JRMG JOURNAL OF RESEARCH MANAGEMENT & GOVERNANCE

Vol. 5, Issue 1, pp. 18-29

RESEARCH ARTICLE

Trends of Academic Publications: A Case Study of Malaysian Research Universities

Mohd Arif Mohd Sarjidan (ORCiD: 0000-0001-6413-8568)[1,*], Azrin Md Kasim (ORCiD: 0009-0000-8405-3078)[2]

[1] Department of Biomedical Imaging, Faculty of Medicine, Universiti Malaya, 50603 Kuala Lumpur, Malaysia.
[2] Data Analytics and Research Intelligence Section, Institute of Research Management & Services (IPPP), Level 7, KPPI Building, Universiti Malaya, 50603 Kuala Lumpur, Malaysia.

*Corresponding author's email: mohd.arif@um.edu.my

Received date: 16 June 2023
Published date: 31 Dec 2023

How to cite:
Mohd Sarjidan, M.A. & Md Kasim, A. (2023). Trends of academic publications: A case study of Malaysian Research Universities. *Journal of Research Management & Governance*, 5(1), 18-29. Retrieved from https://ejournal.um.edu.my/index.php/JRMG/article/view/30519

DOI:
https://doi.org/10.22452/jrmg.vol5no1.2

ABSTRACT

The Ministry of Higher Education Malaysia granted five universities with Research University (RU) status, which are Universiti Malaya (UM), Universiti Putra Malaysia (UPM), Universiti Kebangsaan Malaysia (UKM), Universiti Sains Malaysia (USM), and Universiti Teknologi Malaysia (UTM). These RUs are expected to focus on research and innovation and become a model of Malaysian universities for research activities aimed at knowledge advancement. Publications are one of the performance indicators for RUs. Thus, this paper confined its scope to the publications produced from 2016 to 2020 by the five RUs. The study aimed to analyse the patterns related to the number of publications, subject areas, type of publications, international joint publications, and the language of the publications. The findings show that the number of publications increased for UPM, UKM, and USM over five years, while UTM champions four subjects: Engineering, Materials Science, Computer Science, and Environmental Science. Journal articles are the most prominent scholarly output for all RUs. All RUs actively collaborate with international scholars and use English as the primary language for publications.

Keywords: Malaysian Research Universities; Publications; Academic Performance; Research Output

1. Introduction

The Ministry of Higher Education (MOHE) Malaysia has been focusing on strengthening national higher education to ensure a conducive ecosystem for knowledge excellence. This is clearly stated in the second phase of the Action Plan in the National Higher Education Strategic Plan 2007-2020, focusing on achieving predetermined projects at Higher Education Institutions (HEIs) comprising public universities, polytechnics, and community colleges (Shariffuddin et al., 2017). During the implementation phase, greater emphasis was given to have better access to higher education. To move and encourage excellence among local HEIs, four public universities in Malaysia were conferred Research University (RU) status with the support of additional funding for research and commercialization under the 9th Malaysia Plan. The initial four RUs were Universiti Malaya (UM), Universiti Kebangsaan Malaysia (UKM), Universiti Sains Malaysia (USM), and Universiti Putra Malaysia (UPM). The rest of the universities were

categorized as focused or comprehensive universities. The fifth research university that was conferred RU status was Universiti Teknologi Malaysia (UTM) during the unveiling of the 10th Malaysia Plan in 2010. These five RUs have had to focus on research and innovation and become referred institutes that drive the development of the nation (StudyMalaysia.com, 2015).

The RUs are subject to evaluation and the instrument used is the Malaysia Research Assessment (MyRA). MyRA is a comprehensive system and instrument used to evaluate the research capacity and performance of all HEIs in Malaysia (Kementerian Pendidikan Tinggi Malaysia, 2018). The assessment indicators comprise the quantity and quality of research, researchers, and postgraduate students, innovation and commercialization, networking and linkages, and support facilities. MOHE has established a minimum requirement for each indicator, which will serve as the basis for awarding rating stars to each HEI according to their annual performance. These assessment indicators will inadvertently drive the work culture at HEIs. For RUs, the benchmark for 'passing' each criterion in MyRA has been set higher and a 6-star rating is required to retain the RU status. The rating system is also vital for the Rus to obtain funding for their research activities as this will be based on the MyRA scores they obtain.

