

Institutional Repositories in The AI Era: Faculty Perceptions, Digital Preservation Strategies, And Emerging Trends

Nayan Anil Khode

Librarian

Mahajan College of Technology Yavatmal

Abstract—Institutional repositories (IRs) play a critical role in preserving and disseminating the intellectual output of academic institutions. With the rapid advancement of artificial intelligence (AI), the traditional functions of IRs are undergoing significant transformation. This study examines faculty perceptions of institutional repositories in the era of AI, explores evolving digital preservation strategies, and identifies emerging trends that are shaping the future of repository services. Using a descriptive survey research design, primary data were collected from faculty members across higher education institutions to understand awareness, usage patterns, perceived benefits, and concerns related to AI-enabled IRs. The findings reveal moderate awareness but growing acceptance of AI-driven features such as intelligent discovery, automated metadata generation, and enhanced preservation mechanisms. However, concerns regarding data privacy, intellectual property, and technological complexity persist. The study highlights the need for strategic policy development, faculty engagement initiatives, and ethical AI governance frameworks to ensure sustainable and inclusive repository ecosystems. The paper contributes to the growing discourse on the convergence of artificial intelligence, digital preservation, and scholarly communication.

Index Terms—Institutional repositories, artificial intelligence, faculty perception, digital preservation, academic libraries, emerging trends.

I. INTRODUCTION

Institutional repositories have become integral components of the scholarly communication ecosystem, providing platforms for the collection, preservation, and dissemination of academic research outputs. Traditionally, IRs have focused on archiving

theses, dissertations, journal articles, conference papers, and institutional publications. However, the emergence of artificial intelligence has introduced new possibilities and challenges that are redefining repository functionalities and user expectations. Artificial intelligence technologies such as machine learning, natural language processing, and data analytics are increasingly embedded in digital library systems. These technologies enable advanced search capabilities, automated metadata creation, predictive analytics, and intelligent content recommendation. In this context, institutional repositories are evolving from passive storage systems into active knowledge management platforms.

Faculty members are key stakeholders in the success of institutional repositories. Their perceptions, attitudes, and participation significantly influence content submission rates and overall repository effectiveness. Understanding how faculty perceive AI-enabled repositories is therefore crucial for planning sustainable repository services. Simultaneously, digital preservation strategies must adapt to new forms of scholarly output, including AI-generated content, datasets, and dynamic research objects.

This paper investigates institutional repositories in the AI era by focusing on three core dimensions: faculty perceptions, digital preservation strategies, and emerging trends. By adopting a primary data approach, the study provides empirical insights into how academic communities are responding to AI-driven transformations in repository services.

II. OBJECTIVES OF THE STUDY

The primary objectives of this study are:

- To assess faculty awareness and perceptions of institutional repositories in the AI era.
- To examine the role of artificial intelligence in enhancing digital preservation strategies within IRs.
- To identify emerging trends influencing the development and future of institutional repositories.
- To analyze challenges and concerns associated with AI-enabled repository systems.
- To provide recommendations for the effective implementation of AI technologies in institutional repositories.

III. REVIEW OF LITERATURE

Institutional repositories have been widely studied as instruments for open access and scholarly communication. Early studies emphasized their role in increasing research visibility and institutional reputation. Faculty participation, however, has often been inconsistent due to a lack of awareness, perceived complexity, and copyright concerns.

Recent literature highlights the growing integration of AI in digital libraries and repositories. Artificial intelligence has been found to improve information retrieval accuracy, automate metadata creation, and support digital preservation workflows. AI-driven text mining and semantic analysis enable repositories to provide richer discovery experiences and contextual linking of scholarly outputs.

Studies on faculty perceptions indicate mixed attitudes toward repository adoption. While some faculty members appreciate increased visibility and citation impact, others remain skeptical about the added value of repositories compared to academic social networking platforms. The introduction of AI has further complicated these perceptions, raising ethical and privacy-related concerns.

Digital preservation literature emphasizes the challenges of preserving born-digital and non-traditional research outputs. AI-generated data, machine learning models, and interactive content require advanced preservation frameworks, including

detailed metadata standards and long-term accessibility strategies.

