Progress of open science in Indonesia

Dasapta Erwin Irawan

Faculty of Earth Sciences and Technology, Institut Teknologi Bandung, Jalan Ganesa No. 10, Bandung, Indonesia, 40132, dasaptaerwin@itb.ac.id cc dasaptaerwin@gmail.com

Abstract

Indonesia has made significant strides in open-access publishing, becoming a leading producer of open-access documents. However, several challenges hinder further progress, including reliance on expensive foreign platforms, financial constraints, and stringent academic regulations. The emphasis on publishing in high-impact journals for university rankings distorts the open-access initiative, leading to shortcuts and potential misconduct among academics. The Ministry of Education's regulations prioritize costly, high-profile journals, straining budgets and limiting research accessibility.

The article stresses the need for Indonesia to adopt broader and fairer open science principles while promoting local journals to maintain research integrity. It highlights how global rankings influence policies, pushing high-cost open access publishing. To fully embrace open science, Indonesia should create a balanced, inclusive academic environment, moving away from biased ranking systems.

Collaboration with other Global South nations could help build a more relevant global context, valuing academic contributions based on genuine impact rather than rankings. By investing in local institutions and supporting local journals, Indonesia can improve research quality and accessibility, fostering a more equitable academic community.

Keywords: Open Science, Open Access, Global South, World Class University Ranking,

Introduction

Four years ago, Indonesia was the leader in open access publishing, a big achievement for their academics (Irawan et al. 2020; Van Noorden 2019). They have many Indonesian-written open access journals but face a problem: to gain wider recognition, as demanded by major university rankings, they rely on foreign platforms that use English and come with high costs, straining their budget. Despite their key role in open access, money issues and strategic choices could impact their long-term standing (Irawan et al. 2024).

This perspective article discusses the current state of open access in Indonesia and examines how the Ministry of Education uses the term "world-class university" and its impact on the academic situation.

How do we run Open Access Journals in Indonesia

Open access journals in Indonesia have operated as non-profits since the 1970's (Irawan et al. 2021). The journals are usually managed by universities or government offices with government funding, and managed by volunteer staff or employees whose duties include journal work. Initially, issues were printed and distributed to libraries, then moved online using platforms like Blogspot or WordPress, and later to PKP's Open Journal System, where Indonesia is the largest user. Peer reviews were conducted voluntarily by experts, mostly university lecturers (Admin RJI 2024; 2021). In recent years, Indonesian journals have started paying moderate salaries to journal managers and providing honorariums to accepted authors and reviewers. This approach once embodied the true essence of community-led academic publishing in the country.

Moving to the Era of Rankings

The movement towards university rankings in Indonesia began in the early 2000s when the Ministry of Education introduced the concept of world university rankings. Notable rankings include Webometrics, Times Higher Education (THE), QS World University Rankings, and the Academic Ranking of World Universities (ARWU). These rankings gradually became the standard for evaluating and ranking universities in Indonesia (Tennant 2020; Irawan et al. 2021; Kusumawati, Nurhaeni, and Nugroho 2020). The introduction of these rankings was particularly embraced by the newly autonomous universities—state-owned/public institutions that had recently been granted more control over managing their own funding. These institutions were most enthusiastic about using global ranking criteria to enhance their campuses' reputations.

In this era, the Scopus database was introduced as a reputable academic resource, becoming a key criterion for journal prestige and the papers within them. Indonesian journals were evaluated for their quality and reputation based on their inclusion in the Scopus database. Then, gradually, the Web of Science (WoS) database was introduced as an even more reputable scientific database than Scopus (Dirjen Dikti 2019; Pemerintah Indonesia 2024a).

Slowly but surely, the ministry has included that criterion into its pool of criteria, creating scores of Indonesian journals and ranking them with the SINTA platform. And then finally the status of each journal is determined by factors such as their indexing in Scopus and/or WoS, citation scores based on the Scimago list and Journal Impact Factor, and eventually the nationalities of the personnel managing the journal (Dirjen Dikti 2019; Pemerintah Indonesia 2024a). Yes, we measure all.

The Open Access Crown and The Direct Impacts

The Open Access Crown

Indonesia is one of the top producers of open-access documents and adopted the open-access initiative early. But despite this good start, open access in Indonesia is unlikely to progress soon due to rules from the Ministry of Education and Culture through DIKTI (Pemerintah Indonesia 2024b). These rules mainly want research in scientific journals to be open access by the public.

