Journal of Applied Science, Engineering, Technology, and Education *ISSN: 2685-0591 (online)*
Vol. 7 No. 2 (2025)
https://doi.org/10.35877/454RI.asci4189

A Bibliometric Analysis of Scientific Publications at Universiti Malaysia Sabah

Anath Rau Krishnan, Rizal Hamid, Geoffrey Harvey Tanakinjal, Saiful Bahri, Nalini Arumugam

[a]*Labuan Faculty of International Finance, Universiti Malaysia Sabah, 87000 Labuan F.T., Malaysia*
[b]*Universitas Slamet Riyadi, Jl.Sumpah Pemuda No 18, Surakarta, Indonesia*
[c]*Faculty of Bioresources and Food Industry, Universiti Sultan Zainal Abidin, 22200 Besut, Terengganu, Malaysia*

Abstract

This study presents a comprehensive bibliometric analysis of scientific publications associated with Universiti Malaysia Sabah (UMS) from 1994 to 2024, tracing the university's research progression over three decades. Using data extracted from the Scopus database, the study analyzes 9,217 publications by document type, open access (OA) status, and author keywords across three distinct decades using tools like Power Query, Microsoft Excel 365, and VOSviewer version 1.6.20. Findings reveal a steady increase in scientific publication productivity, with journal articles dominating output and OA publishing experiencing a significant surge in recent years. The keyword analysis highlights a consistent emphasis on local issues, particularly those related to Sabah and oil palm, while also reflecting the university's growing engagement with emerging global themes such as COVID-19, machine learning, and deep learning. These insights suggest that future research efforts at UMS could be strategically aligned with other high-impact and trending areas, including climate change, renewable energy, public health, and artificial intelligence.This study offers the first comprehensive, cross-disciplinary bibliometric analysis of UMS publications, uniquely highlighting the university's growing engagement with open access publishing. The findings offer valuable guidance for future policy decisions, particularly in enhancing publication funding, promoting balanced growth across disciplines, and advancing open science initiatives.

Keywords: Bibliometric analysis; scientific publications; Scopus; Universiti Malaysia Sabah

Received: 29 July 2025 Revised: 19 August 2025 Published: 31 August 2025

1. Introduction

Universiti Malaysia Sabah (UMS), established in 1994, stands as one of Malaysia's prominent public universities. The idea to establish UMS was coined to provide higher education opportunities mainly for the local students in Sabah, while also welcoming students from other states across Malaysia (Mujani et al., 2014). Furthermore, the presence of the university was expected to drive various economic developments for the local community, a vision that has become evident in the present day. Located in Kota Kinabalu, Sabah, UMS has expanded its operations to include two additional campuses in Sandakan and Labuan (Mohd Sharif et al., 2017), further addressing the educational and research needs of the country.

In essence, UMS is not only committed to academic excellence but also strives to be a leading research institution, generating groundbreaking discoveries that translate into practical solutions for industries and communities. Over the past 30 years, UMS has achieved remarkable milestones in research. Notably, in 2023 and 2024, the university maintained a five-star rating in the Malaysian Research Assessment, a system developed by the Ministry of Higher Education (MoHE) to assess the research performance of public and private universities. Additionally, UMS was ranked between 1001 and 1200 in the 2024 QS global university rankings.

In recent years, UMS researchers have secured numerous international grants, demonstrating the impact of their innovative research ideas. For instance, in 2022, the Labuan Faculty of International Finance received funding from the

* Corresponding author.
E-mail address:

ASEAN-Japanese Centre to examine opportunities for the BIMP-EAGA region to leverage the circular economy. At the same time, UMS continues to forge research partnerships with local industries seeking expertise in enhancing operational efficiency and business performance. In 2024 alone, UMS researchers secured RM3,868,656 through MoHE's Industry Matching Programme, covering various sectors including aquaculture, tourism, and oil and gas. Meanwhile, that same year, seven project proposals from UMS focused on green technology were approved and funded by Petronas, with total funding reaching RM5.75 million.

Another significant achievement for UMS is the recognition of the Borneo Marine Research Institute as a Higher Education Centre of Excellence (HiCoE) for its outstanding contributions to the production of high-value marine fish seeds. This accolade underscores UMS's commitment to research and innovation, particularly in areas vital for national development and economic growth.

UMS is also dedicated to ensuring that its research activities directly benefit communities and industries, enhancing its contributions to the body of knowledge. The establishment of living labs serves as a testament to this commitment, consistent with the university's guiding theme, "Leading Towards Innovative Societies". These living labs engage with real environments and communities, facilitating research that directly impacts societal and industrial needs. Reflecting the Sabah State Government's confidence in UMS researchers, a recent pledge of RM2.5 million was made to further bolster UMS living lab initiatives.

Despite all these achievements, UMS is continuously charting its efforts to excel in research activities, injecting more funds to improve researcher engagement, especially for early-career researchers through schemes such as the Skim Dana Kluster and Skim Dana Kolaborasi. The Anugerah Penyelidikan UMS, an annual awards ceremony, recognizes and motivates researchers who achieve excellence in various categories. Additionally, special grant schemes for innovation projects and intellectual property registration are introduced to promote commercialization activities among researchers, ensuring that their findings translate into products that solve real problems, benefit society, or generate income.

While conducting research and innovation projects is important, UMS believes that reporting or publishing the outcomes of such projects is equally crucial. UMS recognizes publication as a vital aspect of research, allowing the global community to benefit from findings while enhancing UMS's visibility. Moreover, increasing recognition through publications has been outlined as one of the strategic initiatives under the 3rd Key Result Area of the UMS Strategic Plan 2023-2027, with each faculty, center, and academy assigned publication targets based on their respective domains and researchers' strengths. UMS has also introduced funding schemes for journal article publications and organized various workshops to boost publication productivity among its researchers. Given the various initiatives and strong emphasis placed on scientific publication, it is timely to conduct a bibliometric analysis to examine how the publication culture among UMS researchers has evolved since the university's establishment. Such an analysis can offer valuable insights to inform future strategies and policies related to research publication.

