.00
SAM	24	24.00	20	20.00	36	36.00	3	3.00	17	17.00
TRI	17	17.00	24	24.00	39	39.00	0	0.00	20	20.00
UDA	24	24.00	20	20.00	38	38.00	1	1.00	17	17.00
BAN	06	6.00	15	15.00	21	21.00	50	50.00	08	8.00
Total	269	20.60	256	19.60	499	38.30	61	4.60	215	16.90
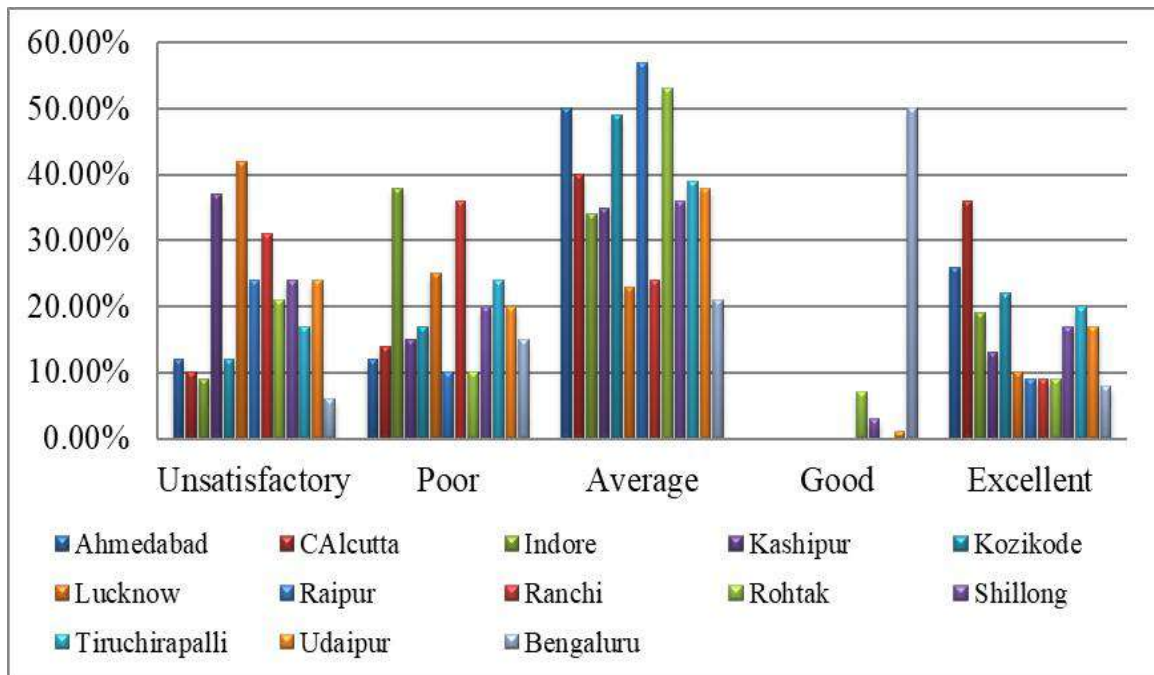
Figure 5.23. Satisfaction level of respondents regarding web OPAC

Based on the table 5.58 we may conclude that majority of respondents from IIM Lucknow think that the library web OPAC is unsatisfactory; majority of respondents from IIM-Indore think that library OPAC is poor and majority of respondents from IIM-Bodh Gaya think that an average. To look for possible difference of opinion among respondents from different IIMs regarding satisfaction towards web OPAC at their respective libraries one-way ANOVA test is conducted and the following hypothesis is tested. The results of the test are presented in the table 5.59.

Hypothesis 6_A: There is no significant difference in satisfaction levels of respondents from different IIMs regarding the web OPAC at their libraries.

Hypothesis 6_B: There is no significant difference in satisfaction levels of respondents from different age groups regarding the web OPAC at their libraries.

Table 5.59. One-way ANOVA test results for testing H_{6A} and H_{6B}

Factor	F-value	p-value	Conclusions
IIMs	10.904	0.000 (<0.05)	Hypothesis H_{6A} is rejected
Age Group	2.866	0.036 (<0.05)	Hypothesis H_{6B} is accepted

Table 5.60. Descriptive numbers for satisfaction regarding web-OPAC across IIMs

	N	Mean	Std. Deviation
Ahmedabad	100	3.16	1.277
Calcutta	100	3.38	1.362
Indore	100	2.82	1.218
Kashipur	100	2.37	1.331
Kozhikode	100	3.03	1.243
Lucknow	100	2.11	1.246
Bodh Gaya	100	2.60	1.128
Ranchi	100	2.20	1.155
Rohtak	100	2.73	1.145
Sambalpur	100	2.69	1.339
Trichy	100	2.82	1.306
Udaipur	100	2.67	1.326
Bengaluru	100	3.39	1.034
Total	1300	2.72	1.303

It is seen from the table 5.60 that IIM-CAL and BAN have the highest mean response of all IIMs whereas IIM-LUC has the least mean response. Hence we may conclude that, based on the mean differences presented in table 5.60 that, respondents from IIM CAL and BAN are more satisfied with web-OPAC at their library than IIM KAS, IIM LUC, IIM BOD, IIM RAN, IIM ROH, IIM SAM and IIM UDA. Also, respondents from IIM LUC are less satisfied with the library OPAC than respondents from all other IIMs except for IIM KAS, IIM BOD, IIM RAN, IIM SAM and IIM UDA libraries.

