IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY ON LEARNING & RESEARCH ACTIVITIES OF LIBRARY AND INFORMATION SCIENCE STUDENTS AND RESEARCH SCHOLARS: A STUDY OF CENTRAL UNIVERSITIES IN NORTH INDIA

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ABSTRACT

Information and communication technology (ICT) has revolutionized traditional learning and research approaches, creating a modern and interactive environment. ICTs play a crucial role in the education and research sectors. This study focuses on the use of ICT at the Department of Library and Information Science (DLIS) and examines its impact on students and research scholars. The study categorizes ICTs into five parts: theory and practice, infrastructure, techniques and methods, devices and tools, and educational applications.

The study investigates the learning and research process at four different levels: undergraduate, postgraduate, M. Phil, and Ph.D. research scholars. Titled "Impact of Information and Communication Technology on Learning & Research Activities of Library and Information Science Students and Research Scholars: A Study of Central Universities in North India," the research design employed a mixed-methods approach to achieve its objectives. Both quantitative and qualitative data collection and analysis techniques were utilized.

The study targeted Library and Information Science (LIS) students and research scholars from central universities in North India. The sample size consisted of 665 respondents, with 392 from each group. The researchers employed multistage sampling and stratified sampling to select the participants. To determine the appropriate sample size for the study, the researchers utilized the Raosoft software sample size calculator and conducted priori power analysis. These methods helped in calculating the overall sample size required to achieve sufficient statistical power and precision in the study. The final sample size for the study consisted of 665 respondents, with 392 participants from each group (LIS students and research scholars). This sample size was considered appropriate to provide reliable and meaningful results.

Two data collection instruments were used: a questionnaire and an interview guide. The Likert-type questionnaire collected quantitative data on the impact of ICT on the learning and research activities of the participants, while the interview guide gathered qualitative data on their perceptions and experiences with ICT.

Quantitative data analysis involved descriptive statistics, such as frequency distributions and percentages. Inferential statistics, including the Chi-square test, were used to test for significant differences between the groups. Qualitative data collected from the interviews were analyzed using content analysis.

The results of the study indicate that ICT has a positive and significant impact on the learning and research process in Central Universities of North India. However, there were variations in the impact of different ICT factors across the different levels of education. For undergraduate and postgraduate levels, all ICT factors had a positive and significant impact on the learning and research process, except for devices and tools, which had a negative impact at the undergraduate level and an insignificant impact at both levels. Techniques and methods had a positive but insignificant impact at the undergraduate level, while infrastructure had an insignificant impact in higher education. Overall, there is a positive relationship between the use of ICT and the learning and research process. The usage and benefits of ICT applications are more effective in higher levels of education, influenced by factors such as learning policies, individual abilities, capacity for absorption, study specifications, extent of need, and complexity.

OBJECTIVES OF THE STUDY

The study has been conducted on the basis of certain objectives:

1. To quantify the awareness and use of ICT among LIS students and research scholars.

2. To determine the impact of ICT on their innovative learning and research activities.
3. To evaluate the attitude of students and research scholars towards the application of ICT in LIS education.
4. To find out the capability among students and research scholars to retrieve, evaluate and use information.
5. To investigate the skills to use various library related software.
6. To find out the competencies among students and research scholars to use various devices related to information storage and retrieval.

SCOPE AND LIMITATIONS OF THE STUDY

The scope of a study outlines the specific aspects or dimensions that are explored, while the limitations acknowledge the boundaries and constraints that may affect the research process and the generalizability of the findings. Understanding the scope and limitations of a study helps readers interpret its results accurately and evaluate its applicability to other contexts. In this discussion, researcher explored the scope and limitations of a study titled **"Impact of Information and Communication Technology on Learning & Research activities of Library and Information Science Students and Research Scholars: A Study of Central Universities in North India"** The study is confined on the following Central Universities which are as follows:

NAME OF THE CENTRAL UNIVERSITIES IN NORTH INDIA

1. Babasaheb Bhimrao Ambedkar University (Lucknow)
2. University of Delhi (Delhi)
3. Jamia Millia Islamia University (Delhi)
4. Central University of Haryana (Haryana)

5. Central University of Punjab (Punjab)
6. Aligarh Muslim University (Aligarh)
7. Banaras Hindu University (Varanasi)
8. Hemvati Nandan Bahuguna Garhwal University (Uttarakhand)
9. Central University of Himachal Pradesh (Himachal Pradesh)

However, it is important to note that the study has certain limitations. The limitations of the study are that, though there are numbers of Central Universities in India, which are as follows:

- There are number of central universities (54) in India. Visiting them all to conduct this research would have been very difficult.
- Due to time and geographic constraints, only Central Universities in North India were included in this study.
- Only library and information science students and research scholars from Central Universities in North India were included in this study.

