

Scientific Research of FIFA World Cup and Sports Performance Analysis Advances: A Bibliometric Review Study

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Abstract

For more than four decades, FIFA World Cup has attracted growing interest from scholars, students, and academic institutions worldwide. This paper aims to analyze the literature review of FIFA World Cup and sports performance analysis, using the bibliometric analysis to examine the data of 2665 studies published in Scopus from 1974 to 2022 related to this topic. The results were presented and discussed with the following approaches: keywords, authors, references (research papers), research work, countries, and research institutions. The study found that bibliometric analysis is fundamental in detailing the theoretical literature and developing an integrated theoretical framework on FIFA World Cup and sports performance analysis. This review provides reference points for entry into this interdisciplinary field and benefits grassroots researchers by providing a more accessible and systematic analysis of the current situation and development direction of sports performance in past World Cups.

Keywords: Bibliometric Analysis, FIFA, Football, Performance Analysis

Introduction

FIFA World Cup is an acronym for the International Federation of Association Football. The Uruguay World Cup in 1930 was the inaugural FIFA World Cup. Only 13 teams from three continental confederations competed, all of which were qualified by invitation. In contrast, the 32 participating teams for the 22nd FIFA World Cup in Qatar are from the football national teams of 205 countries and regions in the six continental federations who were promoted through the "tragic" qualifiers, in which countries as strong as Italy (FIFA national team ranked 6th in the world), Colombia (ranked 17th in the world), Sweden (ranked 25th in the world), and China (ranked 79th in the world) failed to qualify. As can be observed, today's World Cup stage is full of powerful players, strong players, and talents. According to statistics, the 2018 Russia World Cup had over 3.5 billion worldwide TV viewers, accounting for 44% of the global population (FIFA, n.d.). The World Cup's popularity, impact, and competitive level are all evident. Sir Alex Ferguson, former Manchester United coach, stated in an exclusive interview after his retirement: "There is no question that sports science has brought about the most significant and lasting transformation in my life. It has elevated football to a new level. Maybe it was something we could never have imagined many years ago. Football now has a whole new dimension thanks to sports science." (Buchheit, 2017). What happens therefore when the tremendous advancement of sports science collides with the World Cup, which marks the pinnacle of football? Where is the spark? To identify appropriate answers, this paper employs

a bibliometric method. This study is essential for the professional growth of football coaches, players, and performance analysts. The data collected enables them to comprehend the development and requirements of FIFA sports performance and thus, be able to make innovations, visualizations, evaluations, feedbacks, generalizations, and future plans.

The research questions of this study are as follows:

RQ1: What are the publishing trends of World Cup-related research papers over years?

RQ2: What are the popular keywords authors use the most in World Cup-related research?

RQ3: What are the popular journals for World Cup-related research publications?

RQ4: What are the types of paper published for World Cup-related research?

RQ5: What are the disciplinary distributions of World Cup-related research?

RQ6: Who are the active authors of World Cup-related research?

RQ7: What are the most active research institutions concerning the production of research papers on World Cup?

RQ8: Who are the most cited authors in the field of World Cup-related research?

RQ9: What are the top countries concerning the production of research papers on World Cup?

RQ10: What is the distribution of Chinese institutions publishing papers related to World Cup?

The study aims to determine the bibliometric analysis results and the results of the process, which will benefit the researchers in administrative sciences in drawing the correct direction. This study, then, includes identifying keywords, the most influential researchers in the field, the research work, reference sources, countries, and reference research institutions.

Materials and Methods

Data Sources

Database: Scopus, Search time: 16 November 2022, Search type: ((TITLE-ABS-KEY(FIFA World Cup) OR TITLE-ABS-KEY(football World Cup) OR TITLE-ABS-KEY(soccer World Cup) AND NOT TITLE-ABS-KEY(robot) AND NOT TITLE-ABS-KEY(rugby) AND NOT TITLE-ABS-KEY(women))). A total of 2665 documents related to FIFA World Cup were retrieved.

