Interdisciplinary Collaborative Study on Scopus Indexed Publications of Universitas Terbuka Academic Staff 1988-2022

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Abstract

Lecturers whose duties are research are communities of creators and users of scientific knowledge who have an important role in the creation of knowledge through scientific research or studies, are required to have knowledge in order to achieve scientifically justifiable results. Collaboration is a combination of several bibliometric elements, measurement is the main benchmark. The purpose of the study was to determine the impact of publishing scientific papers at the Indonesian Universitas Terbuka indexed by Scopus using a collaborative approach. This research method consists of four stages, namely identification, data collection (Scopus metadata), pre-processing of data (Altmetrics extraction), and analysis of results. This research will analyze the impact of the publication of the Indonesian Universitas Terbuka Research which is indexed by Scopus from 1988 to 2022, totaling 329 documents with a collaborative approach and comparing them with bibliometric calculations. The results of this study show that the total collaboration data are 329 documents from 220 authors of the Universitas Terbuka. The total citations of scopus indexed Universitas Terbuka articles are 393 citations where the author of Fatia Fatimah's article entitled N-soft sets and their decision making algorithms has the most citations, namely 95 citations. Meanwhile, Andrianyansah is the most productive writer with 21 documents, of which 2 are the sole authors and the rest collaborate with other writers. Of the 20 subjects written by the staff of the Universitas Terbuka, the highest subject of Social sciences was 119 documents (22.9%).

I. Introduction

Science develops in a process that takes place gradually and changes slowly. Consistently and systematically, science is structured on pre-existing foundations and forms a cumulative scientific framework. New knowledge depends on and develops based on existing knowledge. New knowledge is assimilated with existing knowledge through a process of diffusion and learning among researchers (Surtikanti, 2004).

In creating knowledge, researchers conduct research or scientific studies that aim to solve a problem by using scientific methods and methods. Thus, researchers are required to have a sufficient amount of knowledge and tools and other facilities to carry out their duties smoothly so as to achieve scientifically justifiable results. An important problem in analyzing the development of science and technology is how to define and describe certain fields of knowledge, namely subjects, approaches and perceptions. Subject refers to the academic field and specialization, approach refers to the technique, theory and subject. Meanwhile, perception is related to the psychological dimension. The study domain of a field of science can be seen by visualizing knowledge. The visualization of science can be

realized in the form of a map so that the field of knowledge mapping appears. This knowledge mapping is used for various purposes including providing boundaries for research programs, decisions regarding activities related to technology, designing knowledge base structures and making education and training programs. (Sulistyo-Basuki, 1994)

The close relationship between documents is one of the subject areas of bibliometric studies. Bibliometrics was first introduced by Pritchard in 1969, when he studied the process of quantitative written communication. Pritchard also defines bibliometrics as the application of statistical and mathematical methods. Meanwhile, Von Ungeern-Sternberg (1995) defines bibliometrics as a study that applies mathematical and statistical methods to measure changes both quantitatively and qualitatively in a collection of books or other media. One of the subjects of bibliometric studies is document relationships. Two or more documents are said to have a relationship if it can be seen from the juxtaposition of these documents in the library collection, which is essentially intended to visualize the structure of science.

The publications of Indonesian scientific works are spread over various research subjects and are researched by various professions. Publication of Indonesian scientific papers is published by various institutions or institutions in Indonesia, such as universities in Indonesia or research institutions in Indonesia. One of the universities in Indonesia that publishes its scientific work in the Scopus journal is the Universitas Terbuka. The Universitas Terbuka (UT) is the 45th State University in Indonesia which was inaugurated on September 4, 1984, based on the Presidential Decree No. 41/1984. The aim of the Universitas Terbuka is to provide broad opportunities for Indonesian citizens and foreign nationals, everywhere. place of residence, to obtain higher education, provide higher education services for them, who, due to work or for other reasons, cannot continue their education at face-to-face colleges, develop academic and professional education programs in accordance with real development needs that have not been widely developed by other universities.

