

## Comparative Research on Top Five Universities' Research Productivity in Indonesia and Malaysia

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### Abstract

The principal objective of this research was to compare research productivity of top five universities in Indonesia and Malaysia. To reveal the purpose of this research, comparative research was conducted. Data collection was based on Scopus database. Findings showed that over the period 2000–2017, top five universities in Indonesia produced only 3000–9000, whereas top five universities in Malaysia produced 29,000–39,000 articles. The findings suggest that top five universities in Indonesia, or generally all universities in Indonesia, should encourage academics, lecturers, students, and researchers to produce more research articles.

**Keywords:** *comparative research, top five universities*

### Introduction

As stated by the Ministry of Research, Technology, and Higher Education of Indonesia and in the constitution of Indonesia, higher education institutions have the function to educate the nation, conduct education, research, and community life (President of the Republic of Indonesia, 2012). Higher education also aims to increase human development. The key point in increasing the human development index is improving the human assets of the country such academics, students, teachers, lecturers, and researchers. The outcome of this purpose is to produce academics, lecturers, and researchers who are innovative, creative, com-

petitive, cooperative, and have good character. The quality of higher education is the top element to maintain and sustain the natural resources of Indonesia along with several programs between ministries in Indonesia. The synergy is important to implement these efforts in maximizing Indonesian potential and preserving natural resources.

Many higher education institutions in Indonesia cannot compete in many international university rankings in the world. The international university rankings such as QS World Universities Ranking, Webometrics, uniRank, The World University Rankings, and other international rankings use the data publication from Scopus database as one of the scoring instruments. The Scopus database describes the international collaboration, total citations, and total publications of universities (Elsevier Indonesia, 2018). Some efforts were then made to enhance the quality of research in universities, institutions, non-government organization, and other organization.

Currently, the Scopus database is embedded as additional data to evaluate the higher education quality in publishing research articles. However, comparative research on top five universities' research productivity in Indonesia and Malaysia has never been conducted. This research analyzes the research productivity among top five universities in Indonesia and Malaysia. This result is important as a material discussion in increasing the number of publications in Indonesian universities and Malaysian universities also the nation's competitiveness. In addition, this research is limited to only top five universities in Indonesia and Malaysia. Subsequently, further research should be conducted into more universities in other countries.

### **Research Problem**

The presented study was conducted to analyze the research productivity of top five universities in Indonesia and Malaysia. The innovative approach was conducting a comparative study of article publications in Scopus database between top five universities in Indonesia and Malaysia.

### **Research Focus**

The importance of this research lies in the importance of the topic. This research focused on analyzing research productivity of top five universities in Indonesia and Malaysia. According to results, previous studies have shown some comparisons of article publications in Scopus database (Zarifmahmoudi, 2012; Mongeon and Paul-Hus, 2015; Atayero, Popoola, Egeonu, and Oludayo, 2018; Lukman et al., 2018).

## **Research Methodology**

### **Research General Background**

The sample of this research were Indonesian and Malaysian top universities' research articles. The data for this research was collected from Scopus database in May, 2018. Gathering from the affiliation search resulted in 316 institutions in Indonesia and 190 institutions in Malaysia. These institutions were universities, research facilities, government institutions, non-formal organizations, and other institutions. However, the data collection was limited to top five universities based on the number of documents on Scopus database.

The research analysis of the top five universities in Indonesia and Malaysia was employed to gather data in each country. These data was then combined in Microsoft Excel for further analysis. The data analysis was quantitative and descriptive. However, as noted in previous research, it was important to view analysis based on online database, considering its limitations. The data in online database will be changed quickly and give impact to the overall database. Thus, the result of this study should be understood based on the time of research, which could be different at the time of its publication. However, this research could be treated as additional research, when a researcher wants to study a related topic around Scopus database.

## **Research Results**

The results of top five universities in Indonesia and Malaysia are presented in Table 1.