HYPOTHESES OF THE STUDY

A hypothesis is a presumption or supposition that must be proven or denied. It could be a false generalization of the problem under investigation. Following are the probable hypotheses of the study are as follows:

H1: ICT have greater impact on learning and research activities.

H2: Students and Research Scholars are capable to operate various devices related to information storage and retrieval.

H3: Students and Research Scholars have ability to retrieve, analyze, evaluate, and use information.

H4: Students and Research Scholars have developed their skills to use various software and tools related to research.

RESEARCH METHODOLOGY

The present study focuses on "Impact of Information and Communication Technology on Learning & Research Activities of Library and Information Science Students and Research Scholars: A Study of Central Universities in North India." The study used a mixed-methods research design to achieve its research objectives and involved both quantitative and qualitative data collection and analysis techniques. The research design was appropriate as it allowed the researchers to collect and analyse data from multiple sources and perspectives, thereby providing a more comprehensive understanding of the research problem. The study targeted LIS students and research scholars from central universities in North India. The sample size comprised 665 respondents, with 392 from each group. The researcher used multistage sampling and stratified sampling to select the participants. To determine the appropriate sample size for the study, the researchers utilized the Raosoft software sample size calculator and conducted priori power analysis. These methods helped in calculating the overall sample size required to achieve sufficient statistical power and precision in the study. The study used two data collection instruments: a questionnaire and an interview guide. The Likert-type Questionnaire was used to collect quantitative data on the impact of ICT on the learning and research activities of the participants, while the interview guide was used to collect qualitative data on the participants' perceptions and experiences with ICT. The study used descriptive statistics, including frequency distributions and percentages, to analyse the quantitative data. The researcher used inferential statistics, including Chi-square test, to test for significant differences between the groups. The study used content analysis to analyse the qualitative data collected from the interviews.

POPULATION & SAMPLING

Sampling is an authenticated means which helps in analysing the survey. It involves sample selection process from a large population to specific population or sample for the study. It is the basis of estimating or predicting the occurrence of an event, situation or outcome related to the population.

Population: This is not the entire population of a certain geographic area, but rather a pre-defined group of likely responses. In this study BLISc., MLISc., M.Phil. or Ph.D. students and research scholars of Library and Information Science Department of Central Universities of North India are taken for the study.

SAMPLE TECHNIQUE

The multistage sampling procedure was followed in enumerating this study's participants. Multistage sampling is a systematic procedure used to recruit elements from a broader population to a sample following a series of stages. It allows for the implementation of different sampling techniques at different stages. It can involve the exclusive use of probability sampling methods, non-probability sampling techniques or a combination of both (Bhattacherjee, 2012). It is used for studies covering large geography and scope (Kothari, 2004). Kothari further presented two advantages of using multistage sampling. These include ease in administration and the ability to cover a large sample under a given cost. This study used multistage sampling because the population distribution is in clusters and geospatially distributed across different cities. Secondly, the study is relatively large, making applying multistage sampling more feasible and reasonable. In implementing the multistage sampling, all the LIS students and research scholars were clustered according to the central universities located in different cities in *stage 1*. In stage 2, the stratified sampling technique was implemented

to create two strata in each central university. The first strata comprised LIS students, whereas the second strata comprised LIS research scholars. The G*Power statistical software was used in this study for a priori power analysis and Raosoft software sample size calculator to calculate the overall sample size (n), and with a confidence level of 95% & 5% margin of error, the sample was chosen for the sample size accuracy.

STATISTICAL TOOLS AND TECHNIQUES

Statistics is a scientific approach to collect and analyse the collected data on the basis of which, relationships among phenomena can be investigated or discovered and interpretations can be made. Several statistical measures are available and used in describing and analysing the data in a meaningful manner. In broad term, the statistical techniques can be divided into two branches namely descriptive statistics and inferential statistics. For the present study following statistical techniques were employed to analyse the data:

1. Percentage method
2. Chi-square Test
3. Table and Graphs

SIGNIFICANCE OF THE STUDY

The study looked at the impact of ICT on learning and research activities; the findings might be used as a starting point for addressing the issue of ICT use in learning and research by students and scholars. As a result, university administrators would be able to buy more relevant ICT facilities for learning and research, upgrade existing e-resources and services, and plan for future research services to satisfy the evolving information needs of their students. It would benefit students and research scholars because it would contribute to scholarly research and fill a gap in the literature in the

field of ICT use. This study can help the government identify the variables influencing ICT use and make efforts to reduce or resolve the difficulties associated with technology use in teaching among teachers in colleges and universities.

