

Open Access to Digital Research Data and Source Code of Theses and Dissertations in Iran: Are Graduate Students on Board?

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Received: September, 22, 2025; Revised: November, 2, 2025

Accepted: November, 3, 2025; Published: December, 22, 2025

Abstract

Purpose: This study investigates the perspectives of graduate students who use the National System for Registration of Theses, Dissertations, and Proposals (NSRTDP) regarding the uploading digital research data and source code associated with their academic works to the Iranian Research Institute for Information Science and Technology (IranDoc), as well as their views on granting open access to these materials.

Methodology: Using a quantitative survey design, data were collected from 449 NSRTDP users through an online questionnaire. The responses were analyzed using SPSS software.

Findings: Fewer than half of the respondents supported uploading digital research data (45%) and source codes (39%) of their theses and dissertations to IranDoc at the time of registration, with many expressing reluctance or uncertainty. However, more than half of those who agreed to upload digital data (72.3%) and source code (73.7%) also supported granting immediate open access to these materials after upload. Notably, most respondents who initially opposed immediate open access to their digital data and source code expressed agreement with open access after a 12-month embargo period.

Conclusion: The findings underscore the need for further investigation into the factors influencing students' willingness to upload and share digital research outputs. They also highlight the importance of developing robust technical infrastructure to support such initiatives. These measures are essential for revising national science policy, advancing open science principles, aligning with international standards, and strengthening Iran's participation in the global open science movement.

Value: This study is the first to examine graduate students' perspectives on uploading digital research data and source code to IranDoc and on providing open access to these resources.

Keywords: *Theses, Dissertation, Open Science, Open Data, Open Source*

How to Cite:

Alidousti, S., & Sahli, F. (2026). Open Access to Digital Research Data and Source Code of Theses and Dissertations in Iran: Are Graduate Students on Board? *Journal of Knowledge-Research Studies*, 4 (4), 168-184.

Doi: [10.22034/jkrs.2025.20686](https://doi.org/10.22034/jkrs.2025.20686)

URL: https://jkrs.tabrizu.ac.ir/article_20686.html?lang=en

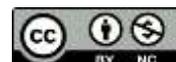
Article Type: Original Article

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Publisher: University of Tabriz

E-ISSN: [2821-045X](https://doi.org/10.22034/jkrs.2025.20686)

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Extended Abstract

Introduction: Open science is a transformative movement aimed at enhancing the transparency, accessibility, and reusability of scientific knowledge, research processes, and outputs (Shmagun et al., 2024; Ng et al., 2024). It encompasses three core pillars: open access to publications, open research data, and open-source software (NASEM, 2018). While many countries have established comprehensive open access policies for theses and dissertations (TDs), Iran's efforts have primarily focused on providing access to metadata and full texts of TDs, particularly through platforms such as the Iran Scientific Database (Ganj). However, no national program currently exists for registering and offering open access to the digital research data and source code associated with TDs. According to Gownaris et al. (2022), NASEM (2018), Robson et al. (2021), and Vicente-Saez and Martinez-Fuentes (2018), digital research data include files such as survey datasets, statistical outputs, laboratory results, interview transcripts, and clinical trial data. Source code refers to the computer programs developed during the research process. Despite the significance of these materials, the perspectives of TD authors regarding their sharing have not been adequately examined in Iran.



Journal of
Knowledge-Research
Studies (JKRS)

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Purpose: This study aims to examine the perspectives of graduate students who use the National System for Registration of Theses, Dissertations, and Proposals (NSRTDP) regarding uploading of digital research data and source code associated with their TDs to the Iranian Research Institute for Information Science and Technology (IranDoc), as well as enabling open access to these materials. Understanding these perspectives is essential for developing effective policies and designing infrastructure that support open access and align with international standards.

Methodology: This study employed a quantitative approach using a survey method, targeting students and graduates who were users of the IranDoc registration system. Based on user statistics, the required sample size was estimated at 384 participants using the Krejcie and Morgan table, and convenience sampling was applied. Data were collected through an online questionnaire whose face and content validity were confirmed by subject-matter experts. Reliability was assessed using Cronbach's alpha, yielding a very high coefficient of 0.98. The questionnaire was distributed to more than 12,000 registered users of the system, and ultimately, 449 valid responses were received and analyzed using SPSS software. Given that the data distribution was non-normal, as determined by the Kolmogorov–Smirnov test, nonparametric tests- including the binomial test, Mann–Whitney U test, and Kruskal–Wallis test- were used for inferential analysis.

Findings: The findings revealed a generally cautious attitude among students toward uploading digital research data and source code. Specifically, only 45% supported uploading digital data, and 39% supported uploading source code alongside their TD registration. A substantial portion of respondents expressed uncertainty or reluctance. However, among those who supported uploading, a majority also favored immediate open access-72.3% for digital data and 73.7% for source code. These results are presented in Tables 1 and 2.

Table 1. Frequency Distribution of Responses to Items on Uploading and Open Access to Digital Research Data

Item	Frequency	Yes	No	Not Sure	Total
If your thesis/dissertation included digital research data, would you agree to upload it to IranDoc along with its registration?	n	202	91	156	449
	%	45	20.3	34.7	100
Would you agree to provide immediate open access to your digital research data upon registration of your thesis/dissertation in IranDoc?	n	146	34	22	202
	%	72.3	16.8	10.9	100
Would you agree to provide open access to your digital research data after a specified embargo period?	n	47	7	2	56
	%	83.9	12.5	3.6	100

Tables 2. Frequency Distribution of Responses to Items on Uploading and Open Access to Source Code

Item	Frequency	Yes	No	Not Sure	Total
If your thesis/dissertation included source code, would you agree to upload it to IranDoc along with its registration?	n	175	136	138	449
	%	39.0	30.3	30.7	100
Would you agree to provide immediate open access to the source code of your thesis/dissertation upon its registration in IranDoc?	n	129	29	17	175
	%	73.7	16.6	9.7	100
Would you agree to provide open access to the source code of your thesis/dissertation after a specified embargo period?	n	36	6	4	46
	%	78.3	13.0	8.7	100



Interestingly, many students who initially opposed immediate open access expressed willingness to allow access after a 12-month embargo period. These results suggest that while there is latent support for open science principles, several obstacles remain, including insufficient infrastructure, lack of incentives, and the need to allocate additional resources such as time and money (Azami et al., 2023; Pascu & Burgelman, 2022; Vaziri et al., 2020).

Conclusion: The study underscores the importance of addressing both technical and behavioral dimensions in promoting open access to digital research outputs. Establishing robust infrastructure for secure data and code management, along with clear policies and educational initiatives, can strengthen student participation in open science. Moreover, the Ministry of Science, Research, and Technology should consider revising existing policies to incorporate mandates for data and code sharing, thereby aligning national practices with international standards and contributing to the global open science movement. The findings also highlight the need for phased implementation strategies- such as embargo periods- to accommodate students' concerns while gradually fostering a culture of openness. By integrating student feedback into policy design, institutions can build trust and encourage voluntary participation.

Value: This research is the first of its kind in Iran to systematically examine graduate students' perspectives on uploading and sharing digital research data and source code through IranDoc. Its findings offer actionable insights for policymakers, academic institutions, and technical developers seeking to advance open science in the country. By illuminating both the opportunities and the challenges, the study

provides a foundation for future initiatives aimed at strengthening transparency, reproducibility, and collaboration in academic research.

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