





Citation Analysis of a Q1 Journal from Its Thirty Years of Inception in Agriculture Supply-Chain

Pragati Priyadarshinee¹ (✉)  and M. V. V. Prasad Kantipudi² 

¹ Chaitanya Bharathi Institute of Technology, Hyderabad 500075, India
pragatipriyadarshinee_it@cbit.ac.in

² Symbiosis Institute of Technology (SIT), Symbiosis International (Deemed University) (SIU),
Pune, India
mvvprasad.kantipudi@ieee.org

Abstract. Journal of Cleaner Production completed its 30 years of publication in 2023. As a credibility the paper aims to present the overview through citation analysis of its content from 1993 to 2023. The research publication is analyzed from the journal database and the citation structure from JCLP through Scopus database. Several keywords are studied upon through thematic analysis process. A graphical representation of cited data is presented via the VOS viewer software. The findings show that JCLP has grown a lot in few years based upon its number of publications in each year and more in the area of ‘Agriculture’. Three major themes on JCLP were studied upon in this article: ‘Agriculture’, ‘Supply-chain’ and ‘Environmental Sustainability’. This one is the first article studying upon the overall publications in JCLP in the area of agricultural supply chain management.

Keywords: JCLP · Citation Analysis · Vos Viewer · Agriculture · Supply-chain Management · Environmental Sustainability

1 Introduction

Introduction: JCLP is an interdisciplinary journal which focuses on technology as well as management, environment and sustainability research practices produced by Elsevier. The Co-Editors-in-Chief for this journal are Cecilia Maria Villas Bôas de Almeida from Paulista University, Jiří Jaromír Klemeš from Brno University of Technology, and Yutao Wang from Fudan University. The journal is indexed in Engineering Village – GEOBASE, Geographical Abstracts, Fluid Abstracts, Scopus, FLUIDEX, Science Citation Index Expanded and INSPEC. The journal is having h-index of 173 that means 173 articles of JCLP are cited for 173 periods. In ABDC (Australian Business Dean’s Council) journal quality list, it is in ‘A’. In 2023, the journal completed its 30 years as it first appeared in 1993.

A 30-year long duration is to signify the achievement of the journal. To identify the journal's achievement in these periods a citation analysis and some other analytical techniques can be utilized for the qualitative representation of the journal in terms of its achievements so far. Recently an article presented a citation analysis for the International Journal of Social Economics (IJSE) on its 45th Anniversary [1]. The author did the bibliometric analysis from 2006 to 2016 for Journal of Cleaner Production which is based on the circular economy in European Union and China [2]. Next study discussed about the 25 years of contribution of Benchmarking: An International Journal to the manufacturing Industry [3].

The major goal of the paper is to reveal the influences of the Journal of Cleaner Production (JCLP) to the systematic literature, as well as to the existing publication and the growth styles. The main intention is to maintain a yearly publication and citation detail. The publication trend is analysed with citation details, participating authors and the regions. In addition to that we conducted some Bibliometric evaluation to understand the fluctuation of the journal in course of time.

RQ1. What are the major publication topics in the agricultural supply-chain?

RQ2. Which are the highly cited articles in this field?

RQ3. What are the citation and co-citation pattern in this field?

The remainder of the paper is organised as follows. Section 2 discusses the research methodology of the study. Section 3 focuses on bibliometric analysis and results. Section 4 is the mapping with the citation analysis software followed by Conclusion in Sect. 5.

2 Methodology

Bibliometrics is the study of bibliographical data. It studies qualitatively the citation analysis data after verifying the major research areas with its current trends. The current study is used to determine the publication strategy of JCLP through bibliometric methods to gain an overall view. The research is analyzed through the Scopus database from 1993 to 2022 using this citation analysis technique. The search started in April 2022 from the Scopus database [4–6].

To identify the targeted solutions, the database is filtered as per “Source Title” to gather the research articles from JCLP. The initial search result was 23,874 manuscripts. Articles other than English language were removed. Editorial and Letters were removed along with the recently accepted articles. The study includes various statistics such as the author, institution, journal, country, publications with the number of citations to get an active viewpoint about the journal's publication trends. It presents three statistical counts of publication to measure the productivity, citation count and the h-index which can combine both the power and efficiency. A graphical mapping of bibliometric data is developed using the VOS viewer software. It develops bibliographic data through bibliographic coupling, co-occurrence of author keywords and co-citation [7–10, 11, 12, 15] (Table 1).

