Bibliometric Analysis of using social media for Education Purpose

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Abstract
The use of online tools in education has led to significant advancements in the field, giving rise to a specialized area of research. This has provided higher education institutions with increased opportunities to engage with their surroundings. One such avenue is the utilization of social media, which aims to enhance and streamline the educational process. The objective of this study is to comprehensively examine the research on the use of social media in higher education. This examination includes analysing publication findings, co-authorship patterns among authors and countries, frequency of author keywords, top institutions, and influential authors. By conducting a bibliometric analysis of 250 journal articles published between 2018 and 2022, using data from the Scopus database via the biblioshiny platform, this research has identified the leading countries in terms of publication output in this field, namely the United States, the United Kingdom, Australia, Malaysia, Saudi Arabia, and Spain. The term "social media in education" is gaining popularity as it aligns with the emerging global trends in online learning. The findings of this study can contribute to the expansion of collaborative networks and the exchange of global perspectives in teaching, learning, and research development.
Keywords: Social Media, Higher Education, Education, Bibliometric Analysis, Biblioshiny

Introduction
The education sector is currently encountering a multitude of challenges and undergoing transformations because of economic conditions and advancements in technology. (Serin Hamdi, 2022). Higher educational institutions are placing a high priority on implementing innovative educational ideas to enhance their services and learning environments (Gao et al., 2022). In recent times, online tools have become increasingly popular as higher educational institutions recognize the value of online tools in teaching (Gao et al., 2022). The Covid-19 pandemic has also played a role in the adoption of online tools education as some institutions had to resort to it as the only alternative to ensure the continuity of the learning process

(Kotula et al., 2021). Despite ongoing disagreements over the use of social media in education, some higher educational institutions have continued to use it, especially as the number of researchers who have studied the topic has increased (Breines et al., 2020; Alia, 2022).

Social media use has become one of the online tools for higher education that has emerged in recent years (Bagarukayo, 2018). Social media is becoming more and more popular in the field of education, as seen by the growing number of higher educational institutions that use it for both official and informal learning (Breines et al., 2020). By facilitating the sharing of resources between students and teachers, improving the quality of the information provided, improving the skill of resource searching, increasing the effectiveness of students' participation, developing students' ability to think clearly and effectively, and increasing learning achievement, integrating social media into education improves education (Alamri et al., 2020; Al-Hamad et al., 2022; Fuchs, 2022; Alia, 2022). To improve the teaching methods, leading to improved educational outcomes (Cabrera et al., 2020; Yang et al., 2021).

Despite social media's rising popularity in higher education, there hasn't been much research on how it may be used as a collaborative tool in the classroom or how academics can explicitly employ social media during the learning process (Hamadi et al., 2022). Few studies now provide maps illustrating the use of social media in education across multiple fields (Hamadi et al., 2022). Researchers specifically studied social media platforms in higher education; for example, a group of researchers presented an explanation for the importance of using the Facebook platform as one of the educational tools that students use to share information, as it offers many benefits that aid in the educational process (Faeq et al., 2018; Alia, 2022). Similarly, Tang and Hew (2017) noted that using Twitter to access, create digital content, and collaborate among students has the potential to promote positive learning (Al-Hamad et al., 2022). Recently, research has expanded to include several social media platforms such as Pinterest, Instagram, Snapchat, Telegram, and WhatsApp, among others (Alzain et al., 2021; Hamdi, 2022). Manka claims that while SM platforms have attracted a lot of interest among young people in 2020, the scientific literature has mostly ignored them. However, even though social media use in higher education is already quite common [6], much more has to be investigated in order to gain a better understanding of how it can be used as a teaching and learning tool (Hamadi et al., 2021). This study examines the research trends in using SM in education process in higher education (218-2022). This study aims to (i) analyze the different ways social media is used in education by examining international journal articles. (ii) It also seeks to highlight the contributions of leading authors and productive higher educational institutions from various countries. (iii) This research would benefit researchers, educators, and organizational leaders by giving them a better understanding of the current trends in the field of using SM in higher education. By staying up to date with the latest research, they can be more innovative and discover new opportunities in the ever-changing field of education. To achieve the research objectives, this study poses the following research questions: (i)What are the current trends regarding the use of social media in higher education? (ii) What are the main keywords used in articles about SM in higher education from 2018 to 2022? (iii) What are the most significant contributions between authors, institutions, and countries?