Results and Discussions

Based on the data for FIFA World Cup, the bibliometric analysis units were presented and discussed a set of results

1. Publishing Trends of World Cup-Related Research Papers

Figure 1 shows the number of papers on World Cup-related research in the Scopus database over time. The first research paper on the World Cup was published after the (10th World Cup 1975). Rost et al (1975) published the relevant analysis results on the hemodynamic response of live TV viewers of the World Cup in "Medizinische Welt". From then on to the 15th World Cup (1994), relevant papers will be published after each World Cup, but the growth rate is slow. Since the 16th World Cup, many related studies have been produced in the year or after each World Cup, and the number of published papers has increased sharply. The publication peaks were formed in the 2006 World Cup in Germany, and the 2010 World Cup in South Africa, and even reached the peak in the 2014 World Cup in Brazil. From the 2014 World Cup in Brazil to the 2022 World Cup in Qatar, the number of published articles showed a relatively stable trend with some fluctuations.

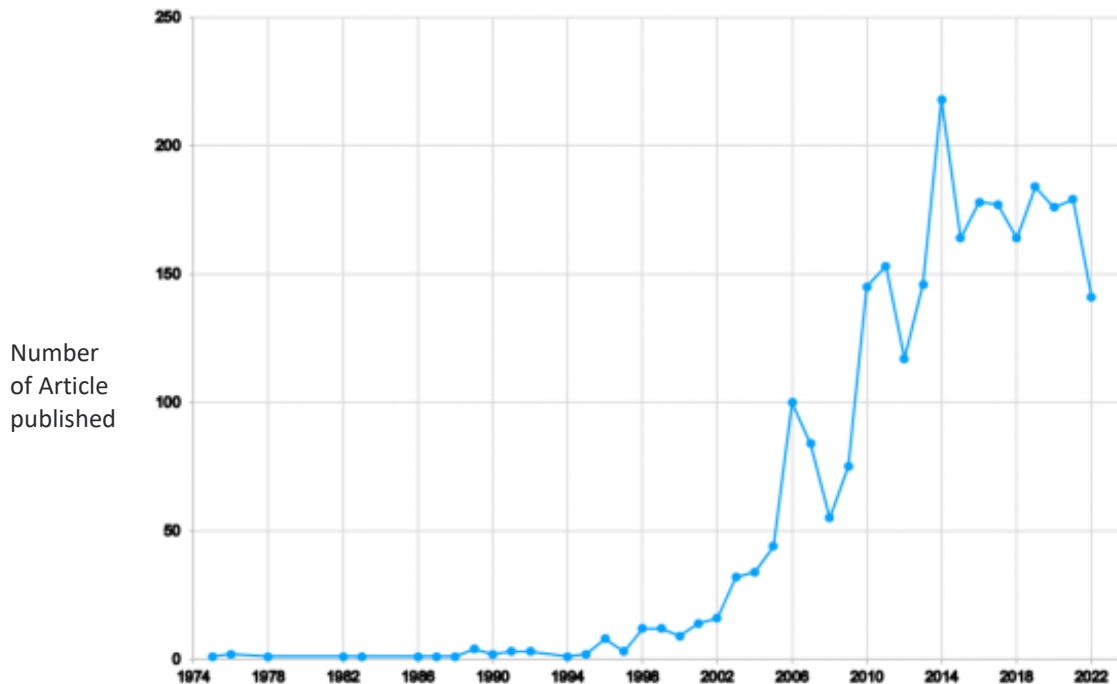


Figure 1 The number of publications related to the World Cup over year

2. Popular Keywords in World Cup-Related Research

The frequency analysis of keywords in 2,665 retrieved papers revealed 27 keywords used more than 35 times (see Figure 2). South Africa, Brazil, Germany, and Qatar, as the host countries of 2010, 2014, 2006 and 2022 World Cups, have attracted the attention of researchers (more than 65 times as research keywords). Strangely, Russia (2018), which is also the host country of the World Cup, failed to attract enough research attention (only 31 times as keywords).

