ICIS2022Penang

https://fim.uitm.edu.my/index.php/research/conference/342-icis-2022
5th International Conference on Information Science
Royale Chulan, Penang, Malaysia, 19-21 Sep 2022
Organised by Faculty of Information Management, UiTM, Malaysia

A Systematic Literature Review on Publication Productivity Among Academics in Malaysian Universities

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Abstract

Publication count is used as one of the indicators of research productivity. It is also used to rank researchers, faculties, and academic institutions. The objective of this study is to identify what are the factors that influence publication productivity in Malaysia using SCOPUS database. This study utilised a systematic literature review methodology for academic articles for 5 years, starting from 2017 to 2021. Various factors that contribute to the publication output in many fields have been identified. These factors have been grouped under three main blocks which are individual, institutional, and situational factors. From 2017 to 2021, it shows that Malaysian research universities and private university have actively published articles.

Keywords: Publication Productivity, Research Publication Productivity, Factors of Publication Productivity, Systematic Literature Review

1.0 Introduction

Bibliometric analysis is the research area that helps to analyse current trends in the literature for a particular area and provides guidelines and motivations for future research work. In addition, it gives a general outline and overall structure of the research area. Studies using bibliometric methods have been used in many fields and disciplines (Mohamad et al., 2013; Yousaf et al., 2021 and Altaf & Masrek, 2021). Bibliometric measurement is one of the essential tools for library and information science research, which helps evaluate published literature's productivity and utility (Singh, 2015). Total publications, also known as publication output, is one of the performance analyses in bibliometric studies.

Additionally, total publications is one of the essential criteria used to evaluate academic experts' performance. When assessing the success of academics working in higher education, one of the most common metrics is the number of publications they produced. Analyzing different people and many institutions they belong to has been a fruitful activity to evaluating the nation's research output. Scholarly publications in any specialised domain, have become significant sources of current data for the advancement and development of society. Publications sparked a revolution and produced new information necessary for economic expansion. In the academic world in Malaysia, having citations and publications under one's belt has helped one's chances of professional progression, promotions, and individual employment.

Malaysian scientific publications aim to improve the economic and reputational standing of the country's institutions, resulting in greater rankings for several Malaysian universities (Budisantoso & Mungkasi, 2020). In addition, publication productivity has been linked to

accreditation and fair distribution of funds toward the individual performance of citations and publications in various institutions. According to these considerations, the significance of publication productivity and growth in Malaysia can be concluded. The trend towards placing a greater emphasis on the productivity of publications and citations has resulted in a study on the factors influencing the level of research and publishing output in Malaysia (Hasan et al., 2018). Because of this characteristic, publications, such as metrics for evaluating performance have increased significantly for various educational institutions in Malaysia. Numerous scientometric indicators, including the g-index, the h-index, and a variety of other versions, have been implemented at Malaysian institutions of higher learning to evaluate publication productivity.

The publication productivity in Malaysia was used to generate these new metrics, which was then used to elicit a wide variety of quantitative and fundamental consequences of research performance. From this vantage point, multiple scientometric studies have identified the meaning of publication rates and have discovered a positive correlation between the number of publications and the number of citations have supported the proposition that the publication rate is proportional to the number of sources (Barrot, 2017). This characteristic suggests that the publication rate substantially impacts publishing of highly cited papers, contributing to the prestige of Malaysian scholars and institutions. This plays a significant part in enhancing publishing productivity in Malaysian institutions of higher learning, which is vital for both the assessment and the research output performance (Budisantoso & Mungkasi, 2020). It provides a variety of tactics that policymakers have utilized to improve publishing output in the country and the rankings of these institutions. The main purpose of this study is to identifty the factors that related with publication productivy using SCOPUS database from 2017 to 2021. Research theoretically equivalent to this has also been performed to study the reasons or factors of publication productivity at all levels. However, there are no substantial assessments of the factors that impact publishing productivity among universities in Malaysia. This calls for a detailed examination of these factors' effects on the outcomes of the publications. This review of the relevant literature is significant because it will cover the factors contributing to the expansion and productivity of publishing in Malaysia.