Research Methodology
The aim of this research is to explore how social media is used in the field of higher education. To achieve this, the study utilizes thorough and well-structured analysis methods by using

bibliometrics methodology (Brika et al., 2021). Bibliometrics is a statistical analysis technique that assists researchers in analyzing patterns in their field of study and provides quantitative data on academic publications. This approach differs from review papers, which focus on the latest developments, challenges, and potential directions of a topic. Despite this, bibliometrics analysis of educational information remains crucial today and is one of the most significant methodologies (Ghani et al., 2022). This study selected around 677 papers that explore the term social media in education. However, the study has some restrictions to choosing only the articles that help to answer the research questions. These restrictions include the use of specific search keywords to identify the selected studies and the exclusion of research that didn't involve using social media in the higher education process. All selected papers were written in English between 2018-2022. The section below includes an explanation of the process of identifying and selecting the papers for this study.

Search Strategy and Data Source
The data for this study came from the online database "Scopus". Online database has long been acknowledged among the most influential scientific and technical literature indexing tools, able of offering the most important areas of scientific and technological research (Gao et al., 2022). The articles were examined in phases after the search criteria were chosen and the recommendations were filtered as shown in Figure 1. The figure explains the process of identifying the research selected in the study and its stages, including the keywords chosen to identify appropriate studies and the filtering and exclusion process.
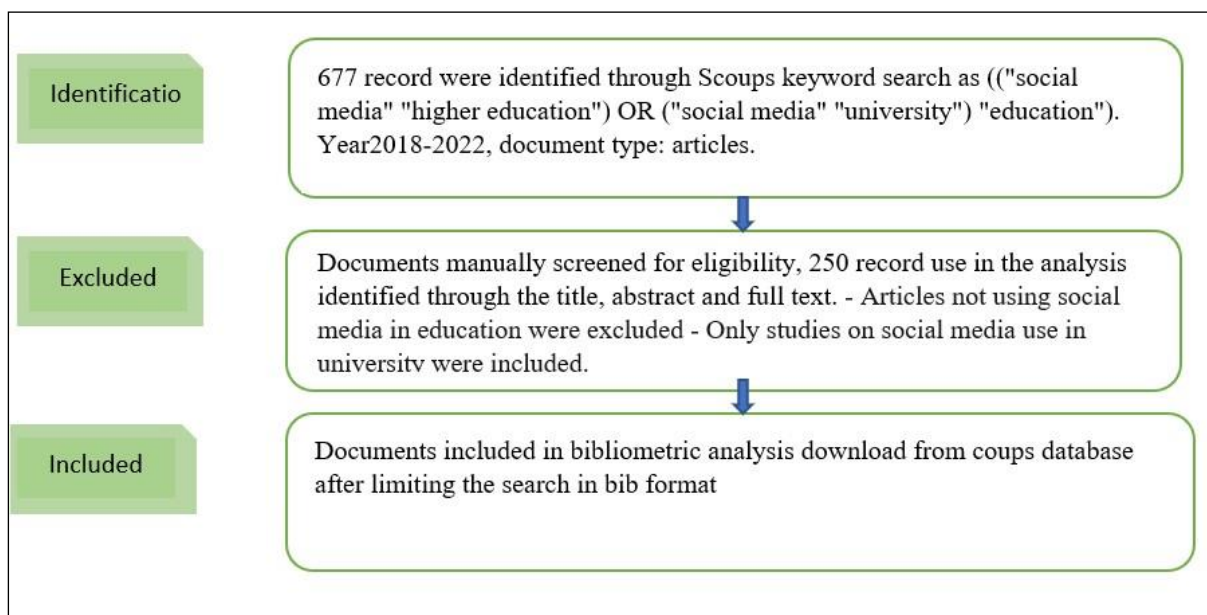