Publications are one of the criteria in the section on the quality and quality of research. Publications include journal articles, conference proceedings, books, book chapters, and other scholarly publications. The weightage is 35% of the total marks for RUs. The publication performance of RUs serves as a benchmark for other Malaysian HEIs striving to be considered as global institutions (Suryani et al., 2013). The publication pattern is correlated with the score and position of the RUs in the World QS ranking system. Additionally, publications have become a vital indicator for accumulating scores for the World QS University Ranking and other local and international ranking systems. The more excellent performance shown by all five RUs when they were ranked among the world's top 200 in the Quacquarelli Symonds (QS) 2021 World University Rankings shows that the action plan and initiatives towards the National Strategic Plan \have been right on track (Dawn, 2020).

In view of the objectives of the establishment of RUs and the importance of scholarly publications as performance indicators of the RUs, it is crucial to study the publication trends among the RUs. Previously, Razib et al. (2016) conducted a general bibliometric analysis of RUs from 2006 to 2016. As an extension of this study, the present article discusses the publication trends produced by the Malaysian RUs from 2016 to 2020 by focusing on five bibliometrics parameters.

2. Material & Methods

Elsevier introduced Scopus, a comparable transdisciplinary and selective database, in November 2004 (Baas et al., 2020). All Scopus information is available with a single subscription that cannot be modified. Scopus incorporates material from various specialist databases, including Embase, Compendex, World Textile Index, Fluidex, Geobase, Biobase, and Medline (Valderrama-Zurián et al., 2015). Most importantly, each database is connected and equally accessible.

Scopus is recognized as a reliable and popular databased to perform a bibliometric analysis on scholarly activity around the world (Mart nez Musiño, 2020; Mart n-Mart n et al., 2018). Specifically in Malaysia, publications that are Scopus-indexed are required output for research grants awarded by the main

sponsoring bodies in Malaysia, namely MOHE and the Ministry of Science, Technology, and Innovation (MOSTI). The research grants include the Fundamental Research Grant (FRGS), the Long- term Research Grant (LRGS), and the Strategic Science Fund (SRF). In addition, the evaluation systems by MyRA and the QS World University Rankings also focus on Scopus-indexed publications for scoring indicators.

Scopus is a searchable database that is constantly updated. The data is organized and user- friendly, making information extraction easy and quick. Its user interface is straightforward and easy to use (Elsevier, 2022). The Affiliation Identifier function, which automatically identifies and matches an organization with its research output, is beneficial for this study's sampling (Elsevier, 2022). This functionality allows authors' journal publications from associated universities to be obtained. The authors' names and affiliations and the year of publication provide insight into the Scopus publication landscape in Malaysia.

It has been shown that Scopus offers a greater journal range than the Web of Science, whereas Google Scholar is regarded as "inadequate, less often updated, citation information" (Falagas et al., 2008, p. 342). The Scopus database compiles a complete list of publications with a more extensive selection of journals. Besides, a recent study reported that about 99% of journals indexed in the Web of Science are listed in the Scopus database (Singh et al., 2021). In the context of the present study, Scopus is a database that provides more thorough coverage of journals with the ability to cater to a more extensive population sampling.

The affiliation search was completed in April 2021, and the data is accurate as of that date. It is essential to keep in mind that the Scopus database is flexible, so accessing it at a different time may provide different results. The query was based on the Scopus affiliation identification (ID) as listed in Table 1. The search term "Documents, whole institution" was selected, reflecting the total number of documents associated with the five research universities. It is the sum of the publications from these universities plus the publications from the affiliations contained within its hierarchy. Where an institution is not at the top level of the hierarchy, only the affiliations below it are included in its total.