2.0 Literature review
Many researchers in different disciplines have studied various correlates or factors of publications productivity. Some of these correlates are;

2.1 Grant
Grant plays a vital role in research productivity. Most studies show a positive relationship between grants and publication productivity. For example, Mahoney, Verma and Morantz (2007) have conducted a study to examine research productivity generated by the American Academy of Family Physicians (AAFP) Foundation and the AAFP Joint Grant Awards Program (JGAP). The results indicate that funded and non-funded applicants showed a significant increase in the overall number of publications during the 5 years after their application compared to the 5 years before their application. Research conducted by Hadjinicola and Soteriou (2006), Itagaki and Pile-Spellman (2005), Auranen and Nieminen (2010), Tafreshi, Imani and Gashlag (2013), Jamjoom and Jamjoom (2016) show similar results where external funding leads to higher productivity.

2.2 Rank
Based on previous studies, academic rank is considered as one of the factor that influence research productivity. The researchers that have included this factor in their studies were Huang, Fang and Lopez (2016), Bailey and Braizer (1992), Betsy (2007), Brocato and Mavis (2005), Sax (2002), Stack (2004), Starkey and Ingersoll (2001), West, Armstrong and Ryan (2005), Whitmire (2003), and Zainab (2001). Most of their studies revealed that the higher a faculty member's rank, the more publications they had. Senior professors are more productive than associate and assistant professors. Full professors are more effective in almost all areas except conference papers.

2.3 Training
Lack of proper training has affected research productivity (Alrahlah, 2016). Research findings from a study by Merani et al. (2014) showed a positive relationship between formal research training and research productivity. A study by Huang, Fang and Lopez (2016) indicates that academic ophthalmologists with fellowship training have significantly higher scholarly output than non-fellowship trained opthalmologies.

2.4 Motivation
Researchers such as Alrahlah (2016), Tafreshi, Imani and Ghashlag (2013), Bland et al. (2005), Brocato and Mavis (2005), Espinoza-Herold (2007), Karnataka (2008), Paul et al. (2006), Steiners Schwratz (2006) have included motivation factor in their study. There was a significant relationship between motivation and publication productivity.

2.5 Consultation
Betsy (2007), in his study on faculty research productivity, found that consulting activity appears to be complementary to research where it increased levels of research output in the short term and career faculty productivity. A study by Tafreshi, Imani and Ghashlag (2013) also revealed the same results.

2.6 Years of experience

Year in faculty or working experience is critical to research productivity. Generally, experienced and senior scientists tend to publish more than junior scientists. Previous studies have shown that this factor is positively correlated with productivity. For example, Walker and Fenton (2013), Brocato and Mavis (2005), Creswell (1986), Greer (1997), Guttman (1997), Turner and Mairesse (2003) and Zainab (2001) have included the experience factor as one of the determinants of publication productivity in their study.

2.7 Collaboration
Research collaboration has been one of growing importance for scientists, research organizations and policymakers (Wagner and Leydesdorff, 2005; Cummings and Kiesler, 2007; Bammer, 2008). Among numerous benefits of research collaboration often cited in the literature are sharing knowledge and techniques, cross-pollination of ideas, pooling of research resources and sharing expensive instruments, increasing visibility and recognition and accelerating research progress. In their study, Vuong et al. (2018) suggested that international collaboration could boost research output, although this effect is insignificant among the high-performing authors. Aksnes, Piro and Rorstad (2019) found that men and women are not equally distributed across fields. There are relatively more female researchers in areas where the international collaboration rates are generally lower.

