

## Investigation of the Top Scopus-Indexed Journals in Agricultural and Biological Sciences Across Diverse Asian Countries: A Bibliometric Analysis

Sattra Maporn<sup>1,\*</sup>, Jirarat Puseerit<sup>1</sup>, Phakwilai Rungwisai<sup>1</sup>, Panyawat Arsapar<sup>1</sup>,  
Pichaya Chowtivannakul<sup>2</sup>, Chonlatee Photong<sup>3</sup>

<sup>1</sup> Division of Research Facilitation and Dissemination, Maharakham University, Maharakham 44150, Thailand

<sup>2</sup> Naresuan University Secondary Demonstration School, Naresuan University, Phitsanulok 65000, Thailand

<sup>3</sup> Faculty of Engineering, Maharakham University, Maharakham 44150, Thailand

\* Corresponding Author: Sattra Maporn, sattra.m@msu.ac.th

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**Abstract:** This article presents bibliometric data of major Asian Scopus-indexed journals in agricultural and biological sciences. The study aimed to compare top cited articles, keywords, authors and different country collaborations published in the top ranked journals in agricultural and biological sciences. The data were collected from two sources, the Scimago Journal Ranking (SJR) 1999-2022 for yearly citation and publications and Scopus database for bibliometric data. The methodology included content analysis and bibliometric analysis of the selected journals, including the top-ranked journals located in China, Japan, and India. The instruments used were fundamental statistics and VOS viewer which was used for crafting author collaboration and keyword maps. The analysis revealed that research on the 2019-nCoV virus, plant resilience, and fish genetics received most citations. Keyword analysis revealed similarities in the content of the journals, but there were variations in the number of citations and publications. In addition, distinctions arose in authors and international collaboration. Typically, featured authors in each journal were predominantly researchers from the country where the journal is based. Finally, the political standings of each country also affected the publication.

## 1. Introduction

The academic sector has contributed an important role in agricultural development since there are 1,836 million people are living in Asia and the Pacific region, which has the biggest area for cultivation when compared to other continents (FAO *et al.*, 2023). The sheer size underscores the need for increased productivity to ensure food security for the population. Academic institutions contribute through research, education, and innovation to address challenges, develop sustainable practices. Academic journals also take part in addressing the challenges and contribute to providing knowledge and practice to policymakers and readers in terms of solving agricultural problems. However, journals from the periphery have overcome several challenges to become indexed in the major indexing databases (Čuljak, 2022). Although such journals may publish important results, they cannot reach a broader scientific community. Globally, only 70 Asian journals out of more than 300 have agricultural and biological sciences content listed in Scopus, a reputable database containing almost thirty thousand journals from around the world. This study aimed to analyze outstanding articles from high-ranked journals that were indexed in Scopus in this region in order to identify trends and journal performance. The second aim was to analyze keywords, authors, and country collaborations. These data provided insights for policymakers and academic publishers as well as researchers seeking to understand trends and to evaluate the possibility of

publication in high-ranked journals.

The large number of bibliometric studies of academic databases have been performed using different methods. Until the present time, most researchers commonly analyzed long-term bibliometrics on reputable academic databases (e.g. Taş *et al.*, 2023; Donthu, Kumar, & Pattnaik, 2020). The reputable database Scopus has since 2000, shown that the Asian region, especially China, features in the Scopus database with an increasingly large number of journals and articles (Thelwall & Sud, 2022). However, there have been few studies providing insights about the characteristics of Asian Scopus-indexed journals in agricultural and biological sciences which is the aspect in the publishers' point of view as suggested by Topkanlo & Sohrabi (2023). The findings from this study will contribute to the field by providing university administrators with support to develop policies, allocate appropriate budgets, and provide strategies to support institutional academic journals to be listed in Scopus. Secondly. This article will make contributions to the author who is selecting a journal for publications in terms of understanding of content published in high-ranked journals in this field. Therefore, this research tried to address the questions "What are the similarities and differences of top cited articles published in the top ranked journals in agricultural and biological sciences across different countries? and what are the similarities and differences of these top ranked journals in terms of keywords, authors, and country collaboration across different

countries?” To answer those questions, this study aims to compare top cited articles published in the top ranked journals in agricultural and biological sciences across different countries. Another purpose is to compare keywords, authors, and country collaboration of in the top ranked journals in agricultural and biological sciences across different countries. The remainder of this article contains a literature review, methodology, results, findings, and conclusion as well as suggestions for further research directions.

Previous studies can be divided into three kinds of research. Firstly, research that focussed on bibliometric analysis of citations and the impact of journals in several fields. These included comprehensive bibliometric evaluation of journals which focus on publication and growth over decades by analyzing impact, prominent topics, and prolific authors as well as identifying highly cited publications and authors (Mishra & Gautam, 2024, Aghalari, Dahms, & Sillanpää, 2023; Tanveer *et al.*, 2020; Balstad & Berg, 2020; Khan *et al.*, 2021; Singh *et al.*, 2021; Elango, 2018). The second group focused on publications in academic databases relating to area-based studies in India and Indonesia (Hanief *et al.*, 2021; Singh & Pandita, 2017). The studies conducted altmetrics investigating the growth of publications and characteristics of research over time as well countries that contributed the most and also popular research topics. Some researchers have studied the journals in a specific database. For example, Bucher (2018) studied European journals in the Web

of Science and JCR Social Science edition. Finally, the content-based bibliometric study included publishers in specific disciplines such as agricultural sciences, and altmetric (Malanski, Dedieu, & Schiavi, 2021; Bhattacharjee *et al.*, 2023; Altarturi *et al.*, 2023; Amiri *et al.*, 2023). Those articles focused on content analysis and bibliometric analysis to find significant points that contributed to the field of study. Those researches demonstrated the application of bibliometric analysis in diverse research contexts and different research foci which mostly used similar methodologies but were different in the way researchers presented the data.

The highly relevant studies on bibliometric data focus on both characteristics of academic journals and reputable databases. Misara *et al.* (2022) employed bibliometric analysis to provide a comprehensive overview of the Precision Agriculture Journal, identifying highly cited articles and establishing thematic connections within the field. The study highlighted the rapid growth and development of the journal, facilitating advancements in precision farming. Some Asian region researchers have studied the characteristics of academic journals in the science field in their region (Malvic *et al.*, 2022; Sirirak, 2021; Bucher, 2018). Moreover, some researchers are interested in the characteristics of the journals published in developing countries such as Thailand, and Pakistan (Maporn *et al.*, 2023; Soroya *et al.*, 2022). Those researchers agreed that journals based in different countries contain different

characteristics in terms of author, affiliation, collaborating network, and supporting funds.

