

## Information Spectrum over Twelve Public Teaching Universities in Indonesia

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### ABSTRACT

This paper gives an information spectrum of public teaching universities in Indonesia as viewed from their publication during 2000-2019. The data were collected through the Scopus database and then analysed based on the number of documents, language, author affiliation, document type, source type, source title, top authors, top citations, co-authorship, and international collaboration. The results indicated that the number of publications until 2019 was 11,993 documents. In the period 2016-2019, publication stretches have begun to appear, and there has been a significant increase in the number of conference proceedings as the primary source of publication. The publication's subject area was dominated by physics and astronomy, engineering, and social sciences, with English being the primary language of communication. Authors from Universitas Negeri Malang (UM), Universitas Pendidikan Indonesia (UPI), and Universitas Negeri Yogyakarta (UNY) dominated the output of public teaching universities in Indonesia. Top citations from documents produced were dominated by UNNES, which collaborates a lot through World Class Professor (WCP). Co-citation, co-authorship, and co-occurrences network visualisation were also illustrated to complete the information of top authors and top citations in this study. The most collaborated authors of public-teaching universities were Malaysia, the USA, Australia, Japan, and Taiwan. Some future considerations were also illustrated as the recommendation of this study to increase the performance of publications among public teaching universities.

**Keywords:** Information spectrum; Public teaching universities; Scientometric study; Indonesia

### NOMENCLATURE

UPI	:	Universitas Pendidikan Indonesia
UM	:	Universitas Negeri Malang
UNY	:	Universitas Negeri Yogyakarta
UNESA	:	Universitas Negeri Surabaya
UNNES	:	Universitas Negeri Semarang
UNJ	:	Universitas Negeri Jakarta
UNP	:	Universitas Negeri Padang
UNM	:	Universitas Negeri Makassar
UNIMED	:	Universitas Negeri Medan
UNDHKSA	:	Universitas Pendidikan Ganesha
UNG	:	Universitas Negeri Gorontalo
UNIMA	:	Universitas Negeri Manado

### 1. INTRODUCTION

Previous research focused on the top universities in Indonesia. However, no study examined the output of public teaching universities. Generally, research concerned the top ten, top twenty, and even top 50 Indonesian institutions<sup>1</sup>. Initially, these universities were institutes that transformed into universities with authority in education and non-education major and were called the Education Personnel Education Institute (LPTK). They prepare professional teachers and

educators for the nation's future generation. We argue that the quality of human resources is produced by quality education. To produce quality education, teachers are the critical success factor.

Data in 2015 shows that there is a total of 421 LPTKs in Indonesia, with details of 12 Public Teaching Universities (PuTUs) –formerly teacher training institutes (IKIP), 28 State Teacher Training Faculties, 1 Teacher Training Faculty of Open University, and 380 Private Teaching Universities (PrTUs). It was noted that this data does not include LPTKs under the Ministry of Religion). However, this research focuses on the 12 PuTUs because most universities are included in the top 50 Indonesian universities<sup>1</sup>. A third of these PuTUs belong to the PTNBH level (state university with the legal entity), a higher level of Indonesian institutions. In contrast, the other two-thirds are still state universities with public service agencies. In addition, seven out of twelve universities are also included in the top 25 universities in Indonesia, according to Scimago Institutions Rankings<sup>2-3</sup>. The list of all PuTUs are listed in Nomenclature.

To analyse the twelve PuTUs, one of the methods that can be adopted is bibliometric analysis. Various researchers in analyzing publications<sup>4-5</sup> have widely used bibliometric analysis. Specifically, the research questions are indicated seven points:

**Table 1. Year-wise analysis of publications published in block of four years from 2000 to 2019**

Name of the university	2000-2003	2004-2007	2008-2011	2012-2015	2016-2019	Total
UPI	6	13	34	188	2507	2748
UM	20	41	21	104	1652	1838
UNY	10	11	22	79	1341	1463
UNESA	3	5	28	91	1054	1181
UNNES	5	4	21	107	975	1112
UNJ	2	5	25	91	962	1085
UNP	1	0	18	72	722	813
UNM	4	3	6	109	679	801
UNIMED	8	8	5	35	328	384
UNDHIKSA	0	0	6	18	268	292
UNG	0	0	6	23	192	221
UNIMA	1	0	3	9	42	55
Total	60	90	195	926	10,722	11,993

- What is the Scopus document profile produced by authors at PuTUs in Indonesia (including number, language, type, subject area, source title)?
- Who are the top authors of twelve PuTUs?
- What is the top citation profile of authors at PuTUs?
- What is the profile of the co-authorship network of researchers at PuTUs?
- What is the profile of the international collaboration carried out by the author at PuTUs?
- What is the profile of the co-occurrences network visualisation performed by twelve PuTUs?
- To what extent should researchers at PuTUs in Indonesia address the future consideration?

