Karya5.1 Scientific Publications

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by Muhammad Munadi

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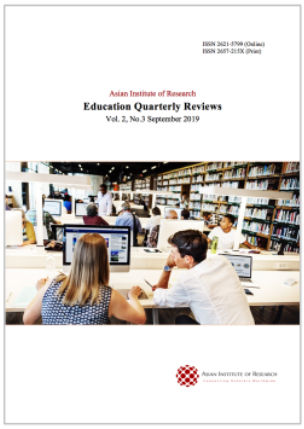

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Scientific Publications in Muslim Countries: Opportunities and Challenges for Islamic Universities in Indonesia

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Abstract
This research has the objective to determine the profiles of scientific publications in Muslim countries, including: the position of Muslim countries developing scientific publications through scientific journals; an overview of scientific journals that develop in Muslim countries; and an overview of scientific journals that develop in Muslims countries as an indicator of opportunities and challenges of scientific publications for Islamic Universities in Indonesia. The research method used was content analysis with the main data source from The Islamic World Science Citation Center (ISC). The data analysis used descriptive statistics with percentage model, and it was described in qualitative descriptive. The results demonstrate that the most widely owned scientific publications are from Malaysia, followed by Iran and Pakistan, which is above 100. The scientific publications, over 40 in number, come from Turkey, Saudi Arabia, and Egypt. The scientific publications, at around 14-24 in number, come from India, Jordan, Indonesia, and Azerbaijan. In addition to the 10 countries mentioned above, 20 other countries have approximately 1-7 scientific publications on average. The lack of scientific publications in Muslim countries becomes a great opportunity and challenge for Islamic Universities in Indonesia for producing quality scientific publications.

Keywords: Scientific Publications, Muslim Countries, Islamic Universities

1. Introduction

Scientific discoveries in Muslim countries are oftentimes nothing more than historical romance - from Ibnu Sina to other public figures, etc. That's in terms of the figures. From the point of view of large and magnificent libraries, the Muslims still keep thinking over the magnificence of Baitul Hikmah in the past. Similarly, when discussing about the educational institutions, they still imagine about Al Azhar University in Egypt. There have not been any significant changes beyond romantic history. Even if there are contemporary figures, Muslim references are only pointed to Nobel recipients, Dr. Abdussalam from Pakistan and Ahmed Zewail from Egypt, and pretty much nobody else. Meanwhile, the research and search for science have been recommended in the

Qur'anic sentence: *Say: Are the same as those who know and do not know?" Actually, only a reasonable person can receive lessons.* (Az-Zumar (39): 9).

Such spirit is less synchronized with the reality of the Muslims. It is said by Pervez Hoodbhoy (2008), citing the study of International Islamic University, Malaysia, showing the records from Science Citation Index and Social Sciences Citation Index: from the average scientific publications of 47 Organisation of Islamic Cooperation (OIC) countries being surveyed, they have only 13 per one million populations, whilst the world's average for this index is 137. Even worse, out of the 28 countries with the lowest scientific article productivity, half was OIC members. The combined 20 Arab countries only contribute for 0.55 percent of the world's total scientific works, while Israel at 0.89 percent, Germany at 7.1 percent, Britain 7.9 at percent, Japan 8.2 at percent and America at 30.8 percent. It can be one indicator of the lack of optimal educational roles and functions in Muslim countries.

The OIC, originally called Organization of Islamic Conference, was set on the basis of a high-level meeting held in Rabat, Morocco, on 25 September 1967, as a result of the action happening at Al-Aqsa-Jerusalem Mosque. The OIC is the only intergovernmental organization representing the world's Muslims. This organization consists of 57 countries, including Indonesia, which covers three regions of Asia, Arab, and Africa (ICO, 2019). The OIC display a full range of information and data.

Scientific publications in Indonesia, as one of the OIC members, are mostly supported by educational institutions. The university holds 96% of the power of 50 Indonesian scientific institutions on indexed scientific publication profile, *Scopus* (Lukman, Yaniasih, Maryati, Silalahi, & Sihombing, 2016). Based on the national recap of the even semester of 2014/2015, there are 3,124 universities under Higher Education Agency (Public Universities), 968 public and private religious universities under the Ministry of Religious Affairs, and 172 official universities under Higher Education Agency and Ministry of Religion. One attention focus of Islamic Higher Education (PTKI) as a unit of higher education is to have competitiveness at national and international levels. Scientific publication is one of the important elements and a key indicator of academic works conducted by higher education (Kementerian Agama, 2015; Zuhdi, 2018) The quality and quantity of scientific publications by universities can be determined through citation analysis. One of the websites providing the citation data is The Islamic World Science Citation Center (ISC).