According to Astuti et al (2019) Education is an obligation of every human being that must be pursued to hold responsibilities and try to produce progress in knowledge and experience for the lives of every individual. Education is one of the efforts to improve the ability of human intelligence, thus he is able to improve the quality of his life (Saleh and Mujahiddin, 2020).

The Universitas Terbuka learning system applies a distance and open learning system. The term distance means that learning is not done face-to-face, but uses media, both print media (modules) and non-prints (audio/video, computer/internet, radio broadcasts, and television). The open meaning is that there are no restrictions on age, year of diploma, study period, registration time, and frequency of taking exams. In this case, the researcher will examine scientific works or research from the Universitas Terbuka, Indonesia which is indexed by Scopus with a collaborative approach. This is because the Universitas Terbuka is one of the first universities to implement an E-learning learning system whose main base is information technology. This is in line with social media which cannot be separated from information technology and is an integral part.

II. Review of Literature

Collaboration is cooperation between two or more people, both within one institution and between institutions in an activity, including the activity of making writings or scientific works. According to Katz and Martin (1997), collaboration provides benefits for collaboration members, including: transfer of knowledge, increase insight and foster creativity, establish intellectual communication, and increase productivity. Subramanyam in Prihanto (2002), distinguishes collaboration into six types, namely: (1) lecturer-student collaboration or DM, (2) peer-to-peer collaboration or SR, (3) supervisor-assistant collaboration or SA, (4) researcher-consultant collaboration or PK, (5) inter-agency collaboration or Navy, and (6) international collaboration or KI

Lecturer-student collaboration is mostly done in universities in terms of preparing student final assignments because in this case students need direction, assistance, and instructions from lecturers. In contrast to peer-to-peer collaboration, it can be done by a group of researchers, and each member provides input according to his expertise. Another type of collaboration is supervisor-assistant collaboration. It is often done between senior researchers and junior researchers. This type of collaboration is often carried out in the laboratory, namely between researchers who are assisted by laboratory technicians. Then the collaboration between researchers and consultants, is mostly done on large-scale research projects. The research team used the services of other institutions as special consultants in the context of data collection, processing, and analysis. Inter-agency collaboration, usually carried out by several individuals from various institutions working together on the same project. International collaboration, usually involves several scientists from several countries (Prihanto, 2002). According to Subramanyam (1983) the level of collaboration is different in each discipline. Sulistyo-Basuki (1990) also stated that the level of collaboration between one discipline and another is not the same. This is influenced by the relevant disciplines, demography, and the environment. Collaboration in this study is determined by the authorship of articles published in BIPI 2013-2015. Articles written by more than one author are categorized as collaboration articles International collaboration, usually involves several scientists from several countries (Prihanto, 2002). According to Subramanyam (1983) the level of collaboration is different in each discipline. Sulistyo-Basuki (1990) also stated that the level of collaboration between one discipline and another is not the same. This is influenced by the relevant disciplines, demography, and the environment. Collaboration in this study is determined by the authorship of articles published in BIPI 2013-2015. Articles written by more than one author are categorized as collaboration articles International collaboration, usually involves several scientists from several countries (Prihanto, 2002).

III. Research Method

This study uses a descriptive method, meaning that based on existing data,. The research data is metadata from Scopus.com in the form of all Universitas Terbuka scientific publications data for 1988-2022 indexed by Scopus.com. As for the search, the researcher writes the Indonesian affiliate keyword and focuses on scientific works or research products produced by Universitas Terbuka staff.

IV. Results and Discussion

From the analysis on Scopus, it was found that the data on the publications of the academic staff of the Universitas Terbuka in 1988-2022 were as follows:

Table 1. Statistics of publication of Universitas Terbuka scientific papers in 1988-2022

Year	Number of Scopus Publications
1988	1
1989	1
2005	1
2007	3
2008	2
2009	2
2010	3
2011	3
2012	2
2013	7
2014	7
2015	11
2016	11
2017	26
2018	34
2019	72
2020	67
2021	67
2022	8
Total	**329**

Based on table 1, it can be seen that the highest productivity of open universities indexed by Scopus.com was in 2019 as many as 72 scientific publications. In addition to the total number of publications of Universitas Terbuka scientific works, researchers also examined the total number of citations to publications of Universitas Terbuka scientific works indexed by Scopus.com until April 4, 2022.