With the growing competitiveness and demand for professionals who can contribute to the state's growth and development, it is critical for researchers to determine how far the universities and departments designated for the purpose have modernised their learning pedagogies and research activities by using technology, particularly ICT, to enable learners to grow professionally in a globalised competitive world. Sensible integration of cutting-edge technology into the learning and research activities can aid in realising a country's full potential. As a result of globalisation, it is more necessary than ever for every country to encourage skill-based, ICT-infused quality education.

MAJOR FINDINGS

Awareness about Information and Communication Technology

A vast majority, 382(97.44%), of respondents are aware of Information and Communication Technology (ICT), while only a small minority, 10(2.55%), answered "no." This high level of awareness indicates the significance and rapid growth of ICT, encompassing various technologies like the internet, mobile devices, social media, and digital tools that facilitate communication and information sharing. In a study conducted by Cruz et.al. in 2017, the potential of certain technologies to significantly enhance student engagement was explored. The study highlighted the growing popularity of mobile technologies, tablets, and smartphone applications among higher education students, as they increasingly embrace innovative learning tools.

Necessity of training for handling ICT facility at the beginning of the course

The study finds that the majority of respondents (90.30%) believe training is necessary for handling ICT facilities at the course's beginning. Only a small percentage (9.69%) indicated such training is not necessary. This highlights a strong consensus on the importance of training for effective use of ICT and the need to consider learners' preferences in designing educational programs involving these technologies.

Quality of technological support provided in university

The majority of respondents positively evaluated the technological support provided by the university. (25.25%) rated it as excellent, while (52.80%) rated it as very good. A smaller proportion rated it as good (17.34%), average (3.57%), and poor (1.02%). These results underscore the significance of robust technological support in universities, contributing to overall satisfaction and positive experiences for the respondents.

Usage of ICT tools helps in learning and research

The study's findings, reveal a significant consensus among respondents, with (98.72%) expressing the belief that ICT tools positively benefit learning and research. Only a small minority (1.27%) disagreed with this statement. This underscores the importance of integrating ICT tools into educational settings to enhance learning outcomes and support research endeavors effectively.

Availability and accessibility of ICT infrastructure

The finding highlights that most students and research scholars have access to ICT infrastructure in their universities, including computers and internet connectivity. However, some respondents expressed uncertainty or reported issues with accessibility.

Addressing these concerns is crucial to ensure equal access to ICT infrastructure for all students and research scholars in their academic work.

Significance of Information and Communication Technology

The findings from the study, reveal the significance of ICT in the education of students and research scholars from different universities. It reveals that respondents highly value ICT tools and infrastructure in their education, expressing positive attitudes towards network connectivity, computerized facilities, automation, computer skills, information management, online platforms, and time-saving benefits provided by ICT. These results highlight the perceived value of ICT in supporting various aspects of academic work and professional development.

Opinion towards ICT application

Based on the data the study reveals that most students and research scholars have a positive opinion towards the use of ICT in their learning and research processes. They recognize its potential benefits in enhancing knowledge, improving communication, accessing information, and searching for relevant resources. However, a small percentage of respondents' express fear or uncertainty about ICT. This finding compares favorably with the findings of Ramadass and Shah (2022) who noted that English language teachers have a good level of knowledge in using ICT, a positive attitude towards its use, and frequently utilize ICT in their teaching and learning practices.

ICT impacted on learning and research work

The study reveals positive perceptions from students and research scholars towards the impact of Information and Communication Technology (ICT) on learning and research.

The majority strongly agreed or agreed with the benefits of ICT, including improved access to information, faster research processes, enhanced professional competency, increased exposure to diverse information, and improved overall performance. These results support the continued integration of ICT in educational and research settings to enhance academic outcomes. The study therefore confirms the study by Amutha (2020) who discuss the impact of ICT in education revealed that ICT integration in education improves student achievement by enhancing knowledge, skills, and learning methods compared to traditional approaches. Additionally, the study by Rubina Bhatti (2013) in Pakistan which also revealed a positive impact of ICT on Social Science faculty members.