Citation analysis is currently one of the most widely used metrics for analyzing the scientific contribution in different fields. The Islamic World Science Citation Center (ISC) aims at promoting technical cooperation among Muslim scientists and their respected centers, based on these theories. It also facilitates the accessibility of knowledge and research contribution among them. Due to its web-based features, ISC products are available worldwide, and due to its functions, ISI and Scopus index journal is interested in further cooperation with ISC. Because of its encompassing nature regarding different languages, ISC products pave the way for achieving a unique database which provides value-added knowledge about the scientific contribution of different Islamic Countries along with the full text all their respected journals in their native language. Because of the evaluation of universities carried out by ISC, more and more organizations are interested in indexing their journals in ISC databases. ISC has provided a robust foundation form projecting scientific journals, scientists, and researchers' views and assessing universities and research centers scientific performance (Mehrad & Arastoopoor, 2012).

The present research explores the opportunities and challenges of scientific publications for Islamic Universities in Indonesia based on the position of Muslim countries developing scientific publications through scientific journals, an illustration of scientific studies in scientific journals that developing Muslim countries.

2. Method

This research employed content analysis method with the main data source from ISC data with the web address: http://www.isc.gov.ir/. Populations and samples were all Muslim countries included in the membership of the Organization of Islamic Conference (OIC), either those having membership status or observer status in this organization. The data collection tool was a document analysis. The data analysis used descriptive statistics with the percentage model and was described in qualitative descriptive.

3. Results

3.1 The Position of Muslim Countries developing Scientific Publications through Scientific Journals

The Organization of Islamic Conference (OIC) has 2 types of membership status, i.e., members and observers. There are 57 member states and 5 observer states. However, of all members, those identified to have ISC are only 30. The percentage is shown in Table 1, and the publication composition of the amount is shown in Table 2.

Table 1. The percentage of scientific publications in Muslim countries

No	Status in OKI		ISC	Percentage
1	Member	57	30	48,38
2	Observer	5	0	0
	Total	62	30	

Table 2. Number of Scientific Publications in Muslim Countries

No.	Country	Number	Percentage
1	Malaysia	400	37.56
2	Iran	249	23.38
3	Pakistan	108	10.14
4	Turkey	77	7.23
5	Saudi Arabia	56	5.26
6	Egypt	40	3.76
7	India	24	2.25
8	Jordan	20	1.88
9	**Indonesia**	**17**	**1.60**
10	Azerbaijan	14	1.31
11	Oman	7	0.66
12	Bangladesh	6	0.56
13	Lebanon	6	0.56
14	Syria	6	0.56
15	Kuwait	4	0.38
16	Libya	4	0.38
17	Sudan	3	0.28
18	Tunisia	3	0.28
19	United Arab Emirates	3	0.28
20	Algeria	2	0.19
21	Iraq	2	0.19
22	Morocco	2	0.19
23	Nigeria	2	0.19
24	Singapore	2	0.19
25	South Africa	2	0.19
26	Yaman	2	0.19
27	Afghanistan	1	0.09
28	Palestinian Authority	1	0.09
29	Russia	1	0.09
30	Sir Lanka	1	0.09
Total		1,065	100.00

3.2 An Overview of Scientific Studies in Scientific Journals that Develop in Muslim Countries

The classification of the sciences published in Muslim-populated countries is shown in Table 3. Figure 1 is a histogram of classification of sciences in scientific publications in OIC member states

Table 3. Scientific Fields being Assessed in Scientific Journals in the OIC Member States

No	Field	Number	Percentage

1	Humanities	386	36.24
2	Basic Sciences	268	25.16
3	Medical Sciences	173	16.24
4	Engineering	146	13.71
5	Agricultural Sciences	54	5.07
6	Veterinary Sciences	26	2.44
7	Art	12	1.13
	Total	1,065	100.00

