Impact of Emerging Technologies and Trends on Library Services: A Case Study of Nehru Library, CCS Haryana Agricultural University, Hisar

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Abstract

The aim of the present study is to assess the impact of ICT, emerging technologies and trends on agricultural libraries with special reference to the Nehru Library of Chaudhary Charan Singh Haryana Agricultural University, Hisar. To know the current trends and impact on library and information services, a case study has been conducted. It is observed that ICT or emerging technologies has widely affected the resources, services and infrastructural facilities of the library. Due to wide impact of emerging technology on library and ever changing needs of users, library have to force to change its resources, services and infrastructure as per the users' need. A small study was also conducted to know the students' perspective about their changing informational needs and awareness about the use of ICT based or emerging technology based information resources and services provided by the Nehru Library, CCS HAU, Hisar. Total 100 scholars were approached and shared copies of self designed a small questionnaire to them to get their opinion on the topic. Out of total 100 questionnaires, 93 valid questionnaires were collected and considered for final analysis, which representing the response rate of 93 per cent. It was found that majority of the respondents were on the opinion that digital services are good as compare to manual because it is the need of the day. Around 88 percent of the respondents opined that it is very easy and fast to find desired information or ICT based contents.
Keywords: Information Communication Technology, ICT, Emerging technology, Latest trends, Technological impact, Library services, CCSHAU, Hisar.

Introduction

Libraries are facing tremendously pressure of ICT (Information and Communication Technology). Now, manual services are totally been changed in digital form. Similarly, the informational needs of the users are also rapidly changed and they demanded their desired information as per their convenience, time and place. However, application of ICT in libraries has provided great opportunities to improve the quality of services as well as to get the full satisfaction of the users. ICT and its applications have changed the working pattern of the library as well. In house activities of the libraries have now shifted completely from manual to automated environment. Modern library management practices have been followed in the library to overcome with the challenges of ICT and web. Use of ICT can enhance service quality, manage the library space properly, time saving, easy to search and access digital resources, and can manage library and information centres systematically. In other words, emergence of Information and Communication Technology is one of the wonderful gifts of the modern science and technology, which has brought tremendous changes in the field of library and information science and libraries have to adapt to these changes and challenges to meet the users' rapid changing needs and growing expectations. Furthermore, due to changing needs of users and format of information resources, libraries are now forced to adopt the ICT challenges in its premises. New concepts are coming out

related with library and resources & services. Therefore, it is prerequisite to the library professionals that they must be well aware of the latest developments, emerging trends and techniques in the area of information and communication technologies, which are useful for libraries as well as for service delivery to the end user[1].

The Nehru Library of Chaudhary Charan Singh Haryana Agricultural University (CCS HAU), Hisar is also

Emerging technologies

Application of ICT gives a birth to many new technologies. In other words, it can be said that with the advancement of ICTs in library and information centres, a lot of emerging and innovative technologies have been evolved and all the users especially researchers are benefitted. Emerging technologies can assist academic librarians in many areas of their work.

The term emerging technology was stated as "a radically novel and relatively fast growing technology characterized by a

facing the ICT challenges and try to adopt the latest and most updated technological applications in providing resources and services up to the satisfaction level of users. Keeping in view of the above discussed, the aim of the present study is to analysis the emerging technologies and trends in library services adopted by the Nehru Library, Chaudhary Charan Singh Haryana Agricultural University (CCS HAU), Hisar.

certain degree of coherence persisting over tie and with the potential to exert a considerable impact on the socio-economic domain(s), which is observed in terms of the composition of actors, institutions and patterns of interactions among those, along with the associated knowledge production processes. Its most prominent impact, however, lies in the future and so in the emergence phase is still somewhat uncertain and ambiguous"[2].

Impact of emerging technologies on libraries and information services

Implementation of emerging technologies in libraries have changed traditional libraries into knowledge centres and librarians function more like consulting information engineers or knowledge managers. "The implementation of ICTs has generated many ways to provide better and quick information any time and everywhere. Information and Communication Technologies (ICT) has a deep impact on all spheres of activities in the libraries such as collection building, technical activities, outreach activities, budgetary strategies, manpower development, infrastructure development and library services, *etc.*"[1].

CCS HAU, Hisar

"After the division of Punjab State, the first established university in Haryana

The emerging and innovative technologies had provided library patrons with more innovative information media to access and locate information irrespective of their geographical location. These technologies have not only impacted the modes of information dissemination but also in collecting, organizing, presenting, and storing information across heterogeneous applications, digital libraries, networks, platforms, and systems. The rapid development of information technologies will continue enhancing and integrating library information resources and services.