Information Literacy Skills

Study indicates that a majority of students and researchers have strong Information Literacy Skills, including proficiency in tasks such as using the internet, working with MS Office, sending emails, searching effectively, evaluating information, and understanding citations. With a large percentage rating themselves as good or excellent in these areas, it highlights the widespread capability of respondents in using information and technology for academic work. This positive finding suggests that these skills are valuable for academic work. The results of this study align with the findings of Sumpter (2006), which indicated that LIS postgraduate students exhibited a high level of proficiency in information literacy knowledge. However, these findings differ from the research conducted by Islam and Tsuji (2010), who reported that LIS graduate students were not in a favorable position in terms of their understanding of information literacy.

Use of ICT support

Based on the data, the finding highlights the key discovery is that most students and researchers across different universities find ICT support highly useful in various aspects. This includes improved communication and networking, enhanced self-development and learning, more effective preparation of assignments and research work, and better access to e-resources. These findings highlight the significant positive impact of ICT support on academic activities.

Impact that ICT Resources has made in support learning and research activities

The major finding is that students and research scholars perceive a significant positive impact of various ICT resources on their learning and research activities. These resources, including e-thesis, email, library websites, databases, online presentations, discussion forums, online education materials, blogs/portals, MOOCs, video lectures, social networking sites, and academic networking sites, have been reported to contribute significantly to their academic pursuits, underscoring the essential role of ICT in fostering effective learning and research experiences. In a study conducted by Lalitha in 2021 who found that the study concluded that the inadequate availability and accessibility of ICT resources, along with a lack of comprehensive training and support, hindered the effective utilization of ICT in the academic environment.

Operating skills of with various Library Automation Software

The study reveals insights about software usage in universities. These findings show how students and research scholars perceive and utilize different software options. It highlights the popularity of Koha and the varying perceptions of usability and effectiveness among the listed software options across different universities.

Technological devices used in the learning and research activities

The result reveals a significant discovery regarding the technological device preferences of students and research scholars in their learning and research activities. The study found that Personal Computers/Laptops and Mobile Phones/Smart Phones are the most commonly used devices among the participants. These devices have been identified as the primary tools for academic tasks, with high usage rates indicating their essential role in the academic community.

Satisfaction regarding of ICT-based Student-centred and researcher-centred Lectures

The results shows that most participants were happy with how well the recorded interviews matched their course content. This means the interviews were helpful and related to their studies. Also, a good number of participants liked the recorded lectures and found them interesting. This means the way the lectures were recorded caught their attention and helped them learn. All of this suggests that using technology for student-centered and researcher-centered lectures can make students and research scholars very satisfied with their learning experience.

ICT Tools used for Pre-Data Analysis

Study demonstrates tools preferences for pre-data analysis among students and research scholars in North Indian central universities. The data emphasizes a significant reliance on online resources, particularly online information resources and questionnaires. This emphasizes the necessity for robust online resources and appropriate training to maximize their effective utilization for academic research purposes.

Tools used by students and research scholars for Data Analysis

The study analyzed the tools used for data analysis by students and research scholars from various central universities in North India. The results indicate that Microsoft Excel and SPSS are the preferred tools for data analysis among respondents, suggesting that these are the go-to tools for students and research scholars in the region. The findings of this study are consistent with the research conducted by Bradbury and Borchert (2010), who discovered that researchers utilized statistical analysis software such as SPSS and STATA, as well as qualitative data analysis applications like NVivo, for their data analysis.

Resources/ Tools use for Dissertation or Thesis Preparation

Study shows the results of a study on the tools used by students and research scholars in Central Universities in North India to prepare their dissertations or theses. The findings indicate that online literature and Grammarly are crucial resources for academic writing and research, with high usage rates suggesting that students and research scholars actively seek out resources to improve their writing skills and ensure academic integrity.

Issues & Challenges in using ICT services in Learning and Research Activities

Study shows challenges faced by students and research scholars using ICT for learning and research. These include low ICT competence, unavailability of internet, low bandwidth, outdated computers, dependence on electricity, mental/physical strain, and lack of ICT skills. These are significant obstacles, suggesting a need for improvements in ICT infrastructure and training to enable full use of technology in academic settings. In comparison with similar research conducted by Rubina Bhatti (2013) and Bhatti et

al. (2011) in a Pakistani University, researchers encountered similar challenges when it comes to utilizing Information and Communication Technology (ICT) for research activities.