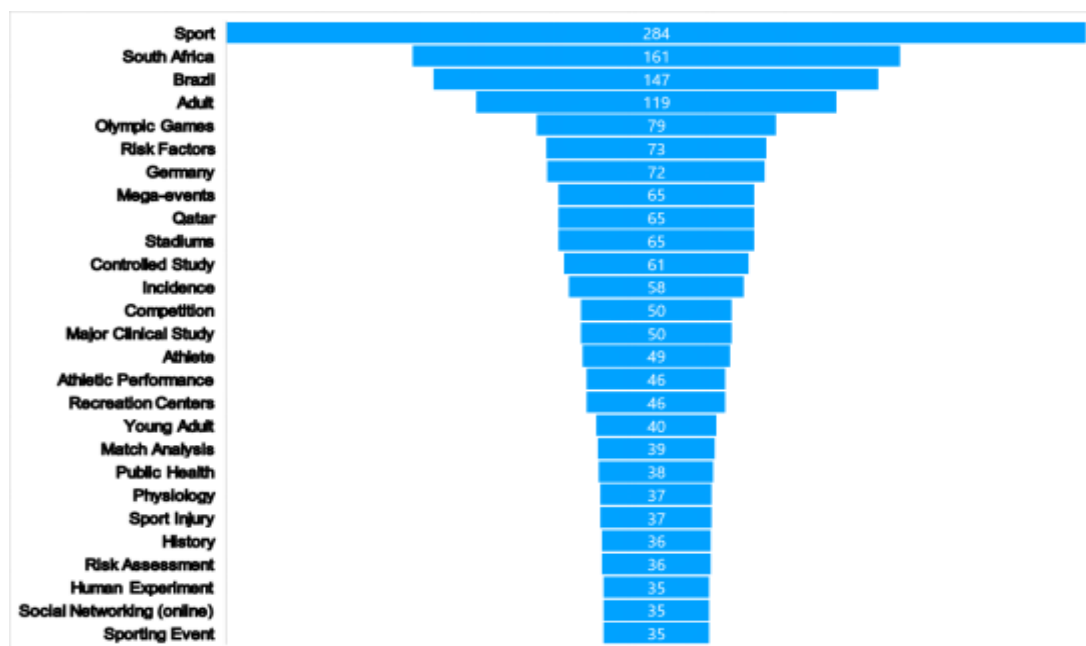


Figure 2: Popular keywords of World Cup-related research

3. Popular Journals for World Cup-Related Research Publications

As shown in Figure 3, among the 2,665 research papers related to the World Cup, the three journals of Football and Society, International Journal of Sports History and Sports in Society published the most papers, with more than 35 papers each. Followed by "British Journal of Sports Medicine", "International Review of Sociology of Sports", "Journal of Sports Science" and "Journal of Sports and Tourism", the number of publications is between 22-25.



Figure 3: Popular journals published on World Cup-related research

4. Paper Types for World Cup Related Research

It can be seen from Figure 4 that in the research literature related to the World Cup, original research papers accounted for 70%, conference papers accounted for about 10%, monograph chapters and review papers combined accounted for about 15%, and other types of literature accounted for 50%.