State in 1970 is Haryana Agricultural University, which is one of the Asia's

biggest agricultural universities. In 1991, it was renamed after India's seventh Prime Minister Chaudhary Charan Singh. Thus, now it is known as Chaudhary Charan Singh Haryana Agricultural University, Hisar. The university covers an area of 8645 Acres, out of which, 7219 acres at main campus and 1426 acres at sub-campuses. The University has six colleges in its main campus with different departments, *i.e.*, College of Agriculture (COA), College of Home Science (COHS), College of Agriculture

Objectives of the study

- To study the usage and importance of ICT in advancement of future libraries
- To discuss about the issues and challenges related with ICT implementation in libraries
- To study how technology is adding values to innovate the concept of libraries
- To create consciousness among library professionals and users on the use of technology based information resources and services

Methodology

Considering the objectives of the study, qualitative research method was adopted with the aid of case study method. Primary data was collected from annual reports of Nehru Library, whereas, secondary data was collected from the opinion of research scholars who were

Nehru Library: A brief sketch

"Though the library was establishment in 1948 with the establishment of College of Veterinary Sciences, in the year 1975 it was named after Jawaharlal Nehru, the first Prime Minister of India. The covered area of the building is 9076 m^2 with a capacity to accommodate more than 3.5 lacs books and bound journals (CCSHAU, 2022). The

Engineering & Technology (COAE&T), College of Basic Science & Humanities (COBS&H), and College of Fisheries Science (COFS), and College of Biotechnology (COBT). The University has two more colleges in its outstation campuses other than these six colleges situated in main campus, *i.e.*, College of Agriculture, Kaul (COAK) and College of Agriculture, Bawal (COAB). The University is affiliated to Indian Council of Agricultural Research (ICAR)" (CCS HAU, 2022).

- To study the awareness of the use of ICT based/emerging technology based information resources and services among the users
- To know the current status of automation and digitization of resources and services of Nehru Library
- To discuss about the ICT based resources and services provided by the Nehru Library of Chaudhary Charan Singh Haryana Agricultural University, Hisar

visited the library on frequent basis for their academic and research purpose. Furthermore, the researchers have also considered his/her personal observations about which he/she has seen and observe about the library infrastructure as well as other such facilities.

library possesses a rich collection of more than 3.8 lacs books, bound journals and other reading material to meet the informational requirements of students, teachers, research scholars, extension specialists and other staff of the Chaudhary Charan Singh Haryana Agricultural University (CCSHAU) as well as Lala Lajpat Rai University of Veterinary and

Animal Sciences (LUVAS) located at Hisar and sub-campuses. The library is also maintaining its collections at College of Home Science, Hisar, College of Agriculture, Kaul, College of Agriculture, Bawal, Campus School, 19 Krishi Vigyan Kendras and 7 Regional Research Stations. The library is successfully exploiting the power of information and communication technologies in various activities for retrieval and dissemination of information" (Nehru Library, 2022).

Table 1 Current status of the Nehru Library, CCS HAU, Hisar

Information resources	Quantity
Books	2,53,643
Bound journals	1,05,737
Thesis	14,235
CD-ROM databases	155
Books CDs	2,555
Theses CDs	3,840
E-books	1,662
Total	3,81,827
EBSCO E-Books Academic Collection	2.4 Million
NIPA Computer Examination Package	4,30,000

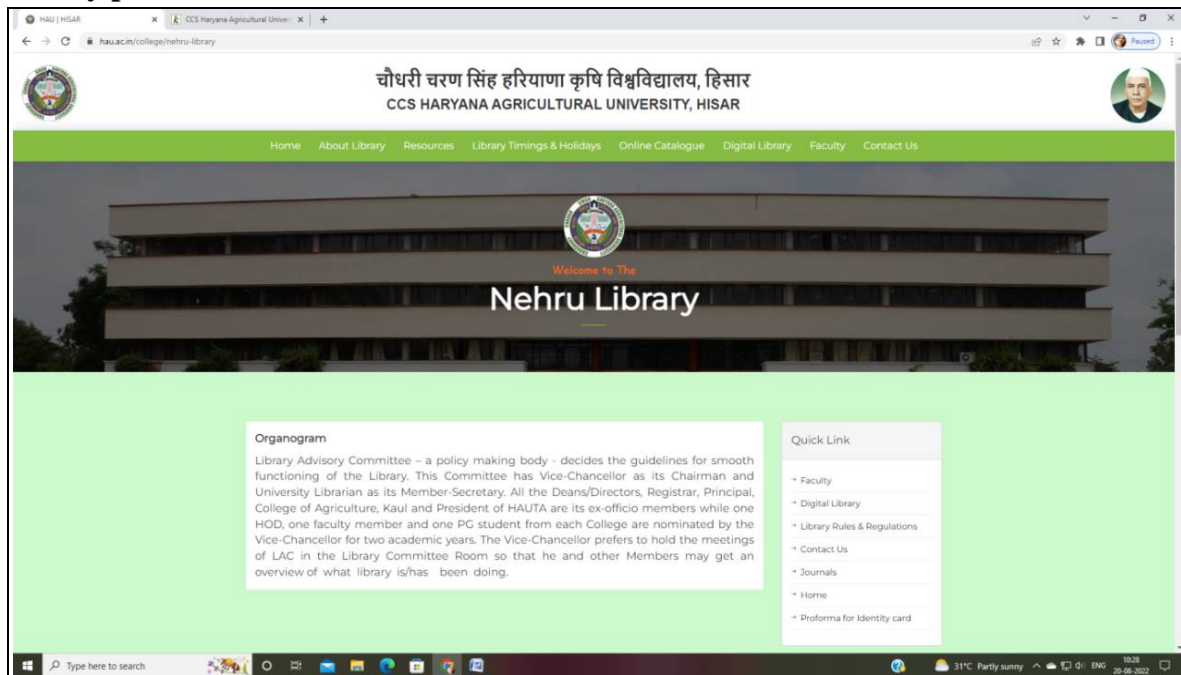**Source:** Annual Report, 2021-22, Nehru Library, CCS HAU, Hisar

