Comparative Case Studies on Indonesian Higher Education Rankings

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Abstract. The quality of the higher education is the result of a continuous process. There are many indicators that can be used to assess the quality of a higher education. The existence of different indicators makes the different result of university rankings. This research aims to find variables that can connect ranking indicators that are used by Indonesian Ministry of Research, Technology, and Higher Education with indicators that are used by international rankings by taking two kind of ranking systems i.e. Webometrics and 4icu. This research uses qualitative research method with comparative case studies approach. The result of the research shows that to bridge the indicators that are used by Indonesian Ministry or Research, Technology, and Higher Education with web-based ranking system like Webometrics and 4icu so that the Indonesian higher education institutions need to open access towards either scientific or non-scientific that are publicly used into web-based environment. One of the strategies that can be used to improve the openness and access towards scientific work of a university is by involving in open science and collaboration.

Keywords: Higher Education Rankings, comparative case studies, Indonesian Universities, Open Science

1. Introduction
In the Republic of Indonesia constitution Number 12 in 2012, it mentions that the higher education has a function to educate the nation’s life, conduct the education, research and community service in order to produce academicians who are innovative, creative, skilled, competitive and cooperative, as well as able to develop science and technology by paying attention to human values [1]. To achieve these goals, the higher education must always maintain the quality. The quality of higher education is the suitability of national standards applied by universities according to the needs of the stakeholders [2]. Ministry of Research, Technology, and Higher Education of the Republic of Indonesia (Kemenristekdikti) recognizes that the quality of higher education in Indonesia is not yet in ideal condition, it can be seen from the number of universities that achieved A accreditation score (excellent) is only 12% [3]. On the other hand, higher education today are faced with massive expansion, many new higher education institutions that have sprung up with diverse profile, there are
the demands on the adaptation and integration of communication technology and education, internationalization, competition, financial shape adapted to the model of governance, including increased performance, quality and accountability [4]. To achieve public accountability, there needs to be an internal quality assurance system and accreditation so as to ensure that a higher education has met the quality standards that have been determined [2].

The quality of a higher education is the result of a continuous process. There are many indicators that can be used to assess the quality of a higher education. These indicators will be depended on the purpose of the institution assessors. There are several departments in the world's universities that are used as guidelines for assessing the quality of a college. For example, 4icu takes university base rankings on web metrics where web traffic becomes the base of ranking system [5], QS World University Ranking adhering to the six metrics in raking the higher education institutions that is based on academic reputation, the reputation of the institution, the ratio of students, the number of citations per faculty, the ratio of international faculty and the ratio of international students [6], the Academic Ranking of World Universities (ARWU) uses six indicators to rank universities in the world i.e. by counting the number of staffs and alumni who won the Nobel Prizes and Fields Medals, the number of citations in Thomson Reuters, the number of articles published in journals, the number of articles indexed in Science Citation Index and the Social Sciences Citation Index, and the performance of a university [7], webometrics claim that they use a composite indicator which log webometrics normalize variables into a ratio of 1:1 before combining between activity/presence and visibility/impact of the indicator group, and several other ratings. Kemenristekdikti in 2017 had also issued a list of 100 best universities in Indonesia. The list is divided into 5 clusters i.e. cluster 1, cluster 2, cluster 3, cluster 4 and cluster 5. These clusters serve as guidelines for coaching purposes. The university ranking of Kemenristekdikti version is based on data from the database of Higher Education (Dikti) and Kemenristekdikti assessment results data that are not listed in the database. These indicators are the quality of human resources, quality of management, quality of student activities, the quality of research and publications [8]. The existence of different indicators makes different ranking results. As an example, University of Muhammadiyah Yogyakarta (UMY) questioning its position in the ranking of 71 based on Higher Education (Dikti) version, while the international rating of webometrics and 4icu, they are in 24th place in comparison to any other universities in Indonesia [9].