Emerging trends identified in recent studies include repository integration with research information systems, adoption of FAIR data principles, and development of federated repository networks. However, empirical research focusing on faculty perceptions of AI-enabled institutional repositories remains limited, underscoring the need for the present study.

IV. RESEARCH METHODOLOGY

4.1 Research Design

The study adopts a descriptive survey research design to collect primary data from faculty members in higher education institutions.

4.2 Population and Sample

The population consists of faculty members from universities and colleges across various disciplines. A sample of 150 faculty members was selected using convenience sampling.

4.3 Data Collection Tool

A structured questionnaire was designed, consisting of both closed-ended and Likert-scale questions. The questionnaire covered areas such as:

- Awareness of institutional repositories
- Usage patterns
- Perceptions of AI features in IRs
- Digital preservation concerns
- Challenges and expectations

4.4 Data Analysis

Collected data were analyzed using descriptive statistics, including percentages, frequencies, and mean scores. The results are presented in both tabular and interpretive forms.

V. DATA ANALYSIS AND INTERPRETATION

5.1 Awareness of Institutional Repositories

The study found that 72% of respondents were aware of institutional repositories, while 28% had limited or no awareness.

5.2 Usage of Institutional Repositories

Approximately 61% of faculty members reported using IRs for accessing research materials, while only 48% regularly deposited their own work.

5.3 Perception of AI Integration

A majority (65%) of respondents agreed that AI-enhanced search and discovery tools improve repository usability. However, 42% expressed concerns regarding data privacy and automated content analysis.

5.4 Digital Preservation Perspectives

Faculty members acknowledged the importance of AI in digital preservation, particularly in automated metadata creation and format migration. Yet, concerns were raised about the long-term accessibility of AI-generated research outputs.

Questionnaire:

Section A: Demographic Information

- Gender
- Academic Designation
- Discipline
- Teaching Experience
- Type of Institution

Section B: Awareness and Use of Institutional Repositories

- Awareness of IRs
- Frequency of IR usage
- Purpose of IR use

Section C: Faculty Perceptions of AI in IRs

- AI improves search accuracy
- AI enhances research visibility
- AI-based recommendations are useful
- AI reduces the time in information retrieval

Section D: Digital Preservation and Ethical Concerns

- AI helps in long-term preservation
- Concerns about data privacy
- Concerns about copyright/IPR
- Trust in AI-driven repository systems

Section E: Future Expectations

- Need for AI-integrated IRs
- Willingness to deposit work
- Training requirements

VI. OVERALL SATISFACTION

Likert Scale:

1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

SPSS-Ready Variable Coding

Variable Name	Description	Values
GENDER	Gender	1=Male, 2=Female
DESIGN	Designation	1=Asst Prof, 2=Assoc Prof, 3=Professor
IR_AWARE	Awareness of IR	1-5
AI_SEARCH	AI improves search	1-5
AI_PRES	AI supports preservation	1-5
PRIVACY	Privacy concern	1-5
SATISFY	Overall satisfaction	1-5

VII. DATA ANALYSIS AND INTERPRETATION

Table 1: Demographic Profile of Respondents (N = 150)

Category	Frequency	Percentage
Male	92	61.3
Female	58	38.7
Assistant Professor	78	52.0
Associate Professor	42	28.0
Professor	30	20.0

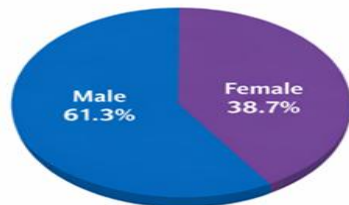


Figure 1. Gender Distribution of Respondents (N = 150)



Figure 2. Designation-wise Distribution of Respondents (N = 150)

Interpretation: The majority of respondents were Assistant Professors, indicating strong participation from early- and mid-career academics.