Impact of ICT or Emerging Technologies on Nehru Library, CCS HAU, Hisar

Nehru Library has been impacted widely by the innovative and emerging technologies. The collection building pattern, information retrieval system, circulation services, Readers' Services, and library security has totally been changed gradually. Now, the library has tried to procure all type of electronic information resources, provides quick and easy information services, federated search or discovery service, and service at the door of users. With the rapid pace of time, if the format of information resources has changed, users' informational demands have also been totally changed. Now users want quick and easy access to the desired information as per their convenience @ 365x7x24. Furthermore, now users' want quality information services as compare to quantitative information services, which was the main feature of a library before the year 2000. Similarly, due to implementation of emerging technologies in library operations and services, users' community also want to get the pinpointed information. Therefore, the role of library as well as role of library professionals is also changed from the custodian of information or documents to the quality service provider who satisfies the users' informational requirements.

Some of the areas of Nehru Library, CCS HAU, Hisar, where ICT/Emerging technologies have impacted greatly are discussed in detail so that the reader of this paper may get some insight or overview about the current or emerging technologies, which affected the library operations or service delivery pattern greatly.

Library portal

Pic. 1. Screenshot of Portal of Nehru Library, CCS HAU, Hisar

In this era of ICT (Information and Communication Technology), it is supposed that every information resource of the library should be on public domain. The Nehru Library, CCS HAU, Hisar has also created its portal and a link is given on University website and put all about the library and its resources & services on library portal so that users' can get their desired information at any time and as per their convenience easily in digital form.

8.2. Reader services

Readers' services of Nehru Library have totally been shifted from manual to ICT based. Whatever the ready reference or short/long range type of services required by the end user, t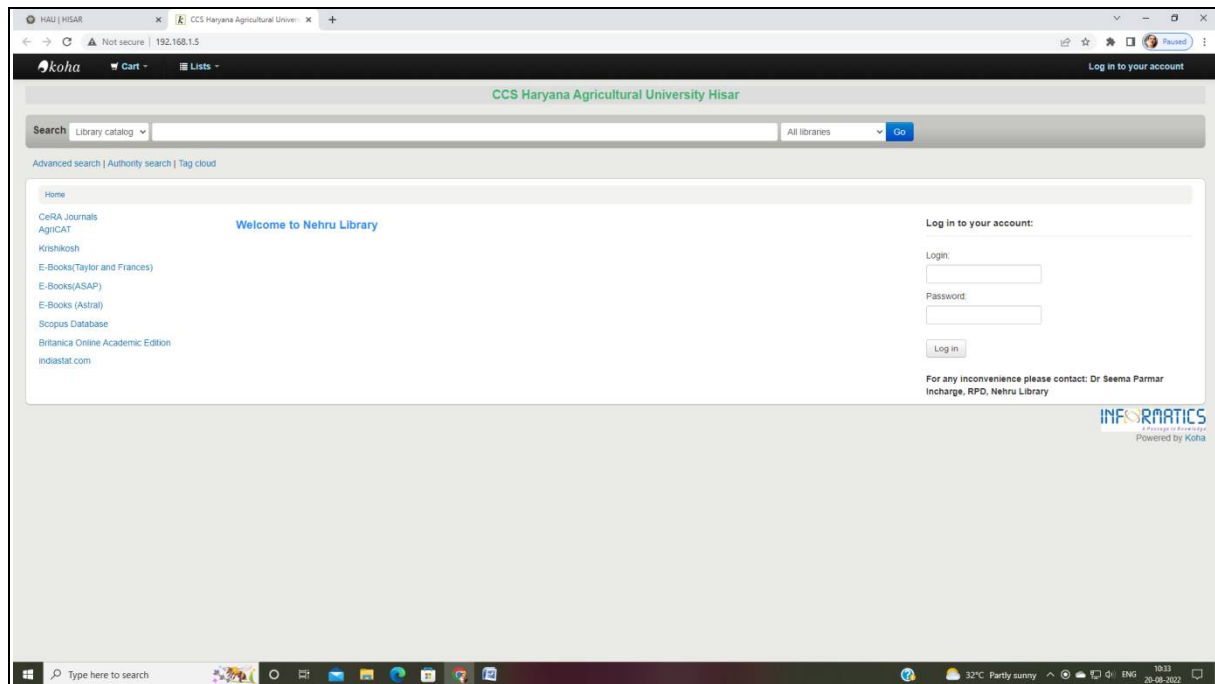he Officer-In-Charge of the Readers' Services Division is delivering the required information in digital mode. Sometimes, required information is supplied through e-mail, WhatsApp and by other social media tools. On urgent basis, information has also been supplied telephonically to the end user.