This study aimed to compare the ranking indicators used by Kemenristekdikti with the indicators used by international ratings by taking the example of two of rating systems that are Webometrics and 4icu. The research questions include universities that are included in the top 14 of Kemenristekdikti, Webometrics and 4icu version, what are the similarities and differences among the three ranking indicators universities? What can bridge the ranking indicators of universities in Indonesia by the trend of international rankings? The results of this study are expected to provide contribution in bridging the ranking indicators based on national needs and international trends.

2. Research Methods
This research uses qualitative research method with comparative case studies approach. Comparative study aims to understand, explain and interpret variety of processes and the outcome of the units of analysis [10]. Comparative case studies include the analysis and synthesis of the similarities, differences and patterns between two or more cases that have the same focus or target [11]. Analysis units were selected based on the purpose of the study i.e. analyze the ranking indicators of university. From a variety of higher education ranking version, we choose three ranking versions, namely Kemenristekdikti, Webometrics and 4icu versions. Kemenristekdikti version is chosen for this version that is used to determine the ranking of universities in Indonesia, while the Webometrics and 4icu selected as ranking indicators of both because those ranking systems have more emphasis on the use of technology that becomes a trend change in the digital era. The stages of analysis in this research covers identification, evaluation and interpretation of indicators of each rating system then compared to generate indicators that are related to the national interest and international trend.
3. Results and Discussion

3.1. The Comparison of Higher Education Rating System of Kemenristekdikti, Webometrics and 4icu version

In August 2017, Kemenristekdikti released the 100 best universities for non-polytechnics category and 25 best universities for polytechnic categories. This study only examines the ranking of non-polytechnic universities. Of the 100 best non-polytechnic universities there are 14 universities that come into the category of Cluster 1 (Excellent), as it is shown in Table 1.

Table 1 Universities Ranking in Indonesia, Cluster 1 Kemenristekdikti Version 2017

| Rank | Kemenristekdikti version | Webometrics version | 4icu Version |
|------|--------------------------|---------------------|--------------|
| 1    | Gadjah Mada University   | University of Indonesia | Gadjah Mada University |
| 2    | Institut Teknologi Bandung | Universitas Gadjah Mada | Universitas Indonesia |
| 3    | Institut Pertanian Bogor | Institut Teknologi Bandung | Institut Pertanian Bogor |
| 4    | Universitas Indonesia    | Institut Pertanian Bogor | Universitas Diponegoro |
| 5    | Institut Teknologi Sepuluh Nopember | Universitas Brawijaya | Universitas Sebelas Maret |
| 6    | Universitas Diponegoro   | Universitas Padjadjaran | Universitas Brawijaya |
| 7    | Universitas Airlangga    | Universitas Diponegoro | Institut Teknologi Bandung |
| 8    | Universitas Brawijaya    | Universitas Udayana | Universitas Negeri Yogyakarta |
| 9    | Universitas Hasanuddin   | Universitas Sebelas Maret | Universitas Padjadjaran |
| 10   | Universitas Negeri Yogyakarta | Universitas Riau | Universitas Pendidikan Indonesia |
| 11   | Universitas Sebelas Maret | Universitas Syiah Kuala | Universitas Islam Indonesia |
| 12   | Universitas Andalas      | Universitas Jenderal Soedirman | Universitas Airlangga |
| 13   | Universitas Pendidikan Indonesia | Institut Teknologi Sepuluh Nopember Surabaya | Universitas Islam Negeri Syarif Hidayatullah Jakarta |
| 14   | Universitas Padjadjaran  | Universitas Hasanuddin | Universitas Udayana |

Source: [8, 12, 5]