The remainder of this paper is structured as follows: Section 1 presents an overview of UMS's research and publication journey over the past three decades. Section 2 reviews relevant bibliometric studies and highlights three key aspects commonly examined in bibliometric analysis. Section 3 describes the methods used for bibliographic data collection and analysis. The findings are discussed in Section 4. Finally, Section 5 concludes the paper by summarizing the key contributions and limitations of the study.

2. Survey on Past Literature

Bibliometric analysis serves as a widely used method for exploring the research and publication patterns of an institution (Sarjidan & Kasim, 2023). In such analyses, researchers typically collect publication data specific to the institution from scholarly databases such as Scopus, using predefined criteria. The collected data is then cleaned and analyzed. Most bibliometric analyses summarize the findings through various visualizations (Buri et al., 2024; Liu et al., 2025), such as pie charts, treemaps, geographic maps, word clouds, and others, as these formats can effectively provide clear evidence of the institution's research and publication productivity.

In a related study, Baby & Kumaravel (2012) analyzed the research productivity of Periyar University faculties in India using bibliometric methods, mainly to identify publication growth rate, most prolific authors and most prolific journals. The data for their study were retrieved from the Scopus database, covering a period of thirteen years from 1998 to 2010.

Ismail et al. (2017), on the other hand, conducted a bibliometric analysis to examine open access (OA) publication trends within the Universiti Sains Malaysia (USM) community. The analysis was based on several criteria, including

publication productivity, citation impact, subject coverage, and publishing costs. They collected data on OA publications from 2013 to 2015 using the Scopus database. The study specifically focused on OA publications in hopes of providing useful insights to support USM researchers in making informed decisions regarding future OA publishing efforts.

Similarly, Yusop et al. (2022) conducted an in-depth bibliometric analysis using data extracted from the Scopus database to explore publication and research trends at Universiti Teknologi Malaysia, particularly after its recognition as one of the nation's Research Universities. The analysis primarily aimed to identify the key research areas in which the university excels.

In a recent study, Daimary (2024) conducted a 29-year bibliometric analysis (1995–2023) of Tezpur University's research output across four major disciplines: Science, Engineering, Management Science, and Humanities & Social Sciences. The study highlights trends in publication volume, citation impact, and collaborative research practices. Findings indicate that Science and Engineering dominate in overall output, while Management Science has experienced the most rapid growth. The analysis also identifies influential authors, key research themes, and assesses the university's specialization at both national and global levels, offering insights into Tezpur University's academic strengths and guiding future research and collaboration strategies.

When conducting a bibliometric analysis, various aspects can be examined depending on the objectives of the study. One commonly analysed aspect is the type of scientific publication. For instance, Krishnan (2025) analysed the publication patterns related to a decision-making method known as CRITIC. The study examined publications from the method's inception, categorised by publication type, and found that most CRITIC-related works appear as journal articles. Based on this finding, Krishnan (2025) recommended that scholars should consider writing more books that offer less technical and more accessible explanations of the CRITIC method, in order to attract broader academic and practical interest. In essence, understanding whether researchers prefer to publish in journals, conference proceedings, or book chapters can offer insights into their dissemination strategies. Each type of publication has its benefits. Journal articles go through strict peer review, which boosts their credibility and chances of being cited. In contrast, conference proceedings allow researchers to present their work, receive immediate feedback, and engage in meaningful academic discussions.

On the other hand, the rapid rise of open access (OA) publishing outlets has led to a growing number of bibliometric studies focused specifically on OA publication trends. For instance, Galán-Valdivieso et al. (2024) conducted a comparative bibliometric analysis to trace publication trends in Green Public Procurement across OA and traditional journals. The swift growth of OA is widely regarded as an innovation in scholarly communication, offering broader access to scientific knowledge and facilitating faster advancement of science (Miguel et al., 2016). Many researchers are increasingly drawn to OA platforms, as these outlets not only enhance their visibility and citation potential but also contribute to higher research productivity (Chung & Tsay, 2015; Langham-Putrow et al., 2021). Supporting this, Breugelmans et al. (2018) conducted a bibliometric analysis on poverty-related disease (PRD) publications and confirmed a clear citation advantage for OA articles. Within the university context, understanding staff preferences for OA publishing through bibliometric analysis can benefit institutional management in multiple ways. It enables them to align policies with current publishing trends, such as expanding support for OA platforms, and to make informed decisions on funding allocations for article processing charges (APCs) or OA memberships.

There are several bibliometric analyses that have attempted to identify popular keywords associated with publications, with the aim of revealing key areas of interest within a subject or institution (Krishnan et al., 2024). Typically, visual methods such as word clouds or density maps are used to graphically summarize and detect frequently used publication keywords. When a university's publications are analyzed based on their keywords, it allows the institution to determine whether its research and publication activities align with current priorities. This insight helps in managing resources effectively, either by focusing on areas where staff excel or by strengthening efforts in emerging or underrepresented research areas. For instance, Indarta et al. (2023) conducted a bibliometric study of SINTA-indexed publications produced by the Faculty of Engineering at Universitas Negeri Padang. Their word cloud analysis revealed several prominent keywords, including "system," "computer," "learning," "information," and "education," suggesting a strong research focus and expertise in digital learning and related technologies within the faculty.

