



Assessing the Scholarly Significance of the “Journal of Academic Librarianship”: A Comprehensive Bibliometric Study

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Abstract: This research paper delves into the use of bibliometric analysis within the context of the “Journal of Academic Librarianship” from 1988 to 2022. It aims to investigate various aspects such as trends in annual scientific output, author productivity, global contributions, and research networks. The study reveals significant shifts in yearly scientific production and underscores the importance of considering both citation rates and the duration of an author’s active contributions when evaluating their impact. Prominent contributors to scientific output include the United States, Canada, China, Spain, and the United Kingdom. Additionally, the research brings attention to highly cited countries and uncovers co-citation networks, which provide insights into shared research themes and collaborations among authors and institutions. In summary, this study highlights the ever-changing nature of academic knowledge and research interest in shaping research patterns. It offers a valuable resource for professionals and educators navigating the intricate realm of academic research, offering a comprehensive understanding of scholarly communication and its quantitative facets.

Keywords: Bibliometric analysis; Academic librarianship; Scholarly communication; Scientific production trends; Author productivity; Research impact; Citation analysis; Co-citation networks.

1. INTRODUCTION

In the age of information, staying attuned to evolving research trends has become an essential endeavor for professionals immersed in the realm of knowledge. These trends are not mere ephemeral interests; rather, they serve as the guiding stars that illuminate the path towards crafting, nurturing, and successfully delivering products and services tailored to the ever-evolving needs of researchers and information professionals, including students and educators.. The practice of scrutinizing citations within academic journals, while not a recent innovation, has remained a steadfast beacon of scholarly inquiry. Its origins can be traced back to the groundbreaking work of Gross and Gross in 1927, and since then, it has permeated the literature of myriad academic disciplines (Budd, 1988). This methodology, grounded in the analysis of citations, has solidified its popularity over time, primarily due to its inherent qualities of being succinct, easily manageable, and seemingly objective. Nevertheless, like any tool, bibliometric methods do not escape the critical eye of experts who, rightfully, scrutinize their merits and limitations (Diem & Wolter, 2013). In the academic realm, information systems journal rankings and ratings have emerged as invaluable assets. These metrics serve as compasses for scholars, skillfully directing their publishing endeavors toward esteemed journals. They have become ubiquitous gauges for evaluating the quality and impact of research, functioning as reliable proxies for discerning scholarly excellence (Lowry, 2013).

The domain of international comparative higher education research has deep historical roots, dating back to the inception of higher education studies. Even in the early days, scholars participated in the productive practice of comparing their own institutions with foreign counterparts. This intellectual endeavor, marked by its dual nature of challenge and reward, has yielded valuable insights into diverse higher education systems, fostering cross-cultural learning and improvement. Within the ever-expanding landscape of academia, information and communication technologies (ICTs) stand as a rapidly burgeoning frontier. Recent years have observed the rise of innovative domains including big data, bioinformatics, cloud computing, and numerous others. These nascent fields embody the dynamism and innovation inherent in the realm of information, promising rich avenues for exploration and discovery (Muhamedyev, 2018). At the core of this multifaceted academic surroundings lies bibliometric analysis—a robust method employed to quantify the impact of research through the lens of quantitative indicators. Bibliometrics, scientometrics, and informetrics collectively contribute to the evolution of comprehensive tools that cater to the exhaustive needs of information seekers. These techniques delve into the quantitative analysis of scholarly literature, spanning historical, current, and future dimensions of scholarly communication. The scope of bibliometric studies is



expansive, encompassing various document types, including books, periodicals, theses, and their constituent elements such as authors, words, titles, and citations (**Ray & Sen, 2019**).

Bibliometric techniques, in their multifaceted application, empower information seekers to unveil the profound impact of articles, journals, institutions, and even entire nations. Through the examination of citations, these techniques serve as guardians of intellectual property, safeguarding the rightful ownership of ideas and contributions. In the contemporary academic landscape, bibliometrics has transcended disciplinary boundaries, establishing itself as a truly interdisciplinary research field that spans across virtually every scientific domain. The main objective of the present paper is to explore diverse bibliometric approaches to the study of scientific fields, encompassing subjects, authors, citations, and more.

In particular, this study undertakes an in-depth analysis of the growth and patterns discernible within the body of research literature published in the esteemed "Journal of Academic Librarianship," distinguished by its international and peer-reviewed status. This scholarly journal, which holds a prominent position in the field of academic publishing, has diligently addressed issues relevant to college and university libraries, consistently publishing six issues annually since its inception in 1988.

2. REVIEW OF LITERATURE

(Thanuskodi, 2010)- This paper conducts a bibliometric analysis of the journal Library Philosophy and Practice (LPP) from 2005-2009. The study encompasses two main parts: an analysis of articles and an analysis of citations. It aims to determine the number of contributions published during this period, study authorship patterns, rank leading contributors, assess subject coverage, and analyze article length. The analysis of citations seeks to identify the number and types of documents cited, the year-wise distribution of cited journals, and the age of cited journals. Key findings reveal that LPP published a total of 249 articles during the study period, primarily focused on computer applications in library and information science. Almost all contributions (91.16%) contained references, including journals, books, conference proceedings, and dissertations. However, the study has limitations, including its exclusive focus on the years 2005-2009, neglecting other aspects of article content and quality, and failing to compare LPP with similar journals or analyze article impact. It also did not consider developments beyond 2009 or delve into the reasons behind the dominance of computer applications in the field. In essence, this paper offers a detailed bibliometric examination of LPP during a specific time-frame but leaves room for further exploration and contextualization.