8.3. Document Searching

Earlier, for searching required books, bound volumes of journals, theses, *etc*. was done manually or either by visiting the stack areas directly or first search in Card Catalogues, which takes a lot of time. Now, from the year 2000 and onwards OPAC (Online Public Access Catalogue) has been implemented and the users can easily search their required document location within a few seconds. Secondly, Web-OPAC Services are also implemented in the library, by the help of which a user can search his/her desired information very quickly as per convenience and even at their own place.

Pic. 2. Screenshot of Koha- OPAC of Nehru Library, CCS HAU, Hisar
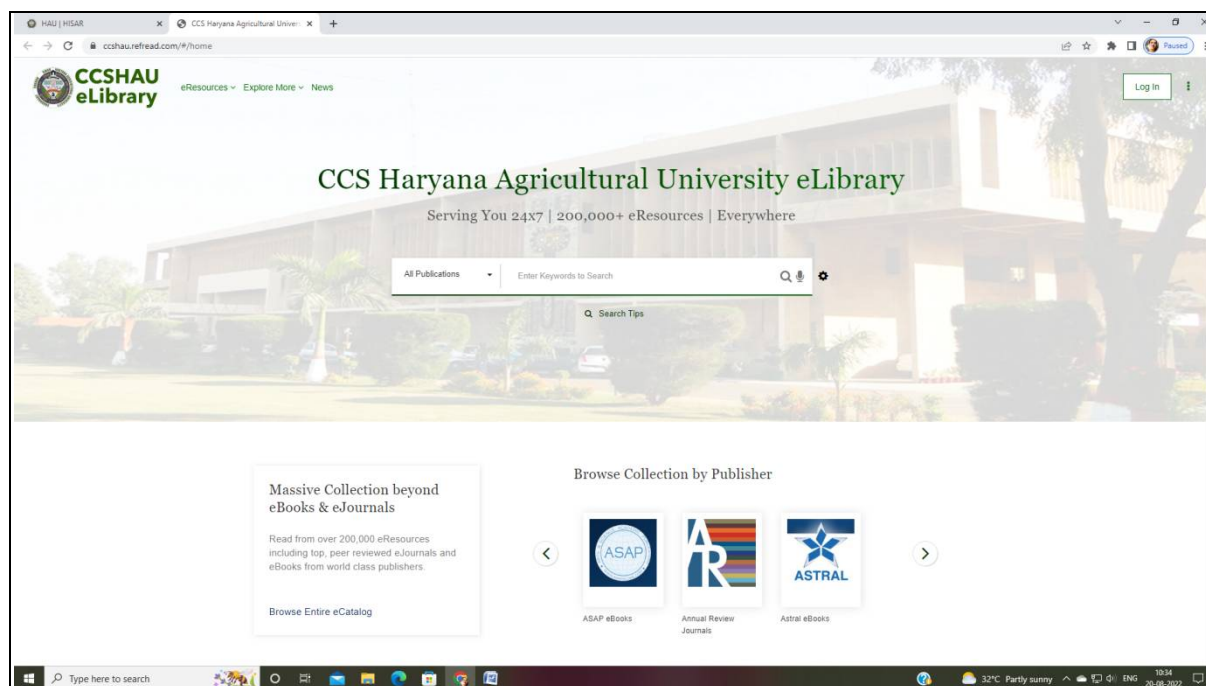
Circulation services

Earlier, the circulation services (Check-in and Check-out) have been given manually particularly it is based against the reader's tickets, which were issued to the users as per their defined eligibility. Later on, when the automation of library operations and services was started and LibSys software was implemented in the library, the circulation services have started to given through the software. In automated circulation or with the use of computer and software, the check-in and check-out services have been provided quickly and the record of the documents or daily transactions could be maintained easily. From 2017 onwards, RFID technology has also been implemented in the Nehru Library and now all circulation services are providing through RFID staff station only. Self check-in and check-out is also permissible to the users. Stock taking and shelf rectification is also doing with the help of handheld device, which supports RFID tags. Even reservation of books, fine calculation and due date alerts could do quickly in automated circulation services.

Federated search or discovery services (Single search option)

Federated search or discovery services are called to those services, which uses single search window option. It means that the user can search any documents or information and its location in the library with the help of single window search option. This service is very popular among the research fraternity because they have not sufficient time to visit the library and access the required contents due to busy schedule in attending/taking regular classes/lecturers or either busy in field research work. So single search platform of Nehru Library, CCS HAU, Hisar is helping to the users to search their required information/documents from one search option without visiting the library and access it quickly at their own place and as per there time convenience.