Table 5.61. Mean difference table for levels of satisfaction of IIM library OPACs according to different IIM libraries

(I) Institute	(J) Institute	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Calcutta	Ahmedabad	.220	.187	.994	-.41	.85
	Indore	.560	.183	.111	-.05	1.17
	Kashipur	1.010*	.190	.000	.37	1.65
	Kozhikode	.350	.184	.794	-.27	.97
	Lucknow	1.270*	.185	.000	.65	1.89
	Bodh Gaya	.780*	.177	.001	.19	1.37
	Ranchi	1.180*	.179	.000	.58	1.78
	Rohtak	.930*	.187	.000	.30	1.56
	Sambalpur	.810*	.195	.003	.16	1.46
	Tiruchirapalli	.560	.189	.142	-.07	1.19
	Udaipur	.750*	.191	.008	.11	1.39
	Bengaluru	-.010	.171	1.000	-.58	.56
Bengaluru	Ahmedabad	.230	.164	.973	-.32	.78
	Calcutta	.010	.171	1.000	-.56	.58
	Indore	.570*	.160	.026	.03	1.11
	Kashipur	1.020*	.169	.000	.45	1.59
	Kozhikode	.360	.162	.573	-.18	.90
	Lucknow	1.280*	.162	.000	.74	1.82
	Bodh Gaya	.790*	.153	.000	.28	1.30
	Ranchi	1.190*	.155	.000	.67	1.71
	Rohtak	.940*	.165	.000	.39	1.49
	Sambalpur	.820*	.174	.000	.24	1.40
	Tiruchirapalli	.570*	.167	.041	.01	1.13
	Udaipur	.760*	.170	.001	.19	1.33

*. The mean difference is significant at the 0.05 level.

It is seen from table 5.61 that, the F-value for factor age groups is 2.866 with a p-value of 0.036 (0.05). Hence, we may accept the hypothesis H_{6B} and conclude that, "there is no significant difference in satisfaction levels of respondents from different age groups regarding the web OPAC at their libraries". A look at the table 5.62 with mean differences for the factor age groups reveal that the mean difference for 41-50 age group with respect the age group 21-30 is significant at level 0.05. Hence we may conclude that, older respondents are more satisfied with web OPAC at their respective libraries than the youngest respondents.

Table 5.62. Mean difference table for levels of satisfaction of IIM library OPACs according to different age groups

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
21-30	31-40	-.086	.082	.723	-.30	.13
	41-50	**-.360***	**.121**	**.017**	**-.67**	**-.05**
	51-60	.171	.502	.981	-10.98	11.32
31-40	21-30	.086	.082	.723	-.13	.30
	41-50	-.274	.130	.155	-.61	.06
	51-60	.257	.505	.946	-10.44	10.96
41-50	**21-30**	**.360***	**.121**	**.017**	**.05**	**.67**
	31-40	.274	.130	.155	-.06	.61
	51-60	.531	.512	.770	-8.88	9.94
51-60	21-30	-.171	.502	.981	-11.32	10.98
	31-40	-.257	.505	.946	-10.96	10.44
	41-50	-.531	.512	.770	-9.94	8.88

*. The mean difference is significant at the 0.05 level

Table 5.63. Descriptive statistics for satisfaction regarding web-OPAC according to age groups

Age	N	Mean	Std. Deviation
21-30	769	2.67	1.302
31-40	399	2.76	1.348
41-50	130	3.03	1.269
51-60	02	2.50	.707
Total	1300	2.73	1.316

5.5.10.1. Testing of Hypotheses

The summarizations of the testing of hypotheses are designed for this study is presented here.

Hypothesis 4A: There is no significant difference in the usage of web OPAC among respondents from different IIMs (F=10.825; p=0.000(<0.05 table 5.38). Therefore, hypothesis H_{4A} is rejected and research hypothesis is supported.

Hypothesis 4B: There is no significant difference in the usage of web OPAC among respondents from different age groups (F=6.495; p=0.000(<0.05 table 5.38). Therefore, hypothesis H_{4B} is rejected and research hypothesis is supported.

Hypothesis 4C: There is no significant difference in the usage of web OPAC among respondents different gender (t=-1.572; p=0.116(>0.05 table 5.42). Therefore, hypothesis H_{4C} is accepted and research hypothesis is supported.

Hypothesis 4D: There is no significant difference in the usage of web OPAC among respondents of different status (t=-0.733; p=0.464 (>0.05 table 5.42). Therefore, hypothesis H_{4D} is accepted and research hypothesis is supported.

Hypothesis 4E: There is no significant difference in the usage of web OPAC among respondents with different OPAC usage experience (F=8.259; p=0.000 (<0.05 table 5.38). Therefore, hypothesis H_{4E} is rejected and research hypothesis is supported.

Hypothesis 5: There is no significant difference of opinion among respondents from different IIMs regarding each constraint while using web OPAC. Three hypotheses are accepted and nineteen hypotheses are rejected mentioned p value in the table 5.55.

Hypothesis 6A: There is no significant difference in satisfaction levels of respondents from different IIMs regarding the web OPAC at their libraries (F=10.904; p=0.000 (<0.05 table 5.59). Therefore, hypothesis H_{6A} is rejected and research hypothesis is supported.

Hypothesis 6B: There is no significant difference in satisfaction levels of respondents from different age groups regarding the web OPAC at their libraries (F=2.866; p=0.036 (>0.05 table 5.59). Therefore, hypothesis H_{6B} is accepted and research hypothesis is supported.

5.6. Summary

The above discussions help us to find out more satisfied respondents from institutions wise and respondents age wise. It is clear from the results that IIM-Bangalore and IIM-Calcutta respondents are more satisfied and from all age groups the 41-50 age respondents are more satisfied compare to age group 21-30 across selected IIMs; it is found that older respondents are more satisfied with web OPAC at their respective libraries than the youngest respondents.

Chapter-06

MAJOR FINDINGS, SUGGESTIONS AND CONCLUSION

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Chapter-06

MAJOR FINDINGS, SUGGESTIONS AND CONCLUSION

6.1. Introduction

In this chapter, researcher has exposed the overall achievement of the research work, research objectives attained; present status of web OPACs search features among thirteen IIMs, awareness level of respondents about web OPACs, usage frequency, discussed with cause and effects of respondents search attitudes and behaviour. Further, major findings on OPAC search purposes, constraints faced by the respondents' and their suggestions to add some important features on web OPAC, satisfactory level on web OPAC were discussed. Finally, topics for future research and research gaps were listed out.