(Gupta, 1980)- This study employs citation analysis to explore the development of solar energy research in the USSR, focusing on solar concentrators and collectors. The research is based on a sample of 181 papers published in the Russian journal 'Geliotekhnika' between 1965 and 1974. These papers are categorized as 'GI,' and the citations are divided into GIC (citations by authors within the GI group), GKN (citations external to the GI group but internal to the USSR), and GEE (citations external to both the GI group and the USSR). The analysis provides insights into the growth and connections within the solar energy research field in the USSR. It emphasizes the significance of citations in identifying earlier researchers and their contributions, highlighting the dominance of certain institutions in the field. The study reveals that team research played a significant role, indicating collaboration within the research community. However, the study's limitations include its narrow focus on solar energy research in the USSR, which may limit generalizability. The analysis relies on citations and affiliations to determine linkages, potentially missing some internal and external connections. The sample size is limited, and ethical and non-ethical motivations for citing references are not comprehensively explored. Future research could expand this analysis to other research specialties and countries, use a broader range of institutions, and address potential biases in evaluating scientific papers based on linkages and connections.

(Smith, 1981)- This paper delves into the use of citation analysis for evaluative purposes, spanning scientific papers, journals, and scholars. It underscores the importance of testing the assumptions and validity of citation counts through various studies. While acknowledging the valuable insights citation analysis can provide, the paper also highlights its limitations, including potential data inadequacies and assumptions inherent in the methodology. The need to address these limitations in study design and result interpretation is emphasized. The paper advocates for combining citation analysis with content analysis to enhance research quality and reliability. It also discusses the refinement of citation analysis methods, differentiating between mechanical and intellectual refinements. Furthermore, the paper points out that changes in co-citation patterns over time can unveil the evolution of ideas within a specific field. It discusses the potential of citation analysis to elucidate the consensual structure of concepts in a domain. Despite its focus on citation analysis, the paper refrains from delving extensively into the existing literature on the subject. It calls for more studies to assess assumptions, explore issues within citation analysis, and consider the characteristics of documents that are not



cited or do not cite others. In conclusion, this paper provides a comprehensive overview of the uses, assumptions, limitations, and potential future developments of citation analysis in evaluating scholarly output, encouraging further research and methodological refinement in the field.

(Patra, 2006)- This paper utilizes data from the Library And Information Science Abstracts (LISA) database for bibliometric analysis in the field of bibliometrics itself. The data primarily comprises journal articles, with only a limited number of conference proceedings. The analysis is conducted using Microsoft Excel and Access to derive bibliometric indicators. The study's dataset, sourced from LISA, encompasses 3,781 records related to bibliometrics, scientometrics, and webometrics. It employs Bradford's law to identify core journals, with 'Scientometrics' identified as one such core journal. Authors' productivity patterns are analyzed using Lotka's law, although deviations from the original law are observed. The study also identifies the 12 most productive authors in bibliometrics, each with more than 20 publications. The paper highlights that the growth of literature in bibliometrics lacks a definite pattern. It emphasizes the dominance of the English language in bibliometric literature, followed by Russian and other languages. Bibliometrics is described as a vital field within information science, utilizing unique techniques to monitor, analyze, and manage knowledge resources in various contexts. It serves to study knowledge properties, evaluate research activity, and inform policy decisions in different scientific domains. However, the paper's analysis is based on data from the LISA database, potentially missing some relevant literature. The lack of a clear growth pattern in bibliometric literature limits generalization, and the identification of core journals and author productivity may be subjective. The paper does not discuss potential biases in the LISA database's selection and indexing of literature. In conclusion, bibliometrics is a powerful tool for evaluating research performance and informing science policy decisions across various domains, but its application should be mindful of potential limitations in data sources and methodologies.

(Satpathy & Sa, 2015) This study examines the research productivity of Odisha's state universities from 2010 to 2014 using data from the SCOPUS Database. It presents several key findings like Utkal University is the most productive institution, contributing 37.76% of total publications. The overall growth rate of publications is -105.63%, indicating a decline in research output during the study period. Physics and Astronomy is the most favored subject area, accounting for 20% of total publications. The preferred journals for publications include Optics Communications and Indian Journal of Physics, each representing 1.63% of total publications. P.K. Mishra is the most productive author with 3.06% of total publications. "Article" is the most commonly used document type, making up 87.35% of the publications. Collaboration among researchers is high, with 96.73% of publications involving multiple authors. The highest cited paper is "The impact of conservation on the status of the world's vertebrates" by Hoffmann M. et al., published in Science. The degree of collaboration in the study is 0.97. The data was retrieved from the SCOPUS Database using an advanced search focused on six state universities in Odisha. However, the study is limited to these universities and the SCOPUS database. It suggests conducting a more comprehensive bibliometric analysis over a larger time frame and exploring the reasons behind the negative growth rate of publications. Additionally, the study recommends investigating the factors contributing to the preference for Physics and Astronomy and analyzing collaboration patterns among authors and institutions to understand research dynamics better. Lastly, it suggests examining the impact of research outputs from state universities on the development of the state of Odisha.