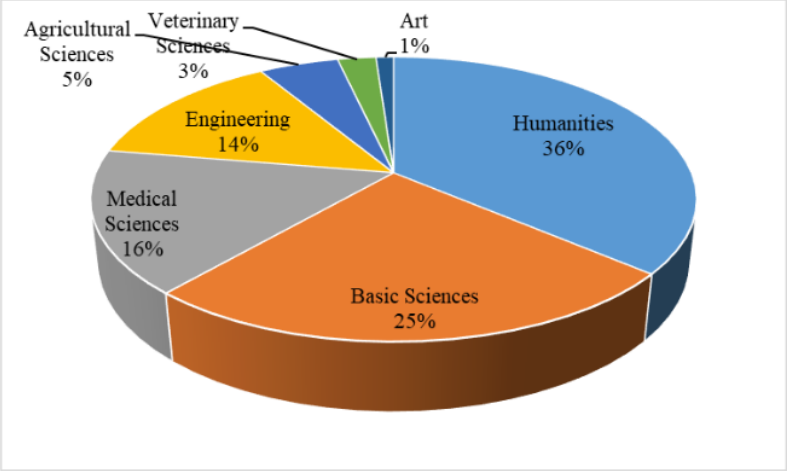

Figure1. Histogram of classification of sciences in scientific publications in OIC member states

3.3 An Overview of specifications of scientific journals that develop in Muslim countries

There are 7 specifications of scientific journals developed in the OIC Member States, as listed in Table 7. The overview of each field of scientific publication is presented in Tables 4-11. The agricultural science studies being published in Muslim countries are presented in Table 4. Figure 2. is a histogram of Scientific Publication in Agricultural Science.

Table 4. Number of Scientific Publications in Agricultural Science

No	Country	Number	Percentage
1	Malaysia	15	27.78
2	Pakistan	10	18.52
3	Iran	9	16.67
4	India	4	7.41
5	Turkey	4	7.41
6	Saudi Arabia	3	5.56
7	**Indonesia**	**2**	**3.70**
8	Jordan	2	3.70
9	Azerbaijan	1	1.85
10	Bangladesh	1	1.85
11	Syria	1	1.85
12	Oman	1	1.85
13	UAE	1	1.85
	Total	54	100.00

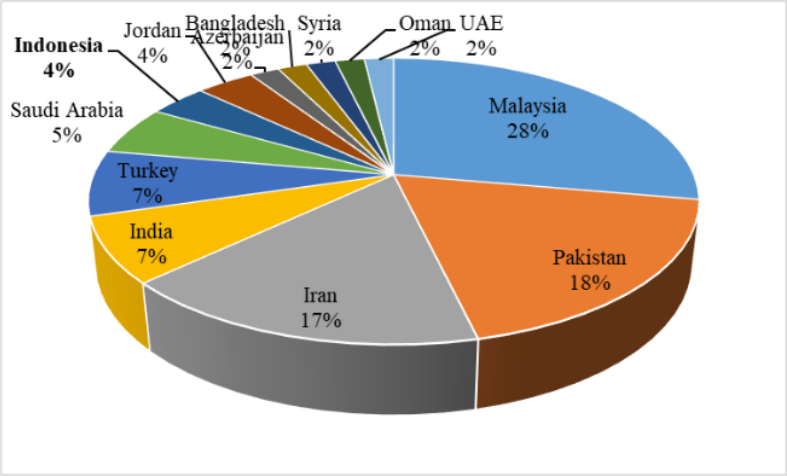

Figure 2. Histogram of Scientific Publication in Agricultural Science

The Art studies published in scientific papers in Muslim countries can be described in Table 5. Figure 3. is a histogram of scientific publications in art studies.

Table 5. Number of Scientific Publication in Art Studies

No	Country	Number	Percentage
1	Pakistan	3	25,00
2	Saudi Arabia	3	25,00
3	Malaysia	2	16,67
4	Egypt	1	8,33
5	Iran	1	8,33
6	Turkey	1	8,33
7	Jordan	1	8,33
	Total	12	100,00

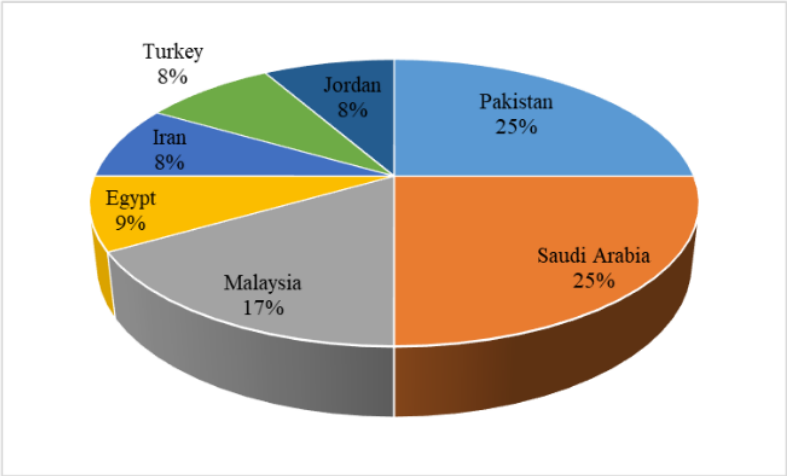

Figure 3. Histogram of scientific publications in art studies

The Scientific Publications in the field of Basic Sciences in Muslim countries are presented in Table 6 and figure 4 below.

