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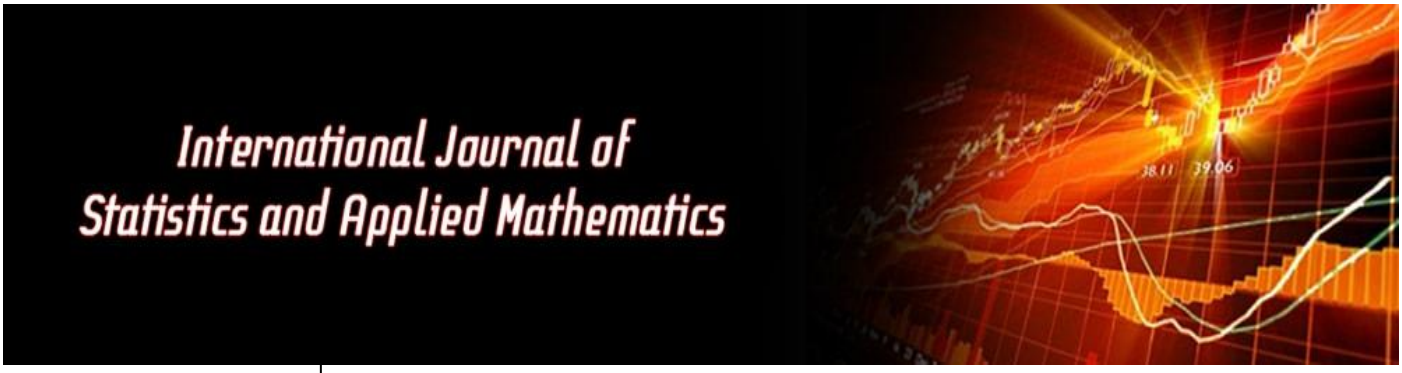

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Integration of IRINS with national databases: A review of opportunities and gaps

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Abstract
The Indian Research Information Network System (IRINS) has emerged as a significant platform to showcase the academic, research, and professional profiles of Indian researchers. Its integration with national databases is critical to enhancing research visibility, standardization of metadata, and data-driven academic evaluations. This review explores the current status of IRINS integration with platforms such as ORCID, Scopus, Google Scholar, Web of Science, and Indian repositories like Shodhganga. It highlights the opportunities such integrations offer for seamless scholarly communication, while also identifying technical, policy-related, and adoption-level gaps that hinder full realization of IRINS' potential. Recommendations for improving interoperability and data governance are also provided.

Keywords: IRINS, ORCID, Scopus, INFLIBNET, Web of Science, Shodhganga, scholarly databases, research information management, metadata interoperability

1. Introduction
In an era defined by extraordinary technological progress and accelerating globalisation, effective research information management (RIM) has become crucial in steering the course of scientific exploration, innovation, and the dissemination of knowledge. The Indian Research Information Network System (IRINS) has emerged as a model of excellence in this field, offering a holistic platform for managing research information while promoting innovation, collaboration, knowledge sharing, and impact evaluation among researchers, academic institutions, and policymakers.

IRINS is a freely accessible service for all academic and research institutions across India. It serves as a powerful tool for researchers aiming to showcase their work to a broader audience, build connections with peers, and monitor the impact of their scholarly contributions.

At its foundation, IRINS functions as a centralised repository encompassing scholarly publications, datasets, patents, and other research outputs produced by Indian academic and research entities. By utilising advanced metadata standards, interoperable technologies, and comprehensive analytics tools, IRINS enables stakeholders to efficiently discover, access, and assess research outcomes with accuracy and clarity. Furthermore, the platform facilitates collaboration by helping researchers identify and connect with potential partners for joint projects.

The Indian Research Information Network System (IRINS), developed by INFLIBNET Centre under the aegis of UGC, aims to build a comprehensive national research information infrastructure. It facilitates automatic creation and maintenance of faculty research profiles, aligned with international researcher identification systems. With increasing emphasis on global research collaborations and institutional ranking systems, the integration of IRINS with both national and international scholarly databases is pivotal. This article assesses the landscape of such integrations, benefits, challenges, and future scope.

2. Overview of IRINS
The Indian Research Information Network System (IRINS) is a national-level Research Information Management System (RIMS) developed by the Information and Library Network (INFLIBNET) Centre, under the aegis of the University Grants Commission (UGC), Government of India.

It is designed to provide a structured, interoperable, and scalable framework for managing and showcasing the research and academic output of Indian higher educational and research institutions (INFLIBNET, 2023) [1].

IRINS enables the creation of dynamic faculty research profiles that include details such as scholarly publications, funded projects, patents, citations, teaching responsibilities, awards, and affiliations. These profiles are generated and updated through automated harvesting from authoritative databases like Scopus, CrossRef, ORCID, and Google Scholar, ensuring authenticity and minimizing manual data entry (Shettar, 2024) [2].

As a centralized platform, IRINS serves multiple strategic objectives:

- Increases research visibility nationally and internationally by standardizing and disseminating researcher outputs.
- Supports institutional evaluation, rankings (e.g., NIRF, NAAC, and RUSA), and strategic decision-making through analytics dashboards.
- Promotes collaboration by enabling inter-institutional and interdisciplinary discovery of expertise.
- Encourages open access practices by integrating with platforms like Shodhganga and institutional repositories.
- Aligns with international standards by supporting ORCID integration and interoperable metadata formats (INFLIBNET, 2023; Nature India, 2022) [1, 4].

As of 2024, IRINS has been adopted by over 150 Indian academic institutions, including central universities, Indian Institutes of Technology (IITs), National Institutes of Technology (NITs), and agricultural and health universities. Its growing influence is instrumental in shaping India's digital scholarly ecosystem and improving transparency, accountability, and accessibility of academic research (Ministry of Education, 2022) [3].