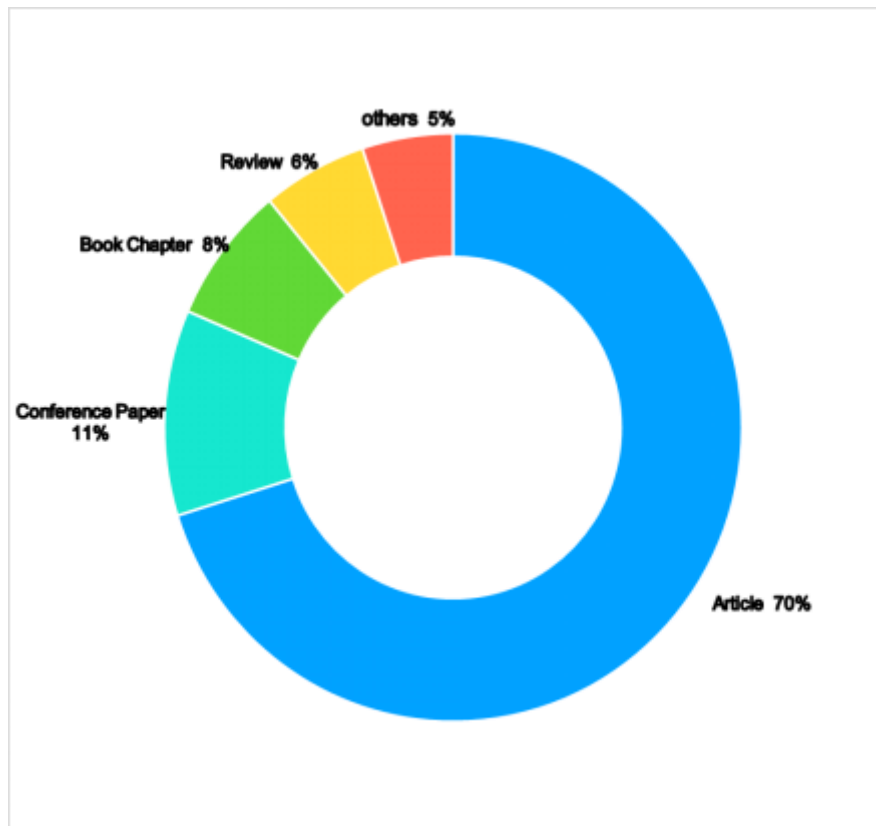


Figure 4: Types of papers related to World Cup research

5. Disciplinary Distribution of World Cup Related Research

As shown in Figure 5, among the research papers related to the World Cup, 1779 belong to the social sciences, accounting for 41% of the total, and the fields of medicine and engineering account for 12%, respectively. In addition, it also involves a variety of disciplines, such as business management, art, computer science, psychology, environment, geography, biochemistry, physics and neurology.