## 2. METHODOLOGY

The method applied in this research was the bibliometric analysis method<sup>4,5</sup>. The method was utilised to determine the profile of a publication. This research was conducted in June 2021 by collecting data from the Scopus database using search keywords, specifically for affiliates from Indonesia, and excluding publications from other countries.

The keyword of the advanced search was used:

*(AF-ID ("Universitas Pendidikan Indonesia" 60103797) OR AF-ID ("Universitas Negeri Malang" 60104775) OR AF-ID ("Universitas Negeri Yogyakarta" 60087601) OR AF-ID ("Universitas Negeri Jakarta" 60105171) OR AF-ID ("Universitas Negeri Semarang" 60089125) OR AF-ID ("Universitas Negeri Surabaya" 60105082) OR AF-ID ("Universitas Negeri Padang" 60105184) OR AF-ID ("Universitas Negeri Makassar" 60106582) OR AF-ID ("Universitas Negeri Medan" 60110725) OR AF-ID ("Universitas Pendidikan Ganesha" 60105231) OR AF-ID ("State University of Gorontalo" 60105011) OR AF-ID ("Manado State University" 60109240)) AND (EXCLUDE (PUBYEAR,2022)) AND (EXCLUDE (PUBYEAR,2021)).*

The data types obtained, namely *csv*. and *ris*., were then analysed using Microsoft Excel and *VoSviewer* to provide a complete description of the publication profile and visualisation of both documents and authors of the 12 PuTUs.

Indonesia itself also has a database called SINTA<sup>6,7</sup>. It uses Google Scholar, Scopus, and Web of Science as its data

sources. For example, in Sinta score (S score) version 2, the weighting of the S score:

The weight of articles in the journal in Scopus were Q1=40; Q2=40; Q3=35; Q4=30; No-Q=30. Meanwhile, the number of non-journal documents in Scopus is given as 15. Total citations in Scopus are given a weight of 4, and the number of citations on Google Scholar accounted for a weight of 0.5. For the weighting of articles in national journals, articles in the S1 = 25 (non-Scopus); S2=25; S3=20; S4=20; S5=15; and S6=15<sup>9</sup>. Q1 and Q2 are given the same weight because of the condition of Indonesian researchers, who seem to find it more difficult to find journals at the Q1 and Q2 levels compared to levels below<sup>9</sup>.

## 3. RESULTS AND DISCUSSION

### 3.1 The Profile of the Scopus Documents Produced by Authors at 12 PuTUs in Indonesia

The searches described in the research method section indicated a total number of publications of 11,993 documents. Table 1 represents the year-wise analysis of publications published from 2000 to 2019—the pattern of growth of output: (in blocks of four years). The duration 2000 to 2007, the number of documents among all PuTUs was relatively small. Indeed, UNDHIKSA and UNG, two new public universities, have not produced a document yet. From 2008 to 2011, all PuTUs contributed documents to the Scopus database. An increasing trend also occurred in the period 2012-2015. At its peak in the 2016-2019 period, the number of publications from all universities increased significantly; even four universities achieved the number of more than 1000 documents for that period, namely superior campuses such as UPI, UM, UNY, and UNESA.

Based on Table 1, the number of documents for every four years is indicated as the output growth pattern (Fig. 1). Accordingly, the total growth in the number of documents from 2000 to 2015 experienced a positive linear increase. However, for the last four years, 2016-2020, the number of documents has experienced exponential growth, reaching 10,722. The total number of papers resulted by twelve universities is illustrated in Table 1. The order from the top reflects the ranking of universities based on the total number of documents or papers