(Moed, 2006) The paper examines 529 European universities that published a minimum of 500 articles during 1997-2004, primarily using bibliometric data. However, these publication records were not verified by institutional representatives, except in a few instances. The analysis focuses on the "output" side of research, emphasizing research articles' quantity and citation impacts. To enhance comparative analysis, the paper underscores the importance of combining these "output" measures with "input" data, including student numbers, research staff categories, and funding amounts. The universities were classified into 15 disciplines based on journal categories available in the Web of Science, considering cognitive contents and reference patterns. It attempted to distinguish clinically oriented biomedical specialties from basic biological sciences and separate research related to humans, animals, and plants. Despite the diverse set of universities and disciplines, the paper found no simple relationship between publication quantity and citation impacts per paper. The study's ultimate goal is to establish a public information system on global research universities, facilitating further research on research performance and its determinants. However, it acknowledges the need to address disciplinary categorization discrepancies between "output" and "input" sides of research and underscores the importance of verified, comprehensive data to refine analysis.

3. OBJECTIVES

- i. To analyze the long-term trends in annual scientific production.
- ii. To assess the publication history of the top 10 authors and determine their productivity and impact over time
- iii. To analyze the distribution of scientific articles produced by different countries



- iv. To identify the most influential author
- v. To spotlight the top 10 most cited countries
- vi. To explore a co-citation network of authors
- vii. To analyze a co-citation network of sources
- viii. To examine a collaboration network of authors
- ix. To analyze a collaboration network of countries
- x. To examine a collaboration network of institutions

4. METHODOLOGY

For the purpose of this study, the Journal entitled “Journal of Academic Librarianship” ISSN No. 0099-1333 was selected from the SCOPUS database. First we search from ISSN No. of the selected Journal 2369 articles were found during the period 1988-2022. For the study only document type “article”, “Conference Proceeding” and “Reviews” have been considered. Editorial, Notes, Erratum, Letters, Short Surveys, newsletters, etc., were excluded, additionally English Language Articles has been considered any other languages like Spanish, French, German, Japanese etc were excluded, Final Published articles have been considered, Article in press was excluded and at last the duration was selected from 1988-2022. The final set consisted of 2111 articles found during the period 1988-2022 and considered for study, which was exported in CSV format (comma-separated values). The final data set analyzed using Microsoft Excel and bibliometrix package in the R software (Aria & Cuccurullo, 2017) for data analysis.

5. ANALYSIS

5.1. To analyze the long-term trends in annual scientific production:

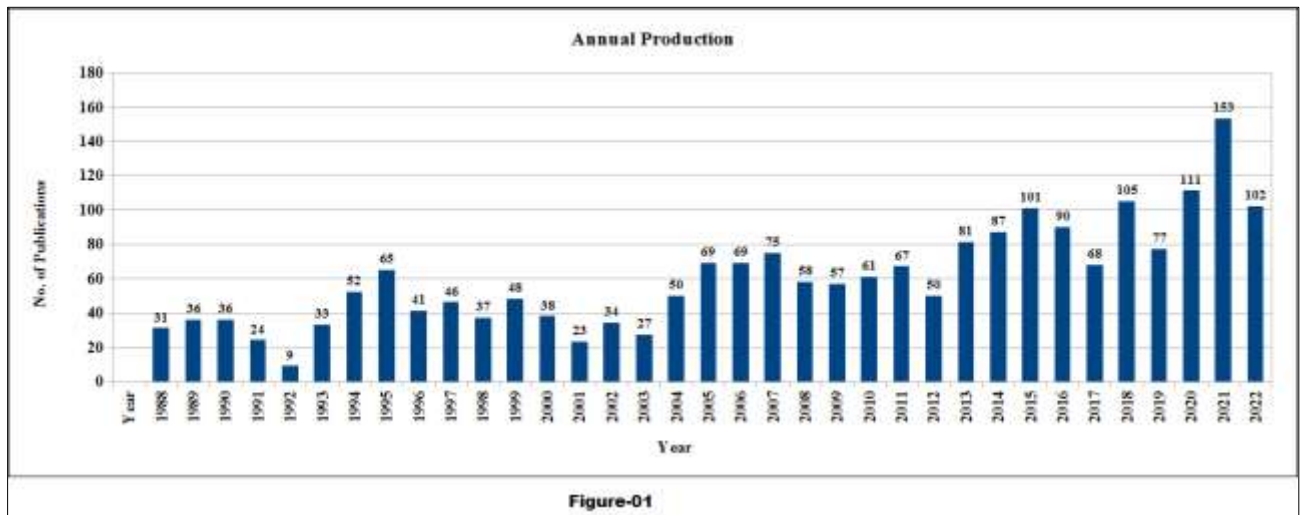


Figure-01 illustrates the annual scientific output depicted by the number of published articles spanning from 1988 to 2022. Notable observations indicate a consistent and upward trajectory in production, interrupted by periodic fluctuations. Prominent milestones in 1993 and 2004 demonstrate substantial increases, while the highest output is observed in peak years like 2021 (153 articles) and 2018 (105 articles). On the other hand, the years 1992, 2001, and 1991 represent significant downturns in the dataset, indicating a substantial decrease in production. Periodic fluctuations are visible, as evidenced by the stability observed in 2005 and 2006. Recent years (2020-2022) demonstrate a noticeable surge, particularly in 2021. The dataset reveals an overall ascending pattern in annual scientific production, characterized by notable shifts and fluctuations.