Based on the literature reviewed, it is evident that analyzing publication data through three key aspects: (1) publication types, (2) open access publishing, and (3) popular keywords—can offer meaningful insights into an institution's publication patterns. In line with this, the present study conducts a three-decadal bibliometric analysis of Universiti Malaysia Sabah (UMS) publications to explore how its research output has evolved over time. As UMS celebrates its 30th anniversary, this is a timely opportunity to revisit the university's scientific publication landscape and evaluate

how its research and dissemination practices have developed over the past three decades. The insights gained may inform strategies for sustaining research excellence and guiding future policy directions to further strengthen the university's publication culture.

While a previous bibliometric study by Khalli and Halmi (2023) focused on UMS publications in the social sciences, the current analysis provides a more comprehensive view by covering all disciplines, including both the sciences and social sciences. Furthermore, this study places particular emphasis on open access (OA) publishing, a mode of scholarly communication that has gained significant momentum in recent years but was not addressed in the earlier study. In essence, this bibliometric analysis seeks to address the following research questions (RQs):

a) How has UMS's publication productivity evolved over the past three decades across different types of publications? (RQ1)
b) What are the trends in UMS's adoption of open access publishing over the past three decades? (RQ2)
c) How have the key research focus areas of UMS researchers shifted based on keyword patterns across the three decades? (RQ3)

3. Methodology

The analysis began by searching and compiling relevant bibliometric data. The Scopus database was selected for this purpose due to its comprehensive coverage of scholarly publications across a wide range of disciplines, including science, technology, medicine, social sciences, and the arts and humanities. Scopus is widely recognized for indexing a larger number of journals compared to many other research databases.

The search focused on retrieving publications affiliated with UMS. Only publications from 1994 onward were included, as UMS was officially established in 1994. In other words, publications dated after 1993 and before 2025 were retained to facilitate a three-decade comparative analysis.

To focus on core scientific outputs, the search was further refined to include only journal articles (ar), conference proceedings (cp), and book chapters (ch) since these formats are commonly associated with the dissemination of original research findings. Other document types, such as books or review articles, were excluded as they typically serve different scholarly purposes and fall outside the scope of this study.

In short, a targeted search was performed in the Scopus database on January 26, 2025, using the following query string, which yielded a total of 9,217 publications: *AFFILORG (universiti AND malaysia AND sabah) AND PUBYEAR > 1993 AND PUBYEAR < 2025 AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ch")).*

The final publication dataset was exported and saved in CSV format. During the extraction process, we ensured that all essential fields were included, such as publication title, year of publication, open access status, document type, and author keywords. The CSV file was then imported into Power Query, a data transformation tool integrated with Microsoft Excel, to clean and prepare the data for analysis. For example, entries labeled as Gold Open Access, Green Open Access, and similar categories were standardized and recoded as "Yes". Blank fields, which indicate non-open access publications, were recoded as "No" to maintain consistency in classification (see Fig. 1).

The cleaned dataset was then loaded into Microsoft Excel 365, where it was analyzed using PivotTable and PivotChart features. These tools were used to process and visually compare publications by document type and open access status across three distinct decades: 1994–2004 (first decade), 2005–2014 (second decade), 2015–2024 (third decade). Pie charts were used to illustrate the distribution of document types, while bar graphs summarized the publications based on open access status.

Simultaneously, the original CSV file was split into three separate datasets, each corresponding to a specific decade. Each dataset was uploaded to VOSviewer version 1.6.20 to generate keyword density maps for each decade. The full counting method was selected, as it is better suited for identifying the most frequently occurring keywords, aligning well with the objective of this analysis (see Fig. 2). Additionally, the minimum keyword occurrence threshold was adjusted for each dataset to ensure that no more than 10 popular keywords were displayed per decade.

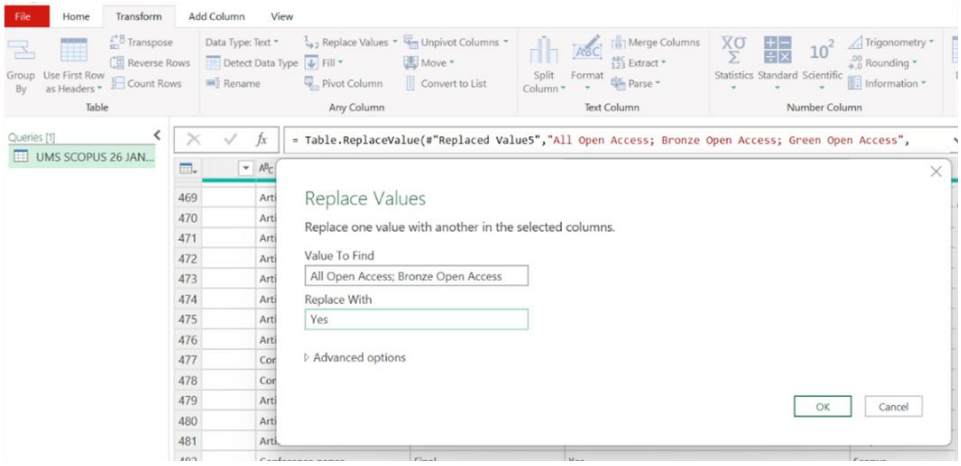

Fig. 1. Screenshot of Power Query Editor used for data formatting

Fig. 3 illustrates the workflow and tools involved in conducting the bibliometric analysis and how they relate to the research questions outlined in Section 2.

