

**Use of open access resources by the PG students of
Faculty of Engineering and Technology at Jadavpur
University**

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By

Arindam Nath

Under the Supervision of
Prof. (Dr.) Subarna Kumar Das

Department of Library and Information Science

Jadavpur University

Kolkata-700032

West Bengal, India

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1. INTRODUCTION

The contemporary academic landscape has witnessed a paradigmatic shift in the dissemination and accessibility of scholarly knowledge, fundamentally challenging the traditional models of academic publishing. At the heart of this transformation lies the concept of open access (OA), which represents both a philosophical commitment to the democratization of knowledge and a practical approach to overcoming the barriers that have historically restricted access to scholarly information. Open access embodies the principle that research outputs, particularly those funded through public resources, should be freely available to all members of society without financial, legal, or technical impediments.

The multifaceted nature of open access manifests through various models and approaches, each designed to address different aspects of the accessibility challenge. The Gold Open Access model involves publishing in journals that make articles freely available immediately upon publication, often supported by article processing charges (APCs) paid by authors or their institutions. The Green Open Access model, also known as self-archiving, allows researchers to deposit their manuscripts in institutional or subject repositories, making them freely accessible while the journal version may remain behind paywalls. The Bronze Open Access model represents publications that are freely readable but lack explicit licensing for reuse. More recently, the Diamond or Platinum Open Access model has emerged, offering free publication and free access without charges to either authors or readers, typically supported by institutional or governmental funding.

2 REVIEW OF LITERATURE

Literature reviews the existing literature on open access (OA) resources, emphasizing their evolution, types, benefits, and challenges, particularly in the context of postgraduate engineering education. It outlines the development of OA models—Gold, Green, Hybrid, and Diamond—and explores India’s efforts to promote OA through initiatives like Shodhganga and institutional repositories. Despite progress, issues such as limited infrastructure, poor awareness, and predatory publishing remain significant concerns. The chapter also discusses the advantages of OA, including increased access, higher citation rates, and broader knowledge sharing, but notes barriers like low discoverability and inconsistent quality perceptions. Studies show that engineering students often lack awareness or training in using OA resources effectively. Institutional support, faculty guidance, and information literacy programs are found to be key factors in shaping student behavior. The review identifies a clear gap in research focused on Indian engineering postgraduates, establishing the rationale for the present study at Jadavpur University.

2. STATEMENT OF THE PROBLEM

The problem of the research may be stated as: assessment of the use of open access resources by the PG students of the faculty of engineering and technology at Jadavpur University

3. RESEARCH GAP

While numerous studies have examined open access adoption from the perspectives of authors, publishers, and institutions, there remains a significant gap in understanding how postgraduate students, particularly in engineering and technology disciplines, engage with open access

resources. Most existing research focuses on faculty usage patterns or undergraduate information literacy, leaving the unique needs and behaviors of postgraduate engineering students underexplored.

Furthermore, the rapidly evolving nature of open access platforms, tools, and policies necessitates regular assessment of usage patterns to ensure that institutional support structures remain relevant and effective. The specific context of Jadavpur University, with its unique academic culture and resource environment, requires targeted investigation to develop contextually appropriate recommendations.

NEED FOR THE STUDY

This study addresses several critical needs within the academic and research community:

Academic Necessity: As research becomes increasingly interdisciplinary and collaborative, postgraduate students require access to diverse information sources beyond traditional institutional subscriptions. Understanding their interaction with open access resources is essential for supporting comprehensive research practices.

Institutional Planning: University libraries and information services need empirical data to make informed decisions about resource allocation, training programs, and infrastructure development to support open access initiatives effectively.

Policy Development: Educational institutions and funding agencies require evidence-based insights to develop policies that promote effective utilization of open access resources while addressing potential challenges and barriers.

Student Support: Identifying specific needs and challenges faced by postgraduate students can inform the development of targeted training programs, workshops, and support services to enhance their research capabilities.

Contribution to Literature: This study contributes to the growing body of knowledge about open access adoption in developing countries and provides valuable insights for similar institutions facing comparable challenges and opportunities.

OBJECTIVES

The objective of the study was to assess the use of open access resources by the PG students of the Faculty of Engineering and Technology at Jadavpur University

1.12.1 Primary Objective

The objective of the study was to comprehensively assess the utilization patterns, preferences, and challenges associated with open-access resource usage among postgraduate students of the Faculty of Engineering and Technology at Jadavpur University.