5.2. To assess the publication history of the top 10 authors and determine their productivity and impact over time

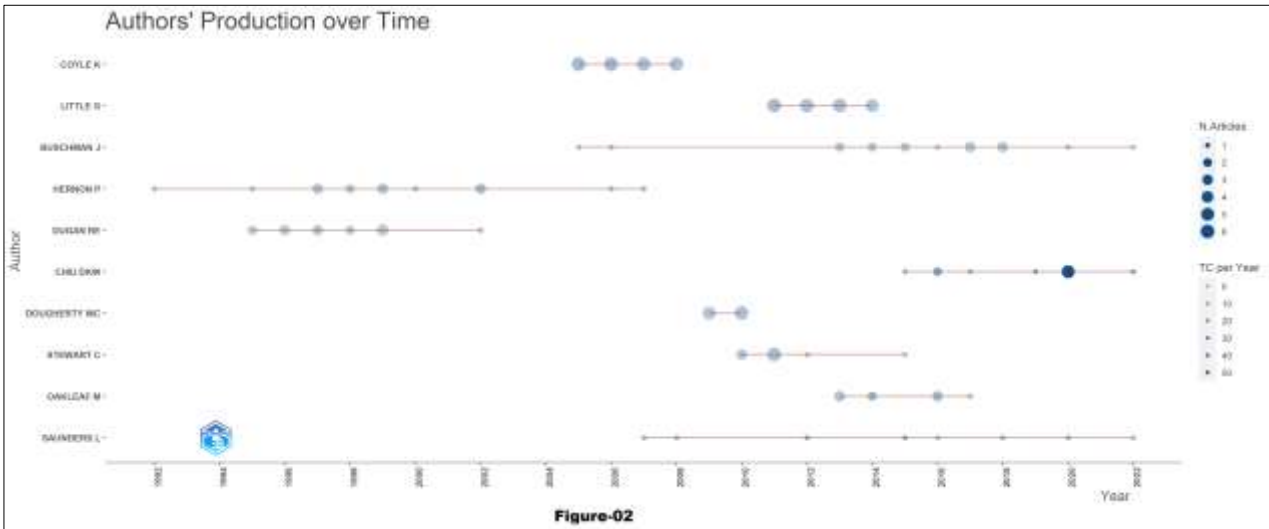


Figure-02 explores the publication history of the top 10 authors, examining important factors to comprehend their productivity and influence over time. Significant discoveries from the analysis reveal that despite a relatively brief active period of 3 years, Coyle K attained a remarkable average of 94 citations per year, indicating substantial impact during this time-frame. Similarly, Little G, also active for 3 years, achieved a respectable average of 52.33 citations per year. On the other hand, Buschman J's lengthy 17-year period of activity resulted in a comparatively lower average of 3.06 citations annually. HERNON P's prolific 15-year career witnessed an impressive average of 28 citations per year. Chiu DKW achieved a high average of 70.71 citations per year within a 7-year span. Despite only being active for 1 year, Dougherty WC received a remarkable average of 52 citations per year. Lastly, Saunders L enjoyed a lengthy and highly influential 15-year career, with an average of 19.47 citations per year. This analysis presents extremely useful perspectives into the varied research occupations and contributions of these writers. It emphasizes the importance of taking into account the years of active engagement, rates of citation, and the expansion of influence when evaluating an author's impact within their respective discipline.

5.3. To analyze the distribution of scientific articles produced by different countries

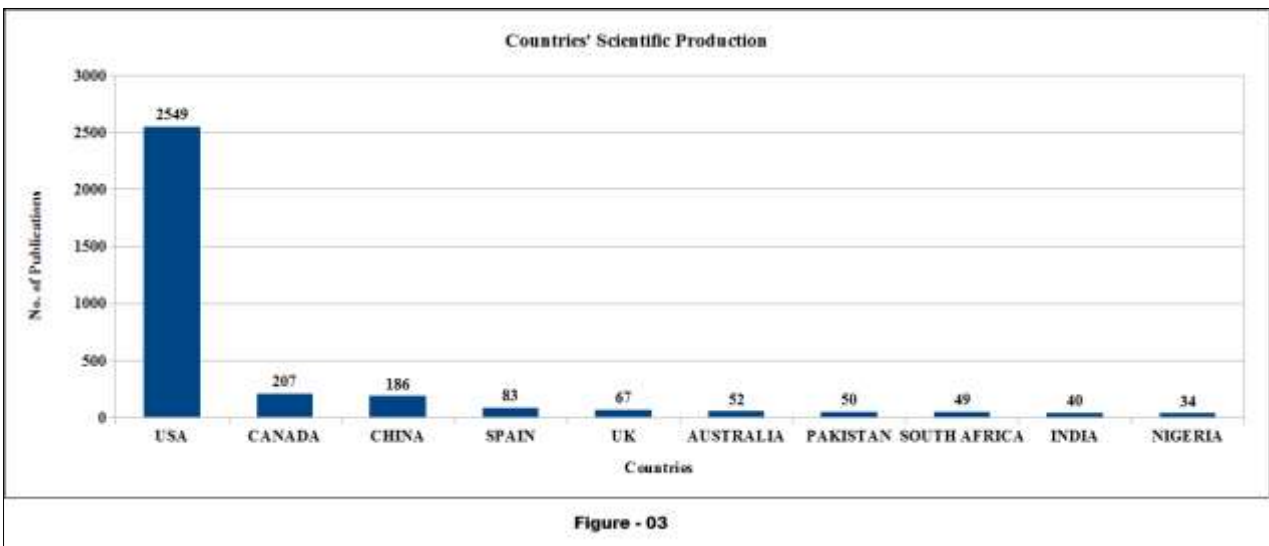
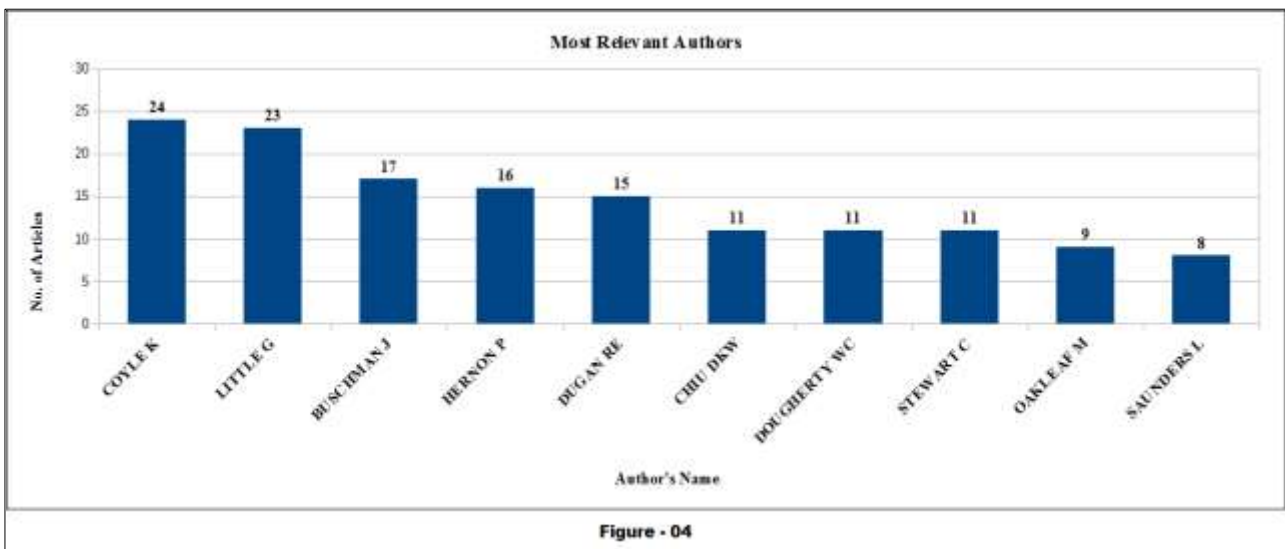