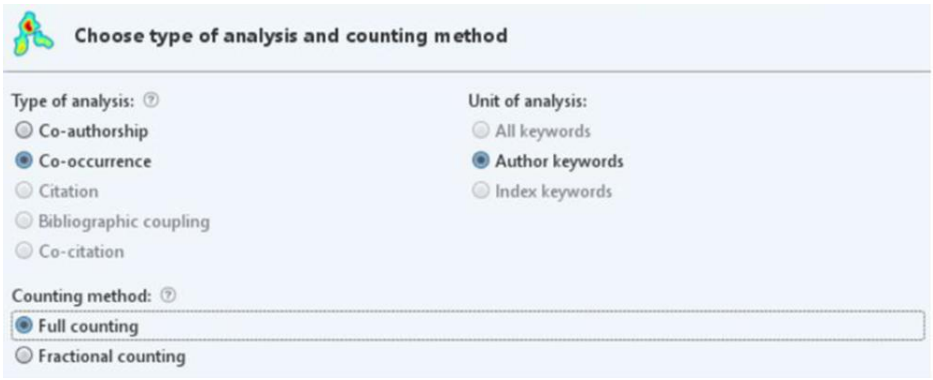

Fig.2. VOSviewer setting for keyword analysis

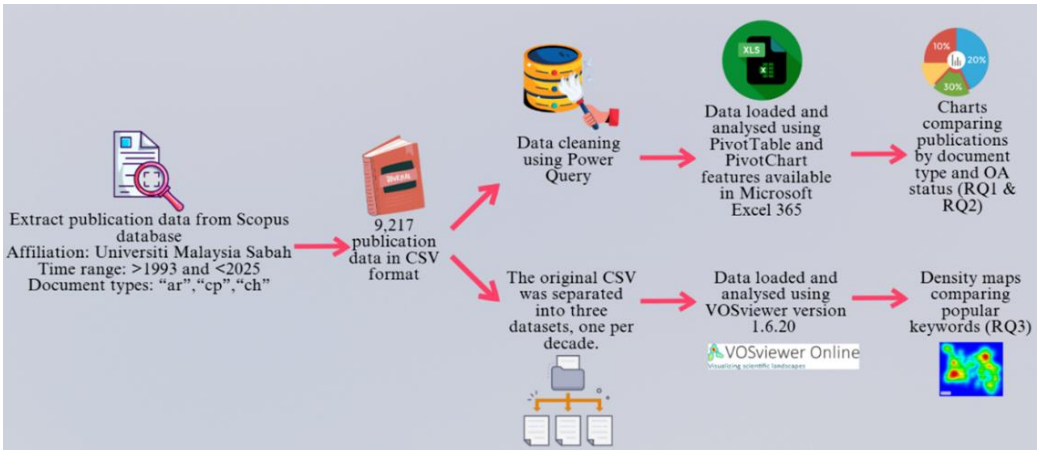

Fig. 3. Workflow and tools used in the bibliometric study

4. Results

The analysis of publication types indexed in Scopus from UMS between 1994 and 2024 reveals a consistent growth in scientific output across three decades. As shown by Fig. 4, journal articles dominated throughout the period, comprising 69% of publications in the first decade (1994–2004), increasing to 67% in the second decade (2005–2014), and further

rising to 76% in the third decade (2015–2024). Overall, journal articles accounted for 74% of total publications (n = 6851), indicating a strong institutional emphasis on peer-reviewed scholarly dissemination.

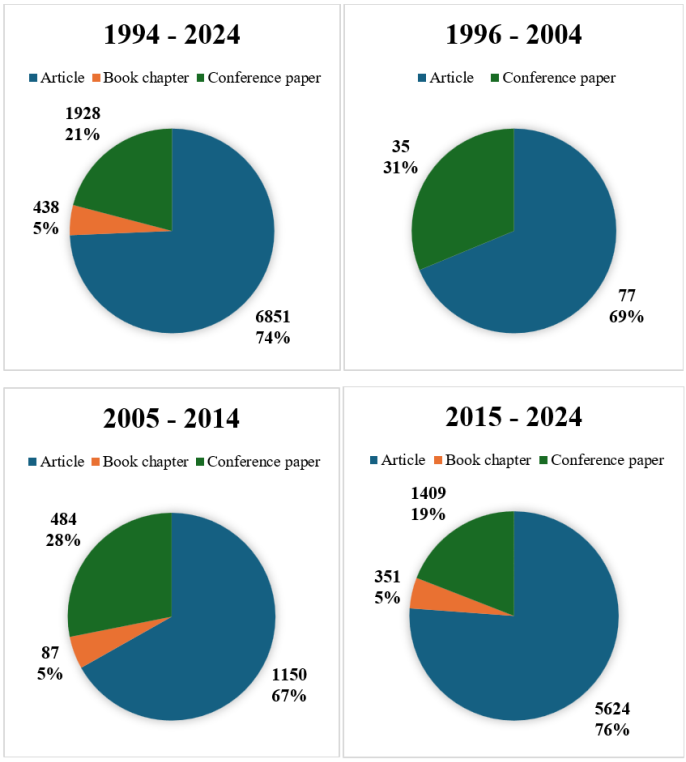

Fig. 4. Analysis according to publication types

Conference papers, while playing a more prominent role during the early years (31% in the first decade), gradually declined in proportion, representing 28% in the second decade and 19% in the third decade, contributing to 21% (n = 1928) of the overall output. This downward trend suggests a tactical shift from preliminary conference presentations to more mature forms of publication, possibly reflecting institutional policies favouring high-impact journals.

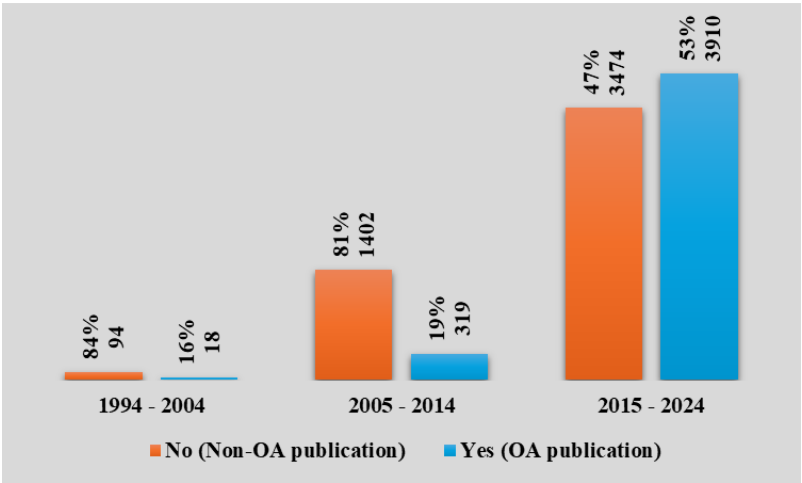

Fig. 5. OA versus non-OA publications

Book chapters were absent in the first decade but emerged in the second decade, maintaining a steady share of 5% through the subsequent periods, culminating in a total of 438 book chapters. The appearance and sustained presence of book chapters indicate diversification in publication strategies.