Table 1: Scopus affiliation ID of RUs in Malaysia

University	Scopus affiliation ID
UM	60029157
UPM	60025577
UKM	60001821
USM	60000906
UTM	60021005

At this point, the results were refined by limiting the document collection year between 2016 to 2020. Five years of data collection is commonly used to evaluate the research performance of universities in either local or international ranking systems. Within the five years, five bibliometric indicators have been used to study the publication trend by RUs in Malaysia. They are as follows:

i) Annual number of publications

ii) Subject area of publications
iii) Type of publications
iv) International joint publications
v) Language medium of publications

Due to a high number of sub-data indicators, normalization was carried out to analyse the subject area. A normalization process is a fundamental approach to listing the area of the subject of publication for each university because each has a different field of research interest. The top six subject areas of publications for each RU are listed first as shown in Table 2. From the list, a cross-matching process was then performed. From that, eight subject areas were obtained as the selected publication areas for this study; Engineering, Medicine; Physics and Astronomy; Materials Science; Computer Science; Agricultural and Biological Sciences; Environmental Science; and Social Sciences.

Table 2: Top six subject areas of publications by Research Universities in Malaysia (Scopus database)

	UM	UPM	UKM	USM	UTM
1	Engineering	Engineering	Engineering	Engineering	Engineering
2	Medicine	Agricultural & Biological Sciences	Medicine	Medicine	Computer Science
3	Physics & Astronomy	Materials Science	Computer Science	Materials Science	Materials Science
4	Materials Science	Medicine	Physics & Astronomy	Physics & Astronomy	Physics & Astronomy
5	Computer Science	Environmental Science	Materials Science	Computer Science	Environmental Science
6	Social Sciences	Computer Science	Social Sciences	Social Sciences	Social Sciences

Data normalization was also conducted to examine international joint publications. In particular, the six most prominent joint publication countries with the RUs have been selected as shown on Table 3. Based on the list of countries, a cross-matching analysis was performed which normalized the comprehensive list into 11 countries, which are Australia, China, India, Indonesia, Iran, Iraq, Nigeria, Pakistan, Saudi Arabia, United Kingdom, and United States.

Table 3: The top six countries that RUs in Malaysia have international joint publications with (Scopus database)

UM	UPM	UKM	USM	UTM
United Kingdom	Nigeria	Indonesia	Saudi Arabia	Indonesia
United State	Iran	United Kingdom	United Kingdom	Iran
China	Iraq	Iraq	Pakistan	Pakistan
Australia	Saudi Arabia	Australia	Australia	Saudi Arabia
India	United Kingdom	Saudi Arabia	Indonesia	Nigeria
Pakistan	India	United State	Nigeria	United Kingdom

3. Results

The number of publications by RUs in the Scopus-indexed database from 2016 to 2020 is shown in Figure 1. Increment trends are observed for most RUs except for UTM, which had a slight drop from 2019 to 2020. In terms of the total number of publications for the five years, UM had the highest with 21,932 publications, while UKM had the lowest number with 17,684 publications. The average annual number of publications for UM was the highest with 4384 documents, while UKM recorded the lowest at 3536. It is essential to highlight that although the number of publications by USM in 2016 was the lowest among the RUs with only 2,972 documents, it garnered the highest publications in 2020 with 4,601 documents, which is over 1.5 times or a154.81% improvement from 2016.

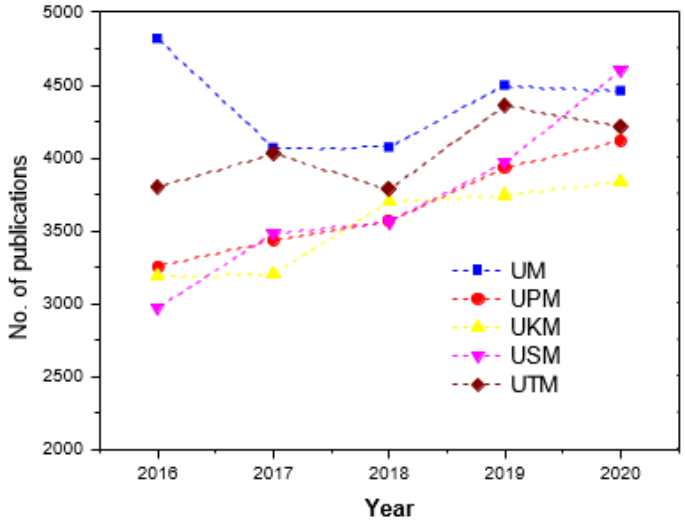

Figure 1: Number of publications by Malaysian Research Universities from 2016 to 2020

The publication pattern by subjects among the RUs is shown in Figure 2. The highest number of publications were in the subject area of Engineering. Analysis by subject shows that UTM dominated in terms of the number of publications in four different subject areas: Engineering, Materials Science, Computer Science, and Environmental Science, with these being 46.91%, 18.87%, 26.75%, and 13.40% of its total publications between 2016 to 2020. On the other hand, UM took the lead in Medicine, Physics and Astrophysics, and Social Sciences, which comprised 19.99%, 18.15%, and 10.68% of its publications respectively. In contrast, UPM had the most papers published in the area of Agriculture and Biological Sciences amounting to 20.96% of its total publications over the five years.