Table 1 shows the different ranking positions from the three ranking systems. Of the 14 universities included in Cluster 1 of Kemenristek Dikti version, there are 10 universities that go into the top 14 versions of Webometrics and 9 universities entered into the top 14 of 4icu version with different positions. One university is not available in the top 14 of Kemenristekdikti version, but included in the top 14 of Webometrics version and 4icu version namely Udayana University. Airlangga University, Yogyakarta State University and University of Indonesia are in the top 14 of Kemenristekdikti and 4ICU version, but not in the top 14 of Webometrics version. On the other hand, Riau University, University of Syiah Kuala and University of Jendral Soedirman, ranked in the top 14 of Webometrics version, but not in the top 14 of Kemenristekdikti and 4icu versions. Meanwhile, the Indonesian Islamic University and the Islamic University of Syarif Hidayatullah Jakarta are in the top 14 of 4icu version, but not included in the top 14 of Kemenristekdikti and Webometrics versions. Thus, the degree of similarity of the number of higher education institutions based on Kemenristekdikti, Webometrics and 4icu versions on the top 14 are at 9-10 institutions or 64-71% only.
3.2. The Rating Indicators in Kemenristekdikti, Webometrics and 4icu Versions

As noted in the introduction part, different indicators make different ranking results. In Table 1 we have seen the similarities and differences of university rankings from 3 rating departments. Table 2 below shows the indicators that are used to determine the ranking:

| Kemenristekdikti version | Webometrics version | 4icu Version |
|-------------------------|--------------------|-------------|
| Quality of human resources | Presence Rank | Using the algorithm by |
| Quality of management | Impact Rank | extracting data from: Moz |
| Quality of student activities | Openness Rank | Domain Authority, Alexa |
| Quality of research and publications | Excellence Rank | Global Rank, Similar Web |
|                          |                    | Global Rank, Majestic |
|                          |                    | Referring Domains and |
|                          |                    | Majestic Trusts Flow. |

Source: [8, 12, 13]

Table 2 shows that the indicators of Kemenristekdikti are more extensively on the institutional aspects, while the webometrics version see how a university featuring activities accurately in the website [14], especially activities related to publications indexed in Scimago and Google Scholar, the number of web pages indexed by Google and the number of online documents in the website. On the other hand, 4icu assesses the popularity of a website based on traffic, confidence and quality of links. It is intended to help academicians and international students to know the universities that are popular in a country [13].

In addition to the differences, these three ratings have the same similarity i.e. on the quality of the research, publications and other activities that have impact so that all of them are accessible by the public.

3.3. Variables that Bridging Rating Indicators between Kemenristekdikti Rating System and Webometrics as well as 4icu versions

Web-based rankings such as Webometrics or 4icu emphasize how academicians and universities globally reflect their quality to the whole world [14]. Rating indicators of Kemenristekdikti version has accommodated aspects of an institution of higher education in Indonesia which emphasizes on three main activities, such as education, research and community service. Nevertheless, the trend of the use of the website by the public should be able to encourage colleges-universities in Indonesia to boost its presence in the web. The presence of universities in the web is not only for scientific publications but also for all web-based public communication processes. In Webometrics, 5% aspects of assessment is derived from the presence of the institution in the web that includes the number of pages to be the main domain and sub-domain of a Google-indexed university; 50% comes from the number of external network (subnet) which comes from an institution by using backlinks checker tools, namely Ahrefs Majestic; 10% rated on the transparency/openness to look at the number of citations indexed by Google scholar; 35% rated on excellence / scholar by seeing the amount of paper that is most often cited based on Scimago data [15].

In order to accommodate this, Kemenristekdikti need to encourage universities to increase the presence and accessibility of scientific publications and other information through the website. The quality of research and publications itself are available in the indicators of Kemenristekdikti version. The matter that is needed to be realized is that publication trend in the digital era is through digital media so that the impact of a publication through the website is no longer just viewed from a quote in a scientific work, but also can be seen from how much a scientific paper is clicked, shared, stored or downloaded, discussed, adapted and are reviewed in an online forum [16]. Thus, Kemenristekdikti need to emphasize the quality of the publication which is accompanied by ease of accessibility and
openness. Kemenristekdikri needs to encourage universities to have an open access policy in the development of its repository. Open science development is believed to have a positive impact on science development and dissemination of scientific work without limits. Open science grant to openness, integrity and productivity in the development of science. Open science can also provide contribution for innovation by presenting open data and collaboration [17]. By promoting open science, it is expected that the level of attendance of Indonesian universities and scientists in the web can increase. The increasing level of presence on the web can increase the rank of the universities on the web-based ranking system.