Figure 1. Flow Chart Describing Collection of SM Papers in Higher Education

The first step is using Scopus advanced search option, which define a variety of search criteriaThe first stage included selecting 677 papers. After bibliographic data identifying pertinent aspects were acquired and placed in the BIB file, the stage involved building a database, downloading research, reviewing the content of the research, and eliminating research that exceeded the purview of the direction to be researched. The file included "metadata" that were frequently linked to each article, including the author(s), affiliation(s), article title, source keywords, abstracts, and several other sorts of quotation data. At this

stage, the study prepared the data for analysis to recall it in a program for analyzing the research trend after making sure to remove the duplicate searches in the selected databases. This stage ended with the selection of 250 research studies that suitable with the research objectives. This study collects data based on number of factors as shown below.

Table 1
Inclusion and Exclusion Criteria in the Study

Inclusion criteria	Exclusion criteria
Paper on the use of social media as educational tools	Papers do not use social media in the education process
Scopus database papers	Papers not in English language
Published paper 2018-2022	Use SM in school
Keywords: social media+ higher education, social media university, education"	Open-source papers

Results and Discussions
The bibliometric analysis section of this study utilized Scopus articles on the use of social media as an educational tool in higher education. The data was analyzed using the biblioshiny tool, and the results were presented and discussed. These results encompassed various aspects such as research growth, relevant sources, trending topics, source impact, top authors, and universities. These findings are detailed in the sections below.

Research Interest in Publication Output and Growth
Over the past five years, 677 research articles have studied the use of social media in education. After filtering them according to specific criteria, 250 papers and 143 sources were included in the analysis. Figure 2 illustrates that the annual growth rate of these publications is 16.95%. Notably, the number of articles related to social media in higher education was lower in 2018 with only 31 papers. However, the amount of research began increasing in 2020, and by November 2022 around 58 papers were published in the field of using SM in education. This surge in research demonstrates the growing interest in studying the use of social media in education, especially during the COVID-19 pandemic, where it has become an essential communication tool across various sectors, including education. Figure 2 also shows that the number of publications doubled in 2022 compared to 2018, indicating a significant increase in the annual growth rate. It's important to note that all the published research analyzed was open source.
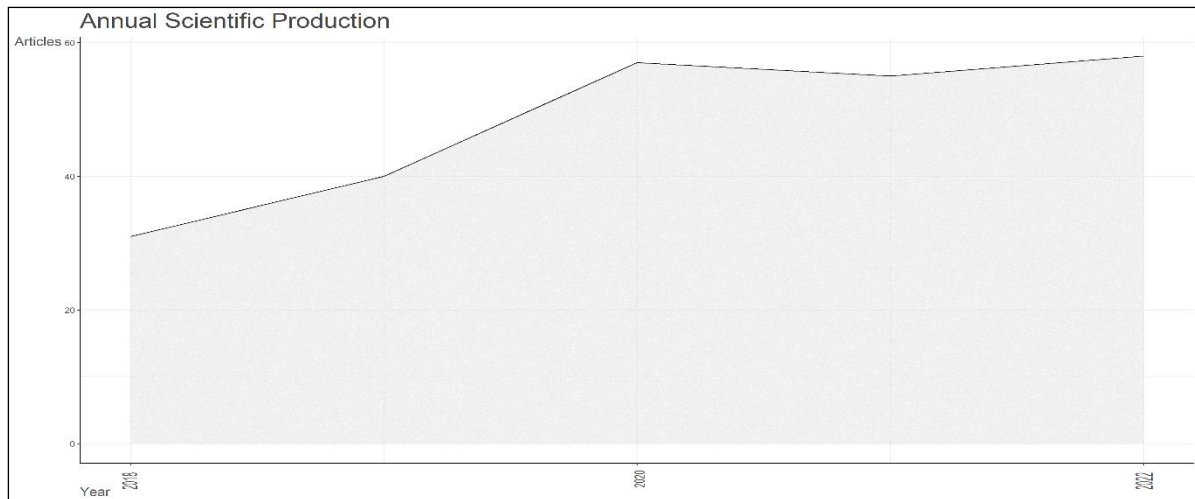
Figure 2. Publication Growth of SM in Field of Higher Education