**Table 1.** Scopus database of top five universities in Indonesia and Malaysia

Country	Institutions	Abbreviation	Website	City	Documents
Indonesia	Institute of Technology Bandung	ITB	<a href="https://www.itb.ac.id/">https://www.itb.ac.id/</a>	Bandung	9,592
	University of Indonesia	UI	<a href="http://www.ui.ac.id">http://www.ui.ac.id</a>	Depok	9,431
	Gadjah Mada University	UGM	<a href="https://ugm.ac.id/">https://ugm.ac.id/</a>	Yogyakarta	6,047
	Bogor Agricultural University	IPB	<a href="https://ipb.ac.id/">https://ipb.ac.id/</a>	Bogor	3,958
	Institute of Technology Sepuluh Nopember	ITS	<a href="https://www.its.ac.id/">https://www.its.ac.id/</a>	Surabaya	3499

Country	Institutions	Abbreviation	Website	City	Documents
Malaysia	University of Malaya	UM	<a href="https://www.um.edu.my/">https://www.um.edu.my/</a>	Kuala Lumpur	44754
	University of Putra Malaysia	UPM	<a href="http://www.upm.edu.my/">http://www.upm.edu.my/</a>	Serdang	32956
	National University of Malaysia	UKM	<a href="http://www.ukm.my/portal/">http://www.ukm.my/portal/</a>	Bangi	32475
	University of Sains Malaysia	USM	<a href="http://www.usm.my/index.php/en/">http://www.usm.my/index.php/en/</a>	Penang	32211
	University of Technology Malaysia	UTM	<a href="http://www.utm.my/">http://www.utm.my/</a>	Johor Bahru	27997

Source: <https://www.scopus.com>, accessed on May 19, 2018.

The table shows the top five universities in Indonesia and Malaysia. Overall, these institutions were universities as listed in Scopus database. The number of research articles in Scopus database indicated that the top five universities in Indonesia and Malaysia have good quality in publications and as favorite universities in those countries. In addition, the number of documents also reflects their researchers' high, academics', lecturers', and university students' determination to produce empirical research articles which are a positive contribution to the academic writing world.

The top five universities in Indonesia and Malaysia in this research established their first publications in Scopus database. The kinds of documents are research articles, book reviews, conference papers, and short communications. Table 2 shows the number of documents from the five universities in Indonesia and Malaysia, published in Scopus-indexed journal over the period 1970–2017. The table also gives the common background of how each university increased their publications indexed by Scopus in the 1970–2017 period and leading in publishing articles from the top five universities in each country.

Those universities published fewer research articles before 2000, with the number of documents under 10,000. After 2000, the trends of article publications from the top five universities changed significantly. As shown in Table 2, the University of Malaya was leading in article publications, with 7614 documents in the 2000–2009 period, while other universities published fewer than 7000 documents on average. Meanwhile, in the 2010–2017 period, those five universities in each country published more documents than in the previous period. It may be assumed that those five universities paid increasing attention to publishing articles indexed by Scopus. However, the top five universities in Indonesia still published fewer articles than the top five universities in Malaysia. As an encouragement to

**Table 2.** First year and number of documents in the 1970–2017 period from top five universities in Indonesia and Malaysia