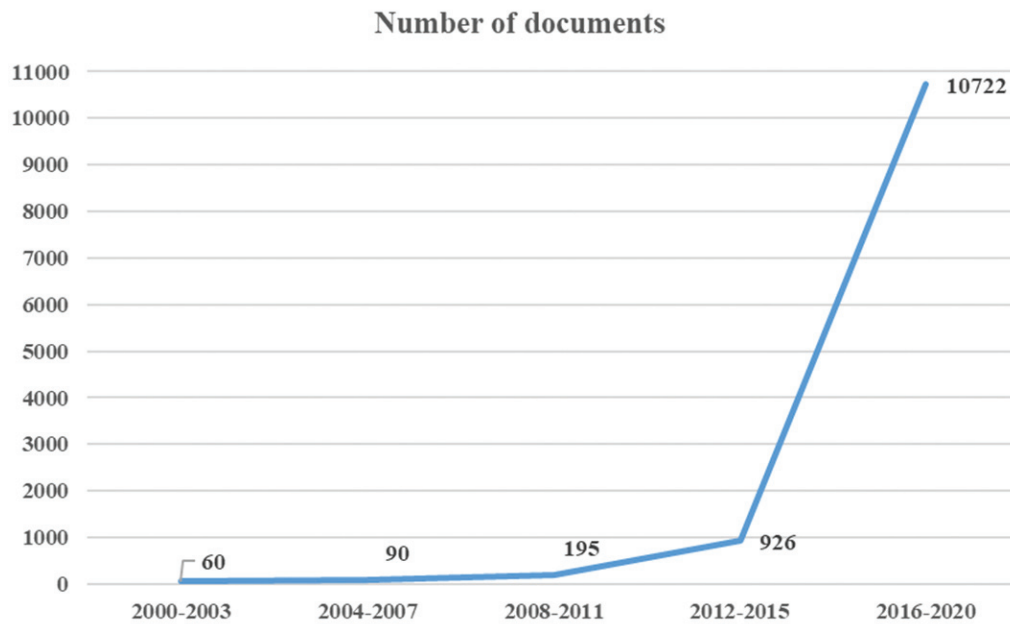


Figure 1. Pattern of growth of output (in blocks of four years) from 2000 to 2019.

Table 2. Calculation of rate of growth from 2000 to 2019

Period	Output	Rate of growth
2000-2003	60	-
2004-2007	90	$(90-60)/60 = 30/60 \times 100 = 50\%$
2008-2011	195	$(195-90)/90 = 105/90 = 1.16 \times 100 = 116\%$
2012-2015	926	$(926-195)/195 = 731/195 = 3.7 \times 100 = 370\%$
2016-2019	10722	$(10722-926)/926 = 9796/926 = 10.6 \times 100 = 1060\%$

also contributed the least, such as UNDHKSA, UNG, and UNIMA.

The rate of growth of documents increased dramatically. In the first block of 2004-2007, it was 50 percent and it doubled during the period of 2008 to 2011. From 2012 to 2015, this figure was 370 per cent. The growth rate peaked during the last four year block of 2016-2019 with a rate of growth of 1060 percent. It shows that 12 PuTUs in Indonesia have made genuine efforts to internationalise and achieve international recognition by publishing articles in reputable journals.

All PuTUs produced 11,993 documents and 25,075 citations from 2000 to 2019, which is quite a number for the

Table 3. Year-wise analysis of publications published in terms of the total number of papers, citations, and h-index from 2000 to 2019

Name of the University	Total number of papers (2000-2019)	Total citations	Citation per paper	h-index
UPI	2748	6470	2.35	44
UM	1838	4332	2.36	35
UNY	1463	2096	1.43	29
UNESA	1181	2084	1.76	25
UNNES	1112	3439	3.09	33
UNJ	1085	1150	1.06	22
UNP	813	1187	1.46	19
UNM	801	2139	2.67	27
UNIMED	384	950	2.47	21
UNDHKS	292	872	2.99	21
UNG	221	221	1.00	13
UNIMA	55	135	2.45	8
Total	11,993	25,075	2.09	24.75

for the last 20 years (2000-2019). As the oldest PuTUs, UPI has contributed to the most significant number of papers in Indonesia. Meanwhile, the campuses that were born last

typical campus in Indonesia. The average citation per paper is 2.09. The h-index has shown to vary from 8 to 44, with UPI still leading. There is a fascinating thing, namely UNNES, with the