Table 6. Number of Scientific Publications in Basic Science

No	Country	Number	Percentage
1	Malaysia	126	47,01
2	Iran	49	18,28
3	Pakistan	27	10,07
4	Turkey	13	4,85
5	Saudi Arabia	12	4,48
6	Egypt	10	3,73
7	Malaysia	5	1,87
8	Azerbaijan	4	1,49
9	**Indonesia**	**3**	**1,12**
10	India	3	1,12
11	Lebanon	2	0,75
12	Libya	2	0,75
13	Oman	2	0,75
14	Sudan	2	0,75
15	Tunisia	1	0,37
16	Algeria	1	0,37
17	Bangladesh	1	0,37
18	Iraq	1	0,37
19	Jordan	1	0,37
20	Nigeria	1	0,37
21	Singapore	1	0,37
22	Syria	1	0,37
	Total	268	100,00

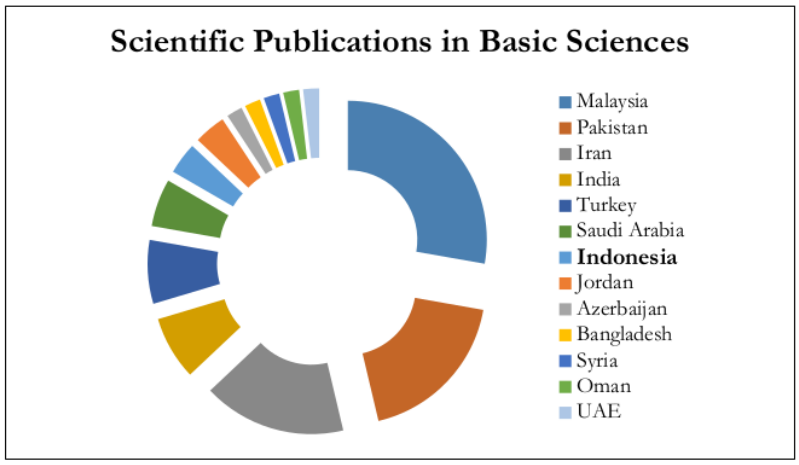

Figure 4. Histogram of Scientific Publications in Basic Sciences

Scientific Publications in the field of Engineering/ Engineering Studies in the OIC Member States are presented in Table 7 and Figure 5.

Table 7. Number of scientific publications in engineering studies

No	Country	Number	Percentage
1	Malaysia	56	38,36
2	Iran	46	31,51
3	Pakistan	10	6,85
4	Turkey	7	4,79
5	Egypt	6	4,11
6	India	5	3,42
7	Saudi Arabia	4	2,74
8	Azerbaijan	3	2,05

9	United Arab Emirates	2	1,37
10	Indonesia	1	0,68
11	Jordan	1	0,68
12	Oman	1	0,68
13	Russia	1	0,68
14	Singapore	1	0,68
15	Syria	1	0,68
16	Tunisia	1	0,68
	Total	146	100,00

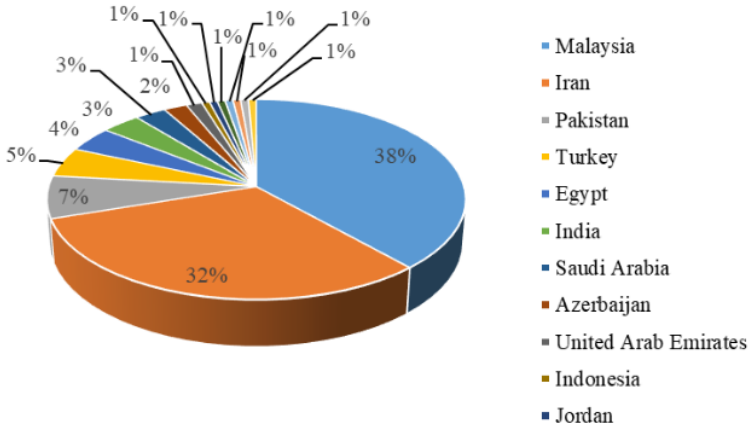

Figure 5. Histogram of scientific publications in engineering studies

Scientific Publications in the field of Humanities Studies in OIC member states are presented in Table 8 and Figure 6 below.