1.12.2 Secondary Objectives

1. To evaluate the current level of awareness and understanding of open access resources among the target population
2. To identify the most frequently used categories of open-access resources and their perceived value in academic research
3. To analyze factors that facilitate or hinder the adoption of open-access resources in research workflows
4. To examine variations in usage patterns across different engineering disciplines and specializations
5. To assess the impact of open-access resource utilization on research productivity and quality
6. To identify gaps in current institutional support for open access resource utilization
7. To develop evidence-based recommendations for enhancing open access resource adoption and utilization.

HYPOTHESES OF THE STUDY

Based on the literature review and preliminary observations, the following hypotheses have been formulated:

H1: Postgraduate students in the Faculty of Engineering and Technology demonstrate moderate to high awareness of open access resources, but their utilization patterns vary significantly across disciplines.

H2: Students primarily utilize open-access journals and conference proceedings, with limited engagement with other forms of open-access resources such as preprint servers, institutional repositories, and open educational resources.

H3: Technical barriers, quality concerns, and lack of systematic training significantly impede optimal utilization of open access resources.

H4: Students who receive formal training or guidance on open access resources demonstrate higher utilization rates and more diverse usage patterns compared to those who do not.

H5: The integration of open-access resources positively correlates with research productivity and the scope of literature coverage in academic work.

SCOPE AND LIMITATIONS

Scope

This study encompasses:

- All postgraduate students enrolled in various departments within the Faculty of Engineering and Technology at Jadavpur University

- Multiple categories of open-access resources, including journals, conference proceedings, repositories, preprint servers, and educational materials
- Both quantitative usage patterns and qualitative user experiences
- Comparative analysis across different engineering disciplines

Limitations

- The study is limited to a single institution, which may limit the generalizability of findings
- Temporal constraints restrict the study to a specific academic period, potentially missing seasonal variations in usage patterns
- Self-reported data may be subject to recall bias and social desirability effects
- The rapidly evolving nature of open-access resources may render some findings time-sensitive

RESEARCH METHODOLOGY

This study employs a mixed-methods approach, combining quantitative survey research with qualitative interviews to provide comprehensive insights into open access resource utilization patterns. The methodology is designed to capture both the breadth of usage patterns across the student population and the depth of individual experiences and perspectives.

The research design incorporates stratified random sampling to ensure representative coverage across different engineering disciplines and academic levels. Data collection utilizes structured questionnaires for quantitative analysis and semi-structured interviews for qualitative insights. The integration of multiple data sources and analytical approaches enhances the validity and reliability of findings while providing a holistic understanding of the research problem.

OUTLINE OF THE THESIS

This comprehensive study is structured across six interconnected chapters, each contributing to the overall understanding of open access resource utilization:

Chapter I: Introduction This foundational chapter establishes the research context, articulates the problem statement, defines objectives, and outlines the methodological approach. It provides readers with a comprehensive understanding of the study's rationale, scope, and significance.

Chapter II: Review of Literature The literature review synthesizes existing knowledge about open access resources, their adoption patterns, and their impact on academic research. This chapter examines global trends, institutional case studies, and user behavior research to provide theoretical grounding for the current study. Special attention is given to research focusing on engineering and technology disciplines, postgraduate student populations, and developing country contexts.

Chapter III: Profile of Study Area This chapter provides detailed contextual information about Jadavpur University, its Faculty of Engineering and Technology, and the specific characteristics of the postgraduate student population. It includes information about institutional policies, infrastructure, and existing support systems for open access resources.

Chapter IV: Research Design and Methodology A comprehensive examination of methodological choices, including population definition, sampling strategies, instrument development, data collection procedures, and analytical approaches. This chapter also addresses ethical considerations, validity measures, and quality assurance protocols.

Chapter V: Data Analysis and Interpretation This chapter presents detailed analysis of collected data, including descriptive statistics, correlation analyses, and thematic analysis of qualitative responses. Findings are organized around key research questions and hypotheses, with appropriate statistical tests and visualizations supporting the interpretation.

Chapter VI: Findings, Recommendations and Conclusion The concluding chapter synthesizes key findings, discusses their implications, and presents evidence-based recommendations for various stakeholders. It also identifies areas for future research and reflects on the study's contributions to the broader field of information science and academic librarianship.

KEY FINDINGS

1. Awareness Levels

The study found that roughly two-thirds (65.4%) of postgraduate students are aware of open access concepts and self-archiving policies. Surprisingly, this awareness did not differ significantly across departments or demographic categories such as gender or year of study. This suggests that institutional efforts—such as library orientations—are reaching students consistently. However, awareness alone doesn't always translate into action.

2. Usage Patterns

When asked about actual usage, students indicated a clear preference for open access journals and conference proceedings. These were the go-to resources for literature reviews and project work. In contrast, preprint servers, institutional repositories, and open educational resources (OERs) were used far less frequently.