From the previous literature on bibliometric analysis, these studies are seen to share the common objective of analyzing publication trends, keywords, content, authors, collaborations, citations, and knowledge structures. Most of those studies used similar methodologies and statistics. However, the differences may be seen in terms of different viewpoints, some research focuses on content and some focus on the author's institution or publishers. Lund (2021) suggested that a bibliometric study should be conducted from the experiences and expertise of the researchers. Therefore, this research will extend knowledge of the bibliometric study of high-ranked Asian academic journals from the viewpoint of academicians and librarians who have experience in editorial boards for a decade.

## 2. Materials and Methods

### 2.1 Data Collection

The data for this study were collected from two sources. The first source was SJR which included the journals and country scientific indicators developed from the information contained in the Scopus database. The latest data from SJR were for 2022. The data included yearly publication, yearly citation, yearly journal ranking score. Another source was the Scopus database was accessed via institutional access in 2023. For data from Scopus, the latest data of each

journal were extracted during September of 2023. The Scopus coverage years for bibliometric data were as follows. - *Science China Life Sciences* (2010- September 2023), *Proceedings of the Japan Academy Series B: Physical and Biological Sciences* (1977- September 2023), and *Journal of Biosciences* (1979- September 2023).

**Journal selection.** The selection of three prominent agricultural and biological sciences journals was based on the following. The first criterion was that the journal must be positioned in high rank by the SJR. The second criterion was the journal must be based in the Asian region and also listed in the subject areas of agricultural and biological sciences, subject categories of agricultural and biological sciences (miscellaneous) according to the SJR ranking 2022. Normally, SJR ranking of the previous year is announced during May of the next year, so the latest SJR ranking during the data collection period was for 2022. There were only six Asian Scopus-indexed journals in this field listed in Quartile 1. The third criterion was that the journals must be from different countries. The fourth criterion was that the journal must provide metadata more than 200 articles which belong to Rogers, Szomszor, & Adams (2020), who suggested 200 articles were considered acceptable for conducting institutional-level bibliometric analysis. As a result, the three highest-ranked journals based on the selection criteria were *Science China Life Sciences* (China), *Proceedings of the Japan Academy Series B: Physical and Biological Sciences* (Japan), and

*Journal of Biosciences* (India). Fortunately, the three selected journals provided larger data when compared to the other journals that had not been selected. Therefore, these three journals were considered suitable data.

**Article selection.** Even though the published articles included many different types of articles. e.g. editorial, news, letters, research articles, and review articles; all data were exported and used in this study because the researcher intended to identify the features of whole characteristics of the selected journals.

**Data collection procedure.** The ranking, number of citations and number of publications were collected from SJR website at: <https://www.scimagojr.com/>. Data was collected from SJR because the data is reported year by year while Scopus is not. Data included citescore, and bibliometric data were retrieved in September 2023 from the Scopus database. The Scopus database was provided by institutional access in the year 2023. The number of exported data was as follows: China Life Sciences (2,658 items), *Proceedings of the Japan Academy Series B: Physical and Biological Sciences* (2,633 items), and *Journal of Biosciences* (3,575 items). The article metadata was downloaded in CSV format.

**Data cleaning process.** Data was exported from Scopus database *via* institutional access. Then, researcher read the .csv file in order to find any flaw in the raw data. Then, researchers fixed some of

the erroneous data. All types of articles. e.g. editorial, news, letters, research articles, and review articles were used in this study because the researcher intended to identify the features of whole characteristics of the selected journals. Then the cleaned data were subsequently processed using VOSviewer to visualize and analyze it in bibliometric form.

## 2.2 Data Analysis

To analyze the collected journals, content analysis was conducted using the information available in the Scopus database and SJR. The basic statistics used were mean, median, mode, standard error of the mean (SEM), as well as the next year citescore forecast model proposed by Kumar *et al.* (2023). The model was designed for forecasting the next year citescore from the previous ten years. MsExcel was used and the syntax was: = FORECAST( $x$ ,  $known\_ys$ ,  $known\_xs$ ).  $x$  is the period for which the value is to be forecasted,  $known\_ys$  are the past values of the variable, and  $known\_xs$  is the past period for which the values are known.

For mapping analysis of bibliometric indicators from the journals, the visualization tool VOS viewer developed by Van Eck & Waltman (2010) was employed. The visualization of similarities (VOS) is a free-access program that has been developed for constructing a bibliometric map of large-scale data. The program functions include label view, cluster density view, and scatter view. The program facilitated the mapping of clusters based on the co-occurrence of words and co-authorship

networks. The analysis of co-occurrence was performed using VOSviewer version 1.6.19, considering the titles, authors, and keywords of the published articles. The visualization approach for analyzing the bibliometric data of the journals was based on Van Eck & Waltman (2010).

### 3. Results and Discussion

The findings of this study provide insight into keyword analysis, author, and country-level analysis.

#### 3.1 Overall statistics of journals

The SJR score of the selected journals from 1999 – 2022 was as follows *Science China Life Sciences* (Figure 1) displayed a mean value of SJR score at 0.743 and Standard Error of the Mean (SEM) at 0.082. *Proceedings of the Japan Academy Series B: Agricultural and Biological Sciences* (Figure 2) had a mean value of SJR score of 0.719 with and SEM = 0.370. The *Journal of Biosciences* (Figure 3) had a mean value of SJR score = 0.567 and SEM = 0.188. From the data, the *Science China Life Sciences* had a relatively high mean SJR score, suggesting that, on average, it is cited at a higher rate compared to the other two

**Table 1.** General overview of the selected Asian Scopus-indexed journals in agricultural and biological sciences in data from SJR 1999-2022.