CONCLUSION

Based on current research, it concluded that information and communication technology (ICT) has had a significant impact on the learning & research activities of library and information science (LIS) students and research scholars. ICT has facilitated access to information and increased the efficiency of information retrieval and management. It has also enabled collaborative learning and research, as well as the creation and dissemination of new knowledge. The findings of the study highlight the positive impact of ICT on academic pursuits and advocates the need to provide better ICT skills training to LIS students and research scholars, establish adequate ICT infrastructure and facilities, ensure regular updates to ICT resources and tools, and encourage the use of open access resources and online databases.

Specifically, the use of ICT tools and resources such as online databases, search engines, digital libraries, library software, e-books, social media, and collaborative platforms has enhanced the quality and quantity of information available to LIS students and research scholars. This has led to improved research outcomes, including increased accuracy, timeliness, and relevance of research findings. Furthermore, ICT has transformed traditional modes of teaching and learning by providing opportunities for distance learning, online courses, and virtual classrooms. This has enabled students and scholars to access educational resources and participate in learning activities regardless of their physical location, which has increased access to education and reduced educational disparities. However, despite the many benefits of ICT, there are

also challenges associated with its use. These include the need for digital literacy skills, the risk of information overload, and the potential for plagiarism and other ethical concerns. Based on the research findings, this study recommends that LIS students and research scholars should receive adequate training in ICT skills, there should be provision for better ICT infrastructure and facilities, regular updating of ICT resources and tools should be done, and open access resources and online databases should be encouraged to enhance the positive impact of ICT on the academic pursuits of LIS students and research scholars in central universities in North India. The impact of ICT on learning & research activities of LIS students and research scholars has been largely positive, but ongoing research and evaluation are needed to address the challenges and maximize the benefits of ICT in the field of library and information science.

This study serves as a stepping stone for future endeavors, guiding educators, institutions, and policymakers in maximizing the benefits of ICT for the betterment of learning and research activities in the field of Library and Information Science.

SUGGESTIONS

Here are some suggestions to improve ICT-enabled learning, research activities, and the evaluation process in universities:

- **Enhance infrastructure and internet connectivity:** Ensure that the university's infrastructure is equipped with modern computer systems, high-speed internet connectivity, and reliable power supply. This will provide a conducive environment for utilizing ICT tools and resources effectively.
- **Provide comprehensive training and support:** Offer training programs and workshops to students and research scholars to enhance their ICT skills and knowledge. Provide guidance on the use of specific software, online databases,

research tools, and reference management systems. Additionally, establish a support system where students can seek assistance with ICT-related issues.

- **Promote digital literacy and information literacy:** Incorporate digital literacy and information literacy skills development into the curriculum. Help students and research scholars to critically evaluate online information, navigate digital resources, and effectively use ICT tools for research, data analysis, and information retrieval.
- **Encourage collaborative and interactive learning:** Utilize online platforms, discussion forums, and virtual collaboration tools to foster collaboration and interaction among students and research scholars. Encourage them to engage in online group projects, share resources, and exchange ideas. This will enhance the learning experience and provide opportunities for collaborative research activities.
- **Facilitate access to online resources:** Ensure that students and research scholars have access to a wide range of online resources such as e-books, e-journals, databases, and research repositories. Collaborate with publishers and organizations to negotiate affordable access to relevant digital resources.
- **Incorporate blended learning approaches:** Combine traditional classroom instruction with online learning components. Utilize learning management systems (LMS) or online platforms to provide course materials, assignments, quizzes, and interactive learning activities. This will allow students to access resources and engage in learning activities at their own pace.
- **Implement online research tools and data analysis software:** Provide access to specialized research tools and data analysis software such as statistical packages, citation management tools, and data visualization platforms. Offer training and support for using these tools effectively in research activities.

- **Adopt innovative assessment methods:** Explore online assessment methods that can effectively evaluate students' understanding and skills. Consider using online quizzes, assignments, discussion boards, and collaborative projects as assessment tools. Additionally, incorporate peer assessment and self-assessment strategies to foster active engagement and reflection.
- **Continuously evaluate and update ICT resources:** Regularly assess the effectiveness of ICT tools, resources, and platforms being used in the university. Seek feedback from students and research scholars to identify areas for improvement and make necessary updates to ensure that the ICT-enabled learning and research processes are up-to-date and aligned with current needs.
- **Foster a culture of innovation and research:** Encourage students and research scholars to explore emerging technologies, participate in research projects, and contribute to knowledge creation in their field. Provide opportunities for them to present their research findings through online conferences, webinars, and publications.