Table 2: Awareness and Use of Institutional Repositories

Statement	Agree (%)	Neutral (%)	Disagree (%)
Awareness of IR	72.0	18.0	10.0
Regular use of IR	61.3	22.7	16.0
Self-archiving	48.0	30.0	22.0

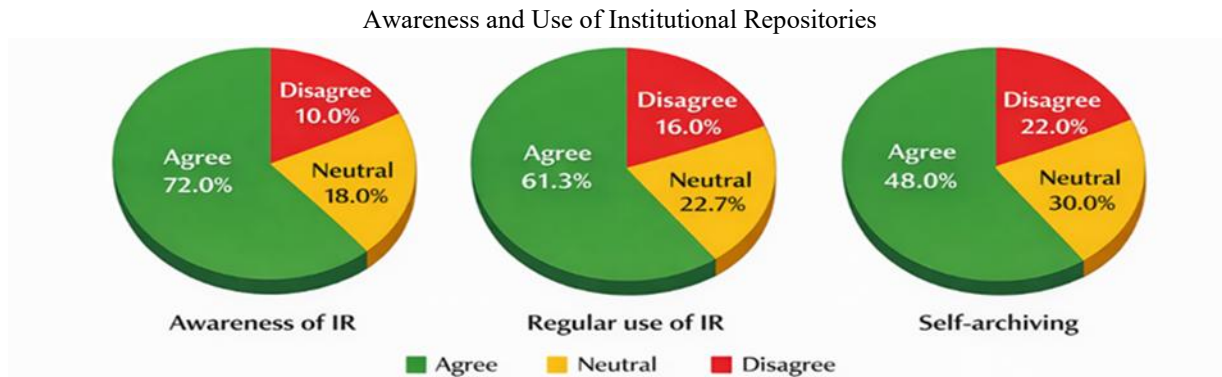


Figure 3. Awareness and Use of Institutional Repositories (N = 150)

Interpretation: Although awareness is high, actual self-archiving practices remain moderate, suggesting the need for motivational strategies.

Table 3: Faculty Perceptions of AI in IRs (Mean Scores)

Statement	Mean	SD
AI improves search	4.12	0.68
AI enhances visibility	4.05	0.72
AI recommendations useful	3.89	0.81
AI saves time	4.20	0.63

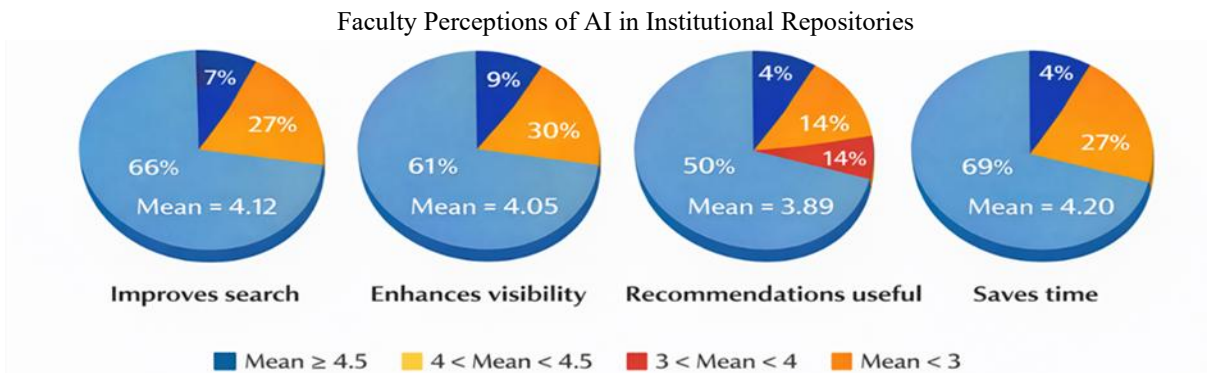


Figure 4. Faculty Perceptions of AI in Institutional Repositories (Mean Scores)

Interpretation: High mean scores indicate a positive perception of AI-enabled repository services.

