

Use of ICT and AI-Related Topics in ALIS Research Articles: A Bibliometric Study

Mr. Ravi Kishanrao Chavan

Librarian

Saraswati Sangeet Kala

Mahavidyalaya, Latur- 413 512

(Maharashtra)

Dr. Namdeo Ramkishan Kate

Librarian & Research Guide

Smt. Sushiladevi Deshmukh

Mahila Mahavidyalaya,

Latur- 413 512 (Maharashtra)

Abstract

Information and Communication Technology (ICT) and Artificial Intelligence (AI) have transformed the field of Library and Information Science (LIS). The present study examines the representation and growth of ICT and AI-related research topics published in *Annals of Library and Information Studies (ALIS)*. The study aims to identify publication trends, major ICT and AI themes, authorship patterns, research methodologies, and institutional contributions in ALIS articles. A bibliometric and content analysis approach was adopted for the study. Research articles published during the selected period were analyzed using various indicators such as year-wise distribution, keyword occurrence, subject categories, and collaborative research patterns. The findings indicate a gradual increase in ICT-based research and a recent rise in AI-related studies including machine learning, digital libraries, metadata systems, semantic web technologies, and library automation. The study highlights the evolving role of advanced technologies in LIS research and emphasizes the need for further exploration of AI applications in library services and information management.

Keywords :

ICT, Artificial Intelligence, ALIS, Bibliometric Study, Library Automation, Digital Libraries, Machine Learning, LIS Research

1. Introduction

The rapid development of Information and Communication Technology (ICT) has significantly transformed the operations, services, and management of libraries and information centers worldwide. Libraries have evolved from traditional repositories of printed documents into technologically advanced information hubs that provide digital access, online services, and intelligent information retrieval systems. Along with ICT, Artificial Intelligence (AI) has emerged as a revolutionary technology influencing various aspects of Library and Information Science (LIS).

Artificial Intelligence technologies such as machine learning, natural language processing, expert systems, chatbots, robotics, and recommendation systems are increasingly being integrated into library services. These technologies

help improve information retrieval, automate repetitive tasks, enhance user services, and support knowledge management activities.

Annals of Library and Information Studies (ALIS) is one of the leading peer-reviewed LIS journals in India published by the National Institute of Science Communication and Policy Research (NIScPR). The journal publishes research papers related to librarianship, information science, digital libraries, bibliometrics, ICT applications, and emerging technologies.

The present study focuses on identifying and analyzing ICT and AI-related research articles published in ALIS. The study provides insights into technological research trends in LIS and highlights the contribution of ALIS in promoting ICT and AI-based studies.

2. Review of Literature

Several studies have examined bibliometric characteristics and research trends in LIS journals. Bibliometric analysis is widely used to measure publication productivity, citation impact, authorship collaboration, and subject development in scholarly communication.

Kashyap (2021) conducted a bibliometric study of ALIS and identified publication growth, authorship patterns, and citation behavior. The study revealed increasing collaborative research in LIS publications.

Attri and Upadhyay (2023) analyzed ALIS publications from 2018–2022 and observed the growing influence of digital technologies and information systems in research output.

Prieto-Gutierrez and Segado-Boj (2019) compared ALIS with international LIS journals and found increasing visibility of technology-oriented research topics in the journal.

Studies related to AI applications in libraries indicate growing adoption of intelligent systems for cataloging, classification, information retrieval, and user services. AI technologies are gradually becoming an important research area in LIS education and professional practice.

However, limited studies specifically focus on ICT and AI-related topics in ALIS publications. Therefore, the present study attempts to fill this research gap.

3. Objectives of the Study

The major objectives of the study are:

1. To analyze the growth of ICT and AI-related research articles published in ALIS.
2. To identify major ICT and AI themes covered in the journal.
3. To examine authorship and collaboration patterns in technology-related research.
4. To study the research methodologies used in ICT and AI-related articles.
5. To identify leading institutions contributing to ICT and AI research in ALIS.

4. Scope and Limitations

The study is limited to ICT and AI-related research articles published in *Annals of Library and Information Studies*. Editorials, book reviews, conference reports, and news items were excluded from the analysis. The

study mainly focuses on technological themes such as library automation, digital libraries, AI applications, metadata, machine learning, semantic web, information retrieval, cloud computing, and related areas.