Table 8. Number of Scientific Publications in Humanities Studies

No	Country	Number	Percentage
1	Malaysia	157	40,67
2	Iran	65	16,84
3	Pakistan	43	11,14
4	Turkey	28	7,25
5	Saudi Arabia	19	4,92
6	Egypt	15	3,89
7	Jordan	12	3,11
8	India	10	2,59
9	Indonesia	10	2,59
10	Azerbaijan	4	1,04
11	Lebanon	4	1,04
12	Kuwait	3	0,78
13	Syria	3	0,78
14	Bangladesh	2	0,52
15	Afghanistan	1	0,26
16	Algeria	1	0,26
17	Iraq	1	0,26
18	Libya	1	0,26
19	Morocco	1	0,26
20	Nigeria	1	0,26
21	Oman	1	0,26
22	Palestinian Authority	1	0,26
23	Sir Lanka	1	0,26

24	Sudan	1	0,26
25	Tunisia	1	0,26
	Total	386	100,00

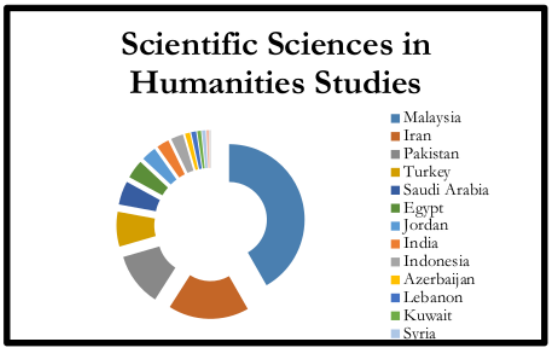

Figure 6. Histogram of Scientific Sciences in Humanities Studies

Scientific Publications in Medical Sciences Studies in OIC Member States are presented in Table 9 and figure 7.

Table 9. Number of Scientific Publications in Medical Sciences

No	Country	Number	Percentage
1	Iran	68	39,31
2	Malaysia	21	12,14
3	Turkey	19	10,98
4	Malaysia	12	6,94
5	Saudi Arabia	9	5,20
6	Pakistan	6	3,47
7	Saudi Arabia	6	3,47
8	Egypt	6	3,47
9	Pakistan	6	3,47
10	Turkey	4	2,31
11	Azerbaijan	2	1,16
12	India	2	1,16
13	South Africa	2	1,16
14	Yaman	2	1,16
15	Egypt	1	0,58
16	Oman	1	0,58
17	Bangladesh	1	0,58
18	Indonesia	1	0,58
19	Jordan	1	0,58
20	Kuwait	1	0,58
21	Libya	1	0,58
22	Morocco	1	0,58
	Total	173	100,00

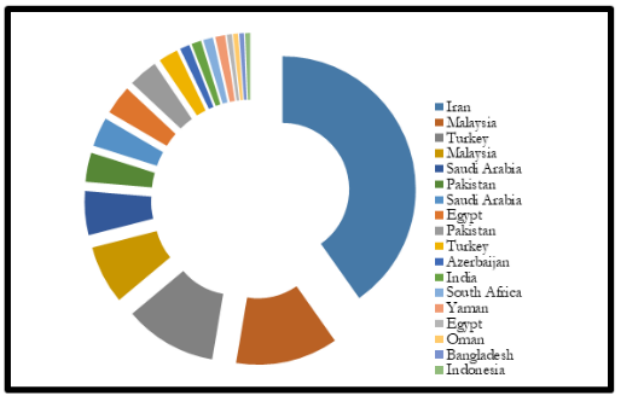

Figure7. Histogram of Scientific Publication in Medical Sciences

Scientific Publications in the field of Veterinary Sciences in the OIC Member States are presented in Table 10 and Figure 4 below.