Table 4: Digital Preservation and Ethical Concerns

Issue	Agree (%)	Mean
AI helps preservation	66.7	3.98
Privacy concern	42.0	3.45
Copyright concern	46.7	3.62

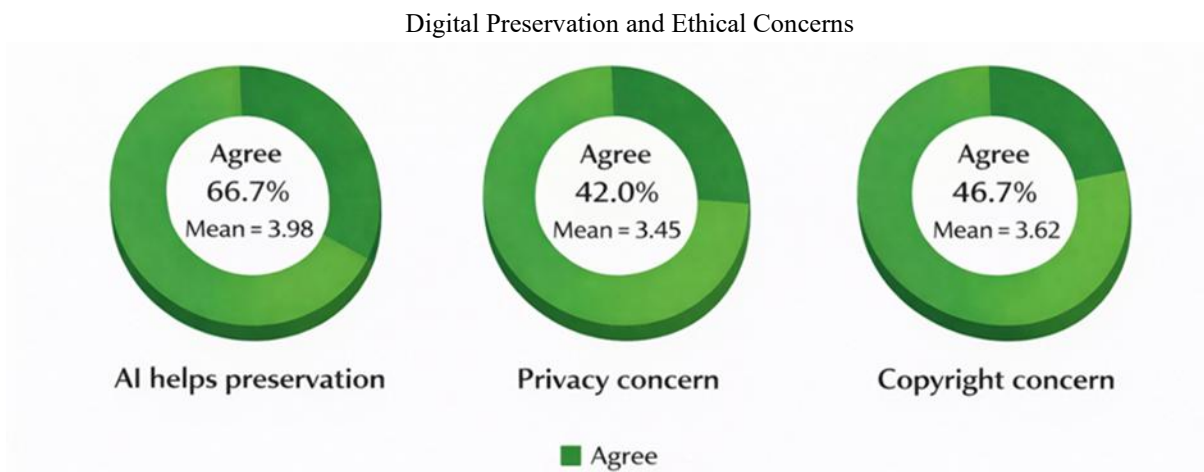


Figure 5. Digital Preservation and Ethical Concerns

Interpretation: While faculty recognize AI's preservation benefits, ethical and legal concerns remain significant.

REFERENCES

- [1] Bailey, C. W. (2005). The role of institutional repositories in scholarly communication. *Educause Quarterly*, 28(4), 14–19.
- [2] Borgman, C. L. (2015). *Big data, little data, no data: Scholarship in the networked world*. MIT Press.
- [3] Burnhill, P., & Guy, F. (2020). Preservation of digital research outputs: New challenges and opportunities. *International Journal of Digital Curation*, 15(1), 1–15. <https://doi.org/10.2218/ijdc.v15i1.682>
- [4] Crow, R. (2002). The case for institutional repositories: A SPARC position paper. SPARC. Dappert, A., & Farquhar, A. (2009). Significance is in the eye of the stakeholder. *International Journal of Digital Curation*, 4(1), 48–59.
- [5] Ferreira, M., Baptista, A. A., & Ramalho, J. C. (2012). A foundation for digital preservation. *Information Systems*, 37(3), 190–210. <https://doi.org/10.1016/j.is.2011.08.003>
- [6] Giarlo, M. J. (2013). Academic libraries as data quality hubs. *Journal of Library Administration*, 53(4), 223–236. <https://doi.org/10.1080/01930826.2013.876823>
- [7] Kim, J. (2011). Motivations of faculty self-archiving in institutional repositories. *Journal of Academic Librarianship*, 37(3), 246–254. <https://doi.org/10.1016/j.acalib.2011.02.017>
- [8] Lagzian, F., Abrizah, A., & Wee, M. C. (2015). Measuring the visibility of institutional repositories. *Scientometrics*, 102(3), 1863–1891. <https://doi.org/10.1007/s11192-014-1494-5>
- [9] Lavoie, B. (2014). The open archival information system (OAIS) reference model. *Digital Preservation Coalition Technology Watch Report*.
- [10] Lynch, C. A. (2003). Institutional repositories: Essential infrastructure for scholarship in the digital age. *Portal: Libraries and the Academy*, 3(2), 327–336. <https://doi.org/10.1353/pla.2003.0039>
- [11] Mering, M. (2017). Faculty attitudes toward institutional repositories. *Journal of Librarianship and Scholarly Communication*, 5(1), eP2158. <https://doi.org/10.7710/2162-3309.2158>
- [12] Park, J. R., & Tosaka, Y. (2015). Metadata quality control in digital repositories. *Cataloging & Classification Quarterly*, 53(5–6), 508–531. <https://doi.org/10.1080/01639374.2015.1010112>
- [13] Pinfield, S. (2015). Making open access work. *Online Information Review*, 39(5), 604–636. <https://doi.org/10.1108/OIR-05-2015-0167>
- [14] Pomerantz, J. (2015). *Metadata*. MIT Press Essential Knowledge Series. Rodrigues, E., & Shearer, K. (2017). Institutional repositories and research assessment. *New Review of Academic Librarianship*, 23(2–3), 121–133. <https://doi.org/10.1080/13614533.2017.1336059>