In terms of OA publishing, the publication data of UMS over the past three decades reveals a significant shift in publishing preferences, with a notable increase in OA publications (refer to Fig. 5). From 1994 to 2004, OA publications constituted only 16% of total outputs, with the majority (84%) being non-OA. This trend remained relatively stable in the following decade (2005–2014), with OA publications slightly increasing to 19%.

However, a major transformation occurred in the most recent decade (2015–2024). During this period, OA publications surged to account for 53% of all publications, overtaking non-OA publications for the first time. In absolute terms, the number of OA publications (3,910) also surpassed non-OA outputs (3,474), despite the continued growth in total research output.

Meanwhile, the keyword analysis based on VOSviewer density maps reveals how research themes at UMS have evolved over the past three decades, reflecting both local priorities and emerging global trends. In the first decade (1994–2004), the dominant keywords included "lightweight concrete," "termites," "fuzzy logic," and "Sabah" (refer to Fig. 6). This suggests a focus on construction materials, pest control, and early applications of computational techniques, alongside a strong emphasis on local geographical relevance.

During the second decade (2005–2014), the research landscape began to diversify. Keywords such as "groundwater," "seawater intrusion," "oil palm," "Southeast Asia," "Borneo," "Malaysia," "attitude," and "consumer behaviour" reflect growing attention to environmental issues, regional identity, and socio-economic research, particularly in the areas of natural resources and public perception.

In the most recent decade (2015–2024), while "Sabah," "Malaysia," "Borneo," and "oil palm" remained consistently prominent, new keywords such as "COVID-19," "machine learning," and "deep learning" emerged. This indicates a shift toward more contemporary and data-driven research, as well as responsiveness to global challenges like the pandemic.

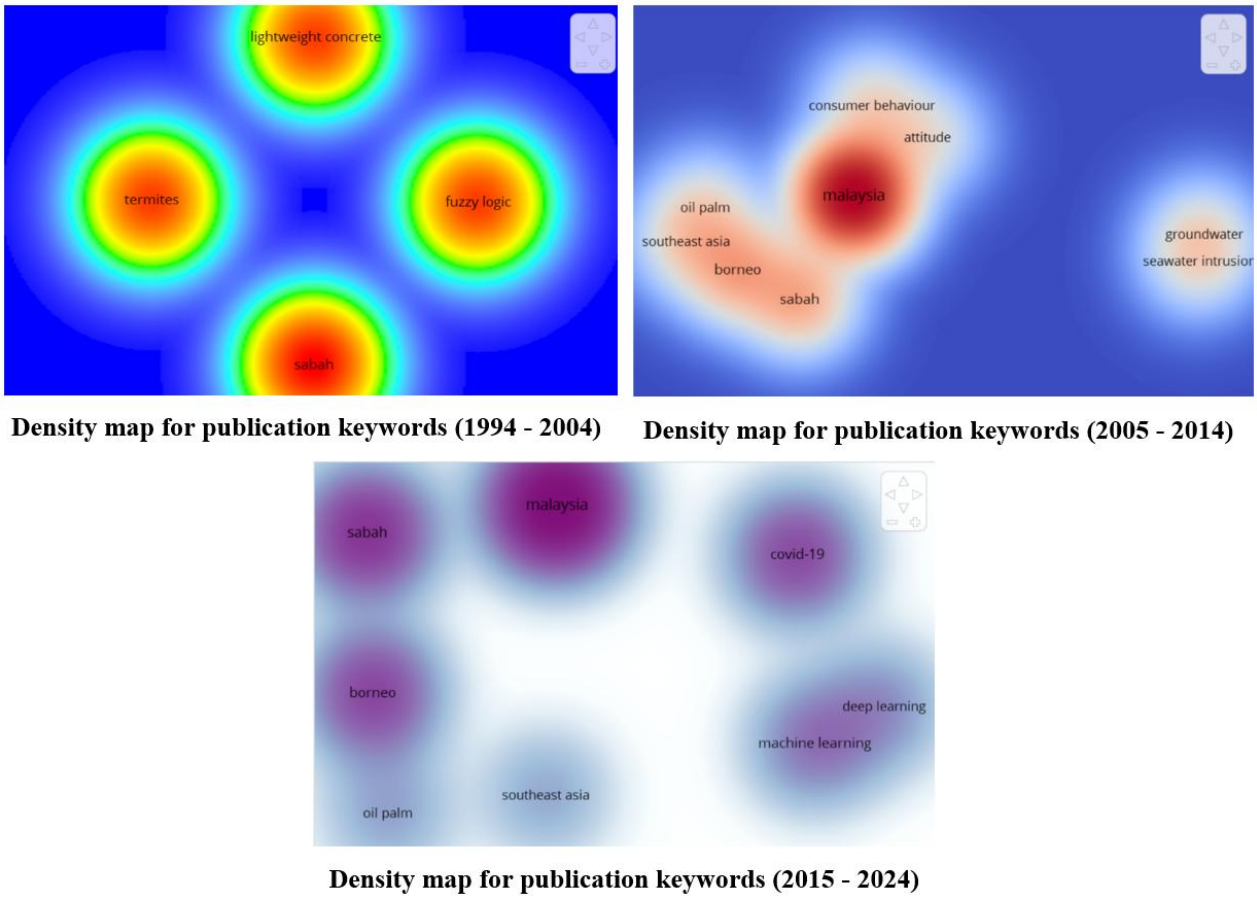

Fig. 6. Density maps for publication keywords

5. Discussion

The findings on publication types suggest that UMS has undergone a significant transformation in its research profile, reflecting both increased research capacity and improved output quality. The growing dominance of journal articles and the steady rise in book chapters indicate a maturing research ecosystem. In contrast, the declining share of conference papers suggests a strategic shift toward more impactful, peer-reviewed publication channels.