Pic. 3. Screenshot of Discovery Service of Nehru Library, CCS HAU, Hisar

Acquisition of documents

Activities related with acquisition of new documents, whether it will books, e-books, journals, e-journals, or other databases are now conducted in automated environment in the Nehru Library of CCS HAU, Hisar. Due to changing trends and rapid change in users informational requirement, library has trying to procure more and more digital documents so that users can 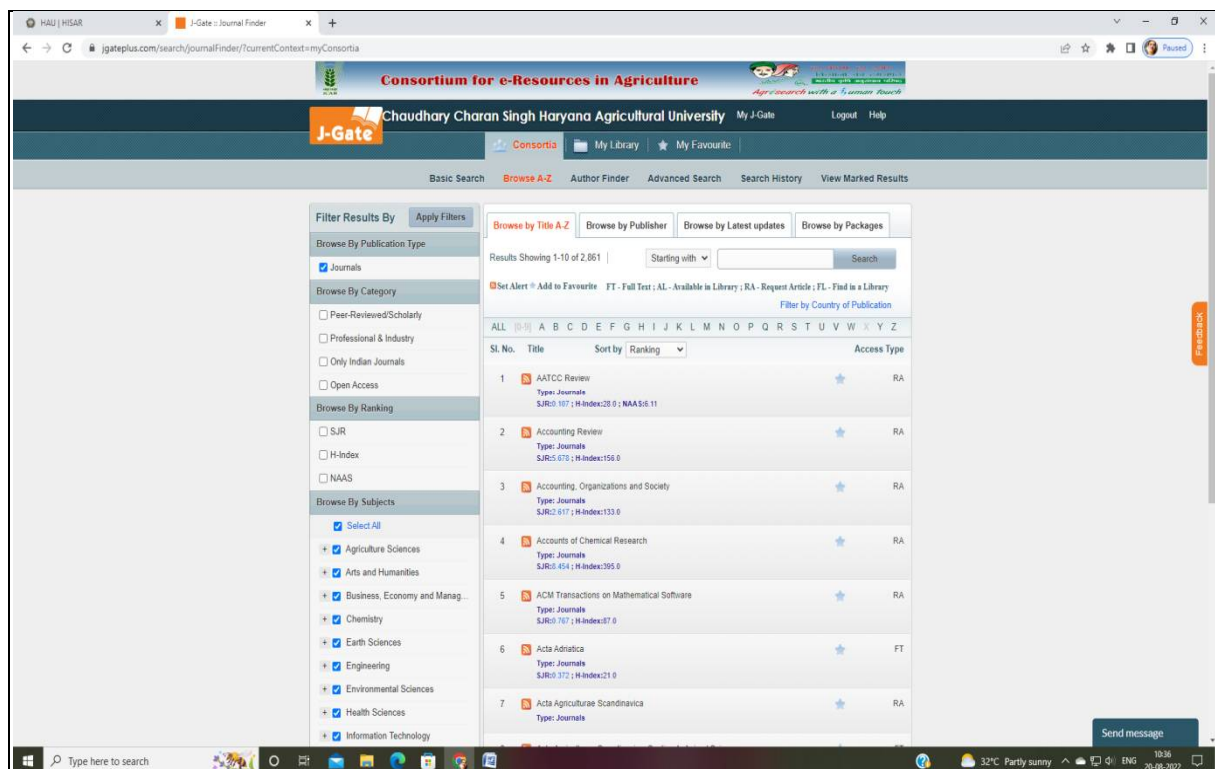get their desired information in their preferred format. Furthermore, the Nehru Library also procuring the physical documents, whatever it will be and demanded by the library users through computerized mode. Koha Integrated Library Management Software is right now being used in the library for in-house activities as well as for user services. Earlier, LibSys LMS was used but later on library has shifted to Koha ILMS.

Periodicals' subscription

Currently total 240 print journals (Indian and Foreign) are being subscribed by the Nehru Library. Earlier, print journals were subscribed more than 350. Gradually, the trend has been changed and due to implementation of ICT or emerging technologies in libraries, print subscription is reducing day by day and now focus is only given to subscribe electronic journals. Some of the journals have been subscribing through different journals' packages and other journals are being accessible through CeRA (Consortium for e-Resources in Agriculture). Furthermore, periodicals were subscribed manually and their bibliographic data has been maintained manually in the register or in Kardex system. But, with the implementation of LibSys LMS first and then migrated to Koha ILMS, records are being maintained in the online system, which helps to retrieve the required information timely and quickly.

Resource sharing

In this era of cut throat competition, ICT and reducing budget day by day, no library is in the position to procure every published document.