Figure 1 Illustration of the troubled ship of Open Access Indonesia.

However, "open access journal" mainly means those from big publishers with high fees. With limited research funding (in range of IDR 50.000.000,00 to IDR 150.000.000,00), which is often less than the fee itself, DIKTI's rule forces researchers to usually pay out of their own pockets or get other funding to publish in these journals (Sudrajat, Iskandar, and Makarim 2024).

The Wrong Motivations

With the expensive article processing charge (APC), why are Indonesian researchers still targeting reputable publishers to publish their research? Why are they not using many OA journals with low or no APC listed in the Directory of Open Access Journals (DOAJ)? The answer is simple: those DOAJ journals mostly do not meet DIKTI's criteria for reputable journals. So, it's a kind of vicious circle, and the life and career of academics must go on. Staff promotions are another reason why Indonesian academics still aim for these fancy and expensive journals, ironically with predatory journals lurking in every corner.

It appears that this phenomenon is not confined to Indonesia alone; rather, it occurs globally. Researchers and academics in many countries face similar challenges when it comes to the pressure of publishing in high-impact, expensive journals. This widespread phenomenon often leads to a compromise in academic integrity and the quality of research, as individuals prioritize meeting institutional demands and advancing their careers over producing genuinely impactful work (Frey and Rost 2010; Bonn and Pinxten 2019; Zhaksylyk et al. 2023).

This situation threatens academic honesty. When researchers need to publish in expensive journals to meet job requirements and advance their careers, they might focus on quantity over quality. This pressure can lead to unethical actions, like submitting to predatory journals that lack proper review and standards. These journals exploit the need for quick publication and can spread low-quality or fake research (Besançon et al. 2022; Mahajan and Mali 2021).

Moreover, focusing on prestigious journals can distract from the main goal of research, which is to add valuable knowledge to the field. Researchers might cut corners, manipulate data, or skip thorough studies just to meet deadlines and requirements. This harms the credibility of the academic community and can reduce public trust in scientific research. Several cases have come to light (Irawan et al. 2024; Cabanac, Labbé, and Magazinov 2022; Tennant et al. 2017).

The Distorted Universities' Policies

Regulations at both national and university levels are increasingly using derivative indicators based on those employed by most global university rankings or frankly speaking distorted by global rankings (Baker 2020; Frey and Rost 2010). This is evident across the three major areas known as Tridharma, encompassing education, research, and community outreach. The focus of these regulations is to produce mainstream products, with an emphasis on articles published in high-impact journals, thereby perpetuating the dominance of traditional ranking metrics.
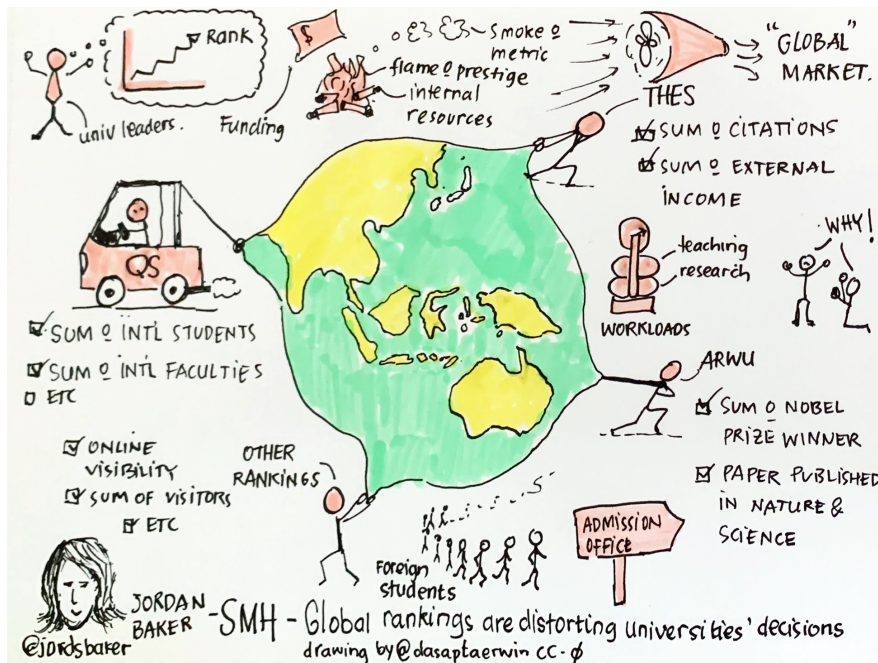

Figure 2 Illustration of the distortions caused by world university rankings.