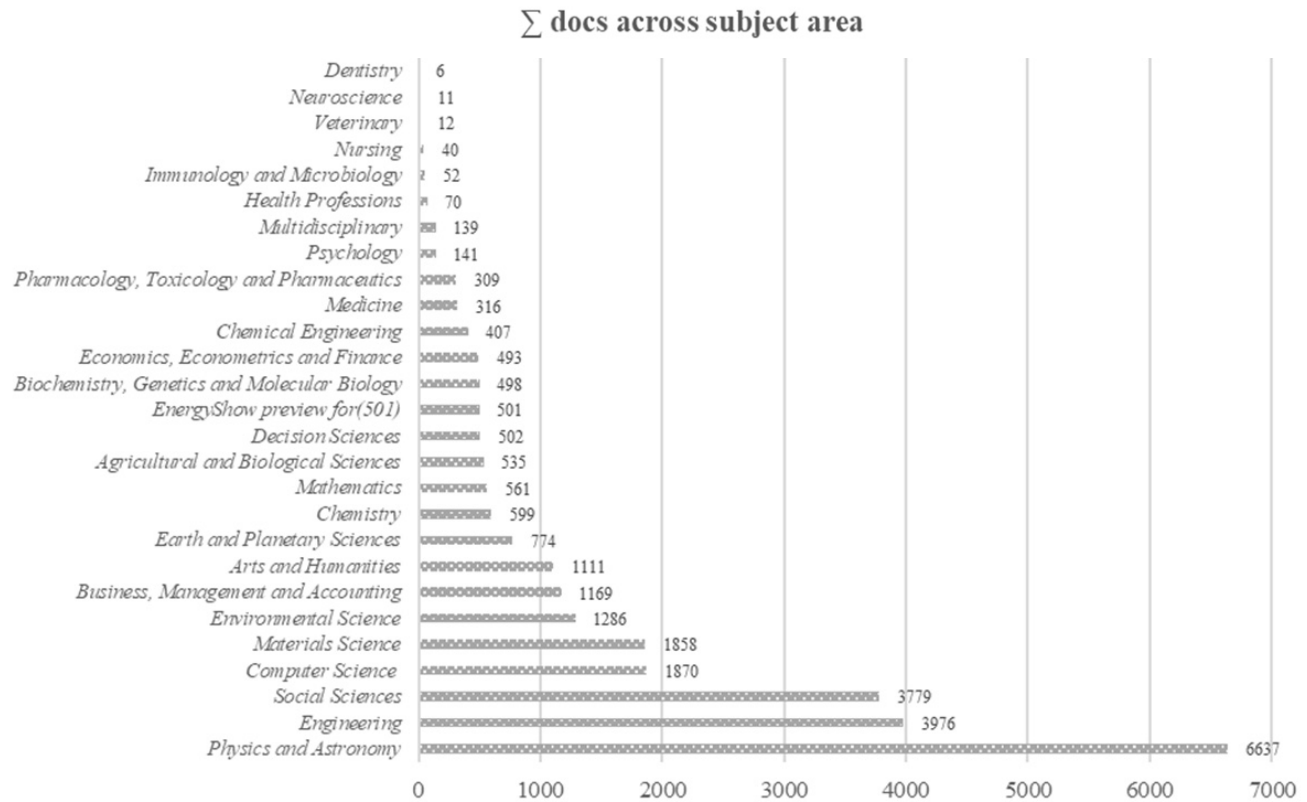


Figure 2. Number of documents based on subject area.

number of documents in fourth place, but the highest citation per paper is 3.09. While UPI only excelled in the number of citations with 6,470 citations.

If we break it down year by year, some essential points can be seen. From 2000-to 2010, all universities resulted in documents less than 50. From 2010 to 2015, there was an increase in the number of documents, although it was not significant. Since 2016, publication stretches have begun to appear, and there has been a very significant increase. This trend continued to increase until 2019. UPI, UM, and UNY are still in the top 3 of the 12 existing PuTUs, and it seems that it is still tricky for UNESA, UNNES, and UNJ, who occupy the middle position. Indeed, UPI and UM can produce more than 1000 documents per year, especially in 2019. At the same time, ten other universities have never reached this number.

In fact, since 2010, every university started to have documents, which increased significantly according to existing policies. This condition began to have a positive signal in 2015, stretching publications from all campuses began to grow, and in 2020 was the top performance of the 12 PuTUs with more than 5,000 documents. Predictably, this number will increase in 2021, which is currently running. There are several policies, including:

- Circular of the Director-General of Higher Education (DGHE) in 2012: publication provisions for BA/MA/PhD programs which are one of the graduation requirements, which are effective starting after graduation after August 2012.
- The circular letter of the Director-General of Learning and Student Affairs, Ministry of Research, Technology and

Higher Education (MRTHE) in 2019 stated that regarding the publication of scientific works for BA, MA, and PhD programs states that to produce the quantity and quality of publication of scientific works for BA and MA students on a national and international scale.

- Based on the letter from the Director of Intellectual Property Management (DIPM), MRTHE in 2018, notified the DIPM in 2019 will carry out the Incentive Articles Published program in International Journals, which is to provide incentives for university lecturers/researchers who successfully publish their scientific articles in reputable international journals.

The universities under study published 11,993 records in different documents from 2000 to 2019. Of these, 6809 (56.75 %) were conference papers, followed by articles numbered 4752 (39.62 %) documents. These two together constituted about 96.37 per cent of all records. The remaining 3.63 per cent were review, book chapter, erratum, editorial, note, retracted, letter, book, data paper, and short survey. Of the total documents, 11655 (97.18 %) were in English, and the remaining half percent were in Indonesian, Spanish, Malay, Russian, Bosnian, Croatian, German, Lithuanian, and Portuguese.

Furthermore, publishing articles in international journal articles and proceedings can contribute significant credit points of at least 30 credits to the Credit Score Assessment (PAK) guidelines<sup>8</sup> and has a high point score on the SINTA score with a minimum of 30 for journal articles and 15 for non-journal<sup>7</sup>.