| Journal title / Items                      | Statistical formula  | Science China Life Sciences | Proceedings of the Japan Academy Series B: Physical and Biological Sciences | Journal of Biosciences |
|--|--|-----------------------------|---|------------------------|
| Year of publication (1999-2022)            |  | 1958                        | 1925  | 1975                   |
| Average number of publications (1999-2022) | $\frac{\text{Total Number of publications 1999 – 2022}}{24 \text{ years}}$                             | 147.79                      | 39.33   | 93.88                  |
| Average number of citations                | $\frac{\text{Total Number of citations 1999 – 2022}}{24 \text{ years}}$                                | 882.09                      | 263.63  | 443.21                 |
| Average number of citations / documents    | $\frac{\text{Total Number of citations 1999 – 2022}}{\text{Total Number of publications 1999 – 2022}}$ | 5.97                        | 6.70  | 4.72                   |
| Annual growth (%) Citations                | $\text{CAGR} = \left( \frac{\text{End value}}{\text{Beginning value}} \right)^{\frac{1}{24}} - 1$      | 21.98                       | 13.13   | 16.42                  |
| Annual growth (%) Publications             | $\text{CAGR} = \left( \frac{\text{End value}}{\text{Beginning value}} \right)^{\frac{1}{24}} - 1$      | 7.20                        | 0.07  | 5.48                   |

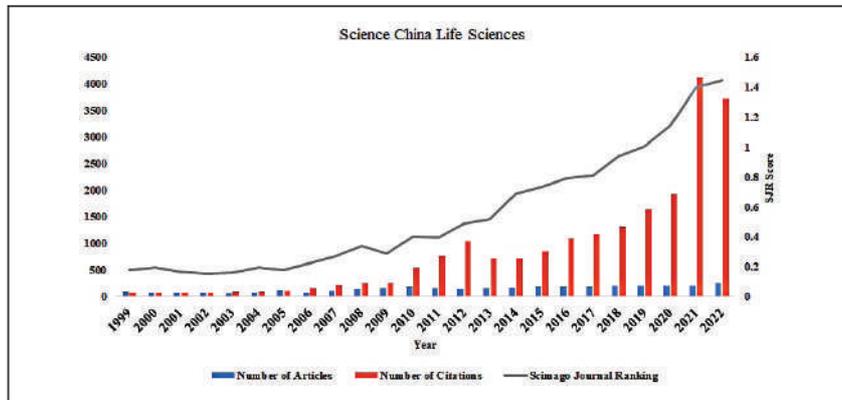


Figure 1. Historical profile of *Science China Life Sciences* in SJR database

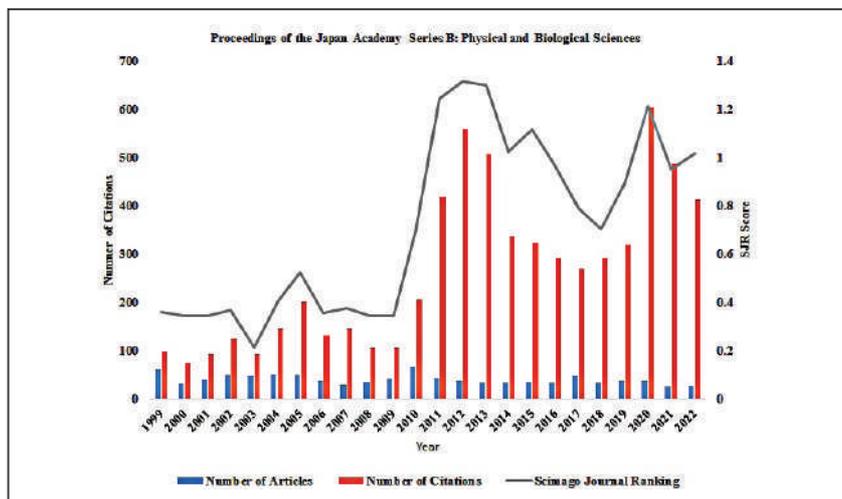


Figure 2. Historical profile of *Proceedings of the Japan Academy Series B: Physical and Biological Sciences* in SJR database

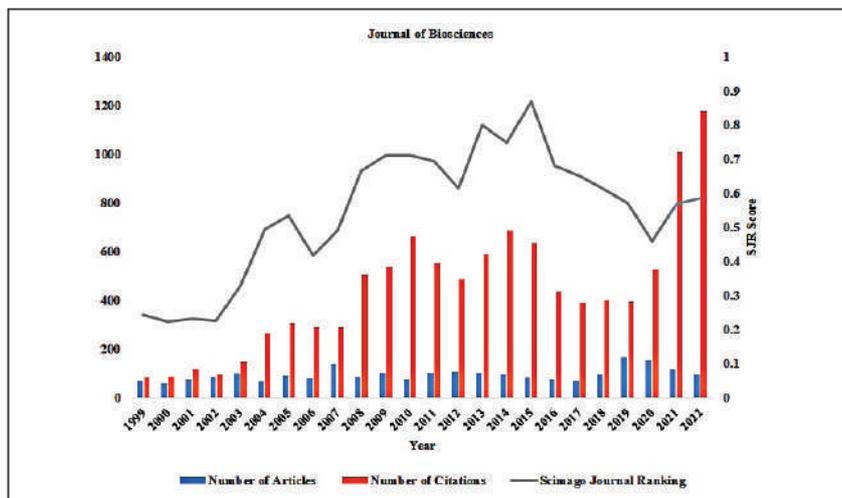


Figure 3. Historical profile of *Journal of Biosciences* in SJR database

journals. The SEM provides an indication of the variability of SJR scores around the mean. A lower SEM suggests that the scores are relatively close to the mean. For, *Proceedings of the Japan Academy Series B: Agricultural and Biological Science*, the SJR score was lower than for *Science China life Sciences* on average and demonstrated some fluctuations in score as it had a higher SEM than the other two journals. In addition, for *Journal of Biosciences*, the SJR score was lower than the other two journals, but there was less fluctuation in SJR score than in *Proceedings of the Japan Academy Series B: Agricultural and Biological Science*. Based on this information, it is seen that *Science China Life Sciences* displayed greater stability in terms of citations and SJR scores compared to the other two journals. This stability may be a

contributing factor to its top-ranking position.