6.2. Research Design

As we know that, this study is intended to evaluate the web OPAC search facilities and patrons' awareness on it among the selected IIMs. IIM-Ahmadabad, IIM-Bangalore and IIM-Calcutta are considered as first generation IIMs, later remaining institutions are established in different years. 06 IIM Libraries are working with Koha, 04 IIM libraries are managing with Virtua and 03 IIM libraries are serving with Libsys. The Wi-Fi and local networks facilities are available at all the thirteen IIMs for accessing the web OPACs.

The three fold research methods are applied to evaluate the web OPACs such as evaluation of salient search features of different web OPACs based on renowned evaluation parameter checklist designed by Ramesh Babu and Anne

Obrien, evaluation of OPAC 2.0 search features of different web OPACs based on the evaluation parameter checklist designed by Tanja Mercun and Maja Zumer, application of precision and relative recall formulas to find out relevancy of search results in different web OPACs and for user survey on web OPACs in different IIMs the descriptive research design has used to collect data whereby semi-structured questionnaire was used to gather data from the respondents.

The questionnaire comprises 05 parts with 19 main questions in multiple choice formats. The research questionnaire applied five point Likert's scale, 1500 filled questionnaires were received through google forms and only 1300 questionnaires were usable for the study. The students and research scholars of IIMs are the respondents since, those are the direct, effective and regular users of the Web-OPACs in the institutes for their various information needs, The total population (students and research scholars) was 4215 and 1300 (30.84%) respondents were taken into consideration and representing target community which was scattered among different departments. The data was analysed in SPSS software at Department of statistics, Karnatak University, Dharwad and Karnataka.

6.3. Evaluation of Web OPAC Salient Search Features

6.3.1. Availability of general parameters

- It is found from table 5.2 that 'Content and coverage of OPAC' is not available in many of the IIMs except AHM, BAN. CAL, TRI, which tells the users scope and limitation of web OPAC related to about library, library sources, and database subjects in the library, other useful links, Rules & regulations etc. to proceed further.

Suggestion

The proper designing of the web OPACs caused to rich showcase of library (online) image. It attracts the patrons to use the web OPACs. The designing of web OPACs should focus more on speed navigation, F-shaped pattern reading, visual hierarchy, grid based layout and mobile friendly pattern.

6.3.2. Availability of different types of searches

- The table 5.3 describes about different types search features availability, only 04 IIMs (BOD, ROH, SAM, UDA) have not customised the 'provision for truncation'. The truncation is a technique used in database in which a word ending is placed by symbol such as * $ etc.

Suggestion

It is observed that truncation facility rarely used even though it is available due to no awareness among user community. In the web OPACs Truncation wild card should display; truncation wild card is nothing but list of symbols used for words.

- Provision of hyperlinks in search item for full bibliographic details is available in all the OPACs with maximum hyperlinks within bibliographical details except KAS, LUC, RAN, TRI libraries, also these libraries do not offer hyperlink facility to all the bibliographical elements.

Suggestion

Most of the users expect hyperlinks on abstract field, front page image, copy location and contents, without this indirectly it leads to half bibliography. While designing web OPAC developer should be guided by library professionals to create hyperlinks to above ones.

6.3.3. Access Points

- Analysis of table 5.4 revealed that KAS, LUC, and TRI libraries don't offer class number, ISSN and ISBN search points in their respective web OPACs.

- KAS, LUC, RAN, TRI libraries don't provided the facility to search through series, barcode number, name and subject authority controls.

- Only AHM, BAN, and CAL libraries facilitated 'cross references' remaining ten libraries not offering this feature.

- Only AHM, BAN, CAL, IND, and KOZ libraries made provision for copy location access in bibliographical display.

Suggestion

Many of library professionals should change their understanding that above mentioned features not useful and same way they insist during customization of web OPAC. Otherwise, library professionals should check usage of each field from LMS backend files and decide to retain or deletion of the fields.

6.3.4. Availability of search strategy features

- The table 5.5 deals with 'search strategy features' on the web OPAC, it is found that no libraries are providing examples under each type of search strategy except Boolean operators and publication years. The KAS, LUC and TRI libraries do not offer any search strategies and search history of a query.

Suggestion

The libraries who failed to provide search strategy should develop the dense index system in LMS; in this system the number of records in the index

table is same as the number of records in the main table. It needs more space in the disk but makes searching faster.

6.3.5. Availability of search limit/ filter features

- The table 5.6 shows the search filters among the IIMs, nine libraries are having all the search limits (year, language, type of publication, location, publication status, etc.) and sorting records, ranks output by relevancy. The LUC and RAN libraries don't providing any of above search filters.

Suggestion

KAS library has not customised sorting of records and outputs in relevancy wise, further SAM library should build sorting of records feature.

6.3.6. Display Features

- The table 5.7 highlights about web OPAC Display features, it is found that except RAN library remaining all the IIMs have given provision for 'brief/long bibliographic displays or both' and 'customizable display screens, top, right, middle etc.'

Suggestion

The libraries BOD, KOZ, KAS, LUC, RAN, ROH and SAM, UDA need to adopt 'limiting the number for the display of records (output control)' facility at web OPACs.

6.3.7. Availability of external links

- The table 5.10 depicts on external links such as 'links to electronic sources', 'access to Z39.50' and 'links to external sources'. It is observed that IIM-KAS, IIM-LUC and IIM-RAN don't offer any of the above

features at their web OPACs. Only five (AHM, BAN, BOD, SAM and TRI) IIMs are having all the above mentioned three features on their web OPACs

Suggestion

It is urged to implement all the three features especially, links to free or subscribed sources, links to table of contents, companion and supplementary materials, links to book review, links to google scholar, book finder, world cat, publishers site etc.