Figure -03 examines the scientific production of multiple countries and provides insights into the distribution of research output across various regions. It presents the numerical representation of scientific articles generated by each country, thereby offering valuable in- sights into their contributions to global research endeavors. The United States



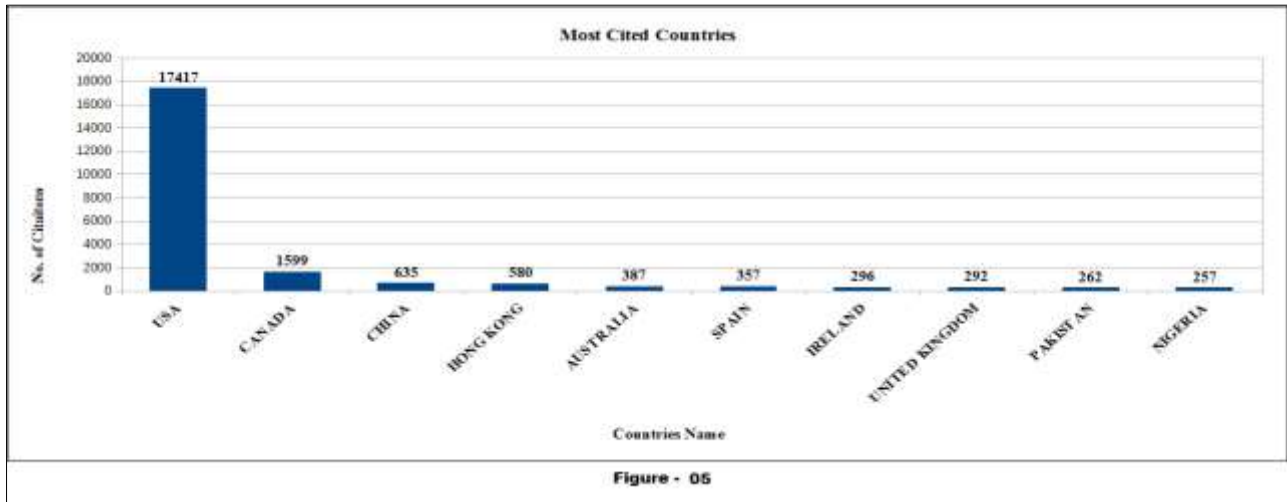
leads the roster with a substantial count of 2,549 articles, thereby emphasizing its robust research infrastructure and generous funding. Canada follows suit with 207 articles, thereby highlighting its dedication to research and innovation. The 186 articles from China signify its escalating investment in science and technology, while Spain's 83 articles underscore its significant role in European research. Despite its smaller size, the United Kingdom maintains a strong presence with 67 articles, thereby reflecting its historical prominence in academia. Australia's 52 articles demonstrate active participation. Pakistan, South Africa, India, and Nigeria demonstrate participation in scientific production, although with varying levels of potential for growth. This analysis fundamentally offers a brief representation of scientific productivity on a national scale, displaying the multifarious research environments across the globe.