Figure 2 shows that the publication's subject area was dominated by physics, astronomy, engineering, and



social sciences. It can be associated with the publication of international Scopus proceedings in Indonesia, the majority of which are in the IOP conference series (JPCS, MSE, EES) and AIP conference series with the areas of physics and astronomy, engineering, and applied sciences and IJICC journals for social sciences publications.

Table 4 indicates that among 15 top source titles, six of them were discontinued from Scopus. This source has become one of the barns of articles on Scopus for authors from Indonesia. Indonesian authors, especially those from public teaching universities, should be concerned about this situation. Meanwhile, *Jurnal Pendidikan IPA Indonesia* and the Indonesian Journal of Applied Linguistics are two top source titles with publishers from Indonesia.

**Table 4. Number of documents across top source titles**

Source titles	Number of documents
IOP Conf. Ser. J. Phys. Conf. Ser. (JPCS)	5,164
IOP Conf. Ser. Mat. Sci. Eng. (MSE)*	1,153
AIP Conf. Proc.	1,050
IOP Conf. Ser. Earth Env. Sci. (EES)	559
Int. J. Innov. Creativity Change (IJICC)*	376
Int. J. Scie. Tech. Res.*	249
J. Pend. IPA Indonesia	207
Int. J. Instruction	202
Univ. J. Educ. Res.*	181
J. Eng. Sci. Tech.	143
Int. J. Adv. Sci. Tech.*	137
Matec Web of Conf.*	136
Asian EFL J.	118
Indonesian J. App. Linguistics	115
Int. J. Eng. Tech. UAE	104

\*(coverage discontinued in Scopus)

Based on the information, there are 15 publishers chosen by the authors to publish their manuscripts. However, from 15 publishers, it turns out that six publishers have been discontinued from the Scopus database. This condition is considered dangerous and affects the quality and sustainability of the author's publications in Indonesia. The provision of information and socialisation from relevant government agencies is being carried out to remind Indonesian authors regarding this case. Three main reasons why journals or proceedings have been discontinued from Scopus: Metrics, radar, and publication concern<sup>10</sup>. Specifically, there are six metrics and benchmarks, which are as follows:

- Self-citation rate is a condition in which a paper in a journal cites the paper or journal itself. There is a percentage that Scopus has set, and if it exceeds that limit, a re-evaluation will occur.
- Total citation rate is aimed to see whether there has been a decrease or increase. It has also been the basis of the re-evaluation. When every journal that Scopus will index must maintain its citation, especially from external parties.

- Cite score has functioned as a fundamental calculation in the SJR. This Scimago will determine the quartile rank (Q) of the Scopus index that already exists later. So, if this is a problem, then a discontinued re-evaluation will be carried out by Scopus.
- Number of articles in the journal shows whether articles from journals that will be produced will remain stable or a huge jump. There are even journals that have 100 publications, jumping to 1000 in the following month. So, there is a possibility that it will be discontinued.
- Total of full text click on scopus.com relates to the reader when a reader clicks on articles in the Scopus journal and website.
- Abstract usage on scopus.com is an abstract usage on Scopus, while the reader can click on the full article on the Scopus website.

The second reason is about radar. In 2017, Elsevier released a tool for data analysis related to outliers. It happens to journals that have been indexed by Scopus before. One of the many outliers shown from how many of these tools will be related to spikes in publications. It will affect changes in the journal that will be displayed later. Furthermore, this will also cause changes to the journal that Elsevier has found strange. The tool is used to control the journals and publishers indexed by Scopus.

The third is publication concern, based on ten points, namely:

- Journal policy: Does the journal on Scopus has its rules in the publisher's policy?. Where this publisher refers to the journal and that has been set by the Scopus index?.
- The Scopus team will also check the type of peer review whether it meets the criteria.
- Scopus will also check diversity for demographics that are shown to authors as well as to an editorial. Editors and authors are not from the same country, so they are more diverse in-country or institution.
- Content, there is a problem with content that is related to articles that have been published in Scopus indexed journals.
- Abstract quality affects the quality of the paper, so it is always reviewed.
- Citedness, if the article has a citation retreat, that will have a fatal outcome. Editorial standing, namely the articles produced, must be clear and must be carried out and carried out according to the soup by the editorial.
- Conformity, for example, the journal's scope is engineering, but suddenly there are social articles. So, this violates a publication concern.
- Journal standing relates to citedness, what kind of citation behavior (self-citation). The other is that there are errors related to editorial standing.
- Publishing regularity is relating to timeliness issues for the publication. A journal must not change the publication schedule.
- Online availability, can the paper be viewed on the website? (Minimal is an abstract).