Table 2. Citation statistics for publication of Universitas Terbuka scientific papers in 1988-2022

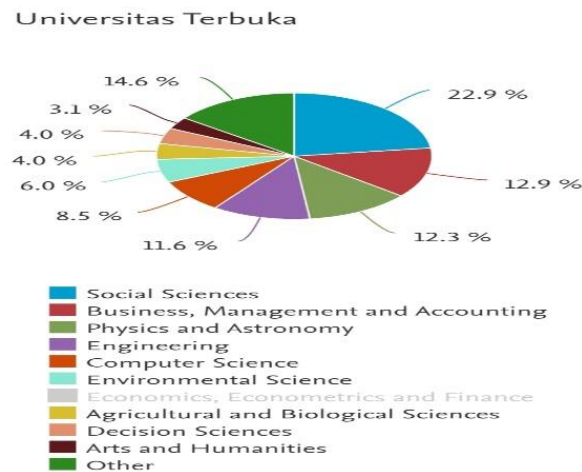| Year	Scopus Number of Publication Citations
1988	4
1989	5
2005	18

2007	37
2008	4
2009	1
2010	7
2011	29
2012	18
2013	15
2014	6
2015	10
2016	28
2017	22
2018	95
2019	37
2020	7
2021	50
2022	0
Total	**393**

Based on table 2, it can be seen that the highest citation productivity of open universities indexed by Scopus.com was in 2018 as many as 95 citations.

Table 3. UT Scopus Indexed Publications Map

No	Subject	Number of documents
1	Social Sciences	119
2	Energy	15
3	Business, Management and Accounting	67
3	Biochemistry, Genetics and Molecular Biology	11
4	Physics and Astronomy	64
5	Mathematics	9
6	Engineering	60
7	Materials Science	5
8	Computer Science	44
9	Pharmacology, Toxicology and Pharmaceutics	5
10	Environmental Science	31
11	Chemistry	4
12	Economics, Econometrics and Finance	26
13	Medicine	4
14	Agricultural and Biological Sciences	21
15	Veterinary	4
16	Decision Sciences	21
17	Chemical Engineering	2
18	Arts and Humanities	16
19	Health Professions	1
20	Earth and Planetary Sciences	16

From the table above, it can be seen that the dominant research subjects were Social sciences with 119 documents (22.9%), followed by Business, management and accounting subjects with 67 documents (12.9%) then followed by Astronomy Pysiscs with 64 documents (12.3%) followed by engineering subjects with 60 documents. (11.6%) then computer science subjects occupy the top 5, namely 44 documents (8.5%).

Source: www.scopus.com

Table 4. The most cited authors in Scopus indexed UT publications in 1988-2022 (Top 10 Ranking)

No	Author	Title	Citation
1	Fatimah, F., Rosadi, D., Hakim, R.B.F., Alcantud, J.C.R.	N-soft sets and their decision making algorithms	95
2	Cordova, M.R., Nurhati, I.S., Riani, E., Nurhasanah, Iswari, M.Y.	Unprecedented plastic-made personal protective equipment (PPE) debris in river outlets into Jakarta Bay during COVID-19 pandemic Open Access	50
3	Fatimah, F., Rosadi, D., Hakim, R.F., R. Alcantud, J.C.	Probabilistic soft sets and dual probabilistic soft sets in decision-making	37
4	Belawati, T., Zuhairi, A.	The practice of a quality assurance system in open and distance learning: A case study at Universitas Terbuka Indonesia (The Indonesia Open University) Open Access	37
5	Jung, I., Wong, T.M., Li, C., Baigaltugs, S., Belawati, T.	Quality assurance in Asian distance education: Diverse approaches and common culture Open Access	29
6	Jatmiko, B., Widodo, W., Martini, (...), Wicaksono, I., Pandiangan, P.	Effectiveness of the INQF-based learning on a general physics for improving student's learning outcomes	28