Therefore, it is required for all the libraries to share their resources among the partner libraries so that maximum users' satisfaction could be achieved and budget could be saved or better utilized. In resource sharing facility, a couple of or group of libraries have come together under one umbrella (MoU) means forming consortium and serve their users' communities mutually agreed upon. This service previously started for sharing print resources but lateron with the changing scenario, electronic resources have also been sharing. Such as Nehru Library, CCS HAU, Hisar is providing CeRA e-journal consortium, DELNET, *etc*. platforms, which are good examples of resources sharing service. Under CeRA consortium, Document Delivery Service (DDS) have been providing to the users of consortium partner institutions/libraries.
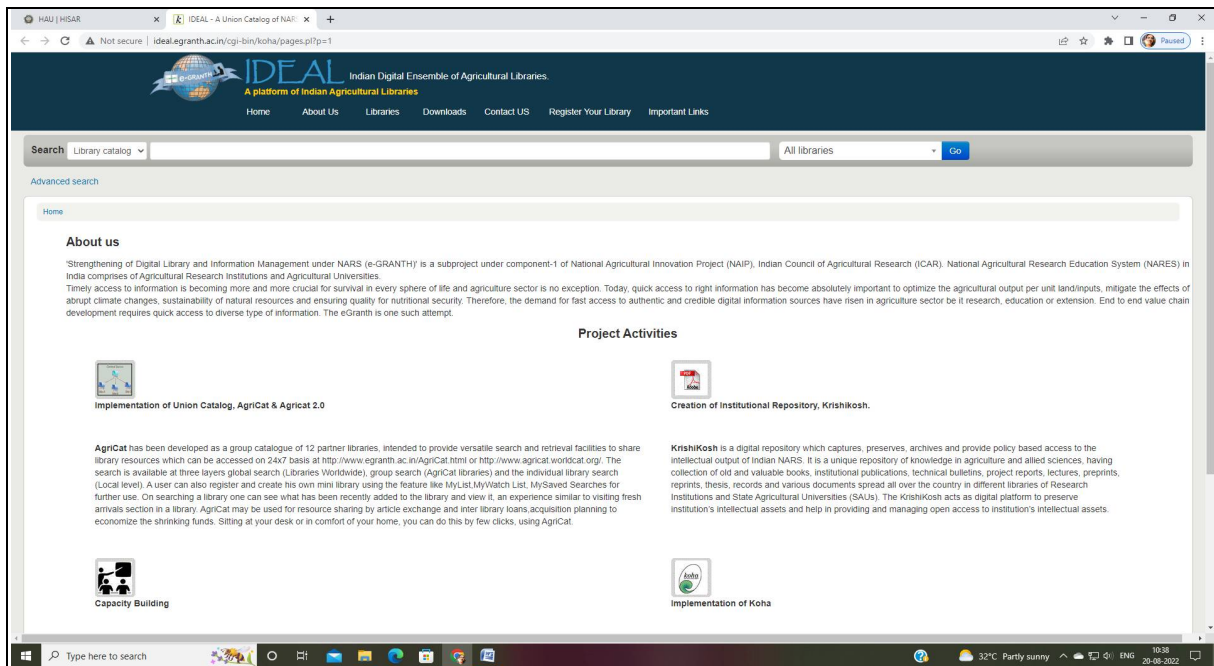

Pic. 4. Screenshot of CeRA Services hosted on Nehru Library Portal

Union catalogue

Union catalogue is a catalogue facility in which two or more libraries have collaboration and integrated their catalogues (OPAC) and to find the desired document from the collaborated libraries. If a user finds his/her desired document from the Union Catalogue, he/she may get the same under the facility of Document Delivery Service. The benefit of this service is that the information resources of partner libraries can be used by the partner libraries' users' community. The Nehru Library, CCS HAU, Hisar has also a member of AgriCat, which is a Union Catalogue of agricultural universities/institutions in India.
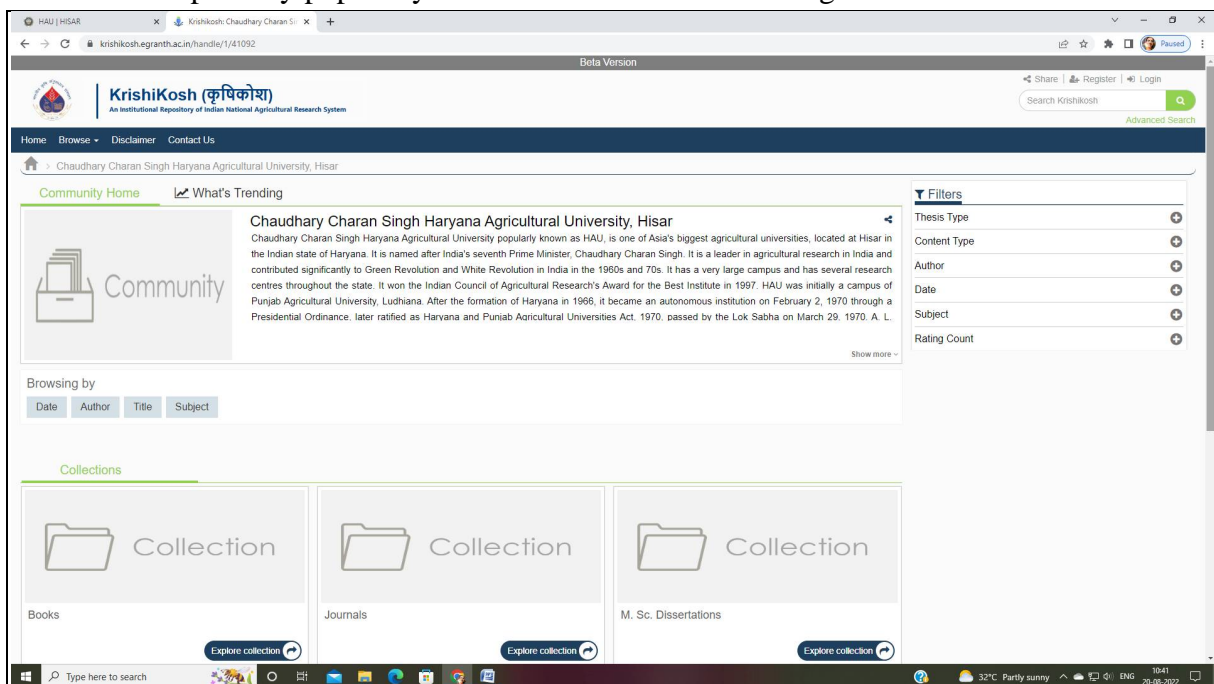
Pic. 5. Screenshot of Union Catalogue- AgriCat