The current situation and focus on traditional ranking metrics have skewed policies and budgets towards high-cost open access publishing, as promoted by major Western publishers. This could potentially lead to a distortion of the open access initiative, steering it away from its original goal of making research accessible and affordable.

Academic Shortcuts and Misconducts

Adding to the problem, many academics are now taking shortcuts because of the current situation. They are looking for quick success, often ignoring the importance of honesty in their work. This could move us further away from the true goal of open access, harming the core of academic research. Keeping honesty in research is very important because it builds trust and credibility in the academic community.

Indonesia needs to improve its academic and research integrity. This means reviewing rules to balance traditional rankings and open access. It's important to create an honest, objective, and responsible research environment. This helps share knowledge widely while keeping research high-quality and trustworthy.

Figure 3 Illustration of the two options taken by academics.

The Need for a Broader Open Science Approach and The Global Context

Indonesia's current approach to open science is very limited. It's proportionally like the size of the Sun's Hot Spot compared to the size of the Sun. It focuses only on open access and does so for the wrong reasons. To fully embrace open science, Indonesia needs to go beyond open access and adopt fair and inclusive principles. Nevertheless, even the tiniest Sun spot can interfere with the Earth's climate.

Programs like Open Science Indonesia, the RINarxiv Preprint Service, and mandatory research depositories by BRIN and BINUS should not only be maintained but also expanded and actively promoted. This will make research findings more accessible, encourage collaboration among researchers, and drive innovation. These steps are essential for making scientific knowledge available to everyone and spreading important discoveries.

The choice by Utrecht University, Zurich University, and three top Chinese universities to leave international university rankings could boost the movement for responsible metrics started by the Leiden Manifesto and SFDORA (Brent 2024; UZH Communications 2024; Sharma 2022; Admin DORA 2024; Admin 2024a). It might shift the focus from rankings to a broader view of universities' roles, including teaching, societal impact, and open science. This could lead other universities to rethink their participation in rankings and align with responsible metrics principles.

Other Asian countries are in varied positions when dealing with open access national policies. Countries like Malaysia (Malaysia Open Science Platform), India (Science, Technology, and Innovation Policy 2020/STIP2020), and Bangladesh (Open Government Data Strategy) have made significant strides in promoting open access through governmental and institutional support (Admin Akademia Sains Malaysia 2024b; Admin STIP 2020; Admin OGDS 2017). However, they, too, face challenges similar to Indonesia, such as the dominance of traditional ranking metrics and high publication costs. On the other hand, countries like Pakistan (Pakistani Research Repository) and Nepal (Nepal Central Open Access Repository) are still in the early stages of adopting open access policies and need substantial support and resources to build a sustainable open access environment (Sheikh 2020; Admin EIFL 2024).

That is why we, as fellow citizens of the Global South, need to work together to build a more relevant global context than just becoming a World-Class University to step away from the "black hole" that slowly absorbs all academic resources for a false reputation.

Future Outlook

Therefore, if asked if the Open Access movement still exists in Indonesia, the answer is yes, it is still present. However, if asked about its potential progress given the current situation, the answer would be no. It is crucial for international organizations to help build confidence in Indonesia and other "Global South" nations. These nations may have fewer resources, but it is essential that they maintain academic and research integrity and assert their value without relying on biased indicators to be labeled as world-class universities.

We need to focus on creating a global academic environment that values genuine contributions to knowledge rather than just chasing high rankings. By collaborating, we can share resources, ideas, and support to make our research more impactful and accessible without relying on expensive and often exclusive publishing platforms. Building a network of open-access journals within the Global South can help us publish and share our research more freely, creating a more inclusive and fair academic community.

Instead of spending money on high-cost journals to achieve "world-class" status, we should invest in our own institutions, improving the quality and accessibility of our research. This means supporting local journals, providing fair compensation to researchers and reviewers, and ensuring that our academic policies prioritize integrity and genuine scientific advancement over rankings.

To protect and restore academic honesty, Indonesian institutions need to rethink their criteria for reputable journals. They should focus on the overall impact and quality of research, not just the journal's prestige. Promoting transparent, ethical research practices and supporting open-access initiatives that don't charge high fees can help create a more honest and reliable academic environment.