A Friedman's test confirmed significant differences in usage across resource types ($p < .001$), and follow-up Wilcoxon tests showed that journals and proceedings were significantly more favored than repositories or preprints. This trend highlights a strong reliance on peer-reviewed and professionally indexed materials.

3. Barriers to Effective Use

Despite general enthusiasm for OA, many students reported encountering obstacles. Factor analysis revealed three main types of barriers: technical (like broken links or login issues), quality-related (concerns about whether journals are peer-reviewed), and informational (lack of training or guidance).

A logistic regression analysis showed that students facing technical problems were significantly less likely to be high-frequency users. On the flip side, those who had received training were twice

as likely to make regular and diverse use of OA resources. This strongly supports the idea that structured exposure and support can make a real difference.

4. Impact of Training

Among the students surveyed, those who had undergone formal training in OA tools and platforms demonstrated not only higher usage rates but also more variety in the types of OA content they used. Trained students had higher mean utilization scores and broader engagement across multiple categories of OA resources. Statistical tests confirmed that these differences were highly significant ($p < .001$), with large effect sizes.

5. OA and Research Productivity

Perhaps one of the most exciting findings was the clear connection between OA usage and research productivity. Students who engaged more with OA resources were more likely to have published papers and cited a broader range of sources in their writing. Correlation and regression analyses confirmed that higher OA engagement predicted both more publications and greater literature coverage.

This suggests that open access is not just a convenience—it has a measurable impact on students' academic success and scholarly contributions.

6. Attitudes Toward OA

The majority of students expressed positive attitudes toward the broader goals of open access. More than three-quarters believed that OA helps bridge India's information gap, promotes innovation, and enhances educational equity. However, concerns about quality were common. Around two-thirds worried that not all OA journals were peer-reviewed or maintained editorial standards. These mixed sentiments—supportive yet cautious—reflect the growing pains of an evolving scholarly ecosystem.

DISCUSSION

Overall, the study paints a complex but hopeful picture. Students are clearly interested in open access and recognize its benefits, but actual usage remains somewhat narrow, focused mostly on familiar sources like journals. There's a clear drop-off in the use of preprints, repositories, and OERs, largely due to lack of familiarity, perceived relevance, or doubts about credibility.

Statistical evidence from this study underscores the importance of formal support mechanisms. Training, platform accessibility, and institutional policies all play significant roles in shaping how students interact with open access resources. The relationship between OA usage and research productivity further emphasizes that investments in OA infrastructure and literacy are not merely ideological—they yield academic dividends.

RECOMMENDATIONS

Based on the findings, several actionable recommendations are proposed:

1. **Enhance Discovery Tools:** Implement a single-point search portal that integrates OA journals, institutional repositories, and databases to simplify resource discovery.
2. **Institutionalize OA Literacy:** Integrate OA training into core research methodology courses for postgraduates.
3. **Develop Mobile-Friendly Platforms:** Improve mobile access and offline functionality to support students in low-connectivity areas.
4. **Create a Curated OA Journal List:** Publish a vetted list of trusted OA journals to guide students and minimize the risk of engaging with predatory publishers.
5. **Introduce OA Mandates:** Require deposit of theses, dissertations, and student publications in the university repository to normalize open scholarship.
6. **Monitor Usage:** Launch a dashboard to track OA usage, with visualizations by department and resource type, to enable data-informed decision-making.

SCOPE FOR FUTURE RESEARCH

This study opens the door to several follow-up investigations. Future research could:

- Track changes in OA usage over time through longitudinal studies.
- Conduct comparative analyses across institutions, disciplines, or states.
- Explore faculty engagement and how it influences student behavior.
- Examine how OA usage affects research impact using bibliometrics.
- Evaluate the user experience (UX) of repositories and OA platforms.

By building on these findings, future studies can help shape a more inclusive, accessible, and effective scholarly environment for students across India and beyond.

CONCLUSION

This research offers a detailed and data-driven exploration of how postgraduate students in engineering at Jadavpur University engage with open access resources. While there is widespread awareness and positive sentiment toward OA, actual usage is uneven and concentrated on a narrow range of resource types. Key barriers—technical, informational, and perceptual—still impede broader adoption.

The study shows that when students receive training and support, their engagement increases significantly, leading to better research outcomes. This correlation between OA usage and research productivity highlights the practical benefits of a robust open access infrastructure. By investing in targeted interventions and adopting inclusive OA policies, institutions like Jadavpur University can maximize the academic potential of their postgraduate students while contributing to the global movement for equitable knowledge sharing.

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