6.3.8. Availability of other services/facilities

- Table 5.11 explains about other service of the web OPACs such as 'interface with the circulation system', 'provision for ILL, renewal, reservations etc'. 'provision of online mailboxes for user comments or suggestions'. It is found that, seven IIMs don't have any of these facilities, IIM-AHM and BAN libraries only offering all three features and remaining four IIMs partially customised.

Suggestion

The effective implementation of other additional facilities helps to increase in the usage of web OPACs. The facilities like; links for grammar checking software tools, plagiarism checking software tools, and subscribed online newspapers and magazines and ready reference material i.e., subscribed online subject dictionaries and directories etc.

6.3.9. Availability of linguistic capabilities

- Table 5.12 discusses about multi lingual collection and non-roman script materials. It is clear that six libraries don't have both the features at their web OPACs, four libraries adopted both and remaining three libraries any one of them.

Suggestion

Unicode supportive package would help to create multilingual libraries and it is very much required in IIMs where students and research scholars come from different parts of country. Non-roman scripts would help the people who come from different countries.

6.3.10. Availability of user assistance features

- The table 5.13 tells about user assistance/on screen help on the interfaces in different ways about OPAC. It is found that 'provision of contextual help messages' and 'provision for procedural learning/training' are not at all built by any of the libraries.

Suggestion

As per procedural training is concerned library professional can put self-streaming video on the web OPACs, same video can be created with the you tube link and can be shared among user community with help of students representatives and in turn they share the link among their department what's app groups.

6.3.11. Availability of other features

- The table 5.16 highlights about other features such as 'provision for drop-down menus or pull-down menus' and 'provision for shadow catalogue'. It is analysed that drop-down menus or pull-down menus are available at all IIMs, but shadow cataloguing is not built by any of the IIM libraries.

Suggestion

The shadow cataloguing would help the libraries on the item status which they don't want share among user community and picklist/list box (drop-down menus or pull- down menus) feature can be used for ISSN, ISBN, accession number, year and editor, call number etc.

6.4. Evaluation of Web 2.0 OPAC Search Features

6.4.1. Availability of general parameters

- The table 5.19 deals about availability of basic parameters those are; MARC21 view, ISBD view, normal view, types of material catalogued and unicode language access points.

- The ISBD view is not available in five IIMs (BAN, CAL, IND, KAS and RAN) but it is present in six IIMs.

- Information on types of material catalogued is available at nine IIMs and not available in four (AHM, BOD, SAM and UDA) libraries.

Suggestion

It is suggested to incorporate ISBD view because it is most cosy compare to MARC21 view as per the researcher observations, further types of materials catalogued information also required to the users because it works as speedy navigation.

6.4.2. Availability of search parameters

- In the table 5.20 various search features are discussed those are; simple search box as available in general search engines, spell checking and suggestions, begin search by browsing, full-text searching.

- It is found that all the four areas of search parameters are available across all the IIMs except IIM-Ranchi and IIM-Rohatk, where, full-text searching facility is not yet offered.

Suggestion

It is observed that twelve web OPACs provide only spell checking facility not spell suggestions. But, in case IIM-Bangalore it provides both spell checking with amazing alternative words or assistances. Further, accessing the full texts from OPACs is available at the eleven library web OPACs, IIM-Ranchi and IIM-Rohtak libraries need to build this feature at their web OPACs.

6.4.3. Availability of result page and navigation

- The table 5.21 elaborates about relevancy ranking and clustering, navigation and recommendation to other resources available on open or subscribed e-resources.

- Regarding relevancy ranking and clustering of results IIM-KAS reported nil, LUC, RAN and ROH libraries are lacking with clustering facility.

- As navigation is concerned IIM-Bangalore provided the hyperlinks to all the elements of bibliography. But, IND, KAS, RAN, and ROH libraries offer navigation to title only and LUC, SAM provided to title and author names fields.

- There is no provision for recommendation to other resources available either on open or subscribed module at eight libraries (AHM, BAN, IND, KOS, KOZ, LUK, RAN, and ROH) web OPACs.

Suggestion

Clustering of results are expected by user community is vivid but minimum clustering are possible such way that recently added items first, A-Z, Z-to A, publishing date oldest first/newest first, call number (ascending order) etc.

Navigation is also play important role in directing user to similar titles, similar works by the author, publisher, navigation to multimedia source related to search query etc. and provision for recommendation to other resources available either on open or subscribed content would help the patrons to access similar resources in simultaneously.

6.4.4. Availability of enriched content and recommendations

- The table 5.22 discusses about enriched content and recommendations which includes front page image, sharing resource in social media, summaries and annotations, excerpts, TOC and linking of resources, new items, most popular, recently retuned items and recommendations lists, "more like this", audio in video content.

- It is found that performance of IIM libraries on front page image in search results is satisfactory expect IIM-RAN library, where they provide. Sharing of resource in social media sites is not possible in BOD, CAL, RAN and UDA libraries but remaining libraries have offered the service.

- Eight IIM libraries (BAN, IND, KAS, LUC, RAN, RAH, SAM, TRI) are not incorporated the 'summaries/annotations'. Excerpts found only in five (AHM, KOZ, SAM, TRI, UDA) IIM library web OPACs.

- TOC and linking of resources not possible in five (KAS, LUC, RAN, ROH, TRI) library web OPACs.

- Customization of new items, most popular, recently retuned items and recommendations lists are not in KAS, RAN and SAM library web OPACs. The KOZ, LUC and RAN libraries don't have feature "more like this" and IIM-Sambalpur doesn't have sources with having audio in video content.