4. Conclusion
The differences in the indicators used by the higher education ranking departments lead to differences in each department such as Kemenristekdikri. Webometrics and 4icu. Web-based rating emphasizes the attendance of a university with a variety of attributes appear in the website environment. To bridge the indicators used by Kemenristekdikri which assess all aspects of institutional ranking of a web-based trend, then Kemenristekdikri need to encourage colleges and universities in Indonesia to open access to scientific or non-scientific information that is publicly used in a web environment. One of the strategies that can be used to improve the openness and access to the scientific work of a university is by engaging in open science and collaboration. Open science makes open science can be disseminated quickly and ultimately expected to increase the impact of the scientific work produced. Improving the impact of a scientific work can help improve the university rankings.

References
[1] Presiden Republik Indonesia, Undang-undang Republik Indonesia Nomor 12 Tahun 2012 tentang Pendidikan Tinggi, Jakarta, Jakarta: Republik Indonesia, 2012.
[2] Kemendikbud, Bidang Pelayagunaan dan Pelayanan Data dan Statistik Pendidikan, 2013. Analisis kualitas program studi perguruan tinggi dalam mendukung pencapaian koridor ekonomi Indonesia, Jakarta.
[3] Kemenristekdikti. 5 May 2017. Mutu perguruan tinggi menentukan kompetensi lulusan. Available: https://ristekdikti.go.id/mutu-perguruan-tinggi-menentukan-kompetensi-lulusan/.
[4] K. Tremblay, D. Lalancette and D. Roseveare, "Assessment of higher education learning outcomes," OECD, France, 2012.
[5] uniRank™, 2017. 2017 Indonesian university ranking updated. Available: http://www.4icu.org/id/.
[6] QS World University Ranking. 8 June 2017. QS world university ranking 2018: methodology. Available: https://www.topuniversities.com/qs-world-university-rankings/methodology.
[7] ShanghaiRanking Consultancy, 2017. About academic ranking of world universities. Available: http://www.shanghairanking.com/aboutarwu.html.
[8] Kemenristekdikti. 21 August 2017. 100 Besar perguruan tinggi non politeknik dan 25 besar perguruan tinggi politeknik di Indonesia tahun 2017. Available: https://ristekdikti.go.id/100-besar-perguruan-tinggi-non-politeknik-dan-25-besar-perguruan-tinggi-politeknik-di-indonesia-tahun-2017/.
[9] UMY. 25 August 2017. UMY pertanyakan hasil pemeringkatan Kemenristekdikti. Available: http://www.ummy.ac.id/ummy-pertanyakan-hasil-pemeringkatan-kemenristekdikti.html.
[10] C. C. Ragin. 1987. The comparative method: moving beyond qualitative and quantitative, Berkeley (CA): University of California Press.
[11] D. Goodrick/ 2014. Comparative case studies, methodological briefs:iImpact evaluation 9, Florence, Italy: United Nations Children’s Fund (UNICEF).
[12] Cybermetrics Lab. 2017. Indonesia. Available: http://www.webometrics.info/en/Asia/Indonesia%20.
[13] uniRank™, 2017. University ranking components. Available:
http://www.4icu.org/about/index.htm#ranking.

[14] M. Kaya, E. Cetin and A. Sözeri. 2010. Introduction to webometrics: quantitative web research for the ranking of world universities; research centers and hospitals, in Conference: Explorations in e-Government and e-Governance (ICEGEG-2010), Antalya-Turkey.

[15] Cybermetrics Lab. 2017. 2017 Ranking web of universities. July new edition. Available: http://www.webometrics.info/en/node/178.

[16] N. Kurniasih. 2016. The implementation of Altmetrics in library as an alternative measurement method for scholarly article impact in social web ecosystem, in International Conference on Science Mapping and the Development of Science, Yogyakarta.

[17] S. Jong and K. Slavova. 2014. When publications lead to products: The open science conundrum in new product development. Research Policy, 43, 4, pp. 645-654.