3.0 Methodology
A systematic literature review approach was adopted in this study, followed the instructions described by Kitchenham and Charters (2007). Using this method, the study identified, evaluated, and interpreted the available published relevant research query. The study adopted two stages to conduct this systematic review, comprising screening and identification of pertinent studies and eligibility only. The database used in this study was the Scopus database. SCOPUS database was used as a main source for this study because SCOPUS indexes more than 15,000 refereed journals. The general query to search the database is by including specific keywords to answer the research questions. The review also included inclusion and exclusion as quality assessment criteria to select previous studies that would only answer the research questions. During inclusion-exclusion criteria, the study checked on the quality assessment by describing all aims that would support the research findings. The search procedure for establishing the search criteria began once the keywords were defined. The search procedure was created using research strings to do sophisticated database searches. The following tables show the study selection procedure.
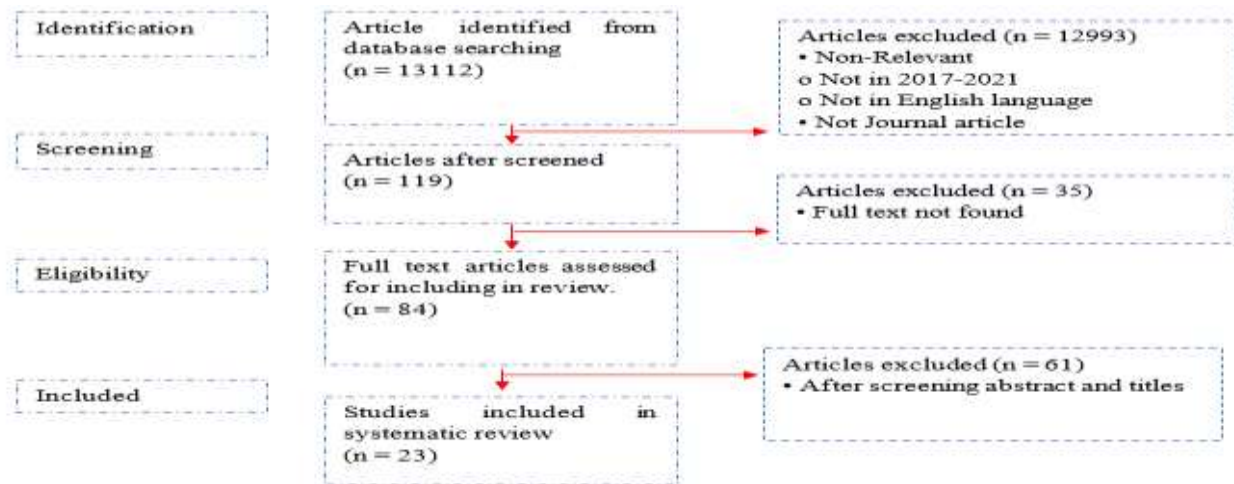

Fig. 1: Study selection approach

From Figure 1, 23 articles related to the study topics were found utilizing the inclusion-exclusion criteria. Therefore, two steps were adopted in this review to analyse the articles, which are thematic and descriptive studies. In the initial phase, excel sheets were used to show or tabulate bibliographic publication information and the geographical distributions among various institutions in Malaysia. Theme analysis was used in the second stage to find thematic trends. Multiple themes were identified and synthesised to identify factors influencing publication productivity in Malaysia.

Table 1. Exclusion and inclusion criteria

No.	Type of Database	Search String
1	SCOPUS	(Publication* OR Research Productivity* OR scientific Performance* OR Academic research performance* OR Scientific Productivity*) AND (Factor* OR Determine* OR Characteristic* OR Increase* OR Effect* OR Predict* OR Influence* OR Impact*)

Table 2. Keyword search

No.	Inclusion Criteria	Exclusion Criteria
1	Publishing date 2017 – 2021	Documents not available for download

2	English language	Articles not written in English
3	Journal publishing	Book review, grey literature, short papers, editorials, and missing abstracts.
4	Emphasising the factors influencing publication productivity in Malaysia	Articles do not mention the factors influencing publication productivity in Malaysia
5	For publishing productivity in Malaysia, single or multiple aspects were emphasised.	Articles focusing solely on citations in publications