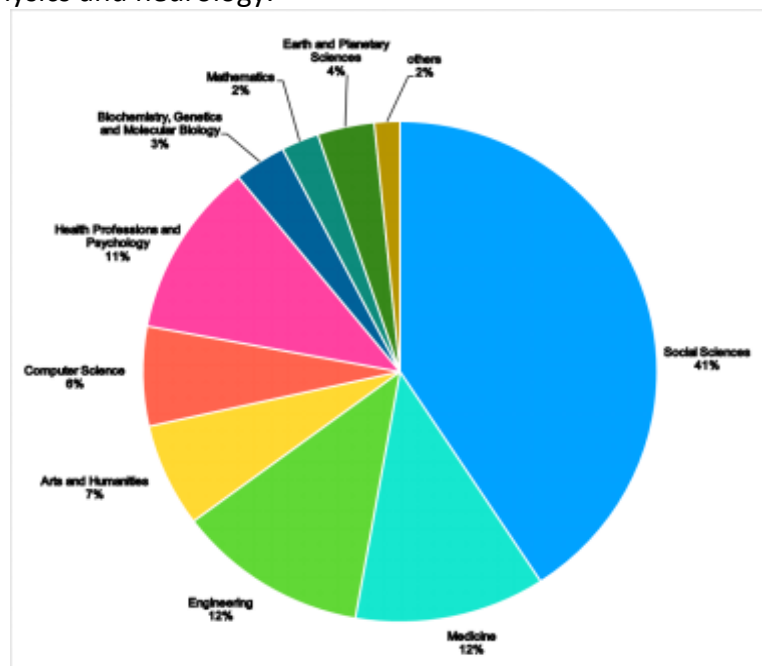


Figure 5: Disciplinary distribution of World Cup-related research

6. Active Authors of World Cup-Related Research

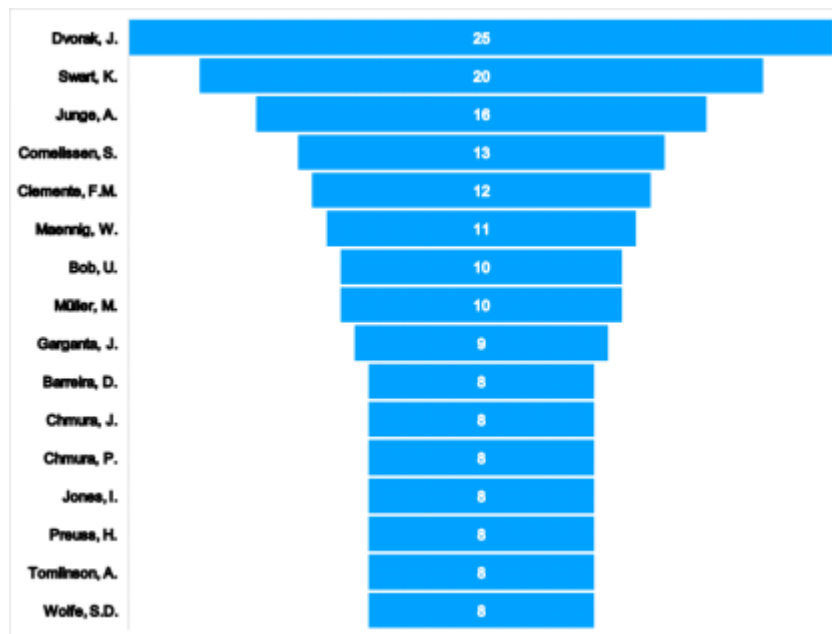


Figure 6: Active authors of research related to the World Cup

As shown in Figure 6, sixteen scholars have published more than eight articles related to World Cup, and eight of them have published more than ten articles. Professor Dvorak J., director of the FIFA Medical Assessment and Research Center (F-MARC), published the most related research papers, and Junge A., a scholar in the same unit, ranked third. Swart K., a scholar from Hamad Bin Khalifa University in Qatar, ranked second in the number of publications.

7. Active Research Institutions for World Cup-Related Research

As shown in Figure 7, a total of 15 research institutions have published more than 20 papers on World Cup-related research. Qatar University topped the list with 41 papers, while the Universidade de São Paulo in Brazil and Stellenbosch University in South Africa ranked second and third with 38 and 37 papers respectively.