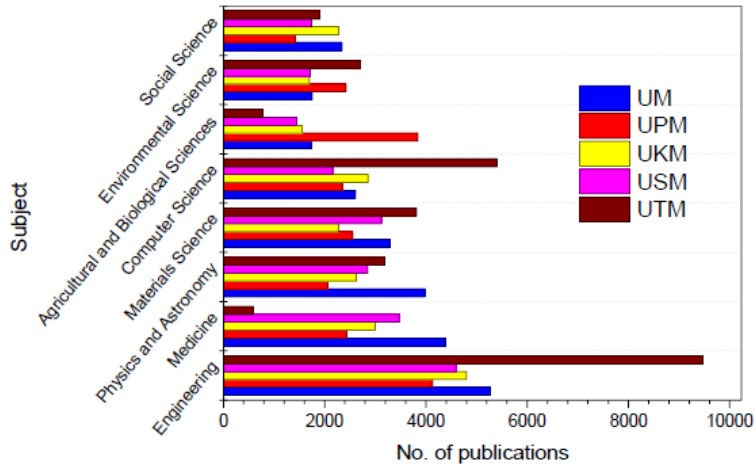

Figure 2: The main subject areas in which Malaysian Research Universities publish

For all the RUs, research articles were the main type of publication as shown in Figure 3. All universities published at least 12,500 journal articles which amounted to 64.64% of their total average publications within the period. UM had the highest number of article publications (n = 17,072) followed by UPM, UKM, UTM, and USM with 14,230, 13,423, 13,090, and 12,971 articles respectively. Conference papers were the second type of publication after research articles, with an average of 16.36% of the total publications. The publication pattern for conference papers showed a reverse trend compared to the trend for research articles. For conference papers, UPM led in terms of the number of such publications followed by USM, UKM, UPM, and UM. The third type of publication was the review paper with an average of 1157 documents or 5.98% of all publications. Similar to the pattern for research articles, UM dominated in terms of the number of this type of publication. This was followed jointly by UPM and UKM, and subsequently by USM and UTM respectively. Other publications by the RUs included book chapters, editorials, data papers, letters, book notes, and short surveys but these comprise less than 2.5% of the overall types of publications.