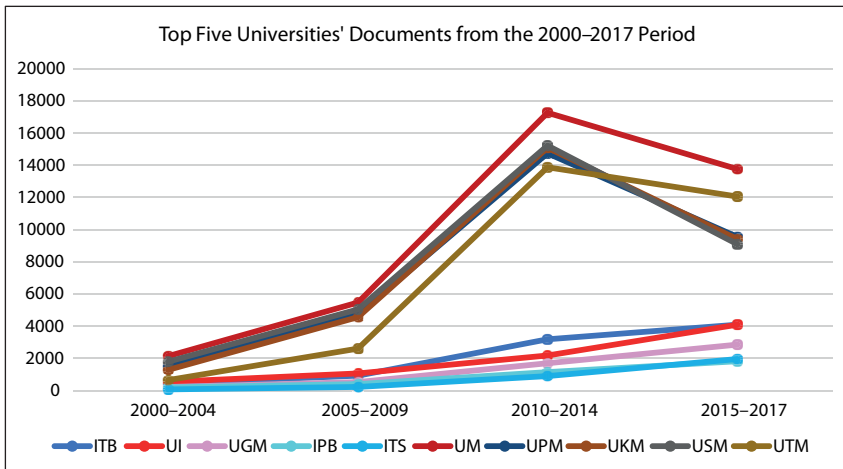
Country	Institution	First Year in Scopus	Number of Documents				
			1970–1979	1980–1989	1990–1999	2000–2009	2010–2017
Indonesia	Institute of Technology Bandung	1961	27	104	298	1337	7276
	University of Indonesia	1948	176	32	585	1602	6276
	Gadjah Mada University	1954	40	86	194	735	4552
	Bogor Agricultural University	1974	5	31	168	587	2957
	Institute of Technology Sepuluh Nopember	1978	1	12	23	279	2843
Malaysia	University of Malaya	1950	1244	1363	2728	7614	31031
	University of Putra Malaysia	1918	40	296	1032	6239	24298
	National University of Malaysia	1969	197	395	1401	5849	24488
	University of Sains Malaysia	1967	165	441	1709	6842	24321
	University of Technology Malaysia	1982	0	43	273	3243	25933

Source: <https://www.scopus.com>, accessed on May 19, 2018.

produce more research articles which could be indexed by Scopus, the Indonesian government announced that there were many grants and scholarship programs to publish research articles. The grants and scholarship programs such as Hibah Dikti (grant from the Ministry of Research, Technology, and Higher Education of Indonesia), LPDP (Indonesian Endowment Fund for Education), BOPTN (Operational Support of States Universities), and university grants.

The analysis of research productivity could be used by Indonesian universities to evaluate, design affordable programs, and encourage article publication among university students, lecturers, and researchers. Comparison of the research publications of the top five universities in Indonesia and Malaysia is shown in Figure 1.

Figure 1 shows in more detail how publications in Scopus-indexed journals increased among the top five universities in Indonesia and Malaysia. The UM reached the top of research article publications and was the most productive university in the whole group of universities in the 2000–2017 period. Similarly, UTM, USM, UPM, and UKM had a significant number of article publications after 2000. These Malaysian universities made a good effort for higher education. Meanwhile,



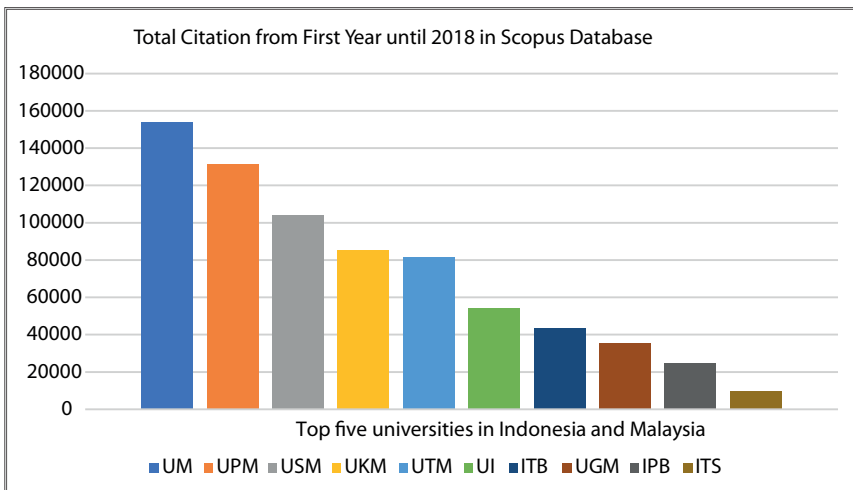
**Figure 1.** Top five universities' documents from the 2000–2017 period

the number of article publications of the Indonesian universities increased slowly. In the 2000–2017 period, the Malaysian universities produced about 29,000–39,000 articles, while the Indonesian universities 3000–9000 articles.