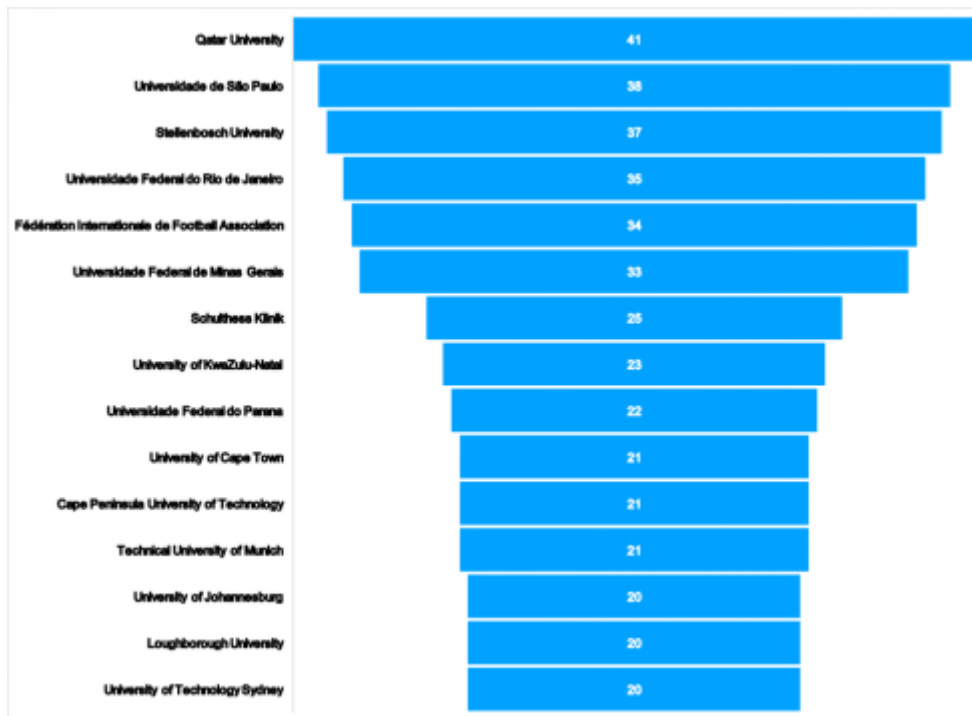


Figure 7 Active institutions for World Cup-related research

8. Citations of World Cup-Related Research Papers

Among the 2665 papers retrieved, 45 were cited more than 100 times, ten were cited more than 200 times, and only one was cited more than 300 times. It can be seen from Figure 8 that the subject of the most cited papers is the quantitative analysis of passing, shooting and scoring in football matches (316 citations). The following paper took the 2002 Korea-Japan World Cup as an example to reflect on the evaluation of the economic effects of large-scale sports events (291 citations). The third most cited paper used Seoul as the host city as an example to investigate residents' views on the impact of the 2002 Korea-Japan World Cup (cited 275 times). It is worth pointing out that the paper "Match statistics related to winning in the group stage of the 2014 Brazil FIFA World Cup" published in the Journal of Sports Sciences by Liu Hongyou, a Chinese scholar, as the first author in 2015, has been cited 128 times and ranked 30th in related research papers.



Figure 8 Top five World Cup-related research papers with the most cited frequency

9. Top Countries for World Cup-Related Research

As shown in Figure 9, 20 countries have published more than 40 research papers related to the World Cup, nine countries have published more than 100 papers, and five countries have published more than 200 papers. The United Kingdom is the only country that has published more than 400 articles, and other soccer powers such as Brazil, Germany, Spain, and France rank among the top 10 in terms of articles published. It is worth noting that China ranks 12th with Canada in the number of publications with 72 articles, which has laid a certain theoretical foundation for the development of Chinese football. This paper further analyzes the details of these 72 papers.