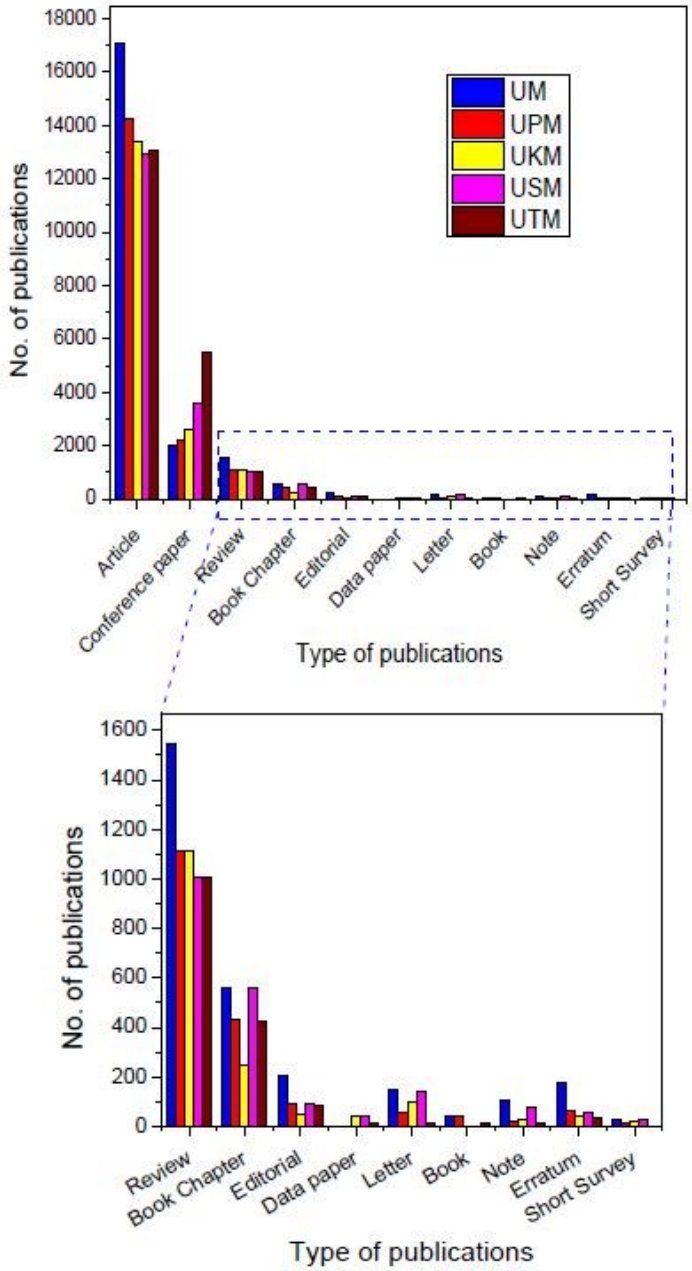

Figure 3: Type of publications by Malaysian Research Universities

Figure 4 shows international joint publications by the RUs from 2016 to 2020. UM exhibited the highest number of joint publications compared to the other RUs in Malaysia with 17,686 documents, or 80.67% of their overall publications having co-authors from other countries. The most significant publication partner for UM was the United Kingdom (12.00%), followed by the United States (10.92%), China (10.39%), Australia (8.90%), and India (8.48%). For UPM, their highest number of papers were with Nigeria, whereas USM had the most publications with authors from Saudi Arabia (5.44% and 4.38% of

their total publications respectively). UTM had the highest number of publications with Indonesian authors with 1,355 documents or 6.71% of its total publications.

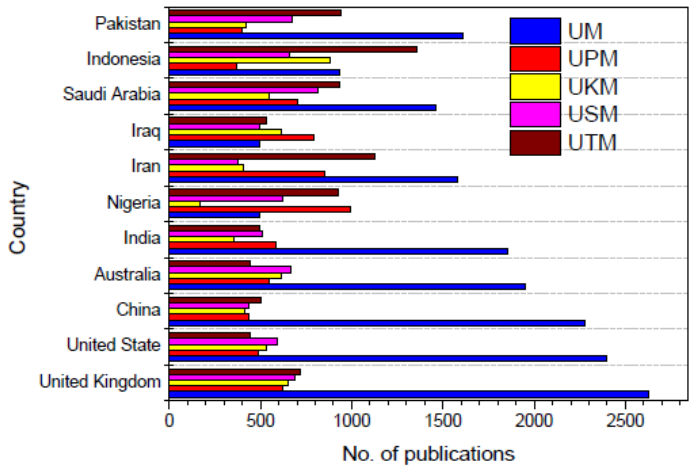

Figure 4: International joint publications by Malaysian Research Universities

As expected, English was the primary language for publications among the RUs as shown in Figure 5. A total of 95,951 or 99.23% of the documents published by the RUs were written in English. The other language used in publications by the RUs was Malay, but this only consisted of 633 or 0.65% of the total publications. UKM had the highest number of publications written in Malay with over 70% of the total documents written in Malay by the RUs. Some of the researchers in the RUs also published in other languages, such as Chinese, Arabic, Portuguese, and Indonesian, but these only comprised a very small percentage.