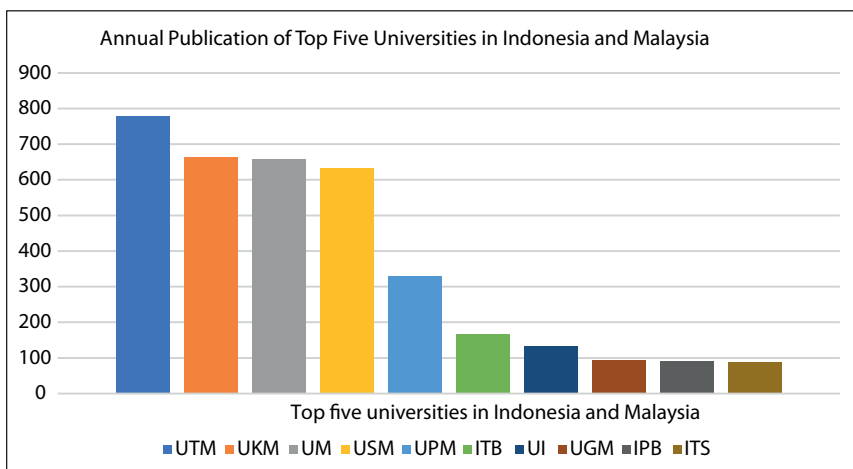
In addition, the discussion about the universities' article productivity was undertaken by Kamdem et al. (2017) in their research article. The universities' productivity could be seen by its publications in Scopus database. It shows the h-index, citation per document, total citation, total document, year coverage, and annual publication. However, the study only showed the results of total citations and annual publications of the top five universities in Indonesia and Malaysia. The total citations data are shown in Figure 2.

Figure 2 shows that the UM has a high total with 153,661 citations. The other universities such as UPM has 131,474 citations, USM 104,187 citations, UKM 85,223, and UTM 81,307 citations. The top five universities in Indonesia such as UI has 54,148 citations, ITB 43,550 citations, UGM 35,187 citations, IPB 24,963 citations, and ITS only 9,567 citations. It can be seen that the top universities in Indonesia have a fewer number of citations than the Malaysian universities. In other words, it is probable that the popularity of research articles of the top five universities in Indonesia does not attract as much interest as that of the top five universities in Malaysia. The novelty and coverage of research concern may be reflected in the total number of citations.

The next comparison concerns annual publications in each university. The annual publications are shown in Figure 3.



**Figure 2.** Total citation of universities' documents from the first year to 2018 in Scopus database



**Figure 3.** Annual publications of universities in Scopus Database

Figure 3 shows that UTM reaches the highest annual number of publications in Scopus database with 77,769. UKM reaches 66,276, UM 65,815, USM 63,159, UPM 32,956, ITB 16,828, UI 13,473, UGM 9,448 IPB 8,995 and the lowest annual number of publications is reached by ITS, i.e., 8,748. The universities' productivity can not only be estimated by total citations, total documents, and annual publication, but also by the average of documents per author.

## **Discussion**

This research presents many important results related to the top five universities in Indonesia in its effort to enhance research and maximize Indonesian natural resources.

### Advance for Indonesia

Research productivity is the main measure of advance toward academic writing among Indonesian lecturers and researchers. The research productivity of universities in Malaysia can be used as a reference by the Indonesian government to determine the direction of publication policy for academics, lecturers, and researchers. As stated by the Minister of Research, Technology, and Higher Education of Indonesia on 17<sup>th</sup> May 2018, the number of international publications of Indonesia indexed by Scopus is 8,269, which exceeds Singapore with 6,825 publications and is less than Malaysia, with 8,712 publications (Ministry of Research, Technology, and Higher Education of Indonesia, 2018a). Currently, Indonesia is in the second place among ASEAN countries. However, the top five universities in Indonesia still publish less than the top five universities in Malaysia. Nevertheless, all Indonesian universities are still able to enhance research productivity through academic writing. There are some causes of fewer publications among academics, lecturers, and researchers: (i) support from the Indonesian government still does not reach all regions of Indonesia, especially universities in rural regions such Papua, Nusa Tenggara Timur, Nusa Tenggara Barat, and Maluku. Financial support from the Ministry of Research, Technology, and Higher Education of Indonesia still does not meet expectations, (ii) awareness among academics lecturers, and researchers to publish research articles indexed by Scopus is still lower than in other countries. The majority of research articles in Indonesia is indexed by DOAJ and Google Scholar. Both DOAJ and Google Scholar have different difficulties and reputations.