7	Gumbira, S.W., Jaelani, A.K., Tejomurti, K., Saefudi, Y.	Quo vadis of reputation delict after constitutional court decision number 76/PUU-XV/2017	24
8	Harsasi, M., Sutawijaya, A.	Determinants of student satisfaction in online tutorial: A study of a distance education institution Open Access	24
9	Muchlisin, Z.A., Nurfadillah, N., Arisa, I.I., (...), Nazir, M., Zulham, A.	Short communication: Fish fauna of lake Lauik Tawar and Lake Laulo, Simeulue Island, Indonesia Open Access	22
10	Farisi, M.I.	Developing the 21st-century social studies skills through technology integration Open Access	20

From the citation table the most widely cited are Fatia Fatimah et al. The article entitled N-soft sets and their decision making algorithms with 95 citations, followed by Cordova in collaboration with nurhasanah entitled Unprecedented plastic-made personal protective equipment (PPE) debris in river outlets into Jakarta Bay during the COVID-19 pandemic Open Access with 50 citations. In third place again, Fatia Fatimah occupies 37 citations with the title Probabilistic soft sets and dual probabilistic soft sets in decision-making.

Author Productivity

Table 5. Universitas Terbuka Writers productivity 1988-2022

No	Author	Document	Number 1	h-index
1	Andriyansah	21	2	7
2	Yuliana, Ernik	12	5	4
3	Belawati, tian	12	3	5
4	Farisi, Mohammad Imam	11	6	3
5	Sidi, Pramono Sidi, P.	11	5	6
6	Zuhairi, Aminudin	9	4	3
7	Fatimah, fatia	8	6	6
8	Lestari, Etty Puji	8	3	1
9	Sugilar, S.	7	7	2
10	Rumanta, Maman	7	4	1
11	Mujtahid, Iqbal Miftakhul	6	3	1
12	Sembiring, Maximus Gorky	5	5	2

From the data above, it can be seen that the most productive author is Andriyansah who has published 21 documents, where she only has 2 documents as the sole author, the remaining 19 documents or articles, she collaborates both with internal open universities and with external open universities with h-indkes 7. the second for productivity is Ernik Yuliana who has 12 documents, of which 5 are the sole or first author, the remaining 7 are in collaboration with others. Followed by Tian Belawati in third place with 12 documents,

but as the sole or first author, there are 3 and the remaining 9 are collaboration documents with others.

From the productivity data above, there are interesting things, namely Sugilar S and Maximus Gorky Sembiring where they have 7 and 5 documents, but all of them are the sole or first author.

V. Conclusion

Universitas Terbuka Period 1988-2022 has published 329 articles involving 220 authors, both as first authors and additional authors. The total citation data is 393 citations and the total collaboration data is 329. However, not all publications of Universitas Terbuka scientific papers can be extracted directly, this is because not all have DOI (digital object identifier). Meanwhile, the most cited data is N-soft sets and their decision making algorithms which have been cited 95 times written by Fatia Fatimah. The most prolific writer is Andrianyansah who has 21 documents, of which 2 are the sole authors, the rest are collaborations with other writers. Based on the origin of the institution, the role of UT's internal writers is higher than that of external writers. The articles written in collaboration are quite large, namely 54.7%, the remaining most of the articles published are written individually. To maintain the high role of UT's internal writers in Scopus indexed publication articles, regular coaching needs to be carried out, in this case by LPPM UT. In addition, it is necessary to review the policy on the procurement of journal collections that have been carried out by the UT Library (Universitas Terbuka) so that the needs of journals in the Multidisciplinary field can be met. This is done considering that journals are primary sources of information that are always up-to-date, as well as supporting educational staff in article writing, which so far the use of journal literature is still low.

Suggestion

This research can be further developed by adding research subjects, not only limited to Indonesian Universitas Terbuka research, but also by comparison of Open universities between ASEAN countries. It is hoped that the research can be more widely disseminated to the general public, not only among the academic community but also to expand the dissemination of research results through social media, not only limited to academics.

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