Table 10. Number of Scientific Publications in Veterinary Sciences

Country	Number	Percentage
Iran	11	42,31
Malaysia	6	23,08
Pakistan	3	11,54
Jordan	2	7,69
Bangladesh	1	3,85
Egypt	1	3,85
Oman	1	3,85
Turkey	1	3,85
Total	26	100,00

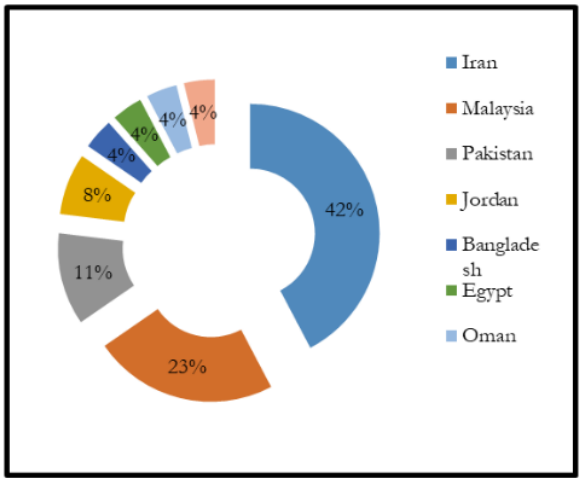

Figure 8. Scientific Publications in Veterinary Science

4. Discussion

The results suggest that Indonesia, as one member state of OIC, has had scientific publications on ISC. However, the scientific publications owned by Indonesia remain very little in number in comparison with the other countries. Indonesia ranked 9th in the number of scientific publications, as many as 19; while Malaysia ranked 1st

with 400 scientific publications. As presented in Table 2, most of the scientific publications in OIC member states are still weak.

The causes of weak scientific publications include the use of foreign languages in scientific publications. According to the president of ISC: "*language context analysis of indexed publications shows just 30 % of publications are in English. The other portions belong to 30% in Arabic, 29% in Persian, 6 % in Turkish, 3% in Urdu, 1% in Malaysian, and 1% in French*". The context analysis of indexed publications shows that only 30% of the publications are in English. The other portions belong to 30% in Arabic, 29% in Persian, 6 % in Turkish, 3% in Urdu, 1% in Malaysian and 1% in French (Islamic World Science, 2012).

Another cause is the low income per capita of the population in most Muslim countries. The results of research by Habibi & Mirhosseini (2010) show that: *The publications of Islamic countries increased from 6906 in 2002 to 21656 in 2009. There was a positive correlation between GDP per capita and publication per million. However, publication productivity did not decrease significantly with the increase of PBP. Turkey and Iran were top two among Islamic countries in terms of the number of publications and growth of the rate of scientific publication, respectively. Islamic countries do lag behind developed countries in terms of the number of publication and the rate of growth.*

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The research by Maryam Khoub nasab jafari, Elya Sadeghifar, Majid Khalili, Khalil Ansarin, Abolghasem Jouyban (2012): *The analyses of data revealed that Turkey is the leading country followed by Iran, Egypt, Malaysia and Nigeria when total numbers of indexed articles in ScopusTM are considered.*
Such finding confirms the OECD histogram (2010) in Figure 9 below.

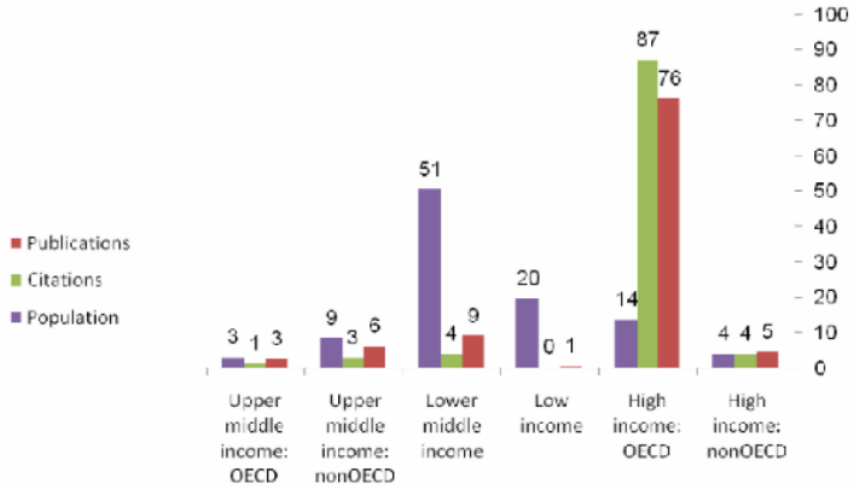

Figure 9. Share of world populations, publications & citation by economic classification.

Figure 9 indicates that the higher income of a country will contribute to its scientific publications and citation of scientific publications. In addition, the lower population of a country is also related to its scientific publications and citation of scientific publications. Thereby, it appears that the population and income of a country are related to its scientific publications and citations of scientific publications.

In the context of Muslim countries, many Muslim countries have low income and large populations; and with such indications, it means that many Muslim countries have low production and publication of scientific papers, and are weak in the citation of scientific publications. If such condition is being associated with the theory of needs, then it will bear some truth - as in the opinion of Maslow, there are 8 types of needs, arranged in a hierarchical and gradual order. The requirement can be seen in the Figure 10.

