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Open Access and Open Science Principles in Ukraine: What Researchers Think and How Librarians Can Help (Based on Selected Results from a 2025 Sociological Survey)

Objective. To examine the attitudes of Ukrainian researchers toward open access principles, open science, and research data management, as well as the role of libraries in promoting open science principles and practices, based on selected results from a sociological survey conducted by the State Scientific and Technical Library of Ukraine in April-August 2025. **Methods.** The study involved 702 respondents from various scientific disciplines and academic institutions, with librarians comprising nearly 10% of participants. The survey aimed to assess awareness levels, current practices, and readiness to implement open science approaches. **Results.** The findings demonstrate generally positive attitudes toward open access and open science while revealing limited practical implementation due to infrastructural, regulatory, or cultural barriers. Researchers identified key obstacles to sharing publications and data: lack of technical knowledge, uncertainty about legal aspects, absence of clear institutional policies, and inadequate organizational infrastructure. The survey also revealed significant gaps in researchers' knowledge regarding data management planning and FAIR principles. Academic libraries can and should fill these gaps as key intermediaries in the transition to open science through comprehensive researcher support: advocacy, training, consulting, development of publication and data repositories, assistance in creating metadata and data management plans. **Conclusions.** Academic libraries in Ukraine continue to actively participate in building open science and implementing its principles and practices. However, to ensure an effective transition to open science, they need to strengthen their role or even lead processes of creating and implementing institutional policies and data management infrastructure, developing systematic training, and providing comprehensive support to researchers at all stages of the research lifecycle.

Keywords: open science; open access; research data management; FAIR principles; institutional policies; research infrastructure; universities; libraries; Ukraine

Introduction

The open access and open science movement has been transforming the global research landscape and scientific communication for several decades, promoting openness and transparency in research processes and outcomes to ensure reproducibility and reuse, accelerate scientific discoveries, reduce collaboration barriers, and eliminate unnecessary duplication. Worldwide, appropriate policies, initiatives, and standards are being implemented, and services are being developed to make science and research more effective, productive, comprehensive, transparent, and reliable, meeting society's needs and expectations. Governments, funding institutions, universities, research institutions, and academic libraries around the world support the idea of "openness" as a key component of scientific research (T. Yaroshenko, Serbin, & O. Yaroshenko, 2022).

Academic libraries have been at the core of academic institutions for centuries and have traditionally performed essential functions in resource management, training, and scholarly support. In the open science context, they are redefining their role by expanding classical information services and educational functions. Libraries play a key role in promoting institutional research openness, actively participate in open science policy development, and provide the necessary infrastructure and services (Donner, 2022; Dube, 2025; L. Liu & W. Liu, 2023; Reynolds & Richards, 2025; Sheikh, Malik, & Adnan, 2025; Tzanova, 2020).

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It should be noted that Ukrainian universities and research institutions joined the open access movement in the early 2000s, with libraries serving as the primary drivers in most cases (Serbin & Yaroshenko, 2022). During this period, Ukraine has created nearly 140 open-access scientific publication repositories; since 2016, the National Repository of Academic Texts has been established and gradually populated; almost all Ukrainian scholarly journals are open access. Following the adoption of the National Open Science Plan in 2022, many universities and research institutions have developed and adopted their own institutional policies. Yet declaration does not mean implementation. Despite widespread recognition of open science value and declaration of its general principles, Ukraine still faces many barriers and prejudices regarding actual implementation and practices: not all researchers are familiar with open science principles and tools, particularly FAIR principles (Findable, Accessible, Interoperable, Reusable), opportunities for disseminating publications and data, research data management plans throughout the research lifecycle, metadata standards, etc. Universities and research institutions often lack the experience and skills to create appropriate services and research data management infrastructure. Ukraine has only a few pilot projects for creating open data repositories (National Academy of Sciences of Ukraine, State Scientific and Technical Library of Ukraine, Vasyl Stefanyk Precarpathian National University). Educational programs for data management specialists are absent, although individual roles are already performed by librarians from the most active libraries (National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Sumy State University, National University of Kyiv-Mohyla Academy, Ukrainian State University of Science and Technologies, etc.).

The actual state of understanding and use of open science and open access principles and practices by Ukrainian researchers, and importantly, the state of institutional support for implementing these principles and practices by universities and research institutions, has not been comprehensively studied before. Only individual questions regarding open science practices usage are presented in several related studies by the National Academy of Pedagogical Sciences (Luhovyi, Drach, Petroie, & Reheilo, 2024) and the OPTIMA project (Kormann, Klebel, Zhezhnych, Berezko, & Ross-Hellauer, 2024). To study and analyse Ukrainian researchers' awareness of open science principles and practices and the state of institutional support for relevant infrastructure and services, particularly from academic libraries, the State Scientific and Technical Library of Ukraine conducted a quantitative sociological survey in April-August 2025, with selected data presented in this article. Particular attention is focused on some discrepancies in understanding the state of institutional support for open science practices and services from the perspectives of researchers and librarians.