The data shows the distribution of publications. The content primarily consists of research articles. In *Science China life Sciences*, research articles were about 65% of total publications compared to other two journals which were 80% and 74%. The distinction of *Science China Life Sciences* is that the publication has a significantly larger volume of letters than the other two journals, accounting for 8% of the total publications accessed in this study, whereas the remaining two journals do not publish any letters. However, *Journal of Biosciences* publishes a variety of content types which is more than other two journals, and includes editorials, notes, errata, conference papers, and short surveys, for approximately 10 percent of the

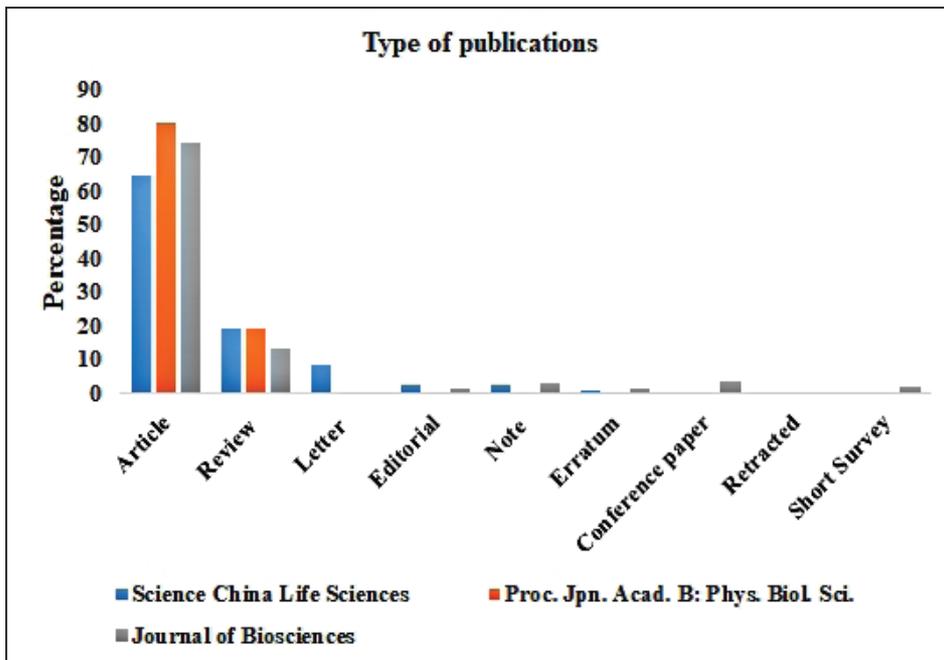


Figure 4. Type of publication of the three journals

**Table 2.** Historical ten years Cite score of the selected journals with next year forecast by the Kumar *et al.* (2023) model

| Journal/Year                                     | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024<br>forecast |
|--|------|------|------|------|------|------|------|------|------|------|------------------|
| Sci. China Life Sci.                             | 2.8  | 2.9  | 3.5  | 3.9  | 3.9  | 4.6  | 7.0  | 10.1 | 12.8 | 14.4 | 13.8             |
| Proc. Jpn. Acad.,<br>Ser. B, Phys. Biol.<br>Sci. | 4.4  | 4.6  | 3.9  | 3.6  | 3.4  | 3.6  | 6.4  | 6.7  | 6.6  | 6.5  | 6.8              |
| J. Biosci.                                       | 3.4  | 3.8  | 2.6  | 2.6  | 2.5  | 2.1  | 2.1  | 3.3  | 4.8  | 5.5  | 4.2              |

total number of publications. There were no retracted formats found in *China Life Sciences* while the retracted paper in other two journals were less than 0.1%.

### 3.2 Most cited articles in the selected journals.

Overall, the content from Table 3 shows evidence that there was significant interest in the fields of evolutionary biology and medicine, possibly due to the situation of COVID-19 during the 2020-2022 pandemic. Researchers have been studying molecular biology, genetic sequences and DNA to expand knowledge in the field.

Data from Table 3 shows the most salient research articles considered by citations of the three journals. Outstanding articles in *Science China Life Sciences* covered a range of topics, including the evolutionary aspects of the coronavirus, clinical indicators and lung injury associated with the 2019-nCoV virus, transmission and clinical manifestation of the virus in asymptomatic individuals, plant resilience to environmental stresses, and

genetic factors influencing sexual dimorphism in fish species. Two of the ranked articles received more than a thousand citations. It is interesting that the most cited article in *Science China Life Sciences* was first authored by Xu, Xintian, who had a H-index equal to 4 with 6 publications. A significant point of the most cited articles related to the global impact of the pandemic in 2020. This might imply that four out of the five most cited articles were published in 2020 which shows the current relevance of research addressing global issues in recent years.

Research articles published in *Proceedings of the Japan Academy Series B: Physical and Biological Sciences* include the development of a vector using the Sendai virus for efficient induction of transgene-free human pluripotent stem cells, the potential of Favipiravir as an antiviral therapeutic, investigations into the structure and functions of the proteasome, and the significance of tissue regeneration, organ development, and cancer biology. One of the ranked articles received more than a thousand citations. The

**Table 3.** Most cited articles in the selected journals

| Rank   | Title  | Year of publication | No. of citations |
|--|--|---------------------|------------------|
| <i>Science China Life Sciences (N = 2,658)</i>   |  |                     |                  |
| 1  | Evolution of the novel coronavirus from the ongoing Wuhan outbreak and modeling of its spike protein for risk of human transmission                                | 2020                | 1,492            |
| 2  | Clinical and biochemical indexes from 2019-nCoV infected patients linked to viral loads and lung injury  | 2020                | 1,352            |
| 3  | Clinical characteristics of 24 asymptomatic infections with COVID-19 screened among close contacts in Nanjing, China   | 2020                | 901              |
| 4  | Plant abiotic stress response and nutrient use efficiency  | 2020                | 522              |
| 5  | Genetic basis and biotechnological manipulation of sexual dimorphism and sex determination in fish   | 2015                | 279              |
| <i>Proceedings of the Japan Academy Series B: Physical and Biological Sciences (N = 2,633)</i> |  |                     |                  |
| 1  | Efficient induction of transgene-free human pluripotent stem cells using a vector based on Sendai virus, an RNA virus that does not integrate into the host genome | 2009                | 1,026            |
| 2  | Favipiravir (T-705), a broad spectrum inhibitor of viral RNA polymerase  | 2017                | 705              |
| 3  | The proteasome: Overview of structure and functions  | 2009                | 517              |
| 4  | Novel Neuropeptides, Neurokinin $\alpha$ and $\beta$ , Isolated from Porcine Spinal Cord   | 1983                | 388              |
| 5  | The discovery of Hepatocyte Growth Factor (HGF) and its significance for cell biology, life sciences and clinical medicine   | 2010                | 354              |
| <i>Journal of Biosciences (N = 3,575)</i>  |  |                     |                  |
| 1  | Lysozymes in the animal kingdom  | 2010                | 550              |
| 2  | Applications of inulin and oligofructose in health and nutrition   | 2002                | 472              |
| 3  | The ubiquitin-proteasome system  | 2006                | 439              |
| 4  | Heat shock genes - Integrating cell survival and death   | 2007                | 422              |
| 5  | Heat stress response in plants: A complex game with chaperones and more than twenty heat stress transcription factors  | 2004                | 422              |

most cited articles were published in different decades, which shows that the impact of these studies was sustained over a long time. One of the top-cited articles in the journal had been published in the 19<sup>th</sup> century.