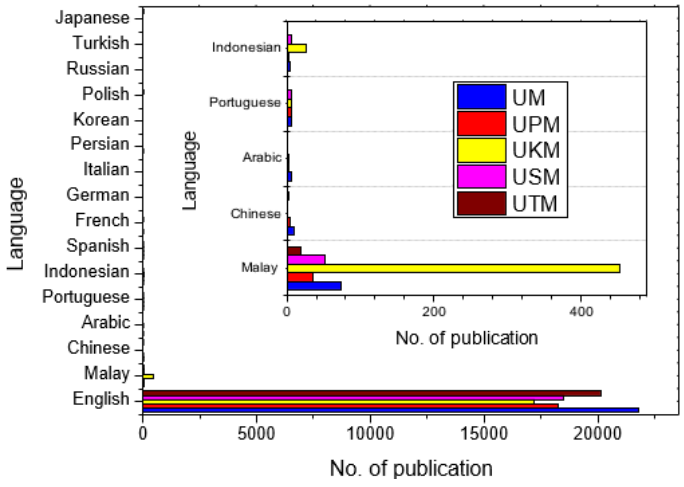

Figure 5: Language of publications by Malaysia Research Universities

4. Discussion

The annual average Scopus-indexed publications by RUs is 3,867 per university, which is slightly higher than the average for a public university in Malaysia up to August 2011 (Suryani et al., 2013). The main subject areas of the publications reflect the core research strength of each university. For example, UTM mainly focuses on technology related to Engineering and Computer Science (UTM, 2017), while UPM primarily focuses on Agriculture and Biological Sciences (Khairul Anuar, 2022). UM, UPM, UKM, and USM all have established teaching hospitals (Samadi, 2017), and are, therefore, strong in the area of medicine and this is reflected in the higher number of publications in this subject area for these universities compared to UTM.

RUs have definitely made efforts to push academics to publish their articles in journals that increase their chances of being cited around the world. For Malaysia, in particular, publishing in high-impact factor journals is seen as an essential factor for RUs (Mohamad Nazri, 2007). In fact, publication marketing tools such as ResearchID and ResearchGate can also improve the number of citations for research publications (Ale Ebrahim et al., 2014). It has also been found that in the area of Computer Science, citations per conference paper are almost similar to citations for journal articles (Rahm, 2008). This could be the reason why UTM produced the highest number of conference papers and at the same time published the most in the area of Computer Science field, as shown in Figures 3 and 2 respectively.

International collaboration has a significant impact on the quality of co-authored articles which could eventually enhance the impact of publications in high-impact journals (Low et al., 2014; Low & Ng, 2011). This trend was shown by Narin and Whitlow (1990) where publications with international authorship are likely to be cited twice compared to single–country publications. The number of publications with international co-authors have been on the increase. Factors contributing to this could be the government's support in terms ofresearch funding as wellas incentives given by universities to encourage researchers to produce international publications in higher impact publications. As MyRA is used to evaluate the performance of Malaysian RUs, networking, and linkages are some of the critical indicators monitored by MOHE. In the MyRA assessment, the quantity of publications, publications with other institutions (universities, research institutes, and agencies), and publications with international partners are measured (MOHE, 2018). This is indicative of the government's emphasis on and encouragement to the universities to publish with external collaborators.

The almost exclusive use of English in the publications is not surprising as it has been pointed out that "it is possible that authors or research groups with a higher impact on the scientific community, and thus more frequently cited, have a higher tendency to publish their work in English" (di Bitetti & Ferreras, 2017, p. 124). The publications in Malay by UKM can be attributed to its role as the leading HEI set up to uphold the national language, Malay, in both science and non-science-based research (Yamat et al., 2014). Moreover, UKM also promotes Malay-based scientific publications via their own journal, such as *Sains Malaysiana*, a Scopus-indexed journal (UKM, 2017).

The results of this study have been examined from a quantitative perspective based on the publication trends of RUs. However, research performance should also be analysed from the number of citations and not only based on the number of publications (Aksnes et al., 2019). In fact, there is a strong

correlation between the number of publications and the number of citations (Sandström & van den Besselaar, 2016). Higher citations can be achieved by publishing in high-impact factor journals (Jain, 2011), which means that looking at the quality of journals is another aspect to examine. Furthermore, the research quality and impact of the RUs should be explored in future studies, correlated with the paper citation count.

5. Conclusion

In short, this paper provided an overview of publication trends among the Malaysian RUs based on bibliometric indicators extracted from the Scopus database for this study. Among the trends observed was that the number of publications for UPM and UKM steadily increased over the five years studied. Significant progress was shown by USM whereas UM and UTM showed a decreasing trend. The subject areas of the publications by the RUs tend to reflect their focus areas. Most of the publications were research articles and almost all are written in English. UM has produced more joint publications with international collaborators compared to the other RUs.