4.0 Findings

The graphs and tables show the distributions of 23 articles for the five years (2017-2021). Figure 2 shows the total number of publications produced in Malaysia within five years. The years 2018 and 2020 indicate the highest number of publications produced during 5 years, with 6 articles of publication respectively. Figure 3 shows the 23 articles published by public and private universities in Malaysia. The University of Malaya offers the highest number of institutions that produced articles (18%), followed by the University of Reading, Universiti Teknologi Mara and Universiti Sains Malaysia (13%), respectively. Table 3 summarises the findings and results on the factors that have significant or insignificant impacts on publication productivity and growth in Malaysia in the last five years.

Across thematic analysis, factors influencing publication productivity were categorised into personal, environmental, and situational factors. From Table 3, out of 30 factors identified, 7 were under the environmental category, 18 were under the personal category, and 5 were under the situational category. The environmental factors are concerned with the features of the researcher's locality, such as skill and expertise, monitoring and support, job satisfaction and behaviour. The individual study type refers to those studies conducted by respective doctorate holders from specific learning institutions. However, some publications are done by a team of students from particular universities (categorised as "learning institutions"), as shown in the table.
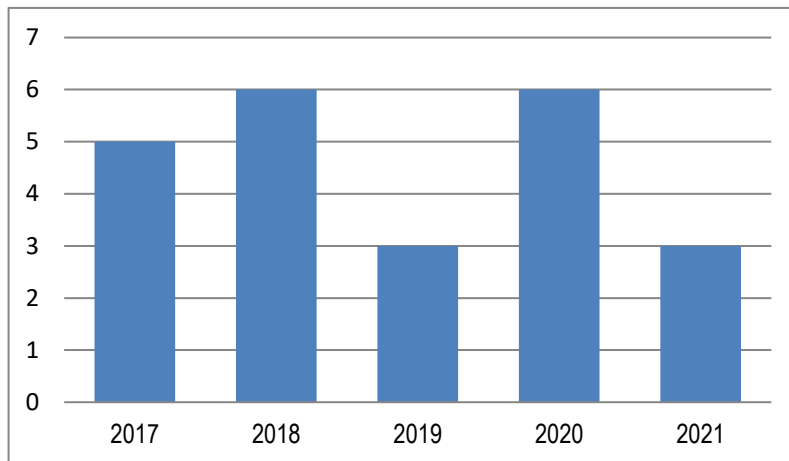

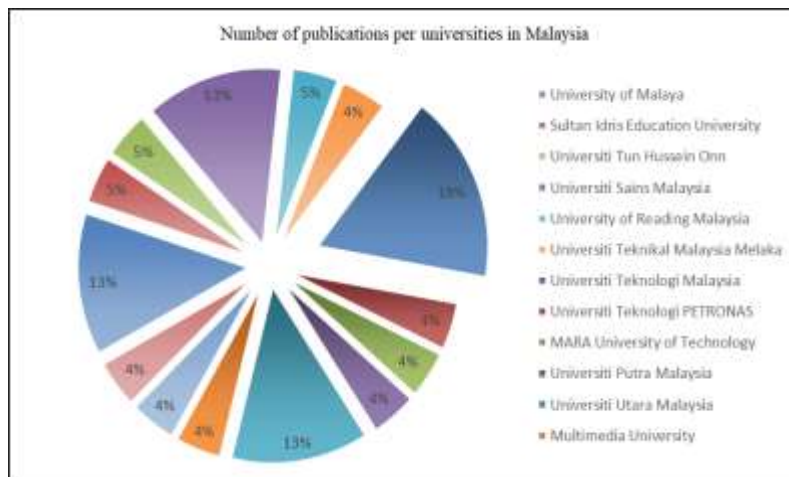Fig. 2: Total number of publications in SCOPUS by year