This shift is consistent with national evaluation standards such as the MYRA, which assigns greater weight to indexed journal publications (Ta et al., 2021). UMS has responded to this by aligning its performance appraisal and promotion criteria to favor journal outputs, thereby incentivizing researchers to prioritize journal article publication. This has fostered a healthy competitive research culture, contributing to the significant rise in journal publications over recent years.

Furthermore, the growing number of postgraduate students has likely influenced this trend, as many are required to publish as part of their graduation requirements. Moving forward, UMS is encouraged to fortify its recruitment of postgraduate candidates, particularly international students, not only to increase journal article output but also to enrich the overall research ecosystem with diverse academic contributions (Tella & Onyancha, 2021).

At the same time, considering the current proportion of publications in conference proceedings, UMS may explore the option of organizing more in-house conferences in collaboration with reputable publishers such as Springer and IEEE. This approach would help maintain a steady number of indexed conference publications, especially in situations where budget constraints limit staff participation in external conferences. Beyond publication output, as mentioned by Hauss (2021), such initiatives would also provide opportunities for networking and academic exchange, fostering collaboration with peers from other institutions and potentially leading to new research partnerships.

Meanwhile, the analysis of OA publishing trends indicates that OA has become the preferred choice among UMS researchers in recent years. Several factors may have contributed to this shift, including increased awareness of the benefits of OA publishing, such as greater visibility (Ramesh, 2024), higher citation potential (Huang et al., 2024) and foster transparency and reproducibility in scholarly work (Logullo et al., 2024).

Although OA journals typically require authors to pay article processing charges (APCs) upon acceptance, UMS has taken proactive steps to support its researchers. In line with the global movement toward open science, the university introduced its own publication funding scheme, known as *Skim Dana Penerbitan Artikel*, to help cover APCs for articles published in indexed journals or books. This initiative enables researchers to disseminate their findings through reputable OA channels without financial burden. In addition, existing internal and external research funding schemes, such as the Fundamental Research Grant Scheme, allow a portion of the budget to be allocated for APCs. These combined efforts have supported the growing adoption of OA publishing among UMS researchers.

On the other hand, our keyword analysis reveals that “Sabah” has remained a dominant keyword across all three decades, indicating that the state continues to be a core geographical focus for UMS researchers. This consistent emphasis reflects the university’s commitment to addressing local issues and community needs through research and innovation. In other words, UMS remains aligned with one of its founding missions, which is to drive development in the state of Sabah through impactful research. This focus is further illustrated through several notable publications that directly address Sabah’s specific needs and challenges. For instance, Chai et al. (2024) examined the short- and long-term impacts of the 2015 Ranau earthquake (6.0 Mw) on river systems in Sabah. Their study provides crucial data on post-earthquake land cover changes, particularly river bar formation, which is essential for assessing impacts and informing mitigation efforts. Similarly, Rashid et al. (2024) explored natural resources around Kota Marudu, Sabah proposing planning strategies for rural tourism development based on the area’s diverse landscapes and rich cultural heritage.

Another keyword that has consistently appeared over the past two decades is “oil palm.” This is not surprising, as UMS is home to experts in various fields of agriculture, including agricultural products and agrotechnology, particularly from the Faculty of Sustainable Agriculture and the Faculty of Science and Technology. The presence of the Sustainable Palm Oil Research Unit at UMS has further strengthened research collaborations with oil palm industry players in Sabah to address challenges and explore solutions related to oil palm cultivation. Given that palm oil is one of Sabah’s main agricultural commodities, the state naturally provides real-world environments suitable for conducting field experiments and data collection. A relevant example is the study by Mohd Rashid et al. (2020), which investigated the infection mode of *Ganoderma* species in oil palm using in-vitro cultural characteristics and somatic compatibility. The samples for this study were collected from an estate in Sandakan, Sabah.

The keyword analysis also indicates that UMS researchers have been actively engaged in COVID-19-related research in recent years, demonstrating their commitment to contributing valuable insights and recommendations during this unprecedented global crisis. Like many institutions worldwide, UMS responded to the pandemic by encouraging its researchers to undertake studies that could address various aspects of the outbreak, ranging from policy guidance to technological innovations. Notably, the university allocated RM7.6 million in funding to support COVID-19-related research projects (Utusan Borneo Online, 2020), underscoring its proactive role in tackling pandemic challenges. It is therefore unsurprising that "COVID-19" emerged as one of the prominent keywords in UMS publications. One such recent publication is by Rahlin et al. (2023), in which they identified financial hardship and online learning as key stressors affecting university students during the pandemic. In another publication, Abdul Rahim and Ramdzan (2023) examined the prevalence of burnout among healthcare workers (HCWs) in Lahad Datu, highlighting the emotional toll faced by frontliners during the health crisis.