Most Relevant Sources

After analyzing research from the Scopus database, it was found that five sources have emerged as leaders in publishing research on the use of social media in higher education. The top-ranking source is Sustainability (Switzerland), which has published 22 research papers on this topic within the past five years. Following closely behind is the International Journal of Emerging Technologies in Learning, with nine research papers. The International Journal of Environmental Research and Public Health and Education and Information Technologies have published seven and six studies respectively. BMC Medical Education rounds out the top five with five papers. It is important to note that while numerous journals have published research on this subject between 2018 and 2022, only the top five sources are depicted in Figure 3. In total, 143 sources have contributed to the study of social media usage in higher education.
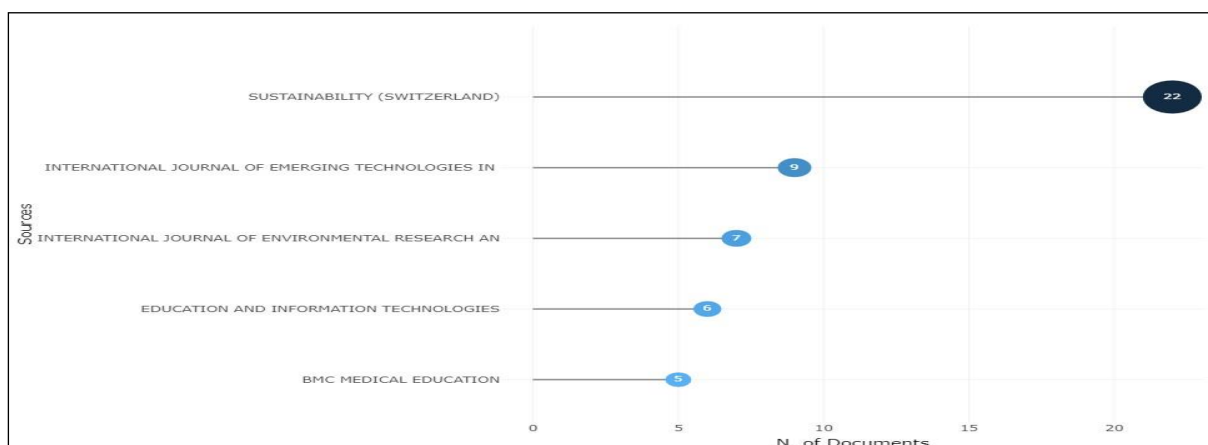

Figure 3. Most Relevant Sources in the Field of SM in Higher Education

Source Impact

In this section, the research results are examined in terms of source impact, which is measured by considering the total citation sources and the h-index. Figure 4 illustrates the top five sources and their respective citation counts. The leading source is sustainability (Switzerland) with 535 citations, followed by the International Journal of Emerging Technologies in learning with 229 citations. IEEE access ranks third with 153 citations, while