Suggestion

Front page image for the books is only possible through sharing the ISBN while data migration from any LMS, normally language books don't have ISBN in that cases front page image not possible from google. For sharing resources through social media is possible library should have an account of Facebook, twitter, linked in, delicious, institute mail etc. In case summaries/annotations (foot notes) it is observed that abstract/book summary is very short. Further, for excerpts (author review, reviews on social networking platforms, etc.) facility library should have its LMS in web version model, and wherever implemented those are in very less number of reviews and discussions are found. It is observed that no IIM libraries have introduced "more like this" where user can see/open more links from the source such as similar items, more by author, similar authors, by readers, same series, by tags, by genre etc. And overall performance of libraries OPAC from KAS, LUC, RAN and ROH is not satisfactory at this category.

6.4.5. Availability of user participation parameters

- Under this category three parameters are covered; ratings and reviews, user comments, tags and forums. It is observed that, there is poor performance of all IIM library web OPACs in this category. There are fewer ratings and reviews, no tags (user created subject headings) and subject wise similar interests' discussion forums.

Suggestion

To enhance this category, user participation is mandatory and same time web OPAC designer should maintain relevant content on web, upto date and authenticated one. From library end immediate incorporation of healthy suggestions given by students, researchers, experts and alumni are highly expected among the community and respectful reactions by library concerned section heads on any feedbacks will make great difference in mind-set of readers.

6.4.6. Availability of user profile and Personalization

- The category itself shows more user centric services and facilities on the web OPACs those are; automatic log-in facility, saved searches, recent activities, overview and editing of created content, saved items lists, personalized web page, personalized e-mail notices personalized recommendations.

- The table 5.24 explains that automatic login facility is made available at all the library web OPACs but still it is in manual nature not in automated wireless (contact less) method. Saved searches facility is built at nine library web OPACs, four libraries (recorded nil) IND, KOZ, LUC and RAN not yet implemented. The option 'recent activities' is found in eleven library web OPACs, excluding IIM-Ahmadabad and IIM-Indore where user may not find their recent activities. The 'saved items lists' is process of saving the source for later use. The six libraries have made this option in the cart, but in the BAN, CAL, IND, LUC, ROH, and SAM library web OPACs not given the provision in cart rather user can save the item (bibliographical information) in the external devices like; desktop, laptop

and mobile phone. In case of IIM-Udaipur (secured score 04) user can save directly from (links) display results

- The 'personalized web page' is fully users search attitude and behaviour centric service on the web OPACs, it includes trending headlines, most site visitors names, homepage and other key landing pages are on the first touch point, call-to-action (read this/buy this/grab this etc.), alumni testimonials, product or plan features, featured blog posts and other content. This web 2.0 application featured OPACs not found in any IIM libraries.

- The 'personalized email notice' facility is recent trend of sending alerts to user community based on their demographical details, email about trigger events of library, alerts based on users prospects and interests in the subject areas, intimation on library existing technologies, visual representation of library products, resolving user grievances and complaints related to library services and activities etc. But presently IIM library web OPACs are offering only introductory mail for library membership and their transaction status alerts.

- Personalized recommendations are given based on user search activities such as which items that have been frequently viewed, issued, renewed and time period and which customer is currently considering. So these are possible through large amounts of historical user data. But currently, IIM library web OPACs are offering only new arrivals to the library, purchase requests, recently returned books and their transaction status alerts.

6.4.7. Availability of other (trends) parameters

- The table 5.25 covers about RSS feeds, blogs, downloadable e-media, Instant messages (patron-library staff), mobile catalogue.

- It is analysed that BAN, CAL, IND, and TRI libraries somehow performed well in all category excluding blog category no library it is created. RSS feeds are found in only six libraries (BAN, CAL, IND, KAS, TRI and UDA) and seven libraries are not offering this. The e-media content materials are very limited and rare in numbers at all the library holdings. The Instant messages system also limited to transactions statuses. Only four IIMs (BAN, CAL, IND, and TRI) are having mobile application platform.

Suggestion

The parameters related to user participation, profile, personalisation and recent trending categories are required most committed library staff with highly skilled in present day technical stuff and knowledge in blogging, content writing, infographic, animation, video streaming, coding, web designing and social media handling etc. The execution of all these listed jobs practically very difficult for library professionals, instead it is recommended to recruit a digital marketing manager with little knowledge of library operations and services would work better.

6.5. Precision and Relative Recall of Web OPAC Search Results

It is clear from the tables 5.29 and 5.30 IIM-Sambalpur which is received highest mean precision (2.58) has received least mean relative recall (0.18) The IIM-Indore and Kozhikode which are out perform in precision but not in mean relative recall, IIM-Ahmadabad performed well in both precision (2.11) mean relative recall (21.70) at second highest.

In case of IIM-Bangalore precision recorded (1.92) and taken highest mean relative recall (68.97). The IIM-Udaipur recorded least precision (1.14) and IIM-Bodh Gaya secured least mean relative recall (0.77). There is no big difference among remaining six IIMs (Calcutta, Kashipur, Lucknow, Ranchi, Rohtak and Trichy) either in precision or in mean relative recall and suggested to improve the same.

Suggestion

The retrieval efficiency of the web-OPACs, in terms of relative recall and precision is vice-versa among the IIM library web-OPACs, those web-OPACs have received highest precision are not adequate in relative recall. To achieve more precision and flawless recall it is required to improve in the syntax and semantics of vocabulary management at the LMS.

While designing the web-OPACs software developer should be insisted to adopt B Tree or B+ Tree indexing technique in the LMS. A B-tree index creates a multi-level tree structure that breaks a database down into fixed-size pages. Each level of this tree can be used to link those pages via an address location, allowing one page (known as a node, or internal page) to refer to another with leaf pages at the lowest level. Based on the algorithm mechanism, it works like a tree, main subject acts as root and relative subjects join root as twig and exact keywords join twig as leaves.

From the library end library authorities should not defend fully on the in-built indexing technique of any LMS while rush data entry process in the name of automation and digitization. Besides, there is still more researches should happen in this direction.