The keyword analysis further shows that UMS researchers have increasingly adopted AI-related techniques, especially machine learning and deep learning, in their recent work, reflecting a growing emphasis on innovative and intelligent solutions. These techniques have gained traction particularly in the past decade (2015–2024), during which they emerged as among the most frequent keywords in UMS publications. For instance, Ulaganathan et al. (2023) developed a machine learning-based classifier designed to detect scam conversations across various digital formats, including live calls. In another study, Sijie et al. (2024) explored the performance of a stacked ensemble method that combines an Artificial Neural Network with other machine learning models to predict health insurance premiums. These examples highlight the researchers' strong technical expertise and engagement with current analytical trends, especially those from the Faculty of Engineering and the Faculty of Computing and Informatics, who have been instrumental in driving AI-focused research and publications at UMS.

Overall, it is evident that UMS's key research focus areas have been aligned with ongoing societal needs and emerging global trends. UMS may continue providing funding, human resources, and infrastructure support for research projects in which it already excels, particularly those related to Sabah, oil palm, machine learning, and deep learning. In addition, future research funding could be strategically directed toward other high-impact and trending areas such as climate change, renewable energy, public health, and artifical intellegence. However, the keyword analysis shows that most of the frequently occurring publication keywords are associated with the science and technology domains, with limited representation from the social sciences. This indicates a need to enhance research and publication productivity in the social sciences at UMS. In this context, the establishment of the Art, Social Science, and Humanities Cluster by UMS can be seen as a timely and strategic move. The cluster committee may continue organizing more targeted programs to boost research and publication productivity among social science researchers. These may include dedicated publication funding for social science disciplines, writing workshops tailored to early-career researchers, and mentorship programs to nurture academic growth and enhance research visibility in the social science fields.

6. Study Contributions, Limitations, and Future Directions

This study offers a two-fold contribution. From a literature perspective, it presents the first comprehensive bibliometric analysis of UMS publications that encompasses all academic disciplines, including both science and social sciences. Previous studies had focused only on the social sciences. What makes this study unique is that it also focuses on OA publishing, highlighting UMS researchers' growing preference for OA platforms. This is particularly relevant given the rising trend of OA publishing, which enhances citation potential and improves accessibility across the global scientific community. In addition, the study analyzes publication trends across three distinct time periods, providing detailed insights into how UMS's publication landscape has evolved over the past three decades, making it a fitting tribute to the university's 30th anniversary.

From a managerial perspective, the study provides quantitative evidence that can assist the UMS Research Management Centre and other stakeholders in understanding the evolution of the university's research and publication trends. Based on the findings, several recommendations are proposed to sustain and strengthen the current momentum in research productivity, particularly in terms of scientific dissemination and visibility.

Nevertheless, this study has a few limitations that could be addressed in future research. First, the bibliometric analysis was based solely on publication data extracted from the Scopus database. Future studies may expand on this by incorporating bibliographic data from other prominent scholarly databases, such as Web of Science and Google Scholar, to provide a more comprehensive and conclusive picture of UMS's publication trends.

Second, the current study primarily focused on analyzing publication trends using quantitative or productivity-based indicators, such as the number of publications by document type, the quantity of AO publications, and frequently occurring publication keywords. However, it did not examine the quality of UMS publications in depth. Future bibliometric research could extend this work by including quality-related indicators, such as citation counts and the distribution of publications across journal quartiles (Q1–Q4), to better assess the scholarly impact of UMS's research output.

Acknowledgements: The authors would like to express their sincere gratitude to UMS for its overall support in facilitating this research. Special appreciation is extended to the UMS Library for providing access to the Scopus database, which was instrumental in enabling the data collection and execution of the bibliometric analysis.

Contribution: Anath: Conceptulization, data analysis/ interpretation, and drafting manuscript. Hamid: Data acquisition. Tanakinjal: Supervision and final approval. Bahri: technical or material support. Arumugam: Editing/reviewing.

References

Abdul Rahim, M. M., & Ramdzan, A. R. (2023). Burnout among Healthcare Workers During COVID-19 Pandemic in Lahad Datu District. *Malaysian Journal of Medicine & Health Sciences*, *19*.

Baby, K., & Kumaravel, J. P. S. (2012). Research productivity of Periyar University: A bibliometric analysis. *International Research Journal of Library, Information and Archival Studies*, *1*(1).

Breugelmans, J. G., Roberge, G., Tippett, C., Durning, M., Struck, D. B., & Makanga, M. M. (2018). Scientific impact increases when researchers publish in open access and international collaboration: A bibliometric analysis on poverty-related disease papers. *PloS One*, *13*(9), e0203156.

Buri, Z., Sipos, C., Szűcs, E., & Máté, D. (2024). Smart and sustainable energy consumption: a bibliometric review and visualization. *Energies*, *17*(13), 3336.

Chai, L. T., Nainar, A., Roslee, R., Wong, W. V. C., & Phua, M.-H. (2024). Assessment of immediate and five-year earthquake impacts on river systems in sabah, Malaysia using multi-temporal satellite imageries. *Geoenvironmental Disasters*, *11*(1), 16.

Chung, J., & Tsay, M.-Y. (2015). A bibliometric analysis of the literature on open access in scopus. *Qualitative and Quantitative Methods in Libraries*, *4*(4), 821–841.

Daimary, N. (2024). Research output of Tezpur University, during 1995-2023: A bibliometric analysis using Web of Science. *Annals of Library and Information Studies*, *71*(2), 172–179.

Galán-Valdivieso, F., Alonso-Cañadas, J., Saraite-Sariene, L., & Caba-Perez, C. (2024). Green Public Procurement in open access and traditional journals: a comparative bibliometric analysis. *Journal of Public Procurement*, *24*(1), 91–113.

Hauss, K. (2021). What are the social and scientific benefits of participating at academic conferences? Insights from a survey among doctoral students and postdocs in Germany. *Research Evaluation*, *30*(1), 1–12.

Huang, C.-K., Neylon, C., Montgomery, L., Hosking, R., Diprose, J. P., Handcock, R. N., & Wilson, K. (2024). Open access research outputs receive more diverse citations. *Scientometrics*, *129*(2), 825–845.