The top cited article in the *Journal of Biosciences* focused on the role of lysozymes in the innate immune system, the health benefits of dietary fibers such as inulin and oligofructose, the intricate workings of the ubiquitin-proteasome system responsible for protein regulation, the impact of heat shock response on cell viability, and the relationship between heat stress and plant biology. The most outstanding research article received only 550 citations, which was lower than outstanding articles reported in the previous two selected journals. It is notable that the high-cited articles were published within a single decade between 2001 and 2010, from which can be implied that the journal performed well during that time.

There were notable differences among the three journals. The most cited

article in *Science China Life Sciences* primarily highlighted research related to the global impact of the COVID-19 pandemic. It would not be wrong to say that the journal received benefits from successful research which was a global problem at that time. *Proceedings of the Japan Academy Series B: Physical and Biological Sciences* benefitted from outstanding works from across decades. The *Journal of Bioscience's* outstanding articles spanned a decade. Although all three journals belong to the top-ranked Scopus-indexed journals in the field, the articles that receive numerous citations were quite different. Some journals got high rankings because of the high number of citations in a short time. Some journals maintained gradually increasing citation scores over time.

### 3.3 Keywords

This part provides keyword co-occurrences among three journals.

The landscape of research content includes genetics, humans, animals, and

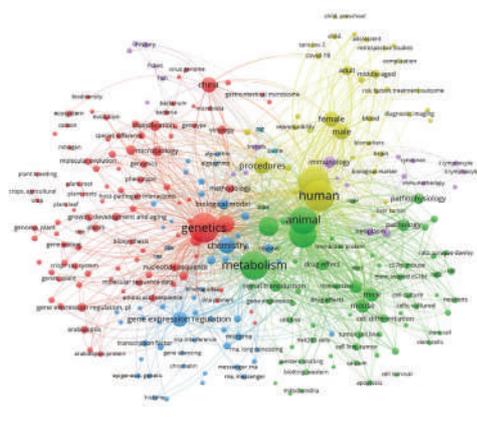


Figure 5. Keyword co-occurrence in *Science China Life Sciences*



transparent keywords co-occurrences map. The decision threshold was varied due to the selected data of individual researchers. For small data, 5 occurrences were used in some studies; but for large data size, the number of occurrences used was increased. *Science China Life Sciences* contained a total of 14,070 keywords used in the retrieved data of which 275 keywords met the minimum occurrence criterion of 25. (Figure 5) presents six distinct clusters. One cluster stands out with a significant size, encompassing 96 items. The most frequently occurring keywords were ‘genetics’ (1,174 occurrences), ‘metabolism’ (1,108 occurrences), ‘human’ (1,235 occurrences), ‘animal’ (993 occurrences), and ‘physiology’ (558 occurrences).

In *Proceedings of the Japan Academy Series B: Physical and Biological Sciences*, 8,142 keywords were used throughout the retrieved data of which 359 keywords met the minimum occurrence criterion of 25. (Figure 6) presents four distinct clusters. A cluster is significant with 11 items. The most frequently occurring keywords were ‘animal’ (255 occurrences), ‘human’ (260 occurrences), ‘metabolism’ (233 occurrences), ‘chemistry’ (174 occurrences), and ‘genetics’ (121 occurrences).

In the *Journal of Biosciences*, 27,574 keywords were used according to retrieved

data with 519 keywords meeting the minimum occurrence criterion of 25. (Figure 7) presents six distinct clusters. The biggest cluster contains 96 items. The prominent keywords were ‘nonhuman’ (1,840 occurrences), ‘animal’ (692 occurrences), ‘controlled study’ (901 occurrences), ‘human’ (994 occurrences), and ‘genetics’ (704 occurrences).

The analysis of keywords from three major Asian Scopus-indexed journals in agricultural and biological sciences showed characteristics and trends within these journals. The analysis revealed commonly occurring keywords across the journals included ‘human,’ ‘animal,’ ‘metabolism,’ ‘genetics,’ and ‘physiology’. Because the journals are in the same field, there seems not to be differences in keyword co-occurrence patterns in both broad picture and highly-cited article analysis. This shows that the three high-ranked journals seem to have similar focus and strategies for the content of published articles.

### 3.4 Authorship individual level

This section provides most occurrences of author and co authorship network in author level and institutional level.

Table 4 provides data on the most prolific occurrences of authors in each journal. The map (Figures 8, 9, and 10) provides

**Table 4.** Authorship profile of the most occurrences contributors in each journal

| Rank  | Author                       | Institution   | country | Number of appearances | Authors' Citation in Scopus | H-Index in Scopus |
|---|------------------------------|---|---------|-----------------------|-----------------------------|-------------------|
| <i>Science China Life Sciences (N = 2,658 articles)</i>   |                              |   |         |                       |                             |                   |
| 1   | Gao, George F.               | Chinese Academy of Sciences   | China   | 27                    | 94,066                      | 109               |
| 2   | Wang, Ningli                 | Beijing Tongren Hospital, Capital Medical University                    | China   | 18                    | 23,289                      | 62                |
| 3.  | Shi, Tieliu                  | East China Normal University  | China   | 17                    | 7,906                       | 41                |
| 4.  | Gui, Jian-Fang               | University of Chinese Academy of Sciences                               | China   | 15                    | 12,331                      | 58                |
| 5.  | Dai, Jianwu                  | Chinese Academy of Sciences   | China   | 14                    | 14,486                      | 65                |
| <i>Proceedings of the Japan Academy Series B: Physical and Biological Sciences (N = 2,633 articles)</i> |                              |   |         |                       |                             |                   |
| 1.  | Y o s i d a ,<br>Tosihide H. | National Institute of Genetics, Mishima, Japan                          | Japan   | 84                    | 1,930                       | 22                |
| 2.  | Kadotani,<br>Tetsuji         | The Kadotani Medical Research Foundation                                | Japan   | 69                    | 370                         | 9                 |
| 3.  | S u z u k i ,<br>Masashi     | National Institute of Advanced Industrial Science and Technology (AIST) | Japan   | 66                    | 8,958                       | 42                |
| 4.  | Watanabe,<br>Yoko            | The Kadotani Medical Research Foundation                                | Japan   | 66                    | 181                         | 7                 |
| 5.  | Kobayashi,<br>Teiichi        | Chiba University  | Japan   | 58                    | 172                         | 6                 |
| <i>Journal of Biosciences (N= 3,575 articles)</i>   |                              |   |         |                       |                             |                   |
| 1   | Morange,<br>Michel           | Ecole Normale Supérieure  | France  | 47                    | 5,130                       | 32                |
| 2   | Kasbekar,<br>Durgadas, P     | Centre for DNA Fingerprinting and Diagnostics                           | India   | 39                    | 447                         | 12                |
| 3   | Lakhotia,<br>Subhash C       | Banaras Hindu University  | India   | 21                    | 3,083                       | 29                |
| 4   | Borges, Renee<br>M.          | Indian Institute of Science   | India   | 18                    | 2,113                       | 28                |
| 5   | Nanjundiah,<br>Vidyanand     | BioTech Park  | India   | 17                    | 1,584                       | 24                |