6.6. Respondents Awareness about their Web OPAC Search Features

- It is clear from the study that more than 70% of respondents are aware of basic search, author search and more than 30% of respondents don't know about different display formats like; AACR2, MARC21, CCF, Dublin Core display formats. Further, more than 50% of respondents expressed that there is no links from web OPACs to search engines, digital libraries, auto keyword generation facility and automatic indexing facility and 60% of respondents stated that non-availability of multi-lingual catalogues and links to other IIM web OPACs.

6.7. Usage of Web OPACs by Respondents among IIMs

- Of all the respondents, total 281 (21.8%) use the web OPAC once in a week and 192 (14.8%) respondents use it daily.

  Cause and Effect : It is observed that IIMs are trying to attract their patrons for increasing the usage frequency, still not yet succeeded.

- There is no significant difference in the usage of web OPAC among respondents from different IIMs. Since, the p-value for the factor IIMs with an F-value 10.825 is 0.000 (<0.005) we reject H4^A and conclude that "there is a significant difference in the usage of web OPAC among respondents from different IIMs.

  Cause and Effect: Library LMS services and OPAC search features are different in each IIM.

- There is no significant difference in the usage of web OPAC among respondents from different age groups. It is observed that, respondents belonging to age group 31-40 use 'an average' compared to other age groups.

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Cause and Effect : Since adult group is common and more at all IIMs.

- There is no significant difference in the usage of web OPAC among respondents different gender. An average usage of web OPAC does not differ with respect to gender as user.

  Cause and Effect: There are equal opportunities to both the gender to avail the web OPAC facilities.

- There is no significant difference in the usage of web OPAC among respondents of different status (category). An average usage of web OPAC does not differ with respect to statuses.

  Cause and Effect: There are equal opportunities to all departments to avail the web OPAC facilities.

- There is no significant difference in the usage of web OPAC among respondents with different OPAC usage experiences. Based on the results an average usage of web OPAC of respondents with an experience of 4-6 years and 7-10 years is more than those with an experience of 1-3 years, it shows respondents with more experience use more web OPAC.

  Cause and Effect: It shows that search experience makes users more OPAC savvy.

6.8. Respondents Search Behaviour on Web OPAC

- Since there are several devices to access the web OPACs among the respondents from all the IIMs, it is found that all the devices are used and laptop (30.2%) is more preferable and desktop is least used.

  Cause and Effect: Laptop is more handy compare to desktop.

- It is found that campus is most preferable place (52.8%) for all the respondents of all the institutes. The workplace is considered as second option except IIM-Kashipur and IIM-Rohtak they prefer other places which includes hostel, cafeteria and lawns etc.

  Cause and Effect: Since these two IIMs have constructed new buildings and provided rich network facilities at hostel & cafeteria.

- It is observed that initiation methods to searching web OPACs; many are started with trial and error method (23.10%) to access web OPACs.

  Cause and Effect: There is delay in conducting orientation program for new comers. It should happen immediately in the first week of classes commence.

6.9. Respondents Search Purposes of Web OPAC

From the data presented through 13 graphs, it is clear that purposes of accessing the web OPAC among the selected IIMs; 'to check available source' is major purpose in IIM-Ahmadabad, IIM-Indore, IIM-Kashipur, IIM-Kozhikode, IIM-Trichy and IIM-Bangalore. 'to know the transactions status' is more used in IIM-Bodh Gaya and IIM-Lucknow, in IIM-Rohtak major use purpose is 'for project/dissertation work'. Respondents from IIM-Calcutta and IIM-Ranchi majorly use 'for writing articles' 'for preparing class', 'rare notes/diagram/ graphs and other materials. IIM-Sambalpur and IIM-Udaipur majorly used for 'research work, for online books and journals'.

Cause and Effect: Information seeking behaviour normally changes based on academic requirements and situations, still it is responsibility of each IIM to find out whether basic purpose of their OPAC is served or not.

6.10. Respondents Search Attitude on Web OPAC

- The respondents from IIM-Tiruchirappalli prefer for search most by 'topical keywords (mean 4.79)' and by title (mean 4.69). IIM-Lucknow and IIM-Kashipur are the least used these two options.

- Respondents from IIM-Kozhikode prefer (mean 4.24) "by author name" entry more than any other entries available in OPAC. In case of "subject wise search" IIM-Bangalore (mean 3.63) and IIM-Kozhikode (mean 3.56) uses these two search tools more in the web-OPACs. IIM-Indore with less mean 2.64 and IIM-Kashipur with mean 2.35 are the less used both the options 'by author name and by subject wise search'.

- Search by "by call number" entry in IIM-Kozhikode, IIM-Indore are significantly greater (mean 2.75) than all other IIMs. In case of "by ISBN/ISSN/accession number" IIM-Bodh Gaya (mean 3.04) followed by IIM-Rohtak (mean 3.02) uses this search tools more in the web-OPACs. IIM-Bangalore with less mean 2.16 recorded in call number search and IIM-Indore with mean 2.67 are the less used option 'by ISBN/ISSN/ accession number'.

- Search "by editor name" entry in case of IIM-Lucknow is least (mean 2.44) as compared with other IIMs under study except for IIM-Calcutta (mean 3.09), IIM-Kashipur (mean 3.11), IIM-Kozhikode (mean 2.64) and IIM-Ranchi (mean 3.07).

- Search by "record or control number" is more in IIM-Calcutta (mean 3.24) web-OPAC as compared with preferences in IIM-Ahmedabad, IIM-Indore (mean 2.59), IIM-Kashipur, Bodh Gaya and Rohtak (mean 1.95) and IIM-Kozhikode (mean 2.35).

6.11. Respondents Cosiness Level on Web OPAC

- It is found that responses for initial five statements IIM-Bangalore has secured highest mean such as "helps in finding documents faster (3.68)", "displays more items than expected (3.36)", "it is easy and fun to use (3.45)", "all features are clear and understandable (3.43)", "results are displayed in comfortable format (3.45)" and "displays irrelevant results sometimes (3.57)". In the same way IIM-Kashipur (2.55), IIM-Sambalpur (2.27), IIM-Indore (2.29), IIM-Rohtak (2.16) and IIM-Kashipur (2.28) are recorded least mean respectively.