3. Opportunities in IRINS Integration

The integration of the Indian Research Information Network System (IRINS) with national and international scholarly databases presents a multitude of opportunities for enhancing the research landscape in India. As a centralized and interoperable research information platform, IRINS strengthens institutional capabilities in managing, evaluating, and disseminating scholarly outputs while aligning with global best practices.

3.1 Enhanced Research Visibility

By linking IRINS with global databases like ORCID, Scopus, Google Scholar, and CrossRef, Indian researchers can significantly improve the international discoverability of their research outputs. Integration ensures that scholarly work is visible beyond institutional boundaries, allowing for greater engagement, citation, and collaboration potential (INFLIBNET, 2023; Nature India, 2022) [1, 4].

3.2 Unified Researcher Identity

IRINS supports ORCID integration, enabling researchers to maintain a unique and persistent identifier. This eliminates duplication of profiles across platforms and supports unified tracking of academic contributions. Such integration is crucial for transparent author attribution and for aligning Indian research output with global identity frameworks (ORCID, 2023) [5].

3.3 Automated data harvesting and profile management

Integration with metadata providers like Scopus, CrossRef, and Google Scholar allows IRINS to automatically harvest publication records. This automation minimizes the manual workload for faculty and institutional administrators, thereby improving efficiency and reducing errors in data entry (Shettar, 2024) [2].

3.4 Institutional performance evaluation and policy support

Integrated IRINS data can be utilized for institutional rankings, grant applications, and performance appraisals. Systems like NIRF, NAAC, and RUSA can benefit from standardized, real-time data pulled through IRINS from various sources, ensuring objective and data-driven policy evaluation (Ministry of Education, 2022; INFLIBNET, 2023) [3, 1].

3.5 Open access promotion and repository linkages

IRINS can be connected with open access repositories such as Shodhganga, institutional digital archives, and emerging preprint servers like India Rxiv. This linkage supports India's national open access policy goals by providing seamless access to theses, dissertations, and published articles (Shettar, 2024; UGC, 2023) [2, 6].

3.6 Fostering collaboration and networking

Through its integrated search and expertise discovery features, IRINS enables researchers to identify collaborators across institutions, disciplines, and geographies. Such networking is critical in addressing multidisciplinary research problems and building national and international consortia (INFLIBNET, 2023) [1].

3.7 Support for national digital infrastructure

IRINS integration aligns with initiatives under India's National Digital Education Architecture (NDEAR) and Digital India, promoting the development of unified, scalable, and interoperable digital frameworks for research and education (Ministry of Education, 2022) [3].

4. Challenges and gaps in IRINS Integration

While the Indian Research Information Network System (IRINS) presents a promising framework for centralized research information management, several technical, organizational, and policy-level challenges hinder its full integration with national and international scholarly databases. These gaps must be critically addressed to optimize the platform's efficiency, reliability, and long-term sustainability.

4.1. Metadata inconsistency and lack of standardization

A significant challenge in integrating IRINS with global scholarly databases (e.g., Scopus, Web of Science, Google Scholar) is inconsistent metadata formats. Different systems use varying standards for bibliographic records, author affiliations, and publication types, leading to data duplication, misclassification, and incomplete harvesting (IEEE Communications Surveys & Tutorials, 2020; Shettar, 2024) [7, 2]. Absence of a uniform metadata schema across platforms creates complications in auto-populating researcher profiles accurately.

4.2 Limited API Access and Licensing Restrictions

Many global scholarly databases, particularly Web of Science and Scopus, operate under restrictive licensing agreements. These constraints limit full API-based data integration, forcing IRINS to rely on partial metadata scraping or manual uploads. Additionally, Google Scholar's lack of a public API creates reliability issues and introduces errors in citation metrics (INFLIBNET, 2023; Clarivate, 2023) [1, 8].

4.3. Researcher participation and profile maintenance

Despite automated features, faculty and researcher engagement in maintaining and verifying IRINS profiles remains limited. Many users lack awareness of the platform's benefits or the technical literacy to correct mismatches, leading to outdated or incomplete data. Without regular validation, the reliability of the IRINS database may deteriorate (Nature India, 2022; ORCID, 2023) [4, 5].

4.4 Institutional capacity and technical infrastructure

The readiness of institutions to adopt and sustain IRINS varies widely. Many state universities and rural colleges face shortages of IT personnel, stable internet access, and awareness about IRINS protocols. These infrastructural limitations affect consistent onboarding and profile accuracy across institutions (Ministry of Education, 2022) [3].

4.5 Lack of policy mandates and enforcement

There is currently no national mandate that enforces IRINS registration or integration with ORCID, Scopus, or institutional repositories. The absence of clear policy frameworks and enforcement mechanisms limits the platform's adoption and consistent use across the academic system (UGC, 2023; Shettar, 2024) [6, 2]. Moreover, no penalties or incentives exist for institutions that fail to regularly update their IRINS data.

4.6 Interoperability issues with institutional repositories

Although IRINS is designed for open access support, integration with institutional repositories (IRs) and regional research databases is still limited. Many IRs lack compatible protocols like OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting), leading to silos in institutional data and fragmented scholarly visibility (IEEE, 2020) [9].

4.7 Absence of Real-Time Synchronization

Most data synchronization in IRINS is periodic or batch-based, rather than real-time. As a result, new publications or profile updates may take days or weeks to reflect, reducing its effectiveness for time-sensitive evaluations like grant proposals or academic audits (INFLIBNET, 2023) [1].

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