Information repository

Due to changing scenario worldwide, libraries have to force to put their maximum documents in electronic format on public domain, which are useful for the users' community and will be used 24x7x365 days. Similarly, in agricultural universities/institutions, there is a digital information repository popularly known as "Krishikosh" in which Nehru Library, CCS HAU, Hisar has also uploaded masters and Ph.D. theses and other documents as well. Krishikosh repository is a very useful information resource among the agricultural and allied sciences research community not only in India but also for foreign countries researchers.
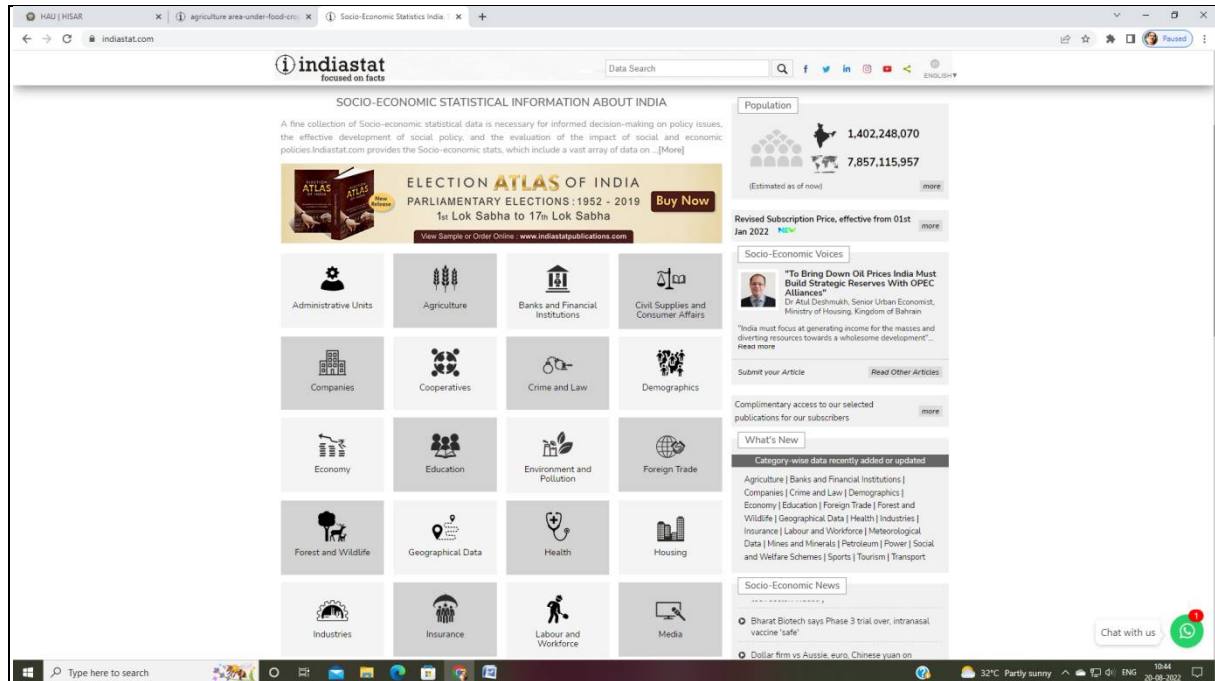

Pic. 6. Screenshot of Digital Information Repository- Krishikosh

Statistical information resource

Earlier, hard copy of statistical information resources has been procured by the Nehru Library for the users' community but now the same has been procured in digital form. Indiastat.com is being subscribed by the Nehru Library, which is a very useful and heavily used by the students, teachers and extension specialists of the CCS HAU, Hisar. Now, users can get their desired information in compiled and processed form. The information is said to be very authentic because the data has been collected from different ministries of Government of India.

Pic. 7. Screenshot of Digital Statistical Information- Indiastat.com

Document security in the library

The Nehru Library, CCS HAU, Hisar has implemented RFID technology to its whole collection. Security of documents from theft, shelf rectification, circulation services, stock taking activities are now managed easily with the help of RFID technology. RFID helps to provide services quickly as compare to manual services.

