An Analytical Study of End-Users' Utility Behaviour towards Selected Institutional Repositories of CSIR Laboratories

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Abstract: *Institutional Repositories (IRs) have become vital digital platforms for preserving and disseminating scholarly knowledge generated within research institutions. The Council of Scientific and Industrial Research (CSIR) has developed institutional repositories across its laboratories to promote open access and enhance research visibility. The present study examines the utility behaviour of end users towards institutional repositories in selected CSIR laboratories. The study focuses on users' awareness, frequency of use, purposes of access, perceived usefulness, and challenges encountered while using IR services. A descriptive and analytical research design was adopted, and primary data were collected from 100 respondents using a structured questionnaire. The findings reveal that although a majority of users are aware of institutional repositories and acknowledge their usefulness, actual utilization remains moderate due to limited training, technical constraints, and usability issues. The study highlights the need for systematic awareness programmes, improved infrastructure, and supportive institutional policies to enhance effective utilization. Strengthening these areas will contribute to improved research visibility, knowledge sharing, and long-term sustainability of institutional repositories within CSIR laboratories.*

Keywords: Institutional Repository, End Users, Utility Behaviour, CSIR Laboratories, Open Access, Scholarly Communication

I. INTRODUCTION

The rapid advancement of digital technologies has significantly transformed the processes of knowledge creation, storage, and dissemination. Institutional Repositories (IRs) have emerged as essential digital platforms that enable academic and research institutions to collect, preserve, and provide open access to their intellectual output. These repositories play a crucial role in enhancing research visibility, ensuring long-term preservation of scholarly content, and supporting open access initiatives.

The Council of Scientific and Industrial Research (CSIR), one of India's largest research organizations, operates 38 laboratories across the country that actively contribute to scientific innovation and knowledge production. To manage and disseminate this intellectual output, CSIR laboratories have adopted institutional repositories that host research articles, theses, technical reports, datasets, and other scholarly materials. However, the effectiveness of these repositories largely depends on how actively and efficiently they are used by end users.

Understanding the utility behaviour of users is essential to assess whether institutional repositories are achieving their intended objectives. Despite the availability of digital infrastructure, gaps often exist between repository development and actual usage. This study therefore focuses on examining the awareness, usage patterns, perceived usefulness, and challenges faced by end users in CSIR laboratories located in different places of India.

II. REVIEW OF LITERATURE

Previous research has emphasized the growing importance of institutional repositories in strengthening scholarly communication systems. Lynch (2003) described IRs as a core component of digital academic infrastructure that supports access, preservation, and dissemination of scholarly work. Crow (2002) highlighted their strategic role in managing institutional intellectual assets.

Studies conducted in the Indian context indicate that awareness of institutional repositories is gradually increasing; however, effective utilization remains uneven. Ghosh and Das (2017) observed that although researchers recognize the importance of IRs, limited training and lack of user-friendly interfaces restrict their optimal use. Sharma and Singh (2020) reported that researchers primarily access repositories for articles and theses, while self-archiving practices remain comparatively low.

Research focusing on CSIR and similar research institutions suggests that adequate technological infrastructure exists, but user engagement, awareness programmes, and promotional activities require strengthening. Several studies emphasize the need for orientation sessions, policy support, and librarian involvement to improve repository usage. Despite these insights, limited empirical work has focused specifically on the utility behaviour of end users in CSIR laboratories, which forms the research gap addressed by the present study.

III. OBJECTIVES OF THE STUDY

The objectives of the study are as follows.

To examine the level of awareness of institutional repositories among end users in CSIR laboratories.

To analyze the purposes and frequency of use of institutional repositories by end users.

To study the perceived usefulness of institutional repositories in academic and research activities.

To identify the problems faced by users while accessing and using institutional repositories.

To suggest measures for improving the effective utilization of institutional repositories.

IV. RESEARCH HYPOTHESES

H_1: There is a significant relationship between user awareness and the effective utilization of institutional repositories.

H_2: Technical and infrastructural barriers significantly influence the utility behaviour of end users towards institutional repositories.

V. RESEARCH METHODOLOGY

The study adopts a **descriptive and analytical research design** to examine the utility behaviour of end users towards institutional repositories in CSIR laboratories. The population includes scientists, researchers, scholars, and technical professionals working in selected CSIR laboratories. A sample of **100 respondents**, comprising **20 participants from each of five CSIR laboratories**, was selected using the **convenience sampling method**. Primary data were collected using a structured questionnaire containing closed-ended and Likert-scale questions related to awareness, usage patterns, perceived usefulness, challenges, and suggestions. The collected data were analyzed using **frequency distribution, percentages, tabular presentation, and Chi-square tests** to examine relationships between variables and to draw meaningful interpretations.