5.4. To identify the most influential author



The analysis presented in figure-04 aims to determine the author who has the greatest influence during 1988-2022 by assessing the number of articles they have provided. It provides a clear breakdown of authors and their corresponding article counts. It becomes evident that Coyle K. stands at the forefront with an impressive total of 24 articles, closely pursued by Little G., who boasts 23 articles. Buschman J., with 17 articles, exhibits a notable presence and contribution. Hernon P., with 16 articles, indicates a robust and valuable presence. Dugan RE, with 15 articles, leaves a remarkable impact. Chiu DKW, Dougherty WC, and Stewart C. each possess 11 articles, which signifies their substantial contributions and active involvement in research. Oakleaf M. consistently maintains a count of 9 articles, denoting an enduring output of research. Finally, Saunders L. concludes the list with 8 articles, thereby signifying a valuable contribution. In summary, by focusing exclusively on the number of articles distributed from 1988 to 2022, Coyle K. and Little G. present themselves as the most eminent authors. It is essential to acknowledge that the capability may vary depending on the research focus, and this investigation solely focuses on quantity, not necessarily the depth or impact of the research.

5.5. To spotlight the top 10 most cited countries



This analysis (Figure-05) highlights the top 10 countries that have received the most citations between 1988 to 2022. It provides valuable insights into their research influence and impact. The United States leads the pack with an impressive 17,417 citations, which clearly demonstrates its dominant position in global research. Canada, with 1,599 citations, holds a significant position in international research and is highly regarded for its contributions. China, with 635 citations, showcases its rapidly growing influence in the research field. Hong Kong, as a special administrative region of China, contributes significantly with 580 citations. Australia's 387 citations underscore its active role in global research. Spain, with 357 citations, signifies its contributions across various research domains, extending beyond Europe. Ireland's 296 citations highlight its research strength. The United Kingdom, with 292 citations, maintains a strong presence in research. Pakistan's engagement in the global research community, as evidenced by its 262 citations, indicates the potential for further growth. Similarly, Nigeria's 257 citations serve as a demonstration of its global research presence, indicating opportunities for expanded contributions. Eventually, these highly cited countries possess considerable global research influence, which plays a crucial role in driving innovation and advancing knowledge in various fields.

5.6. To explore a co-citation network of authors

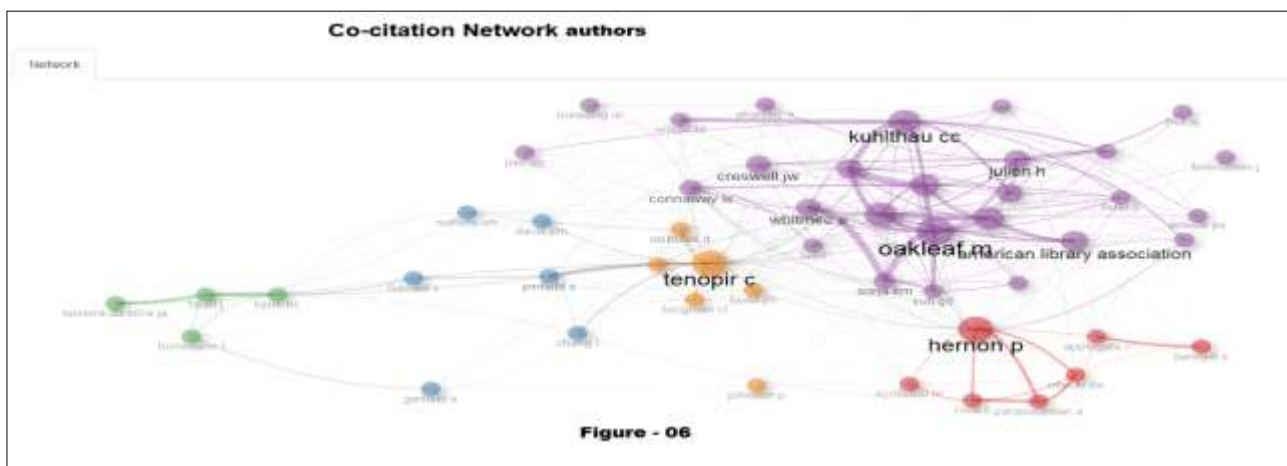


Figure-6 examines a co-citation network of authors, categorizing them into distinct clusters based on their citation relationships. Cluster- 1, comprised of authors such as Heron P., Cook C., and others, is anchored by Heron P., who plays a pivotal role in linking authors together. This suggests the existence of a research community with shared interests or collaborations. Cluster-2 consists of authors Walters W.H., Davis P.M., and Garfield E., among others. Walters W.H. stands out as a central connector, indicating a focused research area or collaborative network within this cluster. Cluster-3 includes Teixeira da Silva J.A., Beall J., and others. They represent a network of authors with potential research connections or shared interests. Cluster-4 contains a diverse group of authors and organizations, including Oakleaf M. and the American Library Association. Within this cluster, important authors such as Saunders L.

plays a minor central role within this cluster, which also includes Dugan R.E and Calvert P.J. In Cluster-3, authors Lemire S. and Graves S.J. form a cluster where no central connectors are apparent. Cluster-4 is comprised of Oakleaf M and Kyrillidou M., and it is characterized by distributed interactions. Cluster-5 is made up of Zhang Y. and Chen H.L., and similar to the previous clusters, there are no central figures facilitating collaboration within this group. In Cluster-6, we observe that Hubbard D.E. and Kimball R. form a cluster that lacks dominant connectors. Lastly, Cluster-7 consists of authors Chiu DKW, Lo P., and Ho KKW, and it is noteworthy for its balanced collaboration network. In summary, this analysis provides insights into the collaborative structures among authors, highlighting the presence or absence of central connectors within various clusters. It suggests that collaboration patterns can vary, from decentralized to balanced, depending on the specific group of authors and their research interactions.