- IIM-Indore has highest mean (3.18) on the statement "I can create my personal profile" but IIM-Sambalpur has least mean (2.51) for the same statement.

- IIM-Ahmadabad has secured highest mean (3.18) for "I can check my transaction statuses" and three IIMs, IIM-Kashipur, IIM-Bodh Gaya and IIM-Rohtak have received the least mean (2.18) for the same statement.

- IIM-Calcutta has got (3.26) highest mean on the statement "it displays circulars on the OPAC" and mean (2.65) is the least in the IIM-Lucknow.

- IIM-Kozhikode has scored highest mean (3.02) followed by IIM-Udaipur (3.00), IIM-Indore scored least mean (2.67).

- IIM-Trichy recorded (3.14), (3.18), (3.44) highest mean for the statements "the help link is really helpful", "it is difficult to use", "it is confusing to use" respectively. Here, again two negative statements, where the IIM-Trichy should address.

- IIM-Kashipur reported highest mean (3.43) followed by IIM-Bodh Gaya and IIM-Rohtak mean (3.38) for the statement "it has limited features" but IIM-Ranchi has least mean (2.48) in this case.

- "It should have more flexible interface" has received highest mean (3.69) in IIM-Kashipur followed by IIM-Indore mean (3.67), IIM-Sambalpur has least mean (2.45) in this case.

- The statement 'ISSN, ISBN and call numbers are helpful' has secured highest mean (3.31) in IIM-Calcutta followed by IIM-Indore (3.15), IIM-Sambalpur has least mean (2.38) in this case.

- For the statement "provision for feedback is needed" is highest mean (3.51) in IIM-Trichy, proceeded by IIM-Kozhikode mean (3.43) and leas mean (2.47) at IIM-Sambalpur.

6.12. Respondents Preferable Styles of Interaction on Web-OPAC

- IIM Kozhikode has secured more preferences for menu based interaction style (4.44), graphical direct manipulation style (4.15), command based style (3.36) and function key style (3.20) with highest mean proceeded by IIM-Trichy in all the initial four interaction styles.

- IIM-Calcutta, IIM-Lucknow, and IIM-Bodh Gaya have got least mean for the above mentioned four interaction styles, where least preference has given by the responses and less used styles by the respondents.

- IIM-Calcutta has recorded highest mean (3.15) proceeded by IIM-Sambalpur (3.13) for the style "natural language dialogue style" and IIM-Kozhikode respondents preferred less for this (2.57).

- IIM-Kashipur has recorded highest mean (3.54) followed by IIM-Bodh Gaya and IIM-Rohtak (3.52) for the style "question-answer type" and IIM-Lucknow respondents preferred less for this (2.68).

- IIM-Trichy has recorded highest mean (3.19) followed by IIM-Ranchi (3.18) for the style "character and image on screen" and IIM-Indore respondents preferred less for this (1.50).

- IIM-Bangalore has recorded highest mean (3.55) followed by IIM-Trichy (3.40) for the style "browsing and navigation style" and IIM-Kozhikode respondents preferred less for this (2.58).

- IIM-Calcutta has recorded highest mean (3.40) followed by IIM-Bangalore (3.39) for the "above all styles of interactions" and IIM-Kozhikode respondents preferred less for this (1.89).

6.13. Respondents Opinion of each Constraint while Searching Web OPAC

- It is clear that, problems such as 'no on screen help, lack of Internet connectivity and lack of knowledge on how to broaden/precise search query' are the accepted common problems among all the IIMs.

6.14. Respondents Opinion on Important Features to Add on Web OPAC

- Respondents from IIM-Ahmadabad and IIM-Calcutta deemed that least important to be added to web-OPAC such as 'provision for suggestions/ feedbacks (mean 2.90), provision for personal profile (mean 2.80), display with relevance rankings (mean 2.44). IIM-Indore expressed that 'provision

to use abbreviations' should be added (mean 3.78) and least expressed by IIM-Sambalpur (mean 2.41**).**

- IIM-Kashipur respondents suggested four features to add 'display with relevance rankings' (mean 4.00), RSS feeds and e-mail notifications (3.95), automatic error corrections (3.78) and provision for suggestions/feedbacks (3.63).

- IIM-Kozhikode respondents suggested three features to add 'search by any words on titles' (mean 4.13), limiting the search by language (3.46), information on book locations and status (3.96). IIM-Sambalpur, IIM-Trichy and IIM-Udaipur are showing most important provisions are as second highest mean.

- IIM-Lucknow respondents expressed least importance about eight provisions not to add which are in least mean. IIM-Ranchi has expressed least importance for 'information on book locations and status (3.72), automatic error corrections (3.73), links to google and google scholar (2.56), provision for suggestions/feedbacks (2.90) and search results with abstract/summary (3.76).

- Respondents from IIM-Bodh Gaya and IIM-Rohtak have uttered for adding the features like, display with relevance rankings (3.95), RSS feeds and e-mail notifications (3.55), automatic error corrections (3.76) and least importance for search results with table of contents (2.63).

- IIM-Bangalore respondents articulated around fourteen features are important to add on the web OPAC, which are seen from the table with highlighted mean numbers.

6.15. Respondents Satisfactory Level on their Library Web OPAC

- There is no significant difference in satisfaction levels of respondents from different IIMs regarding the web OPAC at their libraries. Based on the mean differences, respondents from IIM-Calcutta and Bengaluru are more satisfied with web-OPAC at their library than IIM-Kashipur, IIM-Lucknow, IIM-Bodh Gaya, IIM-Ranchi, IIM-Rohtak, IIM-Sambalpur and IIM-Udaipur.