Based on the regulation of the Minister of Research, Technology, and Higher Education of Indonesia number 20 of 2017 (Ministry of Research, Technology,



and Higher Education of Indonesia, 2018b), journals indexed in Scopus and Web of Science (WoS) are categorized as highly reputable journals, journals indexed in DOAJ are categorized as medium reputable journals, whereas journals indexed by Google Scholar are categorized as low reputable journals.

Why are publications in Scopus important?

Publications as indicators of lecturers' and researchers' productivity are part of academic writing in Indonesia. Although Scopus database is not the only one in evaluating and approximating researchers' and universities' productivity in a country, the Scopus database could be used as evaluation material in measuring universities' and researchers' effectiveness in producing research articles. Publishing research articles in Scopus database can enhance researchers' quality and include them in the academic world of writing. Moreover, publishing research articles in Scopus database encourages researchers to conduct more research and maximize the potential of Indonesian's land area, covered by many plants and forests.

Ways of improving article publications in Scopus

- Additional fees for researchers and lectures as a reward for achievement

In several universities, such Yogyakarta State University (UNY), the lecturers or students who are able to publish their research papers in Scopus will be rewarded with additional charge in rupiah. This benefit may result in enhancing academic writing among lecturers and researchers. Apart from that, it may increase the quality of university to be a world class university.

- Accessibility of research permission

The Ministry of Home Affairs of the Republic of Indonesia has introduced a constitution regulation that regulates conducting research in Indonesia. The purpose of this regulation is to improve researchers' ability to conduct research in Indonesia. Subsequently, the implication was that publications in Indonesia will increase up to excellent productivity.

- Classical conditioning

The social cognitive theory suggested by Albert Bandura (Bandura, 1977, pp. 193–200). Albert Bandura argues that there are three things which affect a human being's learning (e.g., learn about academic or learn about environment). These three things are the individual, environment, and behavior. Bandura believes that humans influence and interact with each other between behavior, environment, and personal variables such as cognitive, affection, and psychomotor ones.

The social theory can be implemented in academic article by designing an environment conducive to enhancing and improving writing skills among academics, lecturers, and researchers. For example, gathering some people to make a group

discussion once or twice a week. Then forum, talking about several topics, such as how to publish our research paper in Scopus, guidance to write good and concise research articles, etc. If these activities are held continuously, the academic writing ability may improve.

## **Conclusion**

This study aimed to analyze the research productivity of top five universities in Indonesia and Malaysia. This study found that generally, that the number of research articles published by the top five universities in Indonesia and Malaysia grew slowly before 2000. Afterwards, the publication level of the top five universities grew fast, i.e., in the 2000–2017 period.

The findings suggest that there was more effort of the Indonesian universities to improve the quantity and quality of publications, also the quality of academics, lecturers, university students, and researchers in Indonesia, which is a good predictor of better competition in the future. The other thing was to maximize the local potential to conduct more research in agricultural and biological sciences. However, a number of important limitations needs to be considered. First, this research only analyzes the research productivity of the top five universities in Indonesia and Malaysia based on documents in Scopus database. Second, the findings cannot cover the other component of research productivity in Indonesia and Malaysia, also other countries. The result of this research should then be compared with other research and may serve as an additional reference to conduct research related to this topic with consideration of universities.

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