the International Journal of Environmental Research and Public Health has accumulated 111 citations between 2018 and 2022. Lastly, the Contemporary Educational Technology Journal has received 107 citations over the past five years.
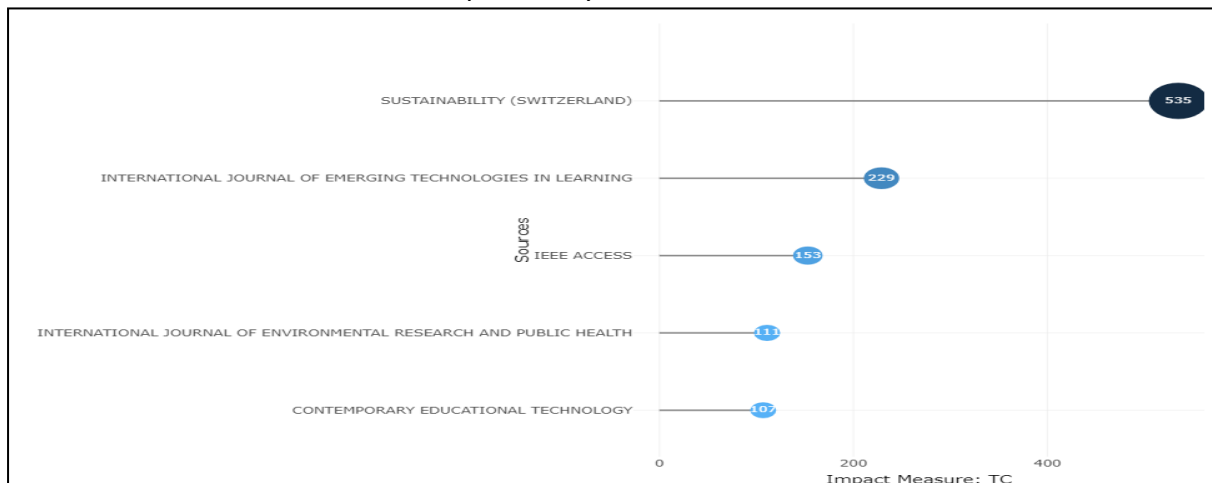

Figure 4. Sources Citation Numbers in the Field of SM in Higher Education

Moreover, the sustainability journal from Switzerland has an h-index impact factor of 10, making it the highest among the mentioned sources. The International Journal of Environment Research and Public Health follows with an h-index of 6. The International Journal of Emerging Technology in Learning has an h-index of 5, while IEEE Access, Education, and Information Technology each have an h-index of 4.

Leading Countries, Top Institutions, and Authors Leading Countries
Table 2 displays the top 10 nations globally in terms of research on the utilization of social media in higher education. The United Kingdom, United States, Saudi Arabia, Spain, Malaysia, China, Australia, Indonesia, India, and Jordan collectively contribute approximately 60 percent of the total publications in this field. These countries hold significant importance in the realm of research on using social media as educational tools in higher education between 2018 and 2022. Leading the way is the United Kingdom, which has produced a total of 68 publications in the selected research studies. Following closely behind is the United States, with 64 papers, and Saudi Arabia with 46 research studies. However, the percentage difference between the top two countries is not substantial. In recent years, there has been a rise in research on the use of social media in many countries, regardless of their level of development. While the United States and the United Kingdom still lead in this area, other nations are recognizing the significance of social media in education. Institutions are making efforts to integrate online tools in the field of education, indicating the growing importance of utilizing social media for educational development.

Table 2
Leading Countries in the Field of SM in Higher Education

Country	No of Papers
UK	68
USA	64
SAUDI ARABIA	46
SPAIN	43
MALAYSIA	33
CHINA	27
AUSTRALIA	22
INDONESIA	20
INDIA	20
JORDAN	18