Fig. 3: Number of publications by Malaysian universities by percentage

Table 3: Top factors affecting the rate and productivity of publications in Malaysia

No	Study Type	Field of study	Factors	Effect	Studies
Personal Factors					
1	Individual	General	employee engagement through leadership	Significant	Ismail et al. (2021)
2	Learning Institution	Medical	performance appraisal	Significant	Mok et al. (2021)
3	Learning Institution	Information Management	system factor, through information quality, and institution-based trust,	Significant	Davarpanah et al. (2020)
4	Learning Institution	Social Study	Monitoring and training	Less Significant	Puad et al. (2020)
5	Learning Institution	Social Study	the impact of resistance to change among academician	Significant	Selvanathan et al. (2019)
6	Individual	Social Study	information and communication technology (ICT) innovations	Less Significant	Ghabban et al. (2018).
7	Individual	Social Study	Staff productivity	Less Significant	Rahman et al. (2018)
8	Learning Institution	Education	aid self-development of the education system	Significant	Ali N. (2017)
9	Learning Institution	Medical	involvement in academic publication trends	Significant	Zhang et al. (2021)
Environmental Factors					
10	Learning Institution	Constructions	skill and expertise within specific job scopes	Small Effect	Hanafi et al. (2021)
11	Individual	Socio-economic	Electronic impact	Less Significant	Balogun et al. (2020)
12	Learning Institution	Manufacturing	Monitoring and supporting the performance	Less Significant	Gozali et al. (2020)
13	Individual	Social Study	Employees' performance and productivity	Positive	Ali et al. (2019)
14	Learning Institution	Production	Job satisfaction and factors that contribute to their satisfaction level	Less Significant	Kamaruddin et al. (2018)
15	Learning Institution	Social Study	Intention and behaviour of academics	Significant	Fauzi et al. (2018)
16	Individual	Social Study	Impact of human capital and innovation on labour productivity	Less Significant	Ismail et al. (2018)
17	Learning Institution	Social Study	Directly or indirectly influence the behaviour and work productivity	Significant	Esfandiari et al. (2017)
Situational Factors					
18	Learning Institution	Information Management	Funding	Significant	Al-Kumaim et al. (2021)
19	Individual	Manufacturing	Monitoring and support	Significant	Ab Wahab et al. (2020)
20	Individual	Information Technology	Multidimensional performance	Less Significant	Mohamad et al. (2020)
21	Learning Institution	Productivity	Factors affecting the behaviour of academic staff	Significant	Ghabban et al. (2019)
22	Learning Institution	Consumer	Funding and technologies	Less Significant	Ahmad et al. (2019)
23	Individual	Warehouse Production	Labour productivity process method	Less Significant	Karim et al. (2018)

5.0 Discussions

Based on the preceding, it is clear that many of personal factors have significantly impact the individual level of publishing in Malaysia compared to environmental and situational factors. For example, the most influencing situational factor is funding. Factors such as researchers' designation, mentoring, and training have less significant impacts on the number of publications in Malaysian academic fields.

Overall, these factors highly contribute to the smaller number of publications in Malaysia in the last five years. At most institutional levels, environmental factors like funding, training, resistance to change, and job satisfaction significantly impact publication productivity in Malaysia. It was also concluded that scholars with less teaching responsibilities, more time for research, and participation in international conferences produce more publications of the specific institutions in Malaysia. Overall, Malaysia's academic sector should pay more attention to funding to improve overall publishing productivity and decrease personal variables that influence the number of publications

6.0 Conclusion

This research is only based on five years of publication ouput in Malaysia using SCOPUS database and the findings are categorized under three main blocks which are personal, environmental, and situational factors. Further studies need to be done in order to have a comprehensive result using other databases such as Web of Science and the period of study should cover more years of publication.

Acknowledgements

Paper Contribution to Related Field of Study

This research paper contributes to the field of Library and Information Science.

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