By working together and focusing on the true goals of open science, we can create a stronger, more inclusive academic community that benefits everyone. This will help us avoid

the pitfalls of relying too much on biased ranking systems and allow us to build a reputation based on the real value and impact of our research.

References

Admin. 2024a. "Leiden Manifesto for Research Metrics." Organization blog. Leiden Manifesto Blog. August 2024. http://www.leidenmanifesto.org.

Admin Akademia Sains Malaysia. 2024b. "Malaysia Open Science Platform." Organization blog. Akademia Sains Malaysia. July 2024. https://mosp.gov.my/about.

Admin DORA. 2024. "San Fransisco Declaration on Research Assessment (SF-DORA)." Organization blog. SFDORA. February 2024. https://sfdora.org.

Admin EIFL. 2024. "The Central Open Access Repository in Nepal - EIFL." EIFL. August 2024. https://www.eifl.net/resources/central-open-access-repository-nepal.

Admin OGDS. 2017. "Bangladesh - Open Government Data Strategy." Government of Bangladesh - Statistics and Informatics Division Ministry of Planning. https://sid.portal.gov.bd/sites/default/files/files/sid.portal.gov.bd/notices/e1531b 3c_460d_49a6_82bf_36b9b61b8b1d/Open%20Government%20Data%28OGD% 29%20Strategy%202016.pdf.

Admin RJI. 2021. "Rezeki Proyek Untuk Kelola Jurnal." Website Relawan Jurnal Indonesia. January 2021. https://relawanjurnal.id/rezeki-proyek-untuk-kelola-jurnal.

———. 2024. "Profil NGO Di Indonesia - Relawan Jurnal Indonesia." Profil NGO Di Indonesia. August 2024. https://sites.google.com/cimsa.or.id/profil-ngo-di-indonesia/relawan-jurnal-indonesia.

Admin STIP. 2020. "Draft - Science, Technology, and Innovation Policy (STIP) 2020." Government of India Ministry of Science and Technology. https://dst.gov.in/sites/default/files/STIP_Doc_1.4_Dec2020.pdf.

Baker, Jordan. 2020. "Global Rankings Are Distorting Universities' Decisions, Says ANU Chief." *Sydney Morning Herald*, November. https://www.smh.com.au/national/global-rankings-are-distorting-universities-decisions-says-anu-chief-20201111-p56do9.html.

Besançon, Lonni, Elisabeth Bik, James Heathers, and Gideon Meyerowitz-Katz. 2022. "Correction of Scientific Literature: Too Little, Too Late!" *PLoS Biol.* 20 (3): e3001572. https://doi.org/10.1371/journal.pbio.3001572.

Bonn, Noémie A., and Wim Pinxten. 2019. "A Decade of Empirical Research on Research Integrity: What Have We (Not) Looked At?" *Journal of Empirical Research on Human Research Ethics* 14 (4): 338–52. https://doi.org/10.1177/1556264619858534.

Brent, Thomas. 2024. "Utrecht University Withdraws from Global Ranking as Debate on Quantitative Metrics Grows." Science blog. *Science Business* (blog). August 2024. https://sciencebusiness.net/news/universities/utrecht-university-withdraws-global-ranking-debate-quantitative-metrics-grows.

Cabanac, Guillaume, Cyril Labbé, and Alexander Magazinov. 2022. "The 'Problematic Paper Screener' Automatically Selects Suspect Publications for Post-Publication (Re)Assessment." *arXiv*, October. https://doi.org/10.48550/arXiv.2210.04895.

Dirjen Dikti. 2019. *Pedoman Operasional Penilaian Angka Kredit (POPAK) Kenaikan Jabatan Akademik/Pangkat Dosen 2019.* https://kepegawaian.itera.ac.id/wp-content/uploads/2021/09/PO-PAK-2019_MULAI-BERLAKU-APRIL-2019-1.pdf.

Frey, B., and K. Rost. 2010. "Do Rankings Reflect Research Quality?" *Journal of Applied Economics* 13 (1): 1–38. https://doi.org/10.1016/s1514-0326(10)60002-5.

Irawan, Dasapta Erwin, Juneman Abraham, Rizqy Amelia Zein, Ilham Akhsanu Ridlo, and Eric Kunto Aribowo. 2021. "Open Access in Indonesia." *Development and Change* 52 (3): 651–60. https://doi.org/10.1111/dech.12637.