Top Institutions

From 2018 to 2022, Universiti Teknologi Malaysia emerged as the leading university in terms of research publications on the use of social media in education, with 11 papers. Following closely is King Faisal University with 10 papers over the same five-year period. King Saud University, University Tun Hussein Onn Malaysia, East Carolina University, Universität De València, University of Sharjah, Imam Abdulrahman Bin Faisal University, Kasturba Medical College, and University Oberta De Catalunya also made notable contributions, as depicted in Figure 2. Previous studies on the use of social media as educational tools initially highlighted the leadership of developed countries like the United Kingdom and others. However, the current data suggests that many developing countries are now actively engaging in research on the use of social media in education, recognizing its impact and significance as demonstrated in previous studies.
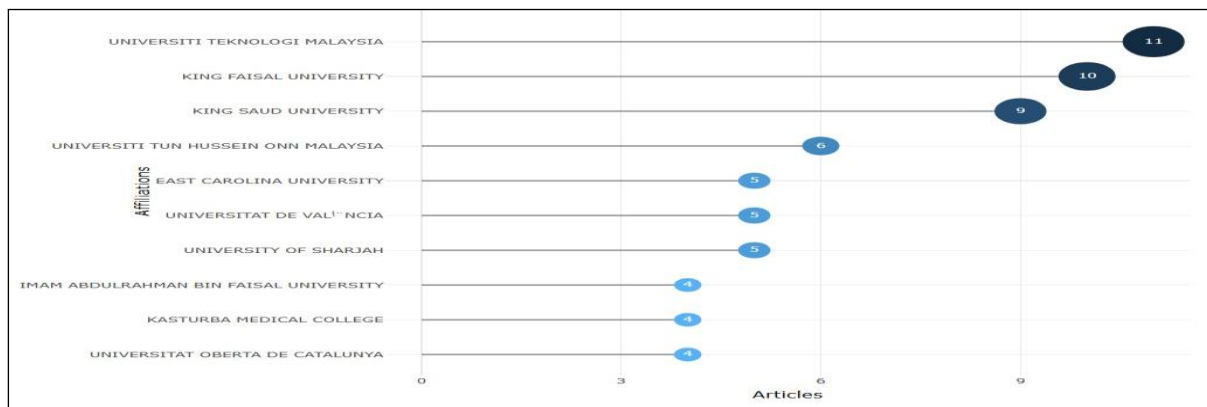

Figure 5. Top Institutes in the Field of SM in Higher Education

Top Authors

In this section, we explore the prominent researchers who have made significant contributions to the study of the impact and utilization of social media in education. Waleed Mugahed Al-Rahmi stands out as a highly knowledgeable researcher in this field, having published 9 research papers in the past five years. Following closely are Ali Mugahed Al-Rahmi and Samuel López-Carril, each with five research papers to their credit. Alina Shamsuddin has contributed 4 papers, while Mahdi Alamri has published 3 papers.

Global Partnership

In this section, the study will explore the global partnerships established between different countries. Figure 6 showcases a visual representation of these partnerships using the biblioshiny visualization tool, illustrating the distribution of countries or territories based on their respective regions. The proximity of countries on the visualization indicates the strength of their relationship and level of cooperation. Through this analysis, it is evident that the most significant partnership exists between Saudi Arabia and Malaysia, with a total of 11 contributions. Additionally, the second largest cooperation involves Malaysia, Saudi Arabia, China, Egypt, Australia, India, and the United Kingdom. Providing these International collaborative partnerships has several advantages, including knowledge exchange, exposure to diverse experiences, and immersion in different cultures. These partnerships can elevate international awareness, that benefits universities and research and thus enable the development and benefit of successful educational processes in various countries.
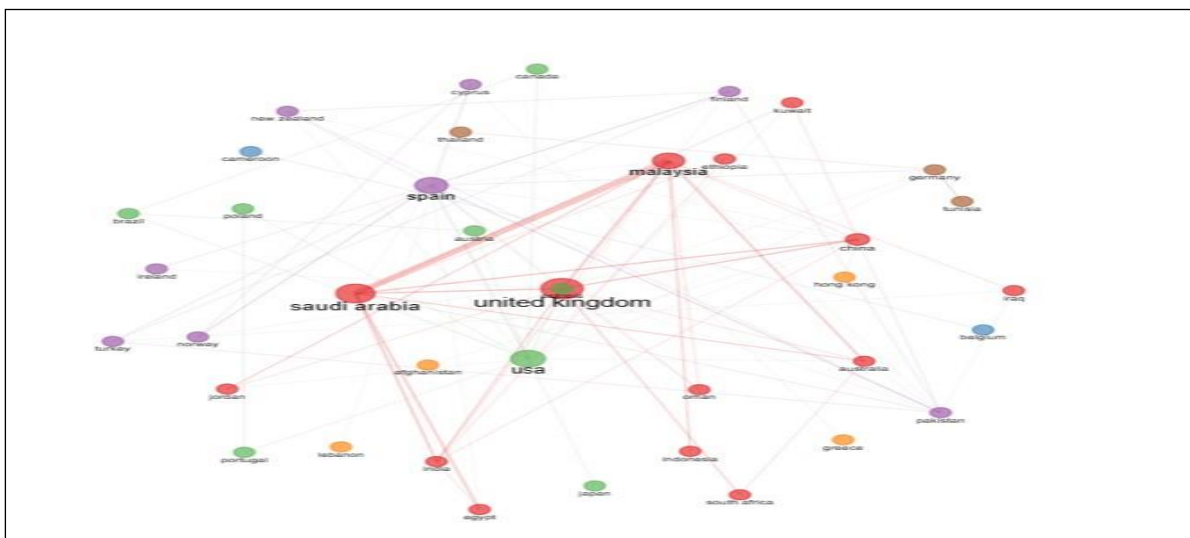