5.9. To analyze a collaboration network of countries

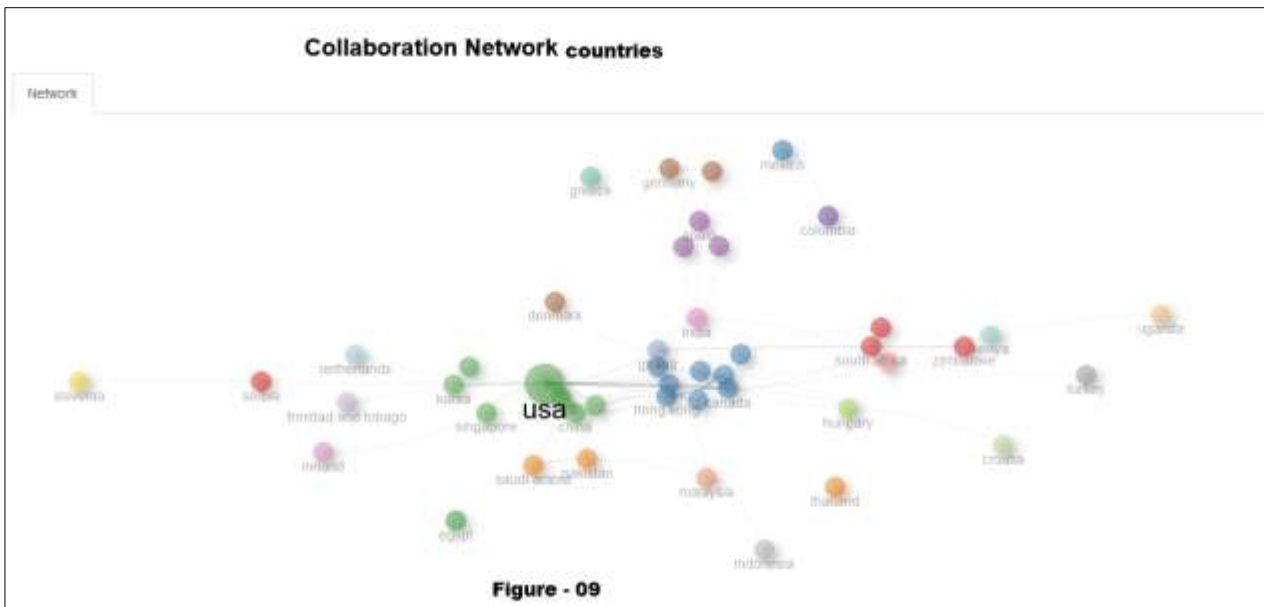
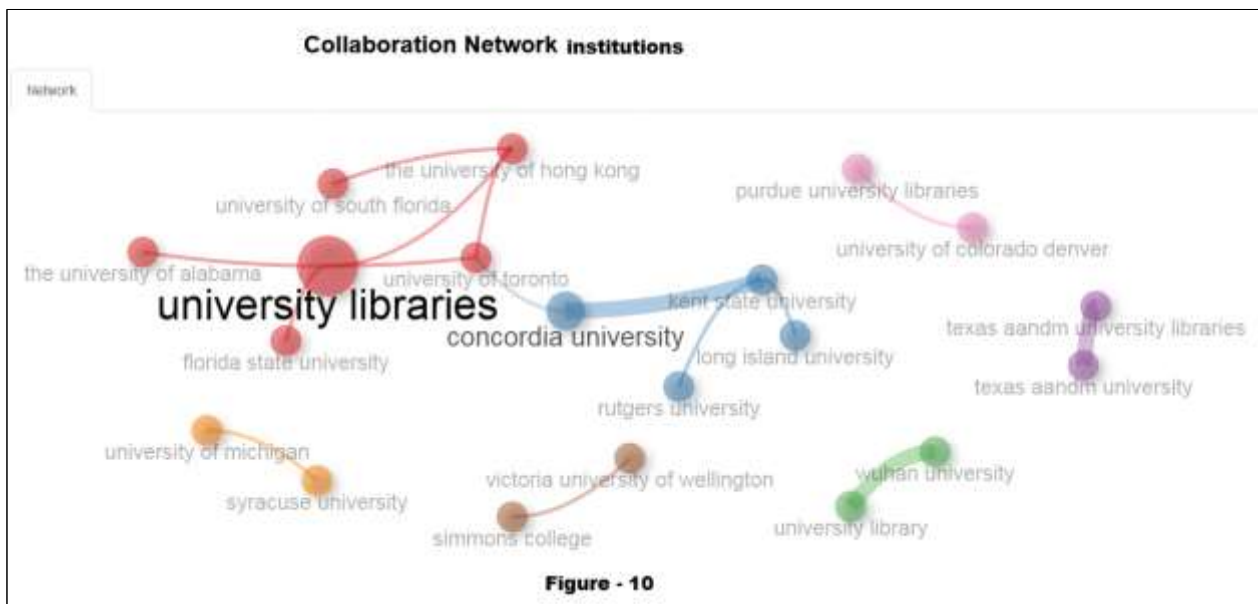