### 3.2 Top Authors

Top authors of public teaching universities in Indonesia

**Table 5. Top authors of Indonesian public teaching universities**

Author	$\Sigma$ docs (2000- 2020)	S score (three years score V2) (Per 10 June 2021)	Affiliation
Taufiq, A.	182	6870	UM
Nandiyanto, A.B.D.	168	6455	UPI
Abdullah, A.G.	147	4660	UPI
Mufti, N.	142	3935	UM
Samsudin, A.	124	3272.5	UPI
Sunaryono	115	4882	UM
Diantoro, M.	104	2970.5	UM
Puspitasari, P.	103	2102	UM
Suhandi, A.	103	2446.5	UPI
Wilujeng, I.	89	2697.5	UNY
Afandi, A.N.	88	4045.5	UM
Retnawati, H.	85	3277.5	UNY
Suryadi, D.	85	1983.5	UPI
Kuswanto, H.	84	2985.5	UNY
Wibawa, A.P.	81	2263	UM
Hidayat, A.	78	1860	UM
Setiawan, A.	78	4679	UPI
Juniati, D.	77	2087	UNESA
Kaniawati, I.	76	1361	UPI
Hidayat, N.	74	2656.5	UM

were still dominated by authors from UM, UPI, and UNY. Taufiq, an author from UM, is still the most dominant of the lecturers at PuTUs, followed by Nandiyanto and Abdullah from UPI. Of the top 20 listed authors, nine are from UM, seven are from UPI, and three are from UNY. Meanwhile, Juniati is the only representative of UNESA in the top 20 authors.

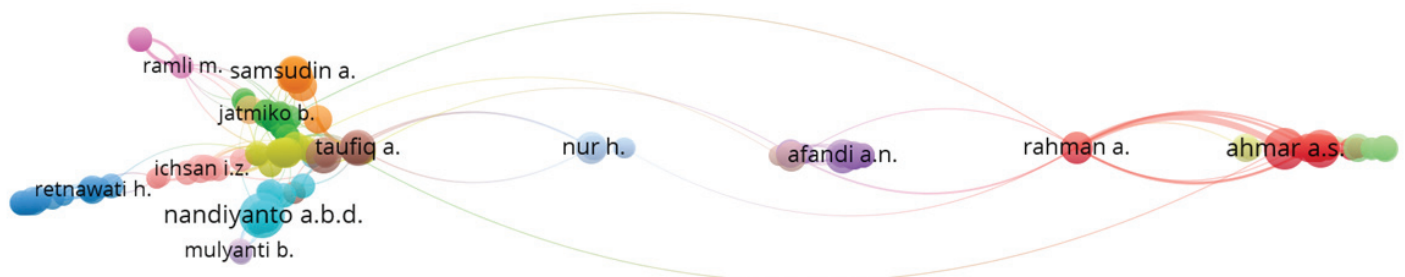
The results of Table 5 in-lined with the SINTA score (S score)<sup>8-9</sup>. Data per June 10, 2021, the S score v2 of Taufiq is 6,870, is the highest score of all authors in public teaching universities.

### 3.3 Top Citations

A citation references to a published or unpublished source (not always the source). Top citations from documents produced by researchers from the public teaching universities in Indonesia were dominated by Ningrum in the medicine and public health field from UNNES. In particular, she collaborates a lot with World Class Professor (WCP), especially when she starts from while taking doctoral degrees in Taiwan. This best practice can be used as an example for other researchers in Indonesia. Meanwhile, Anis and Zainal, also from UNNES and Rahayu from UNESA, were also the top authors based on citations. Based on the formulation of the Sinta score (S score)<sup>6-7</sup>, her S score should be the largest; however, it is considered unnatural because the number of citations is too large. So, the data as of June 10, 2021, this author's Sinta score is only obtained from Google Scholar and not from Scopus. However, in our opinion, as researchers, this condition should not be used as an excuse to ignore the Scopus score obtained.