Table 1. Author & Description

Author	Description
Schlattmann, A. et al. (2022)	The authors discussed about clean water distribution techniques in this article and developed some tool for the same
Bai, C. et al. (2022)	This article discusses about supply-chain performance through blockchain technology and used TOE framework for the same
Wünsche, J.F. et al. (2022)	The study discusses about food supply chain using Block-chain technology through some case-study
Parrot, L. et al. (2022)	The authors discuss about food supply-chain through some case examples
Ransikarbum, K. et al. (2021)	The article discusses about green supply-chain management to improve sustainability through different initiatives
Krishnan, R. (2021)	The article discusses about various innovations in Industries to reduce the food wastage through supply-chain management
Méda, B. (2021)	Food sustainability is an important aspect that is discussed in the article by food supply chain. The authors have proposed some unique method for the same

3 Result and Analysis of Bibliometric Data

Highly cited articles by JCLP are more interesting to scrutiny. To know this a citation analysis document is generated using VOS viewer tool. The articles identified are mostly cited by Journal of Cleaner Production. The following snapshots represent the articles those are cited a greater number of times, minimum 5 times published an article in JCLP that is having the highest citation score of 1350. Next author has 1119 citations for the article published in JCLP.

The articles are analyzed based upon the bibliometric analysis in JCLP, that the journal cites the Country, University and the authors. Abeliotis k. has cited the article mostly in 59 writeups. 17 research papers were cited by the first five authors.

Usage of VOSviewer tool for bibliometric Analysis:

Two documents appear simultaneously in a third document, then it is called as the co-citation [13].

The network of co-citation of JCLP from 1993 to 2023 is very much justified in the following figure with minimum of 50 citations. 2697 self-citation is also there in the resulted outcome (Figs. 1 and 2).

Most cited articles in JCLP.

It is interesting to shortlist the articles after researching a lot of articles from JCLP which have received highest number of citations. Hence, a co-citation network is identified through VOS viewer software, and the documents are mostly cited by JCLP since long (Fig. 3).



Fig. 3. Bibliographic Coupling of documents

The author did cluster analysis of JCLP articles based on bibliometric coupling that happens when two articles are citing a single article that shows the similarity in their architecture [10]. 2578 published articles in JCLP have done the bibliographic coupling of the articles into various clusters. The next figure summarizes the significance of the clusters with their central focus.

The first cluster is the major one that consists of 605 JCLP articles with maximum of 861 citations. Most of the work here belongs to agriculture, technology adoption and job satisfaction (Fig. 4).

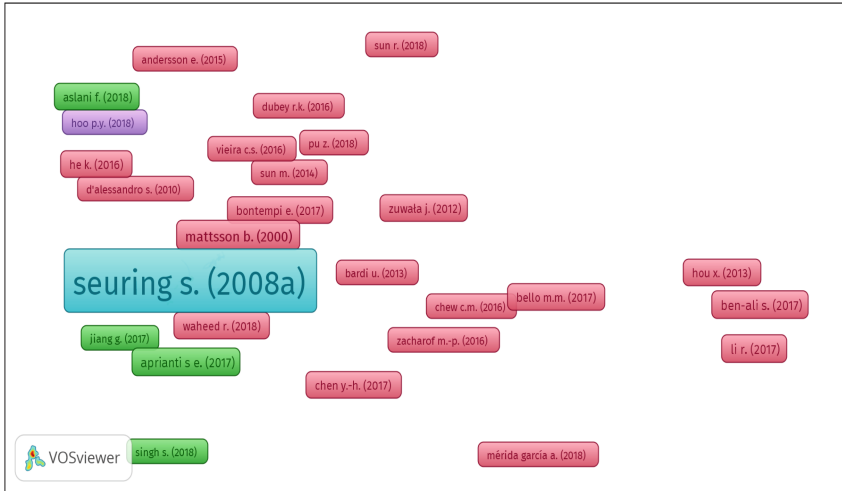


Fig. 4. JCLP articles as per bibliometric

4 Mapping with the Citation Analysis Software

Citation analysis is basically done to understand the development done in any specific area in a certain period. Bibliometric analysis is adopted from the authors [1, 3]. A total of 1719 articles have been identified from the Scopus database using the keywords ‘Agriculture’, ‘Supply-chain management’ and ‘Environmental sustainability’ [14, 15].