By implementing these suggestions, universities can enhance the ICT-enabled learning and research activities, promote digital literacy, and provide a supportive environment for students and research scholars to excel in their academic pursuits.

AREA OF FURTHER RESEARCH

1. The Impact of Virtual Reality Technologies on Learning and Research Activities in Library and Information Science: An Exploratory Study
    - This research topic aims to explore the impact of virtual reality (VR) technologies on learning and research activities within the field of library and information science (LIS). The study will investigate how

VR can enhance the learning experience, facilitate information retrieval, and provide interactive research tools in libraries. By delving into this topic, researcher can uncover the potential benefits and challenges that VR presents in the context of LIS professionals and researchers.

2. Impact of ICT on Learning & Research Activities of Law Students and Research Scholars: A Study of National Law Universities in India.

   - This study focuses on the impact of Information and Communication Technologies (ICT) on learning and research activities of law students and research scholars at National Law Universities in India. The research aims to explore the integration of digital tools, online resources, and e-learning platforms in legal education. By examining how ICT enhances the learning experience and facilitates legal research, the study will highlight the potential benefits and challenges of ICT implementation in the legal domain.

3. Impact and use of ICT on Learning & Research Activities of Engineering Students and Research Scholars of IITs: A Study

   - This research topic examines the impact and use of Information and Communication Technologies (ICT) on learning and research activities of engineering students and research scholars at Indian Institutes of Technology (IITs). The study aims to explore how ICT tools, such as computer-aided design (CAD) software, simulation tools, and online collaboration platforms, enhance the learning experience, promote innovation, and support research activities within engineering disciplines. The findings will shed light on the benefits and challenges of ICT integration in engineering education.

4. Investigating the Impact of Information and Communication Technology on Research Output and Productivity of Library and Information Science Scholars of Central Universities in India: A Study

   - This study focuses on investigating the impact of Information and Communication Technology (ICT) on research output and productivity of library and information science (LIS) scholars from central universities in India. The research aims to explore how ICT tools, digital research methodologies, and collaborative platforms influence research productivity and the dissemination of scholarly work. By examining the use of ICT in research activities, the study will identify potential challenges and suggest strategies for optimizing ICT integration in the LIS field.

5. Use and Awareness of Information and Communication Technology on Learning & Research Activities of LIS Students and Research Scholars: A Study of Selected Private Universities

   - This research topic investigates the use and awareness of Information and Communication Technology (ICT) on learning and research activities among library and information science (LIS) students and research scholars in selected private universities. The study aims to assess the extent of ICT adoption, the effectiveness of ICT tools in supporting learning and research, and the awareness of emerging technologies within the field. By conducting this study, insights can be gained to identify areas for improvement and suggest strategies to enhance ICT utilization in these universities.

STRUCTURE OF THE THESIS

This study was divided into six chapters, each focusing on different aspects of the research. Here is a brief overview of the content covered in each chapter:

Chapter 1: Introduction

The first chapter introduced the study. It included the statement of the problem, objectives of the study, scope and limitation of the study, hypotheses, research methodology, sample size, statistical tools and techniques, and the significance of the study.

Chapter 2: Review of Literature

The second chapter focused on the review of literature. It included a comprehensive review of relevant literature, both from Indian and Western sources, that was accessed and searched to undertake the present study. The chapter also discussed the methodology used for the literature review.

Chapter 3: Information and Communication Technology Application in Learning and Research Activities

The third chapter delved into the application of Information and Communication Technology (ICT) in learning and research activities and explored how Information and Communication Technology is utilized in educational and research settings. Various ICT tools and their impact on learning and research are examined.

Chapter 4: Research Methodology

The fourth chapter provided an in-depth discussion of the research methodology used in the study. It covered aspects such as research design, population and sampling, data collection techniques, and data analysis techniques.

Chapter 5: Analysis and Interpretation of Data

The fifth chapter focused on the analysis and interpretation of the collected data. It presented tabulation, statistical analysis, interpretation, and graphical representation of the data collected from the Central Universities of North India.

Chapter 6: Findings, Conclusion, and Suggestions

The sixth and final chapter presented the findings of the study in relation to the research objectives. It discussed the implications of the study for management practices and provided suitable suggestions based on the results of the research. The chapter also highlighted the recommendations for future research.