Figure 6. Global Partnership in the Field of SM in Higher Education

Trend Topics

The data analysis of published research on the adoption of social media as educational tools in higher education between 2018 and 2022 revealed several noteworthy findings. Firstly, the researchers utilized various keywords in their studies. The term "adoption of social media" was mentioned only 7 times in 2018, but its usage increased in subsequent years. Additionally, the word "Facebook" appeared in approximately 118 research papers between 2018 and 2022, highlighting its significance in education. The exploration of education tools within social media yielded around 481 instances of research between 2019 and 2021. In 2020 alone, there were approximately 33 studies focused on social media platforms. The combination of social media and e-learning was mentioned approximately 15 times in the fourth quarter of 2020 and the first quarter of 2021. Furthermore, the term "academic performance" experienced a significant increase, being referenced over 50 times between 2020 and 2022. This indicates a growing interest in understanding the impact of social media usage on education. Scholars have particularly focused on examining how social media functions and its influence on students' expectations and academic performance throughout the educational process. Notably, four academics have highlighted the emerging research direction of establishing acceptable frameworks for utilizing social media in education, which

will be a key focus between 2021 and 2022. This information is summarized in Table 3, which also highlights the integration of social media with blended learning, collaborative learning, and other related areas.

Table 3
Trend Topics in the Field of SM in Education

Keywords	Frequency	Start	End
social media adoption	7	2018	2018
social media platforms	33	2020	2020
social media usage	22	2019	2020
social media tools	19	2019	2020
social networking sites	18	2019	2021
social media platform	12	2019	2021
peer learning engagement	10	2022	2022
social media content	8	2021	2021
feedback	118	2018	2020
Learning tools	481	2019	2021
e-learning	15	2020	2021
Academic performance	50	2020	2022
online learning	14	2020	2021
blended learning	7	2020	2022
collaborative learning	7	2020	2022
Framework	4	2021	2022

Keywords Trend
During the analysis period, Figure 7 identified several trend words that were used frequently. The research focused on the use of social media in higher education, and the emergence of social networking platforms like Facebook, Twitter, YouTube, LinkedIn, and others in the education process. Additionally, the concepts of online learning, blended learning, collaborative learning, academic performance, problem-based learning, digital technology engagement, and professionalism, along with several keywords, were mentioned in the research.
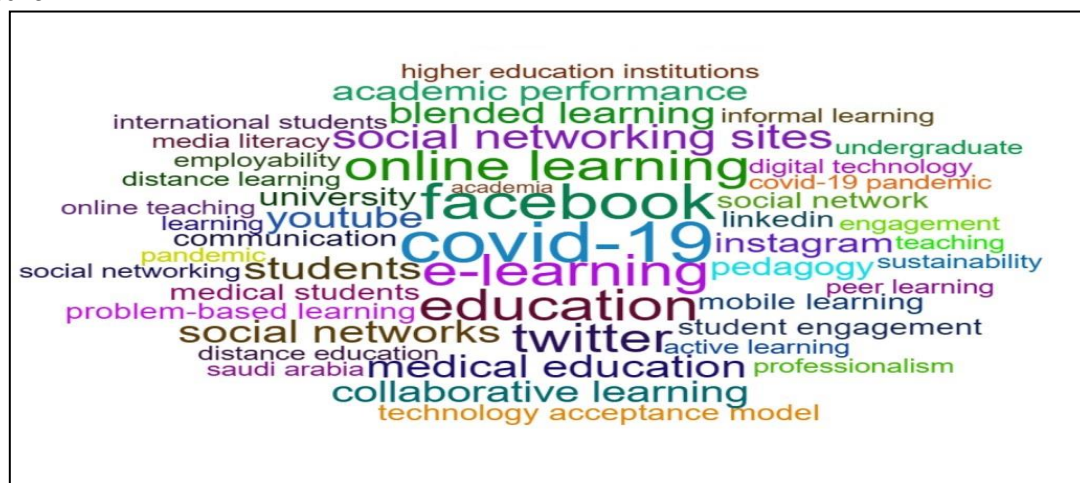