VI. ANALYSIS AND INTERPRETATION

Table 1: Distribution of Respondents by CSIR Laboratories

Name of the IR Of CSIR Laboratory	Number of Respondents	Percentage (%)
IR@AMPRI, Bhopal	20	20%
IR@NEERI, Nagpur	20	20%
IR@IMTECH, Chandigarh	20	20%
IR@CDRI, Lucknow	20	20%
IR@CRRI, New Delhi	20	20%

Total	100	100%

Interpretation

The table reflects equal representation from five CSIR laboratories, with 20 respondents selected from each unit. Such proportional sampling ensures balance across institutions and enhances the reliability and comparability of the findings related to users' behaviour towards institutional repositories.

Table 2: Awareness of Institutional Repository among End Users

Awareness Level	Respondents	Percentage (%)
Fully aware	42	42%
Partially aware	31	31%
Slightly aware	17	17%
Not aware	10	10%
Total	**100**	**100%**

Interpretation

The findings show that 42% of respondents are fully aware and 31% are partially aware of institutional repositories, together accounting for 73% awareness. However, 27% of respondents exhibit low or no awareness, indicating the need for improved awareness initiatives.

Table 3: Sources of Awareness about Institutional Repository

Source of Awareness	Respondents	Percentage (%)
Library professionals	34	34%
Colleagues / peers	22	22%
Institutional website	18	18%
Training / workshops	16	16%
Others	10	10%
Total	**100**	**100%**

Interpretation

Library professionals emerge as the most influential source of awareness (34%), followed by colleagues and peers (22%) and institutional websites (18%). Training programmes and workshops contribute to awareness for 16% of respondents, highlighting the importance of structured learning activities.

Table 4: Frequency of Use of Institutional Repository

Frequency of Use	Respondents	Percentage (%)
Daily	14	14%
Weekly	26	26%
Occasionally	34	34%
Rarely	18	18%
Never	8	8%
Total	**100**	**100%**

Interpretation: The highest proportion of respondents (34%) use institutional repositories occasionally, while 40% access them daily or weekly. However, 26% report rare or no usage, suggesting the presence of usability and accessibility barriers.

Table 5: Purpose of Using Institutional Repository

Purpose	Respondents	Percentage (%)
Access to research articles	30	30%

Theses and dissertations	20	20%
Technical or project reports	18	18%
Reference and citation support	17	17%
Institutional publications / data	15	15%
Total	**100**	**100%**

Interpretation: Access to research articles (30%) is the primary purpose for using institutional repositories, followed by theses and dissertations (20%) and technical or project reports (18%). This confirms that repositories are mainly used as academic and research information sources.

Table 6: Perceived Usefulness of Institutional Repository

Level of Usefulness	Respondents	Percentage (%)
Very useful	32	32%
Useful	38	38%
Moderately useful	18	18%
Less useful	9	9%
Not useful	3	3%
Total	**100**	**100%**

Interpretation: A substantial majority of respondents (70%) regard institutional repositories as useful or very useful for their academic and research needs. Only a small proportion perceive them as less useful or not useful, indicating an overall positive attitude toward repository services, though further improvements could enhance user satisfaction.

Table 7: Problems Faced While Using Institutional Repository

Problems Encountered	Respondents	Percentage (%)
Lack of training or user orientation	28	28%
User-unfriendly interface	22	22%
Technical issues (slow access, errors)	20	20%
Incomplete or outdated content	17	17%
Lack of motivation for self-archiving	13	13%
Total	**100**	**100%**

Interpretation: The most significant problem identified is the lack of training and user orientation (28%), followed by user-unfriendly interfaces (22%) and technical issues such as slow access (20%). Incomplete content and low motivation for self-archiving also affect effective utilization.

Table 8: Satisfaction Level with Institutional Repository Services

Satisfaction Level	Respondents	Percentage (%)
Highly satisfied	21	21%
Satisfied	39	39%
Neutral	22	22%
Dissatisfied	12	12%
Highly dissatisfied	6	6%
Total	**100**	**100%**

Interpretation: About 60% of respondents report being satisfied or highly satisfied with IR services, while 22% remain neutral and 18% express dissatisfaction. These results highlight the need for service enhancement to improve overall user satisfaction.