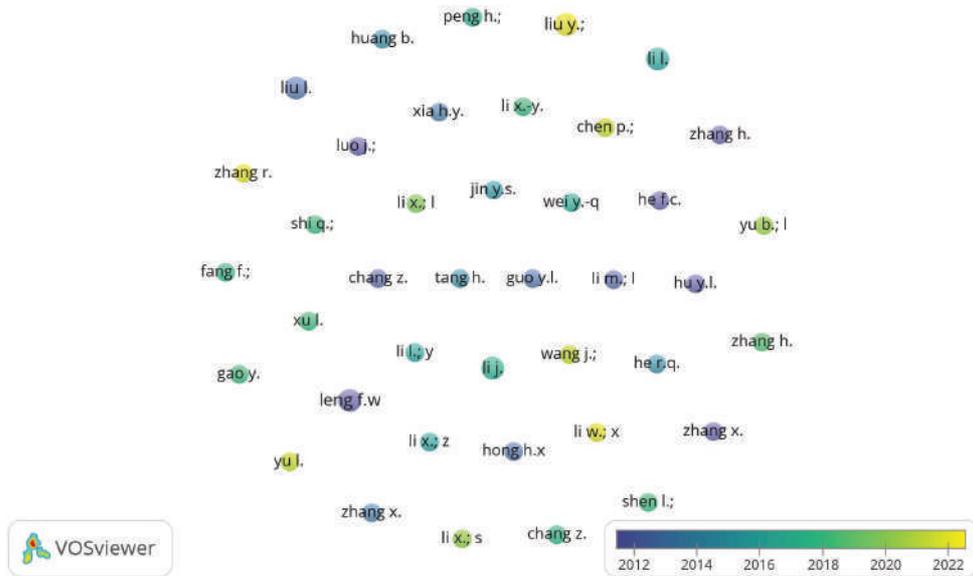


Figure 8. Authorship network in *Science China Life Sciences*

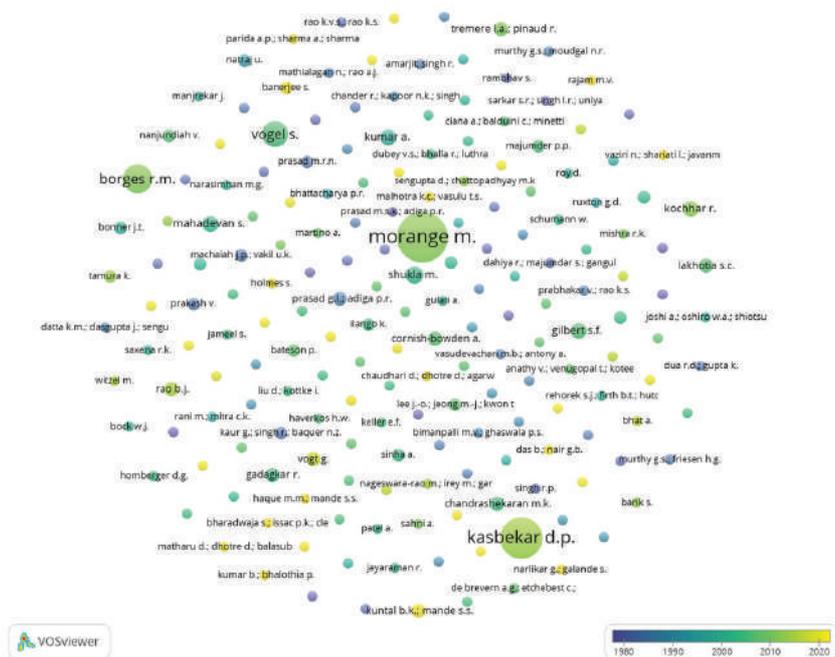


Figure 9. Authorship network in *Proceedings of the Japan Academy Series B: Physical and Biological Sciences*

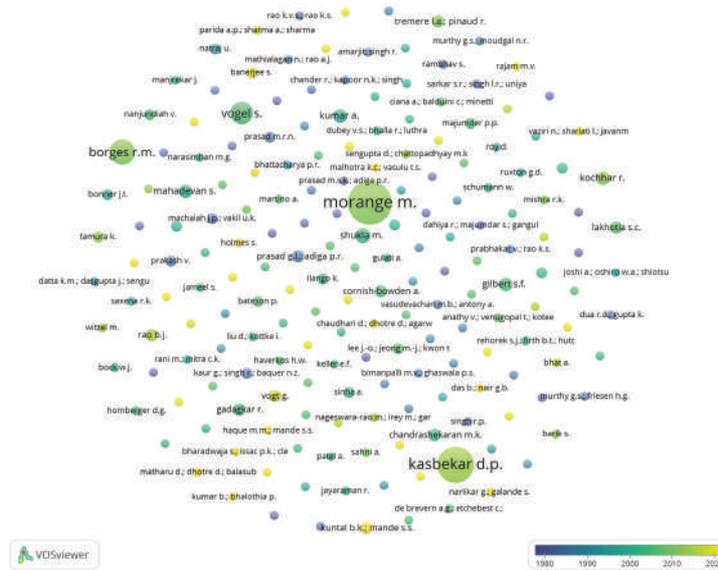


Figure 10. Authorship network in *Journal of Biosciences*

occurrences of author in the dataset. The size of the nodes indicates the number of occurrences in the dataset. For *Science China Life Sciences*, the authors with the most appearances appeared only 27 times, which was very low. This shows that the journal had a large author pool (2,658 items from dataset). Figure 8 shows the distribution of authors but prolific authors were not easy to find due to the size of the nodes which were almost stable. For, *Proceedings of the Japan Academy Series B: Physical and Biological Sciences* the most appearances was 69 times from the author pool (2,633 items from dataset). Figure 9 also shows the distribution of authors, but prolific authors such as *Kobayashi* and *Hidaka* can be identified from the big nodes in the map. In *Journal of Biosciences*, the most appearances was 47 times from author pool (3,575 items from