Figure 7. Keywords Trend in the Field of SM in Higher Education

Discussion and Conclusion

This study presents an overview of the utilization of social media in higher education, drawing from a dataset of 677 papers sourced from the Scopus database. Through the application of various exclusion criteria, a total of 250 publications were selected for analysis. The bibliometrics methodology, supported by the biblioshiny platform, was employed to examine reputable publications, and identify emerging themes and ideas from the years 2018 to 2022. Encouragingly, the findings indicate a notable growth in research on the use of social media in higher education, as evidenced by the increasing number of publications over the past five years. This upward trend is expected to persist as higher education institutions prioritize sustainability in the educational process of the present century. This study also discovered several countries and academic institutions, including Malaysia, Saudi Arabia, the United Kingdom, the United States, and Australia, have made significant contributions to publications. Their strong collaboration on an international level creates opportunities for diverse perspectives and experiences. Recently, numerous researchers have explored various key areas, such as the utilization of social media platforms in higher education. The majority of issues concerning higher education revolve around the adoption and impact of social media. Additionally, there are specific overarching topics related to social media use in higher education, such as its adoption and usage, social media tools and platforms, educational tools, academic performance, blended education, and a framework for incorporating social media in education.

In recent times, there has been a focus on researching the utilization of social media platforms such as Facebook, YouTube, Twitter, and Instagram in the field of education. This includes exploring the concept of cooperative education and online learning through social media, which warrants further investigation by future researchers to gain a deeper understanding of how these platforms can be effectively applied in educational settings. It is important to note that the study specifically examines English language publications, and its findings shed light on various impacts. One significant finding is the extensive presence of research on social media use in education globally, with a notable concentration in developed countries. However, there has been a recent surge in research across Europe, Asia, and Africa, as indicated in Figure 4. This finding aligns with contemporary bibliometric research on the advancement of higher education. Additionally, the study reveals that more than half of the research on social media use in education originates from developed countries like the UK, the US, and Australia, although there is a growing interest in this area of research worldwide. In order to promote the progress of Higher Education Research on the utilization of social media in education, the establishment of a formal research funding program is necessary. It is important to highlight that scholar from developing countries, such as China, Malaysia, Egypt, Iraq, Jordan, and South Africa, have demonstrated significant growth in this field over the past few decades. As a result, a positive response is expected from scholars in higher education development who utilize online tools to generate interest, enhance capacity, and support empirical studies in this research area, particularly in developing countries. Additionally, the study's focus on "social media in education" has yielded findings that expand and complement the work of previously mentioned researchers. The study has compiled a list of noteworthy journals, publications, and authors whose work has been experimentally validated. These investigation results hold value for researchers in this field and can serve as a valuable resource for aspiring scholars. Moreover, the study accelerates empirical research and introduces significant conceptual frameworks. It supports the notion that social media can contribute to educational development, which is increasingly acknowledged, especially in

higher education. The research on social media use in education has demonstrated a clear upward trajectory. Although the research results are important, there are a few limitations to consider. The study only focuses on the years between 2018-2022, which limits the understanding of the changes and trends in social media use in higher education before that period. Additionally, the study only includes papers with English language related to higher education. Therefore, future scholars should consider studying social media use in schools, undergraduate, and postgraduate programs. This research can be valuable in tracking changes in social media use in education over time and comparing different periods.

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