Methods

The survey was conducted from April 29 to August 3, 2025, using online questionnaires for researchers, faculty, graduate students, and librarians. A total of 702 representatives of educational and scientific activities from all regions of Ukraine were surveyed. Participation was voluntary and anonymous. Survey questions were developed based on literature review, expert discussions and feedback, and partial use of questions from the LEARN project study (LEARN, 2017). The resulting survey instrument included 21 questions in 2 main sections: "Open Access and Research Data" and "Institutional Policies and Infrastructure for Open Science, Open Access, Research Data Management at the Institution."

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Results and Discussion

The survey involved 702 respondents from all regions of Ukraine (55% centre, 17% west, 18% south, 10% east), primarily representing scientific and scientific-pedagogical workers (over 70% of respondents), as well as employees of universities or research institutions and their libraries (10%).

Scientific publication and open access. Ukrainian scientists and researchers demonstrate a high level of making their scientific works available in open access, with 86% of respondents showing this tendency: most frequently in open access scientific journals – 88%, with the lowest rate of publications in international repositories such as ArXiv, Zenodo, FigShare, RepEc, SSRN, etc. – 18%. Within the quantitative survey, respondents who do not publish scientific works in open access (14% of the total sample) identified barriers preventing them from doing so, among which three most numerous can be distinguished: risks regarding possible plagiarism and other potential academic integrity violations (43%); lack of technical skills for placement (29%), which libraries should address by organizing proper consultation and possible assistance to researchers.

Research data – management, storage, publication. Cumulatively, nearly two-thirds (73%) of surveyed researchers indicated that their educational-scientific institutions have their own institutional repositories: 39% of this portion specified these are repositories for both scientific publications and research data, while another 34% noted these are repositories only for scientific publications. Only 10% of respondents indicated the absence of such repositories, and 17% have no information about their availability. Among study participants, one-third (34%) reported sharing their research data in open access – most often as supplementary materials to scientific articles (28%), with only 6% depositing them in open access data repositories (Zenodo being the most frequently mentioned and absolute leader among surveyed respondents). Respondents who did not share research data, constituting half (51%) of all participants, described barriers preventing them from doing so within the survey. Similarly, among the main reasons they mention a lack of technical knowledge – 28%; uncertainty about legal aspects – 28%; lack of infrastructure in the organization – 23%. It's worth noting that almost one-third of respondents (32%) do not know about requirements for research data disclosure. The same trend applies to using open data from other research for their own purposes: 21% of respondents never used this opportunity, and another 15% don't even know about it. Also, only 19% of researchers indicated they checked their research data for FAIR principles compliance. Meanwhile, almost half of the study participants (45%) noted they never checked their research data for FAIR principles compliance, and 36% indicated a lack of awareness about FAIR principles regarding research data. Less than one-third of survey participants (27%) responded that their research has a Data Management Plan (a document describing how data will be collected, processed, analysed, and stored during the research project and after its completion), while another 35% indicated their research lacks such a plan, and 38% don't know about such plans and their requirements.

Libraries should work more actively on advocating these fundamental principles of open science in their universities and research institutions, conducting relevant seminars, training sessions, consultations, and assistance in creating data management plans and other aspects of research data management.

Open access, open science, and research data policies in educational-scientific institutions. Almost half (48%) of surveyed scientists and researchers responded that their institution has at least one policy (regulation) regarding open science and research data, but 17% don't know about this at all. Interestingly, among librarians (who are often drivers in developing and implementing such policies in institutions), the percentage of those unaware of policies is only about 4%.

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Research data management units and infrastructure in educational-scientific institutions. Almost a quarter (24%) of scientists and researchers who participated in the survey indicated that their institution has a unit that supports research data management: the most frequently mentioned as such units are the library – 66% and the research department – 65%, which are undisputed leaders among all presented categories (Figure 1). Meanwhile, 29% reported the opposite trend, i.e., absence of a specialized unit, and the remaining 47% of respondents indicated they don't possess information about this. Within the survey, 16% of respondents indicated the presence of infrastructure for research data management throughout the entire research cycle and clear recommendations regarding which data should be stored, transferred, archived, etc. Another 15% indicated their institutions have only some recommendations for research data preservation.

Informing researchers about open science and research data management. More than half (64%) of scientists and researchers reported that within their educational-scientific institutions, certain information about research data management can be obtained, but everything depends on the organizational level of this aspect, specifically:

- 14% of respondents indicated that within their institutions, there is an information support service for research data management, appropriate recommendations are created, regular research data management training for researchers, students, and staff is planned;
- 26% noted that the institution's/library's/research department's website has links with information about research data, and training or webinars are occasionally conducted;
- responded that within their institution, there are appropriate specialists in the library, university research department, etc., who can provide research data management consultations.