Irawan, Dasapta Erwin, Olivier Pourret, Lonni Besançon, Sandy Hardian Susanto Herho, Ilham Akhsanu Ridlo, and Juneman Abraham. 2024. "Post-Publication Review: The Role of Science News Outlets and Social Media." RINarxiv Preprint Server. https://rinarxiv.brin.go.id/lipi/preprint/view/840.

Irawan, Dasapta Erwin, Bambang Priadi, Lusy Tunik Muharlisiani, Sandersan Onie, and Zulidyana Dwi Rusnalasari. 2020. "Indonesia Publishes the Most Open-Access Journals in the World: What It Means for Local Research." *The Conversation Indonesia* (blog). October 2020. https://theconversation.com/indonesia-publishes-the-most-open-access-journals-in-the-world-what-it-means-for-local-research-147421.

Kusumawati, N., I. Nurhaeni, and R. Nugroho. 2020. "Internationalization of Indonesia Higher Education: Does Government Support?" *International Journal of Education*

and Social Science Research 03 (01): 173–80. https://doi.org/10.37500/ijessr.2020.3015.

Mahajan, D. S., and N. A. Mali. 2021. "Preventing Predatory Publications: Role of Librarian and Government Agencies." *IP Indian Journal of Library Science and Information Technology* 6 (1): 1–3. https://doi.org/10.18231/j.ijlsit.2021.001.

Pemerintah Indonesia. 2024a. *Petunjuk Teknis Pelaksanaan Layanan Pembinaan Dan Pengembangan Profesi Dan Karier Dosen (POPAK 2024).* Vol. No. 209/P/2024. https://lldikti4.kemdikbud.go.id/wp-content/uploads/2024/06/Lampiran-2_PO-PAK-2024-Kepmendikbudristek-1.pdf.

———. 2024b. *UU No. 11 Tahun 2019 Tentang Sistem Nasional Ilmu Pengetahuan Dan Teknologi. Database Peraturan JDIH BPK.* https://peraturan.bpk.go.id/Details/117023/uu-no-11-tahun-2019.

Sharma, Yojana. 2022. "Three Major Universities Quit International Rankings." *University World News* (blog). May 11, 2022. https://www.universityworldnews.com/post.php?story=20220511170923665.

Sheikh, Arslan. 2020. "The International Open Access Movement and Its Status in Pakistan." *Libraries and the Academy* 20 (1): 15–31. https://preprint.press.jhu.edu/portal/sites/default/files/20.1sheikh.pdf.

Sudrajat, Daya, Diyon Iskandar, and Faris Hafizh Makarim. 2024. "Lemahnya Sistem Pendanaan Riset Di Indonesia Semakin Terasa Di Tengah Pandemi: Berikut Pengalaman Para Dosen." *Conversation.* https://theconversation.com/lemahnya-sistem-pendanaan-riset-di-indonesia-semakin-terasa-di-tengah-pandemi-berikut-pengalaman-para-dosen-183442.

Tennant, Jonathan P. 2020. "Web of Science and Scopus Are Not Global Databases of Knowledge." *European Science Editing* 46 (October):e51987. https://doi.org/10.3897/ese.2020.e51987.

Tennant, Jonathan P., Jonathan M. Dugan, Daniel Graziotin, Damien C. Jacques, Franıfmmode\mboxç\elseç\fiois Waldner, Daniel Mietchen, Yehia Elkhatib, et al. 2017. "A Multi-Disciplinary Perspective on Emergent and Future Innovations in Peer Review." *F1000Research* 6 (1151): 1151. https://doi.org/10.12688/f1000research.12037.3.

UZH Communications. 2024. "UZH to No Longer Provide Data for THE Ranking." UZH Blog. *UZH Communications* (blog). August 2024. https://www.news.uzh.ch/en/articles/news/2024/rankings.html.

Van Noorden, Richard. 2019. "Indonesia Tops Open-Access Publishing Charts." *Nature*, May. https://doi.org/10.1038/d41586-019-01536-5.

Zhaksylyk, Alikhan, Olena Zimba, Marlen Yessirkepov, and Burhan Fatih Kocyigit. 2023. "Research Integrity: Where We Are and Where We Are Heading." *J. Korean Med. Sci.* 38 (47). https://doi.org/10.3346/jkms.2023.38.e405.