Figure-9 investigate a network of countries collaborating with each other, and these countries are grouped into clusters based on their collaborative relationships. Cluster 1 consists of South Africa, Nigeria, and Zimbabwe, and South Africa plays a key role in this cluster as a collaborator. Cluster 2 represents a diverse group of countries including Canada, Hong Kong, Iran, New Zealand, Japan, Jordan, Chile, and Guam. Within this cluster, Iran, Canada, and Japan have significant roles in connecting different countries. Cluster 3 is composed of the USA, China, United Kingdom, Australia, Korea, Singapore, and Poland, and it forms a global collaboration network. In this cluster, the USA and Japan act as central connectors, indicating strong research ties at a global level. Cluster 4 shows regional collaboration and consists of Spain and Brazil, with Spain being a prominent connector in this cluster. Cluster 5 demonstrates close collaboration between Pakistan and Saudi Arabia, forming a regional network. Cluster 6 to 26: Individual countries with limited collaboration are observed in these clusters. Cluster-27: Ghana stands out in a cluster that suggests African regional collaboration. Cluster 28 to 34: These clusters comprise individual countries with minimal collaborative connections. This analysis unveils patterns of international and regional research collaboration, with some countries serving as central connectors.

5.10. To examine a collaboration network of institutions



Analysis in Figure-10 examines a network of collaborations among various institutions, where nodes represent universities and libraries that are organized into clusters based on their collaborative associations. Cluster 1 embraces university libraries and several universi- ties. The University of Toronto stands out as the most prominent, indicating its crucial role in linking institutions within this group. This implies a substantial level of collaborations among these institutions, with the University of Toronto assuming a pivotal position. Cluster 2 comprises Concordia University, Kent State University, Long Island University, and Rutgers University. Notably, Concordia University and Kent State University exhibit noteworthy values, signifying their significant contributions in facilitating collaborations within this particular cluster. Cluster 3 involves Wuhan University and University Library. However, neither institution demonstrates substantial evidence, implying a limited level of collaboration between them. Cluster 4 consists of Texas A&M University Libraries and Texas A&M University, yet both institutions suggest minimal or no collaboration with other institutions in the analysis. Cluster 5 to 7 encompasses esteemed academic institutions such as the University of Michigan, Syracuse University, Simmons College, Victoria University of Wellington, University of Colorado Denver, and Purdue University Libraries. However, none of these institutions provide substantial evidence indicating comparably isolated or limited collaboration patterns.

6. FINDINGS

6.1. Figure-01 reveals a consistent upward trend in annual scientific production from 1988 to 2022, marked by periodic fluctuations, with notable turning points in 1993 and 2004 indicating significant increases, and peak years in 2021 and 2018 demonstrating the highest output. Low points in 1992, 2001, and 2003 signify reduced production, and recent years (2020-2022) show a noticeable surge, influenced by factors such as funding, research interest, technology, and academic policies.

6.2. Figure- 2 offers valuable information on the publication chronology of the most prominent ten authors, specifically shedding light on the contributions of Coyle K., Little G., Buschman J., Herson P., Chiu D.K.W., Dougherty W.C., Saunders L., and others. The citation rates and active years of these authors demonstrate a wide range, highlighting the importance of considering both variables when evaluating an author's impact.

6.3. The analysis of scientific production by countries identifies the United States, Canada, China, Spain, and the United Kingdom as leading contributors, reflecting their research infrastructure and historical prominence. Other countries like Australia, Pakistan, South Africa, India, and Nigeria also engage in scientific production, each with varying growth potential.

6.4. The analysis on influential authors based on the number of articles (Figure-4) highlights Coyle, K. and Little, G. as the most prominent authors, but it acknowledges that relevance can vary based on research focus, emphasizing that this analysis focuses on quantity rather than research impact.



- 6.5.** The focus on the top ten countries with the highest number of citations (Figure-5) reveals the United States of America, Canada, China, Hong Kong, Australia, Spain, Ireland, the United Kingdom, Pakistan, and Nigeria as prominent participants in worldwide research, possessing robust academic establishments, substantial investments in research and development, and influential contributions.
- 6.6.** The co-citation network of authors (Figure-6) identifies clusters of authors with shared interests, suggesting research communities and collaborations within these clusters.
- 6.7.** The co-citation network presented in Figure-7 provides insights into the clustering of scholars and published works by analyzing citation behaviors, thereby shedding light on the underlying structure of research networks and the connections between authors and sources across different fields.
- 6.8.** The network of collaboration among authors (Figure-8) identifies various clusters that display different patterns of collaboration, including decentralized and balanced approaches. This analysis provides valuable insights into the collaborative practices of authors within distinct research groups.
- 6.9.** The network of collaboration among nations as depicted in Figure-9 unveils the intricate patterns of research collaboration both at the international and regional levels, wherein certain countries assume pivotal roles in establishing connections with others.
- 6.10.** The network of collaboration among institutions, as depicted in Figure-10, illuminates the institutions that assume substantial collaborative roles, as well as groups of institutions that exhibit diverse degrees of collaboration. This provides valuable insights into the complex network of collaboration that exists among universities and libraries.

7. CONCLUSION

The analysis provides a comprehensive understanding of various aspects of scientific production, author influence, country contributions, and research networks. It emphasizes the dynamic nature of research trends and highlights the importance of considering multiple factors, including citation rates, active years, and research focus, when assessing research impact. Additionally, it underscores the role of funding, infrastructure, and national priorities in shaping a country's contributions to global knowledge.

8. FUTURE STUDIES

Future investigations could further explore the specific factors that influence research trends and examine the impact of interdisciplinary collaboration. Moreover, an examination of the development of research subjects and the emergence of novel fields could yield additional perspectives on the dynamics of scientific output. Further examinations into the motivations and tactics underlying international and regional research collaborations among nations and institutions could also prove valuable in comprehending global research networks.

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