**Table 6. Top citations resulted by Indonesian public teaching universities' authors**

Author (s)	PuTUs's author	Affiliation	Journal	$\Sigma$ citations
James, <i>et al.</i> (2018) <sup>12</sup>	Ningrum, D. N. A	UNNES	The Lancet, 392(10159), 1789-1858	2280
Roth, <i>et al.</i> (2018) <sup>13</sup>	Ningrum, D. N. A	UNNES	The Lancet, 392(10159), 1736-1788	1596
Stanaway, <i>et al.</i> (2018) <sup>14</sup>	Ningrum, D. N. A	UNNES	The Lancet, 392(10159), 1923-1994	1178
Kyu, <i>et al.</i> (2018) <sup>15</sup>	Ningrum, D. N. A	UNNES	The Lancet, 392(10159), 1859-1922	858
Feigin, <i>et al.</i> (2019) <sup>16</sup>	Ningrum, D. N. A	UNNES	The Lancet Neurology, 18(5), 459-480	506
Anis & Zainal (2011) <sup>17</sup>	Anis, S. & Zainal, Z. A.	UNNES	Renewable and Sustainable Energy Reviews, 15(5), 2355-2377	482
Fitzmaurice, <i>et al.</i> (2019) <sup>18</sup>	Ningrum, D. N. A	UNNES	JAMA Oncology, 5(12), 1749-1768	417
Dicker, <i>et al.</i> (2018) <sup>19</sup>	Ningrum, D. N. A	UNNES	The Lancet, 392(10159), 1684-1735	313
James, <i>et al.</i> (2019) <sup>20</sup>	Ningrum, D. N. A	UNNES	The Lancet Neurology, 18(1), 56-87	225
Rahayu, <i>et al.</i> (2005) <sup>21</sup>	Rahayu, Y. S.	UNESA	Journal of Experimental Botany, 56(414), 1143-1152	180

**Figure 3. Citation network visualisation of Indonesian top authors.**

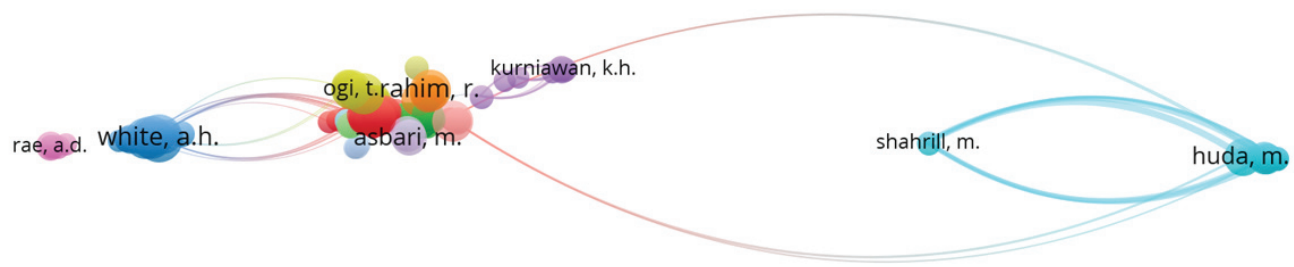


Figure 4. Co-citation network visualisation of Indonesian top authors.

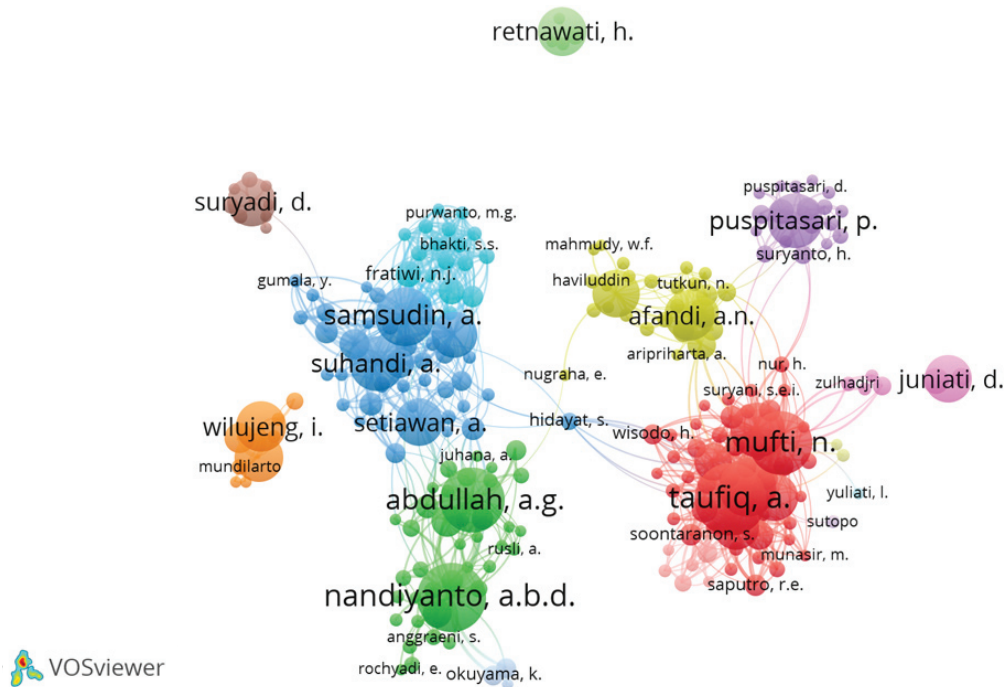


Figure 5. Co-authorship network visualisation.