- [15] Rydning, D. R., & Morrison, H. (2016). Institutional repositories and open access mandates. *College & Research Libraries*, 77(4), 458–472. <https://doi.org/10.5860/crl.77.4.458>
- [16] Russell, R., & Day, M. (2010). Institutional repository interaction with research users. *Program*, 44(3), 224–236. <https://doi.org/10.1108/00330331011064218>
- [17] Sayogo, D. S., & Pardo, T. A. (2013). Understanding smart data ecosystems. *Government Information Quarterly*, 30(1), S1–S6. <https://doi.org/10.1016/j.giq.2012.11.003>
- [18] Schöpfel, J., & Prost, H. (2016). Research data management in institutional repositories. *Library Hi Tech*, 34(3), 543–564. <https://doi.org/10.1108/LHT-01-2016-0007>
- [19] Smith, M., Barton, M., Bass, M., Branschofsky, M., McClellan, G., Stuve, D., & Walker, J. H. (2003). DSpace: An open-source dynamic digital repository. *D-Lib Magazine*, 9(1). Suber, P. (2012). *Open access*. MIT Press.
- [20] Suleman, H., Fox, E. A., Abrams, M., & Bhatia, K. (2014). Automating metadata generation. *International Journal on Digital Libraries*, 14(3–4), 165–179. <https://doi.org/10.1007/s00799-014-0114-8>
- [21] Tennant, J. P., et al. (2020). The academic, economic, and societal impacts of open access. *F1000Research*, 9, 846. <https://doi.org/10.12688/f1000research.24198.2>
- [22] Tenopir, C., Dalton, E. D., Fish, A., Christian, L., Jones, M., & Smith, M. (2015). What motivates authors of scholarly articles? *Journal of the Association for Information Science and Technology*, 67(1), 1–11. <https://doi.org/10.1002/asi.23367>
- [23] Thylstrup, N. B. (2018). *The politics of mass digitization*. MIT Press. Tzoc, E., & Millard, P. (2011). Institutional repositories and faculty participation. *Library Management*, 32(1–2), 108–116. <https://doi.org/10.1108/01435121111102646>
- [24] UNESCO. (2021). *Recommendation on open science*. UNESCO Publishing. van Westrienen, G., & Lynch, C. A. (2005). Academic institutional repositories. *D-Lib Magazine*, 11(9).
- [25] Xia, J., & Sun, L. (2007). Factors affecting faculty contributions to IRs. *Journal of Academic Librarianship*, 33(6), 646–654. <https://doi.org/10.1016/j.acalib.2007.09.005>
- [26] Yakel, E., Faniel, I., Kriesberg, A., & Yoon, A. (2013). Trust in digital repositories. *International Journal of Digital Curation*, 8(1), 14–27.
- [27] Zeng, M. L., & Qin, J. (2016). *Metadata*. Facet Publishing. Zhang, Y., & Mauney, B. (2013). Academic library value in research data management. *Journal of Academic Librarianship*, 39(4), 332–341. <https://doi.org/10.1016/j.acalib.2013.01.004>
- [28] Zhu, Y., & Liu, X. (2020). AI-based knowledge discovery in digital libraries. *Information Processing & Management*, 57(5), 102–114. <https://doi.org/10.1016/j.ipm.2020.102239>
- [29] Zuiderwijk, A., Janssen, M., & Dwivedi, Y. K. (2015). Open data policies and practices. *Government Information Quarterly*, 32(4), 429–443. <https://doi.org/10.1016/j.giq.2015.09.005>