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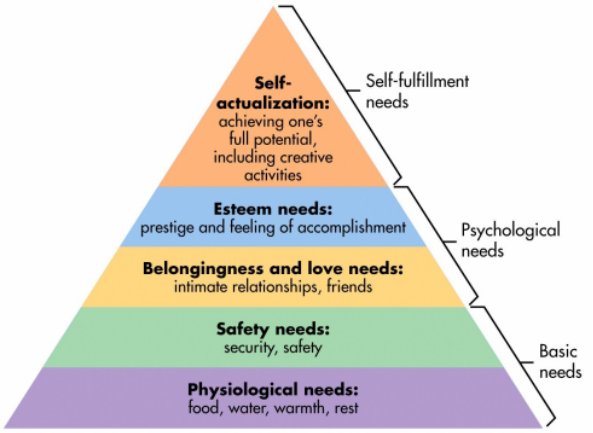

Figure 10. Hierarkhi need Maslow (Mcleod, 2018)

The hierarchy in Figure 10 is viewed from the context of OECD economic classification Table, and the figure above shows that if a country is still struggling with its basic needs, it may lead to self-actualization which is even harder to surpass. The instinctual need, according to (Gautam, 2019) is *the instinctual need of humans to make the most of their abilities and to strive to be the best they can. This need, when fulfilled leads to* ***a feeling of generativity***.

The instinctual need of humans to make the most of their abilities and to strive to be the best they can. This need when fulfilled leads to **a feeling of generativity.**

"Muslims are left behind in the field of science and technology for several reasons including: No commitment to science, neither applied science nor pure science; no strong desire to seek for the independence of science and technology (self-reliance); no sufficient and legal institutional frameworks in order to support the development of science; and the application of improper ways in running the management activities in science and technology."

It becomes opportunities and challenges for Perguruan Tinggi Keagamaan Islam (PTKI) in OIC member states to take part in handling low scientific publications. The presence of faculty of science and technology at PTKI in OIC member state becomes a necessity, which is expected to be the solution for the lack of quality scientific publications. The faculty/ study program of science and technology at PTKI in its development and application has a distinction in the strength and integration of basic Islamic philosophy, thus it's not value-free, instead, it is aligned with the theology of *rahmatanlil 'alamin*.

The urgency of faculty/ study program of science and technology is evidenced in the lack of scientific publications in basic sciences, medical sciences, engineering, agricultural sciences, and veterinary sciences (Table 3), while the humanities studies dominate at 36%. The faculty/ study program of science and technology at PTKI requires proper learning and research methods in order to produce research results in the form of concrete products capable of supporting quality scientific publications for the economic development in OIC member states, instead of simply being obsolete displays in libraries. One effective method that can be used is Research and Development (R&D), producing proper scientific publications. The use of R&D methods in the

learning and research conducted by lecturers and students in PTKI may result in more concrete scientific publications.

Simulations carried out on PTKI in Indonesia by (Susilayati, 2012): *innovation in education can be done effectively and efficiently through final student project. In line with Dirjen Dikti's Letter No. 152/E/T/2012, starting from graduation after August 2016 enacted new rule: student must produce papers published in scientific journals to undergraduate for Bachelor program, students should have resulted in a paper published in national scientific journal preferably Dikti accredited to graduate for Master Program, and students should have resulted in a paper accepted for international journals publication to graduate the Doctoral program. Depend on data MoRA in 2013/2014, and there are 678 religious Colleges with 613.665 students. If almost all of them make innovation at least on the final project with R&D, it means that Indonesia will have 613.665 innovations published eligible, and much more in Kemenristek-dikti.*

The study fields of scientific publications with low specific opportunity for PTKI in Indonesia are agriculture, arts, basic sciences, engineering, humanities, medical sciences, and veterinary sciences. The study field of humanities excels with 10 scientific publications and a percentage of 2.59%, but it is still far behind Malaysia with 157 scientific publications and a percentage of 40.67%.

Indonesia is known as an agricultural country, but Table 4 shows that it ranks seventh with only 2 publications, only at 3.70% which is far different from Malaysia with 15 publications and a percentage of 27.78%. It becomes an opportunity and challenge for PTKI to contribute more scientific publications in the agricultural field. As an agrarian country, it is certainly the right land for the students and lecturers to perform R&D research for producing indexed innovations through scientific publications. PTKI is thereby required to be integrated, not disintegrated from the academic conditions and needs of the surrounding community.