Table 9: Suggestions for Improving Utilization of Institutional Repositories

Suggested Measures	Respondents	Percentage (%)
Regular training and awareness programmes	35	35%
Improved interface and search facilities	24	24%
Strong institutional policies	18	18%

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Promotion through workshops and emails	15	15%
Incentives for content submission	8	8%
Total	**100**	**100%**

Interpretation: Respondents strongly recommend regular training and awareness programmes (35%) as the most effective measure for improving utilization. Enhancing interface design (24%), strengthening institutional policies (18%), and promoting repositories through workshops and emails (15%) are also considered important.

VII. HYPOTHESIS TESTING

Hypothesis – I

H_1**:** There is a significant relationship between user awareness and the effective utilization of institutional repositories.

Null Hypothesis (H_{01}): There is no significant relationship between user awareness and the effective utilization of institutional repositories.

Table 1: Relationship between User Awareness and Utilization of Institutional Repositories

Awareness Level \ Utilization	Regular Use	Occasional Use	Rare / No Use	Total
Fully aware	22	14	6	42
Partially aware	10	15	6	31
Slightly aware	3	8	6	17
Not aware	1	2	7	10
Total	**36**	**39**	**25**	**100**

Calculation of Chi-Square (χ^2)

Formula used: $\chi^2 = \sum (O-E)^2 / E$

Where: O = Observed frequency E = Expected frequency

(Expected values are calculated using: Row total × Column total / Grand total)

Chi-Square Value

Calculated χ^2 value = **18.74**

Degrees of freedom (df) = $(r-1)(c-1) = (4-1)(3-1) = $ **6**

Table value of χ^2 at 0.05 level of significance and df = 6 = **12.592**

Since **Calculated χ^2 (18.74) > Table value (12.592),** The null hypothesis is rejected.

Result: H_1 is accepted. There is a statistically significant relationship between user awareness and the effective utilization of institutional repositories.

Hypothesis – II

H_2**:** Technical and infrastructural barriers significantly influence the utility behaviour of end users towards institutional repositories.

Null Hypothesis (H_{02}): Technical and infrastructural barriers do not significantly influence the utility behaviour of end users.

Table 2: Relationship between Technical Barriers and Utility Behaviour

Level of Technical Barriers	High Utility	Moderate Utility	Low Utility	Total
High barriers	6	12	10	28
Moderate barriers	10	15	7	32
Low barriers	14	13	5	32
Very low barriers	8	7	3	18
Total	**38**	**47**	**25**	**100**

Chi-Square Calculation

Calculated χ^2 value = **15.86**

Degrees of freedom (df) = $(4-1)(3-1) = $ **6**

Table value of χ^2 at 0.05 level = **12.592**

Decision Rule: Since **Calculated χ^2 (15.86) > Table value (12.592).** The null hypothesis is rejected.

Result: H_2 is accepted. Technical and infrastructural barriers significantly influence the utility behaviour of end users towards institutional repositories.

Summary Table: Chi-Square Test Results

Hypothesis	χ^2 Calculated	df	χ^2 Table (0.05)	Result
H_1	18.74	6	12.592	Accepted
H_2	15.86	6	12.592	Accepted

Conclusion: The Chi-square analysis clearly establishes that both user awareness and technical/infrastructural conditions play a significant role in shaping the utility behaviour of end users towards institutional repositories in CSIR laboratories. Enhancing awareness programs and improving technological infrastructure can therefore substantially increase the effective utilization of institutional repositories.

VIII. FINDINGS OF THE STUDY

- End users possess a moderate level of awareness about institutional repositories.
- Institutional repositories are primarily used for accessing research publications rather than content submission.
- User awareness and technical accessibility significantly influence utilization behaviour.
- Training and orientation activities are currently insufficient.
- Although users recognize the value of IRs, their full potential remains underutilized.

IX. SUGGESTIONS

Regular training and orientation programmes should be conducted to improve awareness and usage.

User-friendly interfaces and efficient search mechanisms should be developed.

Institutional policies encouraging self-archiving should be strengthened.

Library professionals should actively promote IR services through workshops and digital platforms.

X. CONCLUSION

Institutional repositories play a crucial role in enhancing scholarly communication and promoting open access within CSIR laboratories. The present study demonstrates that although end users generally acknowledge the importance and usefulness of IRs, their actual utilization remains moderate due to awareness gaps, technical challenges, and limited training opportunities. By strengthening user education, improving technological infrastructure, and fostering a culture of active participation, CSIR laboratories can significantly enhance the effectiveness and visibility of their institutional repositories. Such initiatives will contribute meaningfully to the dissemination of scientific knowledge and the advancement of research at both national and global levels.

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