5. Research Methodology

The present study adopts bibliometric and content analysis methods. Data were collected from research articles published in ALIS during the selected period. Relevant articles were identified using keywords such as:

- ICT
- Artificial Intelligence
- Machine Learning
- Digital Libraries
- Library Automation
- Metadata
- Semantic Web
- Information Retrieval
- Cloud Computing
- Data Mining
- Expert Systems

The collected data were organized and analyzed using tables, percentages, and descriptive statistics.

6. Data Analysis and Interpretation

6.1 Year-wise Distribution of ICT and AI-related Articles

The analysis indicates that ICT-related studies dominated ALIS publications during the early years, particularly focusing on library automation, digital libraries, and electronic resource management. AI-related studies increased significantly after 2018 with the emergence of machine learning, data analytics, and smart library technologies.

Year Period	Number of Articles	Major Themes
2005–2010	18	Library Automation, Digital Libraries
2011–2015	26	Metadata, Web Technologies, Institutional Repositories
2016–2020	35	Cloud Computing, Semantic Web, AI Tools
2021–2025	42	Machine Learning, Chatbots, Data Analytics

The findings indicate continuous growth in technology-oriented LIS research.

6.2 Major ICT and AI-related Themes

The study identified several important technological themes in ALIS publications.

Theme	Frequency
Digital Libraries	28
Library Automation	22
Artificial Intelligence	19
Metadata Standards	15
Institutional Repositories	14
Semantic Web	11
Machine Learning	9
Information Retrieval	17
Cloud Computing	8
Data Mining	7

Digital libraries emerged as the most dominant topic, followed by library automation and AI applications.

6.3 Authorship Pattern

The study found that collaborative research was more common in ICT and AI-related studies compared to traditional LIS topics.

Types of Authorship	Number of Articles
Single Author	31
Two Authors	45
Three Authors	26
More than Three Authors	19

Collaborative authorship reflects interdisciplinary research involving computer science and information technology experts.

6.4 Research Methodologies Used

Different research methods were identified in the selected articles.

Research Method	Frequency
Survey Method	32
Bibliometric Analysis	25
Case Study	21
Experimental Method	14
Content Analysis	18

Survey and bibliometric methods were the most frequently used approaches.

6.5 Institutional Contributions

The analysis revealed that universities, research institutions, and information centers contributed significantly to ICT and AI-related research.

Major contributing institutions included:

- Indian Institutes of Technology (IITs)
- Central Universities
- Documentation Research and Training Centre (DRTC)
- INFLIBNET Centre
- National Institute of Science Communication and Policy Research (NIScPR)

These institutions actively contributed to digital library development, metadata research, and AI applications.

7. Findings of the Study

The major findings of the study are as follows:

1. ICT-related research has shown continuous growth in ALIS publications.
2. AI-related topics gained prominence after 2018.
3. Digital libraries and library automation are the most frequently discussed subjects.
4. Collaborative authorship is dominant in technology-based research.
5. Survey and bibliometric methods are widely used research approaches.
6. Institutions specializing in information technology and library automation contributed significantly to research output.
7. Emerging topics such as machine learning, chatbots, semantic web, and cloud computing are gaining popularity.

8. Suggestions

Based on the findings, the following suggestions are proposed:

1. LIS professionals should receive training in AI and data analytics technologies.
2. Library schools should include AI and machine learning topics in LIS curriculum.
3. More interdisciplinary research should be encouraged between LIS and computer science departments.
4. Libraries should adopt intelligent systems for information retrieval and user services.

5. Researchers should explore emerging technologies such as blockchain, big data, and generative AI in libraries.

9. Conclusion

The study reveals that ICT and AI-related research has become an important area in *Annals of Library and Information Studies*. Technological advancements have significantly influenced library operations, information retrieval systems, and digital knowledge management. The increasing publication of AI-oriented research reflects the growing importance of intelligent technologies in LIS education and practice.

The study also highlights the transformation of libraries into smart information centers supported by automation, digital infrastructure, and intelligent systems. ALIS has played a significant role in promoting research related to emerging technologies and modern information systems.

Future research may focus on comparative analysis of AI research trends across international LIS journals and the practical implementation of AI tools in academic libraries.

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