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Indonesian Researchers' Literacy in Research Data Management as Postgraduate Students at UK Universities[1]

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Introduction

Since 2016, National Research and Innovation Agency (BRIN) has published a regulation managing the Indonesian National Scientific Repository, requiring all researchers to deposit their raw research data on the RIN database (RIN refers to the National Scientific Repository database). The initial deployment and socialization, as well as the development of the database and system, were completed in 2018. Meanwhile, some Indonesian researchers and research administrators were completing postgraduate degrees and working on dissertation projects at UK universities. As researchers, they came from a variety of backgrounds; and as a student, they created a dissertation proposal as well as scientific data. Their research data management (RDM) would undoubtedly be influenced by the RDM policies of their respective universities. This is how the literacy of Indonesian researchers in managing research data from a variety of subjects differs in this study. Even though RDM adoption is still in the works in Indonesia, this study focuses solely on Indonesian researchers' RDM literacy prior to and during postgraduate studies in UK universities.

Theoretical framework

Research Data Management and its Policy

Managing research data is a critical issue in today's scientific world. Vines et al. (2014) conducted a recent study on data management in biology. He discovered that data disappears at a rate of 17% per year after the results are published. It is one of the consequences of researchers unintentionally destroying data or having difficulty retrieving data. In contrast, the data deluge is the result of a crisis in trust in research integrity, while the general measure of open data has also led to increased concerns about data management and data sharing. In 2011, the UK Research Councils and the US National Science Foundation issued Common Principles on Data Policy. They were gaining traction in support of the RDM requirement. By doing so, funders can not only

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prevent the loss of vital data, but also provide accountability (Corti 2020). Data management policies can cover a wide range of topics and come from a variety of sources. It will have an impact on how we store and share data. They could cover topics such as data privacy, data retention, data ownership, data copyright, data management, and data sharing (Corti 2020). Furthermore, data management policies must be incorporated into processes to assist researchers with their needs. It would be viewed as part of a broader policy framework that helps to shape researchers' needs on central deposit of publications to make research outputs and data sharing more visible (Jones, Pryor, and Whyte 2014).

Information and Data Literacy

Information literacy training is a standard service provided by libraries to assist with research. Open access, bibliometric or research analytics services, scholarly publication services, and collection development and reference inquiries are some of the other emerging services provided by libraries (Cox 2018). Meanwhile, one example of data literacy instruction was provided by *Indiana University Purdue University Indianapolis* (Hoffman 2016). Collaboration with academic staff or disciplinary data experts may be the most effective way to deliver data management training. Aside from that, good practices with early career researchers must be embedded in their daily activities (Jones, Pryor, and Whyte 2014).

Research questions

1. Have Indonesian researchers and research administrators implemented RDM in their home institution and later in their academic institution as a postgraduate student at UK University?
2. How do they manage their research data in the context of information literacy?

Methodology

This study's methodology is qualitative, with a literature review and in-depth interviews for data collection. The first steps in data collection were observation and a review of the literature. The next step was to interview eight Indonesian students who worked in research institutions in Indonesia as researchers or research administrators in various fields and were pursuing postgraduate degrees through research and coursework at UK universities. The interview is semi-structured and was manually transcribed and analyzed.

Research Results

Data Storage and Back-up

It is not difficult to store and find data in Indonesia because the research administrator is mostly dealing with administrative records; additionally, as a student, there are some facilities provided

to store files on campus repository as stated in the University's RDM policy, which advised employees and students to back up their data on a regular basis. Meanwhile, data can be backed up on a regular basis to the server and/or an external hard drive. Unfortunately, one informant has lost data due to fire, and another has difficulty remembering it because he has so much of it. In contrast, some informants never lose data because they neatly name files and use a variety of tools for storing and backing up the produced data because they work in a laboratory.

Data Sharing and Security

Most informants use cloud providers because their storage is easily shared, but it is not secure. Students can also gain remote access to a university drive. One participant backs up her data on a specific server, and some sensitive information is password-protected. Only a few people had access to and edit the data. Others who need access to it must sign an NDA (non-disclosure agreement) because confidentiality is critical. Another informant, a botanist researcher and student, mentioned having access to a research team's database, which is restricted to certain people. Meanwhile, according to law researchers and students, data ownership is determined by the work. The data is owned by both teams and individuals. While some team members may require confidential information, those who have a copy of the document must keep it secure so that it does not spread. They will be given a watermarked printout based on the Chatham House Rules concept.

Data Policy

According to one informant, the university's RDM policy is clear enough because it specifies how researchers and research officers are required to manage university research data. His supervisors taught him how to manage dissertation data even though RDM training was not formally or officially socialized. From other perspective, as a chemistry student who was working on a lab report, she must store and back up data as a lab worker. As the RDM policy also mentions security, encrypting (anonymous) participant names would protect personal information as per GDPR regulations and ethics clearance; and it must be based on discipline specific approach as research data varies. Meanwhile, another maritime researcher and student stated that the RDM policy should cover contributors who should be acknowledged. His university does provide extensive information about RDM, including how to use and access the storage platform. It also includes links to additional explanation. He usually collaborated with his supervisors as a postgraduate researcher, so their research activities should adhere to the university's data management policy.

Discussion

According to the results above, because the participants come from various backgrounds and universities in the United Kingdom, the RDM policy is seen from multiple perspectives. Although they manage data in diverse ways, they do use data storage platforms, such as institutional or third-party storage. Furthermore, a few individuals reported data loss and difficulties retrieving files. To anticipate this difficulty, several participants established a normal timetable for backup, such as laboratory regulation. For data sharing and security, they use a specific network and a third-party shared link open to anyone with the link. Unfortunately, they did not restrict access or require email, so security is weak. But universities give them remote access to student file storage to maximize data sharing. Moreover, other sorts of data sharing are also conducted by administrative participants, which use an NDA for each project to protect the data. Meanwhile, permission to access someone's files in a collaborative project is a key consideration in data management --sharing and security. Data ownership must be defined and documented in the data management plan, so an institutional data policy that specifies the control of technical elements is required. Data dissemination is also an important consideration because the researchers and research support staff are working on behalf of the related institution.

Conclusion

In determining the RDM literacy of Indonesian researchers who were also postgraduate students at their respective UK universities, we could see from their respective activities in managing the data on the part of how they store and share the data securely and its relation to the policy of the institution they represent. This study concludes that each student has their own RDM literacy, which is dependent on the RDM program offered by their home and academic institutions, as well as the requirements of the dissertation as an output of their master's program. It follows that the RDM literacy program should be embedded not only in the black and white of paper or regulation, but also in their activities as researchers and students who need to improve their data management skills.

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