- There is no significant difference in satisfaction levels of respondents from different age groups regarding the web OPAC at their libraries. Based on the mean differences, age group 41-50 year respondents are more satisfied compare to age group 21-30 across all selected IIMs; older respondents are more satisfied with web OPAC at their respective libraries than the youngest respondents.

6.16. Suggestions to Survey Results

- It is recommended to customise all the feature of the checklist into web OPAC at all the IIM libraries, especially at IIM-Rohtak, Ranchi, and Bodh Gaya libraries not yet done.

- Every institute must identify the non-users of web OPAC and proper attention should be taken to convert them into potential users of web OPAC of their institute.

- It is recommended to conduct periodic user information literacy program into three categories such as induction program, OPAC instruction sessions and web OPAC hands on training which would enhance the usage of web OPACs at IIM libraries especially where users use rarely and once in a week.

- It is recommended for balance the difference in usage at different IIMs to customise the web OPACs with more user centric, user friendly features in the web OPACs.

- It is observed that respondents belonging to age group 31-40 use more web-OPAC in order to support this community recommended to create mobile apps to their library management systems.

- It is found that, an average usage of web OPAC by respondents with an experience of 4-6 years and 7-10 years is more comparatively the respondents having 1-3 years of experience, further, it is recommended to focus more hands on training programs for new comers or new joiners to the institution.

- It is observed that, trial and error method is highly used by the respondents to access their web OPACs, It is recommended to facilitate self-guide tool or online tutorial in multiple languages which helps the users not use 'trail and error method' at first effort.

- It is found that, purposes for accessing the web OPACs among the IIMs majorly for source availability check, comprehensive list on the topic and for online books and journals. It is recommended to each institution to understand their patrons, minor and major purposes and plan accordingly for improvements.

- It is recommended to educate the patrons on how to filter the search entries would help them to save the time while searching the web OPACs such as search by ISBN, ISSN, record/control number, by accession number and by year and editor which are used less among the respondents in the study.

- It is recommended to incorporate solutions which are downsized the cosiness among the respondents about their web OPACs case by case.

- It is recommended to integrate the style of screen interactions into web OPACs based on the respondents responses wherever applicable.

- The common problems are being faced by the respondents at the web OPACs such as no on screen help, lack of internet connectivity and lack of knowledge on how to broaden/precise search. It is already suggested to accommodate online tutorial in different languages would solve the first problem, for second problem, sometimes it is problem with speed of search navigation in LMS, it is called as common gateway interface (CGI); standard way of running the programs from web server, technology which helps in database for string operations. In Koha it is called as Zebra search engine and in NewGenlib it is called as Lucene search engines.

- It is recommended to each IIM to add important features which are suggested by the respondents on their respective library web OPACs, based on the relevancy and applicability.

- It is recommended to IIM-Kashipur, IIM-Lucknow, IIM-Bodh Gaya, IIM-Ranchi, IIM-Rohtak, IIM-Sambalpur and IIM-Udaipur to take the proper feedbacks to improve the satisfaction level of respondents on their web OPACS.

- It is commonly recommended to all IIMs for obligating few new facilities on the OPACs such as Spell checking mechanism, automatic error correction, hyperlinks for online resources, provision for instructions on each type of search, and option for search history, allocating 'tag clouds' and 'add this' features which are embedded in Koha and supports the users define tagging as subject descriptors in the databases, etc.

6.17. Research Gaps/Suggestions for Future Studies

It is observed from the chapter review of literature while writing the relevant research papers analysis; many researches have been undertaken on checklist based studies, survey based studies and log examines on accessibility, functionality, internal and external designs of OPACs and web OPACs. Still there are plenty of research areas yet to study few are mentioned below.

- Impact of searching in OPAC by using ontology, taxonomy and folksonomy.

- Studies also may be under taken for next generation catalogues comparing the functionality of Google, Amazon and world online catalogues.

- Studies on incorporating and developing mobile apps with library management systems for web OPACs accessibilities. There is gap for finding out unused fields/records to downsize LMS memory space to enhance speed of web OPACs.

- There is urgent need to improve the session filters such as nature of content, language, place, year and location to restrict the results of web OPACs. Works also can be taken on Union catalogue accessibility and functionality features.

- Studies on accessibility of OPACs within (face book) social media web interfaces and impact of web searching behaviour on OPACs searching can be under taken.

- Studies can be taken on evaluation of precision and recall of web OPACs of the selected institute libraries. Predicting the OPAC users' cross-device transitions and understanding their machine learning habits.

6.18. Conclusion

Since a decade, manual cataloguing job is reducing in libraries; we may assume that it is almost stopped due to OPACs. The library professionals have agreed that web-OPACs are their library face; they trying to overload the information at online catalogues, but the users' goals are different at finding the sources; they need easy functionality of catalogues as google with the faster display of results also results should be most relevant.

Other one, recent web 2.0 features are making the users more attractive, but libraries in India are at initial stage in adopting these users centric or users friendly 2.0 OPACs. The commercial online catalogues and publisher websites somehow have shown the directions to libraries especially to academic libraries to start the swing at transformation of online catalogue in both internally and externally. Still there are few challenges, which need to address at present scenario such as OPACs are not translating the search queries into other required languages, there is no online thesaurus utility to seek the information, OPACs don't help for alternative formation of a query if first search fails, and OPACs don't provide the results in regional languages etc. Now-a-days reserve, renew and understanding their transactions are considered as basic facilities of web-OPACs. Many IIT, IIM and NIT libraries have started and engaging themselves to achieve these to incorporate at the earliest to win the situation but the speed of tendency towards is inadequate.

Now, it is demanded to triangular coordination of three major decision making authorities to work together; library professionals should understand the

users expectations insist to library software developers, the software designers should meet the expectations of library professionals and design accordingly at the field level users must interact with the products and should give appropriate and judicious feedback to library professionals for continuous improvement. The Librarians must contain to play the role of an "agents of change" in the use of online catalogues in order to become relevant in this technological driven world.

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