Library Service Quality- Users' Satisfaction Survey

A small survey has been conducted during the first week of August 2022 to know how much the users are satisfied with the information resources and services provided by the Nehru Library, CCS HAU, Hisar. Total 100 questionnaires were distributed among the postgraduate and Ph.D. students in the library premises and out of which, 93 questionnaires were retrieved back timely after filling the same. Hence, the response rate has been achieved @93% and the results are drawn on the basis of the received questionnaires. The collected data is calculated by simple percentage analysis and then presented in the following tables and interpretations are drawn accordingly:

Table 1 Distribution of respondents by their academic status

Users' Category	Respondents	Percentage
Postgraduate	61	65.60
Ph.D.	32	34.40
Total	**93**	**100**

Table 1 show the status of respondents who participated in the survey. The data given in above table highlights that out of total 93 respondents, 61 were postgraduate and 32 were Ph.D. students who participated in the study positively.

Table 2 Awareness and use of digital library services

Awareness	Respondents	Percentage
Fully aware	37	39.78
Partial aware	46	49.46
Not aware	10	10.76
Total	**93**	**100**

Awareness and use of digital library or ICT based library services is highlighted in the Table 2 and it shows that 49.46 percent of the respondents were partially aware, whereas, 39.78 percent of the respondents were fully aware. Apart from this, there are 10.76 percent of the respondents who said that they are not aware to the digital library services due to lack of competency in use of ICT and technology based information resources.

Table 3 Opinion about manual vs. digital library services

Opinion	Respondents	Percentage
Manual services are good	17	18.28
Digital services are good	69	74.20
Neutral	07	07.52
Total	**93**	**100**

The data given in the Table 3 presented the opinion of users about the goodness of manual vs. digital library services provided by the Nehru Library. It is found during the study that 74.20 percent of the respondents were in the opinion that digital services are good as compare to manual because this is the era of ICT and maximum activities are happened digitally. On the other hand, 18.28 percent of the respondents were in the opinion that manual services are good as they feel comfortable with the personal interaction with the documents as well as library professionals. There are 7.52 percent of the respondents who stayed neutral with the question as they said they are comfortable with both the format of delivery of information.

Table 4 Benefits of digital/ICT based services

Benefits*	Respondents	Percentage
Easy and fast to find information	82	88.17
Time and place convenience	91	97.85
Economically suitable	44	47.31
Take less space to store information	63	67.74
Easy to use because of lack of time	39	41.93
Global trend, hence, need of the day	58	62.36

Multiple answers were permitted

The presented data in the Table 4 shows the respondent's opinion about the various benefits of digital/ICT based services. It was explored during the study that 88.17 percent of the respondents were in the opinion that it is easy and fast to find desired information or ICT based/digital contents, while 97.85 Percent of the respondents were in the opinion that they can use digital information as per their time and place convenience. Another side, 67.74 percent of the respondents said that using digital information resources and services takes less space to store

information; whereas, 62.36 percent respondents said that this is the era of ICT and digitization, and using digital information is the global trend, hence, need of the day. 47.31 percent of the respondents were in the opinion that using ICT based/digital information is economically suitable to them, while 41.93 percent respondents said that using digital information is easy to use because they have lack of time as they are very busy in their regular class room lectures and field research activities.

Major findings

Some of the major findings are given below:

- The Nehru Library have very good infrastructure and developed excellent print and digital collection.
- The Nehru Library has adopting all possible ICT based facilities in its premises.
- The Nehru Library is providing ICT based/digital information up to the satisfaction of the users.
- 49.46 percent of the respondents were partially aware, whereas, 39.78 percent of the respondents were fully

aware to the use of digital library or ICT based library services.

- 74.20 percent of the respondents were opined that digital services are good as compare to manual because this is the era of digitization.
- 97.85 Percent of the respondents opined that they can use digital information as per their time and place convenience, while 88.17 percent of the respondents opined that it is easy and fast to find desired information or ICT based/digital contents.

Conclusion

Information and Communication Technology (ICT) plays a vital role in bringing about changes in every walk of human endeavours. Similarly, ICT has been one of the major factors causing changes in the way people communicate, locate, retrieve, and use information. ICT has affected libraries and information centres globally and now libraries have to force to procure electronic information products and services. The three factors named staff, collection and services of any library have been widely affected by the implementation and use of ICT/emerging

technologies. The Nehru Library, Chaudhary Charan Singh Haryana Agricultural University, Hisar has implemented ICT based information facilities and services to the users' community. The Nehru Library is now providing quality services up to the satisfaction level of the users. The study concludes that most of the respondents, *i.e.*, postgraduate students and Ph.D. research scholars, have awareness on use of ICT based/emerging technology based information resources and services. Majority of the respondents were on the

opinion that digital services are good as compare to manual because it is the need of the day. The Nehru Library, CCS HAU, Hisar has organising training/ workshops/ orientation programs on various levels for the students, teachers, scientists, extension specialists as well as for library staff on frequent basis so that proper awareness can be generated among the users of various categories about the use of technology based information resources and services up to their satisfaction level.

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