As identified, till 2023, in Supply Chain Management academic publications were significant (411). It will identify the keywords and their frequency of occurrence with other keywords. We have classified the articles into three major clusters based upon the keywords. The clusters are decided based upon the keywords and the articles are distributed as per that as (1) Agriculture (2) Supply-chain Management (3) Environmental Sustainability. It falls under these three major subject areas with the number of articles that fall under each area.

Citation analysis is carried out on all combinations of papers published. As per the researcher’s citation is the number of times an article is referenced by other authors [16, 17]. It is “a part or the whole of the cited document and a part or the whole of the citing document are inter-related”. Bibliometric Analysis is a subset of the bibliometric that provides information about each of the researcher in a particular area. It identifies the related publications to understand the significance of each article. Citation analysis gives deep insight about some specific topics through some relevant studies. It also provides the overview of citation any article has obtained [18, 19].

According to the researcher the mapping happens when two documents simultaneously appear in the reference list of another document [10]. The above network identifies the amount of co-citation in a span of 30 years in JCLP. The major keyword is JCLP here. JCLP cites the journal like Journal of Business Research, Expert Systems Applications, Annals of Operations Research, Technology Forecasting and Social Change, International Journal of Production Research, Communication ACM, etc.

To analyse the authors, who have received most citation from a specific area in JCLP, there is a co-citation analysis of authors is also done. The figure outcome is mapped along with the following table. The table gives most cited Country with highest number of documents. Here occurs a bibliographic coupling with occurrence of three documents at a time [20, 21] (Table 2).

Table 2. Ten Highly cited Countries on Agriculture

Serial No.	Country	Articles	No. of Citations	Link Strength
1	China	237	3394	108
2	Italy	84	1906	34
3	United states	88	1536	62
4	United kingdom	72	1327	51
5	Spain	51	1197	18
6	Australia	45	1097	30
7	Brazil	65	1054	24
8	Sweden	31	915	17
9	Netherlands	42	796	26
10	Malayasia	19	763	8

From the above table it is identified as China is the leading Country followed by Italy and US. Few developing countries are also in queue.

5 Conclusion

The study aimed at designing the contribution of the journal on 25 years completion of JCLP. On this occasion, the journal tries to identify through a long range of citation analysis those are mostly cited articles with authors, institution, countries. For this, we have used three major keywords as 'Agriculture', 'Supply-chain management' and 'Environmental Sustainability'.

On the occasion of 30 years of JCLP, the study attempted to show the major contribution of the journal in Sustainable Supply chain through the citation analysis structure by most cited publication with the most cited author with annual publication trend based upon the country and the Institution. The outcome of this bibliometric analysis shows that supply-chain management in agriculture shows a very significant contribution from JCLP. Year wise the contribution of such kind of publications are increasing and suddenly JCLP published 100 articles in the year 2018. Thus, the annual citation rate of the journal also increased drastically. The articles which are having minimum of 100 citations ideally should be 15 years old. The article also develops a graphical representation of the bibliometric data through VOSviewer. Keyword analysis also can be done more accurately in future. The most discussed themes of the journal are agricultural supply

chain, developing country, Organizational studies, economic growth and so on those are in line with JCLP.

The resulted outcome says JCLP has a major contribution on agricultural supply chain management that leads to sustainability. The article gives a citation analysis of the articles published so far in JCLP. Everything has some pros and cons. Similarly, the study has certain limitations. The first limitation is, as the data is extracted from Scopus database, if anything is missing in Scopus, that will pull the limitation. Secondly, the resulted study is dynamic which may change over time. Thirdly, certain variables in the bibliometric analysis may change over time. Anyways, the current study is a continuous work that provides a brief overview of the citation analysis of JCLP from the inception of the journal.