Also, within the study, cumulatively 58% of participants indicated the need for support in research data management aspects: most frequently mentioned, and therefore most needed, is information support, consultations, training, and education on research data management, mentioned by 27% of respondents – the highest percentage. Other categories of needed support were mentioned much less frequently, but among them, the following positions can be highlighted: financial and material support – 6%; institutional support, availability of specialized departments, structures, and data management specialists – 5%; technical support and maintenance (appropriate software, instructions for database use and technical maintenance, etc.) – 4%; legal support (legal processing, data publication, intellectual property, patents, copyright) – 3%; availability of methodological recommendations – 3%. As we can see, modern libraries can and should respond to a significant portion of these researchers' needs.

Conclusions

The sociological study results demonstrate that despite Ukraine's significant achievements in open access and declarative support for open science principles, there exists a substantial gap between theoretical recognition of their value and practical implementation. The study identified key barriers hindering effective transition to open science: insufficient awareness among researchers of FAIR principles and data management tools, lack of technical competencies, uncertainty about legal aspects, absence of clear institutional policies, and inadequate infrastructure.

Academic libraries in Ukraine, which historically served as drivers of the open access movement, continue to play a key role in overcoming these challenges. To ensure effective transition to open science, libraries must:

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• **Strengthen educational and advisory functions** through developing systematic training programs on research data management, FAIR principles, data management plan creation, and metadata standards usage.

• **Intensify advocacy activities** to promote the development and implementation of institutional open science policies at the university and research institution levels.

• **Expand technical infrastructure** by creating and developing publication and data repositories, ensuring their interoperability and long-term preservation.

• **Develop specialized competencies** of library staff in research data management and digital curation.

• **Provide comprehensive researcher support** at all stages of the research lifecycle – from planning and data collection to publication and long-term preservation.

The successful implementation of open science in Ukraine requires a systematic approach where academic libraries not only support but also lead the transformation processes of scientific communication. Libraries should not only assist researchers but also actively participate in research groups, engaging in research data management at all stages of the research lifecycle, and become key partners for the long-term future of open science. This requires strengthening inter-institutional cooperation, developing appropriate regulatory frameworks, and ensuring sustainable funding for infrastructure projects. Only under these conditions can Ukraine fully realize open science potential to enhance research quality, accelerate scientific discoveries, and integrate into the global scientific space.

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Принципи відкритого доступу та відкритої науки в Україні: що думають дослідники та що можуть бібліотекарі (за деякими результатами соціологічного дослідження 2025 р.)

Мета. Дослідити ставлення українських науковців до принципів відкритого доступу, відкритої науки й управління дослідницькими даними та роль бібліотек у просуванні принципів і практик відкритої науки на основі окремих результатів соціологічного опитування, проведеного ДНТБ України у квітні-серпні 2025 р. **Методика.** У дослідженні взяли участь 702 респонденти з різних наукових дисциплін та академічних установ, серед яких майже 10 % становлять бібліотекарі. Опитування спрямовувалося на оцінку рівня обізнаності, поточних практик та готовності до впровадження підходів відкритої науки. **Результати.** Отримані результати засвідчують загалом позитивне ставлення до відкритого доступу та відкритої науки, водночас виявляють обмежене практичне впровадження через інфраструктурні, регулятивні чи культурні бар'єри. Дослідники зазначили, що серед основних перешкод для поширення публікацій та даних є брак технічних знань, невпевненість у юридичних аспектах, відсутність чітких інституційних політик та відповідної інфраструктури в організації. Опитування також виявило значні прогалини у знаннях науковців щодо планування управління даними та принципів FAIR. Заповнити ці прогалини можуть і повинні академічні бібліотеки як ключові посередники переходу до відкритої науки через комплексну підтримку дослідників: адвокацію, навчання, консультування, розбудову репозитаріїв публікацій та даних, допомогу у створенні метаданих та планів управління даними. **Висновки.** Академічні бібліотеки України продовжують активно долучатися до розбудови відкритої науки та впровадження її принципів і практик. Проте для забезпечення ефективного переходу до відкритої науки їм необхідно посилити свою роль або навіть очолити процеси створення й

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впровадження інституційних політик та інфраструктури управління даними, розробки системного навчання та надання комплексної допомоги дослідникам на всіх етапах життєвого циклу досліджень.

Ключові слова: відкрита наука; відкритий доступ; управління даними досліджень; принципи FAIR; інституційні політики; дослідницька інфраструктура; університети; бібліотеки; Україна

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