dataset). Figure 10 also shows some prolific authors such as *Morange* who was the biggest node on the map while *Borges* were the subsequently big node. The ratio of the authors in the two journals seems to be different in the percentage of occurrences from the most prominent author. It is surprising that most appearances in the Indian-based journal were affiliated with France while for other two journals, affiliations were mostly where the journal is based. The analysis of author collaboration shows a large diversity of authors because VOS viewers did not retrieve any clusters of authors. The diversity of authors suggests indicates that there was less collaboration between the authors. This cooperation may take place at the national or institutional level instead. It would be interesting to further analyze the data to identify the different collaboration patterns.

**Table 5.** Institution level of contributors

| Rank  | Institution  | Country | Occurrence Percentage |
|---|--|---------|-----------------------|
| <i>Science China Life Sciences</i> (2010 – September 2023) (N=2,658 articles)   |  |         |                       |
| 1   | Chinese Academy of Sciences  | China   | 28.05                 |
| 2   | University of Chinese Academy of Sciences                          | China   | 13.56                 |
| 3   | Ministry of Education China  | China   | 12.07                 |
| 4   | Peking University  | China   | 8.32                  |
| 5   | Chinese Academy of Medical Sciences & Peking Union Medical College | China   | 6.87                  |
| <i>Proceedings of the Japan Academy Series B: Physical and Biological Sciences</i> (1977 – September 2023) (N=2,633 articles) |  |         |                       |
| 1   | The University of Tokyo  | Japan   | 13.91                 |
| 2   | Kyoto University   | Japan   | 5.34                  |
| 3   | Osaka University   | Japan   | 4.70                  |
| 4   | National Institute of Genetics Mishima                             | Japan   | 3.71                  |
| 5   | Nagoya University  | Japan   | 2.77                  |
| <i>Journal of Biosciences</i> (1979 – September 2023) (N=3,575 articles)  |  |         |                       |
| 1   | Indian Institute of Science  | India   | 8.97                  |
| 2   | Centre for Cellular and Molecular Biology India                    | India   | 2.98                  |
| 3   | Bhabha Atomic Research Centre                                      | India   | 2.14                  |
| 4   | Banaras Hindu University   | India   | 2.12                  |
| 5   | Jawaharlal Nehru University  | India   | 2.00                  |

There is another point to be noted; for journals published in a particular country, the contributor usually came from that country.

Table 5 provides overall looking at the point of view of institutions published in journals. It seems each journal was predominantly published by an institution from their own country where the journal is

based. The top five published institutions in *Science China Life Sciences* accounted for approximately 69% of the total institutions that appear in the journal. The Japanese journal, *Proceedings of the Japan Academy Series B: Physical and Biological Sciences*, shared of the most frequent institutions publishing in journals at approximately 30% and the Indian owned *Journal of Biosciences* was

most frequent institution at approximately 18%. It can be implied that the ownership of the journal is dominated by the publishing institution which is correlated with the country where the journal is based.

### 3.5 Authorship network at country level

This part provides a co-authorship network at the country level.

The map in Figure 11, 12, and 13 provides a country level network. The size of the label of an item is determined by the number of occurrences of the item. The distance between clusters indicates the relatedness of the nodes in terms of co-occurrences links. Data from *Science China Life Sciences* shows that 40 authors met the minimum occurrence threshold of 5. All of the five occurrences involved authors

affiliated with China. The analysis of country-level collaboration revealed that there were 96 countries involved in authorship. The minimum threshold of 5 occurrences showed clusters from 20 countries in the data. The prominent cluster consisted of United Kingdom, the Hong Kong Special Administrative Region of the People's Republic of China, Italy, Japan, and Singapore which can be seen in the red cluster (see Figure 11). Despite China not being part of the largest cluster, the country exhibited the highest occurrence among the collected data. The Chinese researchers' collaboration network showed connections between Chinese researchers and other developed countries in Asia and Europe.

The retrieved data from *Proceedings of the Japan Academy Series B: Physical and Biological Sciences* showed that 210 authors

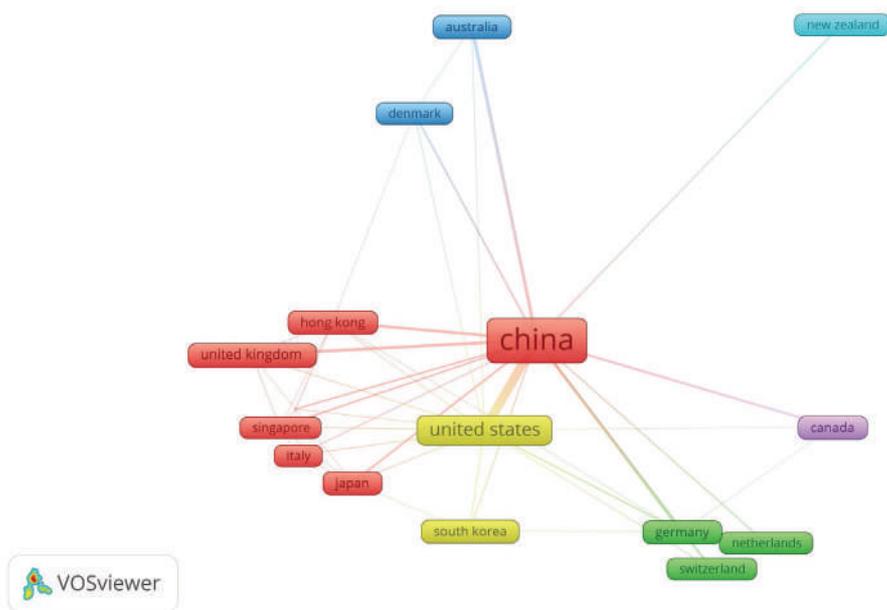


Figure 11. Authorship network in country level in *Science China Life Sciences*



as China and Russia as well as countries in Africa and South America.