It is acknowledged that this study is limited to the trends based on Scopus-indexed publications among the RUs without an in-depth assessment of the role of research ecosystems such as funding and policies. Scholarly publications in Malaysia are also likely to be affected by individual factors like researcher's experience and expertise, and behavioural factors related to researcher's attitudes (Dhillon et al., 2015). In addition, the innovation management systems at universities are also essential to ensure high research performance by the universities (Kowang et al., 2015). These are all areas for future studies on the research performance of RUs as well as HEIs in general to obtain a more comprehensive picture of the research ecosystem of HEIs not just in Malaysia but elsewhere.

Acknowledgement

The authors would like to thank Universiti Malaya for providing access to the Scopus database.

References:

Aksnes, D.W., Langfeldt, L., & Wouters, P. (2019). Citations, citation indicators, and research quality: An overview of basic concepts and theories. *SAGE Open*, *9*(1), 215824401982957. https://doi.org/10.1177/2158244019829575

Ale Ebrahim, N., Salehi, H., Embi, M. A., Habibi, F., Gholizadeh, H., & Motahar, S. M. (2014). Visibility and citation impact. *International Education Studies*, *7*(4), 120–125. https://doi.org/10.5539/ies.v7n4p120

Baas, J., Schotten, M., Plume, A., Côté, G., & Karimi, R. (2020). Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies. *Quantitative Science Studies*, *1*(1), 377–386. https://doi.org/10.1162/qss_a_00019

Dawn, C. (2020, July 28). *Malaysian research universities in top 200 of QS World University Rankings*. *New Straits Times*. Retrieved from https://www.nst.com.my/education/2020/07/612296/malaysian-research-universities-top-200-qs-world-university-rankings

Dhillon, S.K., Ibrahim, R., & Selamat, A. (2015). Factors associated with scholarly publication productivity among academic staff: Case of a Malaysian public university. *Technology in Society*, *42*, 160–166. https://doi.org/https://doi.org/10.1016/j.techsoc.2015.04.004

di Bitetti, M.S., & Ferreras, J.A. (2017). Publish (in English) or perish: The effect on citation rate of using

languages other than English in scientific publications. *Ambio*, *46*(1), 121–127. https://doi.org/10.1007/s13280-016-0820-7

Elsevier. (2022). *How Scopus works*. Elsevier. Retrieved from https://www.elsevier.com/solutions/scopus/how-scopus-works

Falagas, M.E., Pitsouni, E.I., Malietzis, G.A., & Pappas, G. (2008). Comparison of PubMed, Scopus, Web of Science, and Google Scholar: strengths and weaknesses. *The FASEB Journal*, *22*(2), 338–342. https://doi.org/10.1096/fj.07-9492LSF

Jain, A.K. (2011). Impact factor: Measure of quality of research publication. *Indian Journal of Orthopaedics*, *45*(4), 289–290. https://doi.org/10.4103/0019-5413.82330

Kementerian Pendidikan Tinggi Malaysia. (2018). MYRA Glosari II Pindaan 2018 (Versi KPT). Retrieved from https://umresearch.um.edu.my/myra-information

Khairul Anuar, M.N. (2022). The establishment of another Agriculture University is not necessary - Sultan. *Universiti Putra Malaysia*. Retrieved from https://upm.edu.my/news/the_establishment_of_another_agriculture_university_is_not_necessa ry_sultan-24924

Kowang, T.O., Long, C.S., & Rasli, A. (2015). Innovation management and performance framework for research university in Malaysia. *International Education Studies*, *8*(6), 32–45. https://doi.org/10.5539/ies.v8n6p32

Low, W.Y., Ng, K.H., Kabir, M.A., Koh, A.P., & Sinnasamy, J. (2014). Trend and impact of international collaboration in clinical medicine papers published in Malaysia. *Scientometrics*, *98*(2), 1521–1533. https://doi.org/10.1007/s11192-013-1121-6