The bibliometric and content analysis performed for this study have revealed some research avenues for future projects. Studies on the MS domain with a pure empirical mathematical formulation are scarce. To improve the empirical case studies with a practical orientation, it has to devise a strategy for fostering cross-sectoral research including the cooperation of scholars and practitioners. Thus, in order to create a more comprehensive field of study in MS domains, future research can aim to logically connect MS keywords with terms from other clusters. One of the journal's areas of focus is case-based research, thus authors from various geographical areas—which are not yet covered—can target a case study from various regions. This resolves the issues related to various locales with diverse cultures, which could result in more productive research.

References

1. Kumar, S., Sureka, R., Pandey, N.: Forty-five years of the International Journal of Social Economics (IJSE): a bibliometric overview. *Int. J. Soc. Econ.* **47**(7), 831–849 (2020)
2. Türkeli, S., Kemp, R., Huang, B., Bleischwitz, R., McDowall, W.: Circular economy scientific knowledge in the European Union and China: a bibliometric, network and survey analysis (2006–2016). *J. Clean. Prod.* **197**(1), 1244–1261 (2018)
3. Dohale, V., Gunasekaran, A., Akarte, M.M., Verma, P.: Twenty-five years' contribution of "Benchmarking: An International Journal" to manufacturing strategy: a scientometric review. *Benchmarking Int. J.* **27**(10), 1463–5771 (2020)
4. Broadus, R.N.: Toward a definition of bibliometrics. *Scientometrics* **12**(5–6), 373–379 (1987)
5. Pritchard, A.: Statistical bibliography or bibliometrics. *J. Doc.* **25**(4), 348–349 (1969)
6. Bar-Ilan, J.: Informetrics at the beginning of the 21st century—a review. *J. Informet.* **2**(1), 1–52 (2008)
7. Ding, Y., Chowdhury, G.G., Foo, S.: Bibliometric cartography of information retrieval research by using co-word analysis. *Inf. Process. Manag.* **37**(6), 817–842 (2001)
8. Hirsch, J.E.: An index to quantify an individual's scientific research output. *Proc. Natl. Acad. Sci.* **102**(46), 16569–16572 (2005)
9. Van Eck, N., Waltman, L.: Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics* **84**(2), 523–538 (2009)
10. Kessler, M.M.: Bibliographic coupling between scientific papers. *Am. Doc.* **14**(1), 10–25 (1963)
11. Blanco-Mesa, F., Merigó, J.M., Gil-Lafuente, A.M.: Fuzzy decision making: a bibliometric-based review. *J. Intell. Fuzzy Syst.* **32**(3), 2033–2050 (2017)
12. Laengle, S., et al.: Forty years of the European journal of operational research: a bibliometric overview. *Eur. J. Oper. Res.* **262**(3), 803–816 (2017)

13. Small, H.: Co-citation in the scientific literature: a new measure of the relationship between two documents. *J. Am. Soc. Inf. Sci.* **24**(4), 265–269 (1973)
14. Ellegaard, O., Wallin, J.A.: The bibliometric analysis of scholarly production: how great is the impact? *Scientometrics* **105**(3), 1809–1831 (2015)
15. Merigó, J.M., Yang, J.B.: A bibliometric analysis of operations research and management science. *Omega* **73**(1), 37–48 (2017)
16. Narin, F.: *Evaluative Bibliometrics: The Use of Publication and Citation Analysis in the Evaluation of Scientific Activity*. Computer Horizons, New Jersey (1976)
17. Smith, L.C.: Citation analysis. *Libr. Trends* **30**(1), 83–106 (1981)
18. Mishra, D., Gunasekaran, A., Papadopoulos, T., Dubey, R.: Supply chain performance measures and metrics: a bibliometric study. *Benchmarking Int. J.* **25**(3), 932–967 (2018)
19. Waltman, L., Eck, N.J.V.: A new methodology for constructing a publication-level classification system of science. *J. Am. Soc. Inf. Technol.* **63**(12), 2378–2392 (2012)
20. Parrot, L., Dong, C., Carbonnel, F., Meyer, A.: Systematic review with meta-analysis: the effectiveness of either ustekinumab or vedolizumab in patients with Crohn's disease refractory to anti-tumour necrosis factor. *Aliment. Pharmacol. Ther.* **55**(4), 380–388 (2022)
21. Ransikarbum, K., Pitakaso, R., Kim, N., Ma, J.: Multicriteria decision analysis framework for part orientation analysis in additive manufacturing. *J. Comput. Des. Eng.* **8**(4), 1141–1157 (2021)