A citation graph (or citation network) in information science and bibliometrics is a directed graph that describes the citations within a collection of documents. Each vertex in the graph represents a document in the collection, and each edge is directed from one document toward another that it cites (or vice-versa, depending on the specific implementation<sup>9</sup>. Figure 3 indicates the citation network of top Indonesian authors. It was clear that authors such as Ahmar and Rahman, Taufiq and Afandi, Retnawati and Ichsan, Nandiyanto and Mulyanti are examples of authors who dominate the citation network.

Co-citation is “a semantic similarity measure for documents that use of citation relationships. Co-citation is defined as the frequency with which two documents are cited together by other documents”<sup>33</sup>. If at least one other document cites two documents in common, these documents are said to be co-cited. The more co-citations two documents receive, the higher their co-citation strength, and the more likely they are semantically related<sup>22</sup>. Based on Fig. 4, Ogi, Rahim, Asbary, Kurniawan, and White performed most co-citations, as well as Shahril and Huda.

### 3.4 The Co-Authorship Network of Researchers

Among those top authors, Fig. 5 represents the co-authorship network. It was noted that the network visualisation map only figures out the most authors and their co-authorships. The authors like Taufiq, Mufti, Nandiyanto, Abdullah, Samsudin, Suhandi, Wilujeng, Suryadi, Puspitasari, Afandi, Juniati, and Retnawati are the most authors that stimulates co-authorship in his or her cluster.

### 3.5 International Collaboration

Scopus limits the metadata that can be downloaded to the first 2000 metadata. Using the first 2000 documents from Scopus, the most collaborated authors of public teaching universities were from Malaysia, the USA, Australia, Japan, Taiwan, China, Saudi Arabia, the UK, Poland, Germany, France, Turkey, and Brazil, as indicated in Fig. 6. The *VOSviewer* provide name of countries, but it fails to explain the number of papers in collaboration.

### 3.6 Co-Occurrences Network Visualisation

The results of the co-occurrence analysis have shown the existence of teacher-producing universities (Fig. 7). The





### 3.7 Future Consideration

- Choose to submit their articles in reputable journals to



- As it is known that the articles from the conference series are the most significant contributors to documents for authors, but the scores in both PAK and Sinta scores (S score) are lower than an article in a journal. So, authors are still advised to prioritise submitting their articles in reputable journals.
- The core business of PuTUs is education and non-education, so strengthening educational and non-educational research is essential to obtain a variety of research, including



keywords that appear in co-occurrence.

- The top citation obtained from this research results from international collaboration with foreign researchers; in the future, it is highly recommended to optimise joint publications and strengthen the world-class professor program.

#### 4. CONCLUSION

Analysis of twelve public teaching universities in Indonesia through a bibliometric analysis resulted in some essential points. The number of publications until 2019 was 11,993 documents. In the period 2016-2019, publication stretches have begun to appear, and there has been a significant increase in the number of conference proceedings as the primary source of publication. Then, English was the principal language used. Meanwhile, the subject area of publication was dominated by physics, astronomy, engineering, and social sciences. It can be associated with publishing international Scopus proceedings in Indonesia, most of which are in the IOP conference series (JPCS, MSE, EES) and the AIP conference series. UM, UPI and UNY still dominated the top authors of public teaching universities in Indonesia. Taufiq, who is an author from UM, is still the most dominant of the lecturers at PuTUs, followed by Nandiyanto and Abdullah from UPI. Top citations from documents produced by researchers from the public teaching universities in Indonesia were dominated by Ningrum in the medicine and public health field from UNNES that collaborates a lot with World Class Professor (WCP), especially when she starts while taking doctoral degrees in Taiwan. Co-citation, co-authorship, and co-occurrences network visualisation were also illustrated to complete the information of the top author and top citation in this study. The most collaborated authors of public teaching universities were Malaysia, the USA, Australia, Japan, Taiwan, China, Saudi Arabia, the UK, Poland, Germany, France, Turkey, and Brazil. Some future considerations were also illustrated as the recommendation of this study.

From the study, we learn that the profiles of the 12 public teaching universities vary from superior to those that are still lacking in publications. In addition, this research provides an overview of the Information Spectrum over Twelve Public Teaching Universities in Indonesia. For six universities in the lower 50 percent group, such as UNP, UNM, UNIMED, UNHIKSA, UNG, and UNIMA, they must increase their efforts to be able to catch up with publications from 6 universities in the upper group, such as UPI, UM, UNY, UNESA, UNNES, and UNJ. The main limitation of the study is the use of the first 2000 metadata from Scopus in visualisation process of *VOSviewer*.

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