Low, W.-Y., & Ng, K.-H. (2011). International collaboration in journal publishing. *Asia Pacific Journal of Public Health*, *23*(5), 649–650. https://doi.org/10.1177/1010539511424481

Martínez Musiño, C. (2020). Big data informetric analysis of documents indexed in Scopus and Web of Science. *Investigacion Bibliotecologica*, *34*(82), 87–102. https://doi.org/10.22201/iibi.24488321xe.2020.82.58035

Martín-Martín, A., Orduna-Malea, E., & Delgado López-Cózar, E. (2018). Coverage of highly-cited documents in Google Scholar, Web of Science, and Scopus: A multidisciplinary comparison. *Scientometrics*, *116*(3), 2175–2188. https://doi.org/10.1007/s11192-018-2820-9

Md Razib, K., Shahir, S., Omar Yahya, B., & Noraziah, S. (2016). A bibliometric analysis of the research output of Malaysia research universities scholarly publication indexed in Scopus from 2006 – 2015. *ICOLIS 2016, Kuala Lumpur: LISU, FCSIT*, 223–234.

Mohamad Nazri, A.H. (2007). *Journal Impact Factor*. Universiti Malaysia Perlis (UniMAP).

MOHE. (2018). MYRA Glosari II Pindaan 2018 (Versi KPT). In *Kementerian Pengajian Tinggi Malaysia*. https://umresearch.um.edu.my/myra-information

Narin, F., & Whitlow, E.S. (1990). *Measurement of scientific cooperation and coauthorship in CEC-related areas of science*, *May 1990, Volume* 1. Commission of the European Communities.

Rahm, E. (2008). Comparing the scientific impact of conference and journal publications in computer science. *Information Services & Use*, *28*(2), 127–128. https://doi.org/10.3233/ISU-2008-0562

Samadi, A. (2017, July 15). Lima hospital pengajar universiti wujudkan konsortium [Five teaching hospitals form a consortium]. *Berita Harian Online*. Retrieved from https://www.bharian.com.my/berita/nasional/2017/06/293210/lima-hospital-pengajar-universiti- wujudkan-konsortium

Sandström, U., & van den Besselaar, P. (2016). Quantity and/or quality? The importance of publishing many papers. *PLOS ONE*, *11*(11), e0166149. https://doi.org/10.1371/journal.pone.0166149

Shariffuddin, S.A., Razali, J.R., Ghani, M.A., Shaaidi, W.R., & Ibrahim, I.S.A. (2017). Transformation of higher education institutions in Malaysia: a review. *Journal of Global Business and Social Entrepreneurship (GBSE)*, *1*(2), 126–136.

Singh, V.K., Singh, P., Karmakar, M., Leta, J., & Mayr, P. (2021). The journal coverage of Web of Science, Scopus and Dimensions: A comparative analysis. *Scientometrics*, *126*(6), 5113–5142. https://

doi.org/10.1007/s11192-021-03948-5

StudyMalaysia.com. (March 14, 2015). *The Malaysian higher education system - An overview*. Retrieved from https://www.studymalaysia.com/international/the-national-education-system/the- malaysian-higher-education-system-an-overview

Suryani, I., Yaacob, A., Hashima, N., Rashid, S.A., & Desa, H. (2013). Research publication output by academicians in public and private universities in Malaysia. *International Journal of Higher Education*, *2*(1). https://doi.org/10.5430/ijhe.v2n1p84

UKM. (2017). *Sains Malaysiana*. Universiti Kebangsaan Malaysia. Retrieved from https://www.ukm.my/jsm/

UTM. (2017). *Expanding the Research Horizon*. Universiti Teknologi Malaysia. Retrieved from https://experts.utm.my/files/2015/08/Expanding-Research-Horizon-2017.pdf

Valderrama-Zurián, J.-C., Aguilar-Moya, R., Melero-Fuentes, D., & Aleixandre-Benavent, R. (2015). A systematic analysis of duplicate records in Scopus. *Journal of Informetrics*, *9*(3), 570–576. https://doi.org/10.1016/j.joi.2015.05.002

Yamat, H., Umar, N.F.M., & Mahmood, M.I. (2014). Upholding the Malay language and strengthening the English language policy: An education reform. *International Education Studies*, *7*(13), 197–205. https://doi.org/10.5539/ies.v7n13p197