Indarta, Y., Watrianthos, R., & Samala, A. D. (2023). Research Growth of Engineering Faculty Universitas Negeri Padang: A Bibliometric Study of Journal. *Journal of Systems Engineering and Information Technology (JOSEIT)*, *2*(1), 16–24.

Ismail, M. I., Mohd Napiah, M. K., Mohamad Saad, S. R., Che Jaafar, C. R., Azmi, N. A., Ahmad, R., Hassan Basri, J., Ahmat, M. A., Ameer Sultan, A. B. A., Jasni, F. A., Khairuddin, N. A., & Ahmad Al-Munawar, F. N. (2017). Open access publication of Universiti Sains Malaysia: A bibliometric analysis. *Jurnal PPM: Journal of Malaysian Librarians*.

Khalli, M. N. M., & Halmi, M. F. A. (2023). Analisis Bibliometrik Kajian Sains Sosial Di Universiti Malaysia Sabah (Ums) Dalam Pangkalan Data Scopus Sehingga Tahun 2021. *MANU Jurnal Pusat Penataran Ilmu Dan Bahasa*, *34*(1), 1–18.

Krishnan, A. R. (2025). Research trends in criteria importance through intercriteria correlation (CRITIC) method: a visual analysis of bibliographic data using the Tableau software. *Information Discovery and Delivery*, *53*(2), 233–247.

Krishnan, A. R., Arumugam, N., Tanakinjal, G. H., Hamid, M. R. A., Krishnan, V., & Pentang, J. T. (2024). Trends in the Application of Multi-Criteria Decision-Making Methods for Agricultural Land Suitability Assessments: A Keyword Analysis Using Bibliographic Data. *2024 IEEE International Conference on Agrosystem Engineering, Technology & Applications (AGRETA)*, 89–94.

Langham-Putrow, A., Bakker, C., & Riegelman, A. (2021). Is the open access citation advantage real? A systematic review of the citation of open access and subscription-based articles. *PloS One*, *16*(6), e0253129.

Liu, J., Mai, H., Zhao, X., & Zhou, Z. (2025). Business tourism: a bibliometric visualization review (1994–2023). *Tourism Review*, *80*(5), 989–1016.

Logullo, P., de Beyer, J. A., Kirtley, S., Schlüssel, M. M., & Collins, G. S. (2024). Open access journal publication in health and medical research and open science: benefits, challenges and limitations. *BMJ Evidence-Based Medicine*, *29*(4), 223–228.

Miguel, S., Tannuri de Oliveira, E. F., & Cabrini Gracio, M. C. (2016). Scientific production on open access: A worldwide bibliometric analysis in the academic and scientific context. *Publications*, *4*(1), 1.

Mohd Rashid, M. R., Chin, C. F. S., Syazanie A.E, D., & Darlis, D. (2020). Investigation on Ganoderma infection in oil palm based on the cultural characteristics and somatic compatibility: A case study in Sandakan, Sabah. *ASM Science Journal*, *13*(6), 23–29.

Mujani, W. K., Muttaqin, A., & Khalid, K. A. T. (2014). Historical development of public institutions of higher learning in Malaysia. *Middle-East Journal of Scientific Research*, *20*(12), 2154–2157.

Rahlin, N. A., Suriawaty, A., Bahkiar Bahkiar, S. A., Turan, S., & Fauzi, S. N. A. (2023). Global crucial risk factors associated stress among university students during post Covid-19 Pandemic: Empirical evidence from Asian country. In *Artificial Intelligence and Transforming Digital Marketing* (pp. 315–327). Springer.

Ramesh, M. R. (2024). Open Access Journals: Enhancing Author Visibility and Impact. *Naveen International Journal of Multidisciplinary Sciences (NIJMS)*, *1*(2), 20–27.

Rashid, R. A., Talib, H., & Lian, J. C. K. I. M. (2024). Assessing the Tourism Potentials of Kota Marudu and Its Surrounding Villages, Sabah, Malaysia. *Journal of Sustainability Science and Management*, *19*(12), 74–86.

Sarjidan, M. A. M., & Kasim, A. M. (2023). Trends of academic publications: A case study of Malaysian research universities. *Journal of Research Management and Governance*, *5*(1), 18–29.

Mohd Sharif, S., Selamat, I. A. M., & Gobilik, J. (2017). Students empowerment in campus sustainability through art installation project. *Journal of BIMP-EAGA Regional Development*, *3*(1).

Sijie, L., Sia, F., Alfred, R., & Moung, E. G. (2024). Ensemble Machine Learning Method for Health Insurance Premium Prediction. *2024 IEEE International Conference on Artificial Intelligence in Engineering and Technology (IICAIET)*, 642–646.

Ta, G. C., Halim, S. A., Azman, N., Komoo, I., & Mokhtar, M. (2021). Evaluating research performance of research institutes within Malaysian universities: an alternative assessment framework. *Tertiary Education and Management*, *27*(4), 331–349.

Tella, A., & Onyancha, B. (2021). Scholarly publishing experience of postgraduate students in Nigerian universities. *Accountability in Research*, *28*(7), 395–427.

Ulaganathan, T. A. R., Moung, E. G., Farzamnia, A., Yahya, F., Sze, F. S. F., & Hung, L. P. (2023). Online Conversation-Based Social Engineering Detection Using Machine Learning. *National Technical Seminar on Unmanned System Technology*, 193–208.

Utusan Borneo Online. (2020, August 5). *UMS sedia dana RM7.6 juta geran pemulihan impak COVID-19*.

Yusop, A. H. M., Chew, T. H., Sairan, F. M., & Nur, H. (2022). A bibliometric analysis of publications of Universiti Teknologi Malaysia. *Malaysian Journal of Fundamental and Applied Sciences*, *18*(1), 1–18.