Indonesia is also known for its rich culture, but Table 5 shows that there is no scientific publication in art studies. It seems to demand PTKI to produce scientific publications in art studies. Indonesian diversity can be a research opportunity in this field of study. For instance, IAIN Surakarta can make Javanese art and culture and their inculturation with Islam in local wisdom, songs, writings, and other cultural symbols.

SCI-indexed scientific publications in basic sciences studies are shown in Table 6 and Figure 4. Indonesia ranks 9th, with 3 publications out of 22 countries, with a total of 263 publications. The comparison is only about 1%, lagging far behind Malaysia with 126 publications, and a percentage of 47% out of the total publications in such field of study. Scientific publications in basic sciences studies will be strongly supported by the presence of general faculty/study program at PTKI. The concept of science integration can be one of the alternative opportunities for weak scientific publications in this field of study.

An overview of scientific publications in engineering studies presented in Table 7 and Figure 5 is not really satisfying. Indonesia ranks 10th with only 1 publication (0.68%), lagging far behind Malaysia which ranks first with 56 publications, approximately 38% out of the total indexed publications. Engineering science which is expected to be a bridge between the education and the company is yet synchronized. The optimization of the engineering studies is able to boost economic development in Muslim countries, including Indonesia. It should not always come from Public Universities (PU) only, but PTKI has the opportunity to bring this into realization as well, and even make it filled with religious values (of the world and hereafter).

Table 8 and Figure 6 show the Indonesian scientific publications in humanities studies are only 10, but it still ranks 9th (2.59%). Malaysia ranks first with 157 publications, about 40% of 386 publications from 25 countries. For PTKI, humanities studies are not uncommon. PTKI, therefore, should be able to produce Indonesian scientific publications as a result of the implementation of Three Pillars of Higher Education. The teaching, research, and community service can be a huge opportunity for creative ideas in these humanities studies.

The 18th place with 1 Indonesian scientific publication in medical sciences is presented in Table 9 and Figure 7. Indonesia has only a portion of 0.58% out of 173 publications in total from 22 countries. Iran ranks first with 68

publications, at approximately 39% of a total of 173 publications. It may be caused by an extremely small number of PTKI which have medical faculties in Indonesia; in fact, they're so few that people can count on the fingers on one hand. The metamorphosis from IAIN into UIN can be an opportunity to improve scientific publications in this field of study. The transition process from IAIN into UIN status along with its study of urgency can also become an opportunity to increase the number of scientific publications.

Based on the statement of the Directorate General of Islamic Education, the transformation of IAIN into UIN must have the characteristics of Islamic studies (teaching and research) based on the development of science and technology and develop community services. It's must be free from politics, the epistemology of scientific integration must be explicit, and have a scientific distinction that distinguishes existing science (Munadi, 2019).

The final data presented in Table 10 and Figure 8 demonstrate the absence of Indonesian scientific publication in SCI-indexed veterinary sciences. To the researchers' knowledge, currently, there is no faculty/ study program of animal husbandry/veterinary at PTKI. It may be the major cause of the lack of scientific publications in this field. All stakeholders of PTKI must take the initiative to open the faculty/ study program. Veterinary science is highly needed by the Indonesian community, which has a large number of farmers and breeders. Currently, many farmers and breeders still apply conventional methods in farming and breeding, leading to non-optimal outcomes. Technical innovations are therefore needed in that field for farmers so as to improve the development of the Indonesian economy.

5. Conclusion

The results demonstrate that the most widely owned scientific publications are from Malaysia, followed by Iran and Pakistan, which is over 100. The scientific publications, over 40 in number, come from Turkey, Saudi Arabia, and Egypt. The scientific publications, at around 14-24 in number, come from India, Jordan, Indonesia, and Azerbaijan. In addition to the 10 countries mentioned above, 20 other countries have approximately 1-7 scientific publications in average. The lack of scientific publications in Muslim countries becomes a great opportunity and challenge for Islamic universities in Indonesia for producing quality scientific publications, by means of using R&D and opening general faculty/ study program.

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Karya5.1 Scientific Publications ...

ORIGINALITY REPORT

9%	%	%	9%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Hellenic Open University Student Paper	3%
2	Submitted to Singapore Institute of Technology Student Paper	3%
3	Submitted to Manuel S. Enverga University Student Paper	1%
4	Submitted to Lincoln University Student Paper	1%
5	Submitted to Universiti Pertahanan Nasional Malaysia Student Paper	<1%

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		