The retrieved data from the *Journal of Biosciences* showed that 190 authors met the minimum occurrence threshold of 5. Figure 13 showed the co-authorship network of 104 countries. Using a minimum threshold criterion of 5 occurrences, there were several clusters from 38 countries in the data. The most prominent cluster is shown in red, consisting of Argentina, Australia, Belgium, Brazil, Cuba, Finland, Hungary, Mexico, Norway, Spain, and Switzerland (Figure 13). The green cluster consists of Japan, Czech Republic, Italy, Germany, Poland, Russian Federation, and Serbia, and the blue cluster consists of United Kingdom, France, the Netherlands, and Sweden. Despite India not being part of the largest cluster, the country exhibited the highest occurrence among the collected data. As the diagram shows, the strongest cluster was located in South America. The contributors had links with researchers from Europe and North America, but only with some countries in Asia such as Singapore as shown on the map. There were few links with superpower countries such as the United States of America, China, or Russia.

This bibliometric analysis of major Scopus-indexed journals in agricultural and biological sciences in respect of author and country-level co-occurrences showed authorship across the journals depended on the location where the journal was located. It means Chinese-owned journals seemed to

be contributed to by Chinese researchers, Japan-owned journals were possibly contributed to by Japanese researchers, and Indian-owned journal were possibly contributed by Indian researchers. Co-authorship network analysis revealed limited collaboration among authors. The authors from South Africa were rarely found in most journals in this study. The regime or economic conditions may also have an effect on the collaboration network as well as top-rank journal publication bias which was suggested by Howard *et al.* (2017) Most of the networks of authors published in top-ranked Asian Scopus-indexed journals in this study came from regions with major economic powers, such as China, Germany, the United States, etc.

#### 4. Discussion

The research reported here comprehensively investigated major Scopus-indexed journals in agricultural and biological sciences, with a focus on top-ranked publications. The study identified and compared key features as follows. (1) Top-cited articles from the perspective of journal manager, publication of articles addressing current global trends can substantially enhance citation rates. The surge in citations for the 2020 publication on China's COVID-19 has been cited throughout 2021 and 2022. Consequently, there was a strategic imperative to accept articles aligned with such trends. Findings correlated with Malvic *et al.* (2022) indicating that it is the strategies of an editorial board that boost citation and journal

standings. Keywords among the three different countries were similar with the ‘genetic’ and ‘human’ appearing in several clusters. (2) The result might suggest that the journal content in of the journals publishing in the same field (agricultural and biological sciences) might be almost the same. Institutional and country affiliations and authorship collaboration networks showed differences across the three different journals. Most authors were from the country where the journal is located which correlated with several previous reports such as Thailand (Sirirak, 2021), Croatia (Malvic *et al.*, 2022). In addition, the present research article provided a clearer picture of this in the country collaboration part for example, Chinese researchers have strong networks with Asian countries such as Singapore and Japan as well as the United Kingdom, while Japanese journals collaborated closely with the United States and Switzerland. Indian-owned journals were retrieved in several clusters in Europe and South America as well as some developed countries in Asia. It seems that political issues among countries may have a role in country collaboration. This may be due to funding to support research mostly coming from government organizations. This study confirms that politics may play a role in academia as well as in other regions of the world, as stated by Howard *et al.* (2017).

Based on the findings from this study, several recommendations can be made for policymakers. Firstly, it is recognized that the content related to the 2019-nCoV virus, plant resilience to the environment, and fish

genetics may be considered as the current trend of this decade. The publishers may use data from this study to make a content-receiving plan in order to boost the journal citation. Secondly, policymakers can use data from this study to consider collaboration for scholarly activities between academia in prominent countries. For personal interpretation, this study provides information to author of agricultural and biological research. Issues such 2019-nCoV virus, plant resilience to the environment, and fish genetics may be the topics which interest the journals as well as the topics that encounter global problems. Researchers in the field may use the result from this study to engage in research topics in order to provide findings to academia. In addition, this study can be used for setting research directions for institutions. Understanding how journals are structured and what kind of content they contain is essential for institutions to develop research plans and policies for the organization.

The current study provides different perspectives to those from previous research even though the analytical process was quite similar. This study provides information from the perspective of the publisher of the international journal in Agricultural and biological Sciences. The previous studies (Taş *et al.*, 2023; Soroya *et al.*, 2022) focused on the specific field of disciplines of Scopus-indexed journals while the current study focuses broadly on analyzing multiple major Asian Scopus-indexed journals in the field of agricultural and biological sciences in

three different countries. The finding shows similarities with previous studies in terms of the highly impacted journals depending on good practice of editorial policies, reviewers, and contributors who all play important roles in publications.

All studies inevitably have limitations, this study is not an exception. It used data from only a single field and the region was scoped to be only within the Asian region. The advanced statistical instruments were not used due to the limitation of license funds. Therefore, further studies can adapt the advanced statistical instruments to analyze bibliometric data of the journal in a specific field. Another limitation of this study is the limitation of analyzing author clusters individually. Another interesting topic is the Scopus-indexed journals in different quartiles in the same field. Do different factors affect journals in different quartiles? Finally, further research should focus more on providing a novel data analysis framework or studying impacts of factors on some metrics, which would contribute some new findings to the field.

## 5. Conclusion

In conclusion, while these three closely ranked Scopus indexed journals in agricultural and biological sciences operate in different countries, there were similar characteristics in terms of content and keywords, but there were differences in citations, authors, and academic collaborations which highlight the

diverse scholarly landscapes across different nations. A clear pattern emerges that the journal's country of origin strongly influences the predominant nationality of contributing authors, as well as the global scholarly network that thrives on regional academic collaboration. At present, the analysis of academic journals from a publisher's perspective remains constrained, leaving some room for further research in this domain among the large number of bibliometric analysis in current scholarly publications. Therefore, there may still be opportunities for researchers for deeper analyses of publishing practices.

## Human Ethics Approval

All procedures performed in the studies were in accordance with the ethical standards of the Mahasarakham University Ethical Committee. The study was approved by Mahasarakham University Ethical Committee (No. 408/2023)

## Artificial Intelligence Declaration

The content of this article was originally crafted by author teams whose native language is not English. The authors utilized the power of artificial intelligence to enhance English grammar and coherence within this content.

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