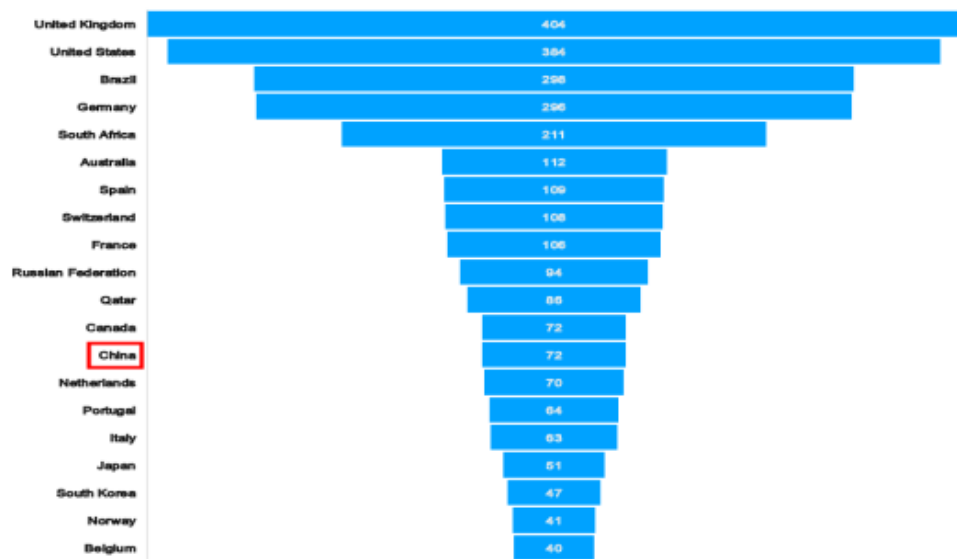


Figure 9 Ranking of published papers by countries related to the World Cup

10. Distribution of Chinese Institutions Publishing Papers Related to World Cup

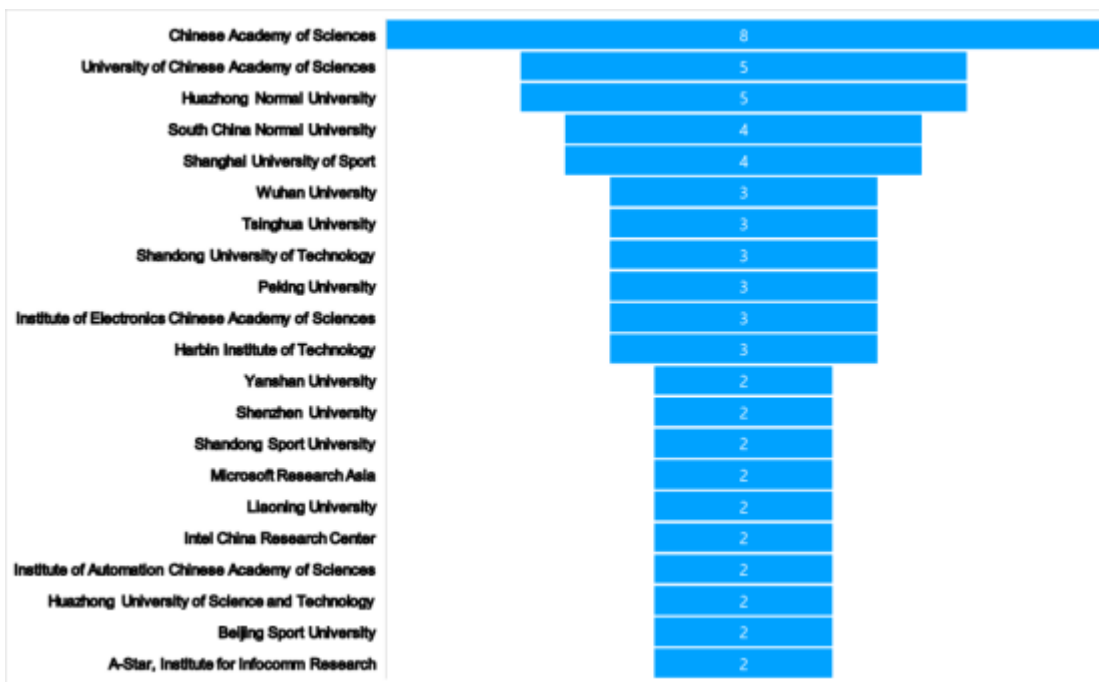


Figure 10 Distribution of Chinese Institutions Publishing Papers Related to World Cup

It can be seen from Figure 10 that among the 72 World Cup-related papers published by Chinese institutions, the Chinese Academy of Sciences, Central China Normal University, University of Chinese Academy of Sciences, South China Normal University, and Shanghai University occupy the top five seats and are the main publishing units. Among the institutions that published more than two articles, only Beijing Sport University (2 articles) and Shandong Institute of Physical Education (2 articles) are professional sports institutions.

Significance of the Study

This study will benefit grassroots researchers by providing a more accessible and systematic analysis of the current situation and development direction of sports performance in past World Cups, as well as improving the refinement and enhancement of this research area. Simultaneously, the theoretical analysis of various concepts related to bibliometric analysis and the introduction and discussion of the FIFA World Cup and sports performance analysis are addressed in detail. The bibliometric analysis identifies more overlapping studies while minimizing discrepancy statistics and search selection issues.

Conclusion

This study delved into the theoretical analysis of various concepts associated to bibliometric analysis, as well as the presentation and discussion of FIFA World Cup and sport performance analysis. We obtained results in the bibliometric analysis when compared to standard approaches, allowing for a diverse variety of research (databases) while avoiding bias and search selection issues. The researcher's decision complements bibliometric analysis methods but it does not replace conventional ways of analysing theoretical literature. The bibliographic analysis is also useful for defining important phrases, identifying the most prominent academics in the subject, identifying research work and reference sources, and identifying nations and reference research institutes (analytical units).

This study will help researchers and sport industry players to understand the status of FIFA World Cup and identify trends in FIFA World Cup. This study also reinforces the growing recognition that FIFA World Cup plays a significant role in society and more and more studies are done on it.

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