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Twenty-five years study (1995–2019) of Food and Bioproducts Processing: An overview of research trends

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TWENTY-FIVE YEARS STUDY (1995–2019) OF FOOD AND BIOPRODUCTS PROCESSING: AN OVERVIEW OF RESEARCH TRENDS

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Abstract

In the current study, we presented an overview of the publication profile of Food and Bioproducts Processing (FBP), a leading international journal on food processing. The detailed analysis was made to measure its scientific progress from 1995 to 2019 by identifying publication trends, most cited articles, leading institutes, and profolic countries. The publication dataset and citations information were retrieved from the Scopus bibliographic database hosted by Elsevier. Several scientific achievements were observed in publications (n=1548), impact factor 3.726 or CiteScore 6.10, and the citations (a total of 33,663) over the 25-year time frame. The factorial analysis revealed that the journal research focuses on two clusters. The first cluster focused on moisture determination, spray drying, mathematical models, thermal processing foods, food products and food processing, and the second cluster focuses on research areas of the dimension of surface properties, organic solvents, response surface methodology, antioxidant activities, flavonoids, solvent extraction and fermentation. Although citations have increased significantly need wider publicity of the work. The most cited articles were identified with the interdisciplinary research within food science and technology and added to reinforce science advancement within the field. Overall, these findings highlighted the evolution, progress, quality, and efficiency of the journal and provided early-profession researchers/specialists with an opportunity to lead more inventive studies in food science and technology (FST).

Keywords: Food Processing; food product; edible food; scientific productivity; collaboration trend; biblioshiny

Introduction

Scientometrics methods are increasingly used to measure the impact of a research field and evaluate the contributions of a source in communicating research in a particular area (Sahoo & Pandey, 2020). The critical analyses of journals are useful, particularly to young researchers, to decide whether to communicate their research. Food processing is an emerging area and involves converting raw agriculture to foodstuff portable for consumption, cooking, and storage. Food processing resulted in making inedible crops in their natural state to edible food. Processing also ensures food safety against harmful micro-organisms. Food processing has a vital role to play in linking farmers in the domestic and international markets. Today, several emerging food processing technologies have already been applied in the food industry, such as high hydrostatic pressure, microwave, ultrasound, radiation, pulsed electric field and cold plasma. These technologies reduce the processing time, enhance food quality, and improve operating conditions (Jia et al., 2019). There is a lack of comprehensive study that deals with the evaluation of journals in food processing areas using scientometrics indicators. To fill the knowledge gap, we have identified one of the leading journals, '*Food and Bioproducts Processing*', which produces a significant research in this area. The publications data of the journal covering twenty-five years were collected and critically evaluated using scientometrics parameters. The primary objectives of the current study are to investigate the publications trend of one of the leading journals *Food and Bioproducts Processing,* and its scientific outcomes over the last 25 years (1995 to 2019) by identifying the publication trends, collaboration pattern journal rank in a particular field, most cited articles, institutes, and countries. The outcomes of this study are expected to represent the quality, transparency, and productivity of the journal. This study also helps young researcher in making decision in publishing their related work in a suitable journal (Sridhar & Charles, 2020). This paper presents an overview of studies associated with *Food and Bioproducts Processing*. The review uses the Scopus database as a primary search engine and analyzes it over 1995-2019. In this study, we extensively used the science mapping tool Bibliometrix R-package to perform bibliometric analysis and build data matrices for co-citation, coupling, scientific collaboration analysis, and co-word analysis of the use of *Food and Bioproducts Processing* Journal (Jelvehgaran Esfahani et al., 2019). Although several journals published research on food processing areas, we analyzed one of the leading journals, 'FBP' by Elsevier, to cross-checked the pattern of publications in these research areas.

Review of Literature

Kalyane & Sen (1995) a study conducted on bibliometric Analysis the Journal of Oilseeds Research during 1984-1992. The study was based on 448 research articles, and the collaboration between authors and institutions was crosschecked and the citation trend found to be positives. Tiew (1998) conducted similar study on the Journal of Natural Rubber Research for ten years and showed the increasing trend of multi-authorship and international collaboration. Suryanarayana (2000) analyzed Journal Tobacco Research's contribution for two decades and observed the multidimensional pattern of citations. Biswas et al. (2007) focused on bibliometric Analysis of Journal Economic Botany during 1994-2003 and revealed that the articles were emanated from 45 countries. An interesting study conducted a study to assess and evaluate the 30 years of the Journal of Crustacean Biology. It has been found that the degree of international collaboration in higher than national collaboration. The journal communicated prominent

research in the areas of the phylogeny of crustaceans, cladistic phylogeny, biogeography, comparative anatomy, and issues of natural history (Schram, 2010). The highest number of citations received to 'article' rather than other document types (Thanuskodi, 2011). Indian research productivity in food science and technology highlighted quantitatively the significant contributions made by the Indian researchers recorded during 1998-2010 (Poornima et al., 2011). (Mamdapur et al., 2020) analyzed the Flavours and Fragrance Journal publication pattern for the period 2000-2019 based on the data extracted from the Scopus Database. The study shows that the journal had produced 1491 articles with 30,484 citations. The highest numbers of papers (186) were published in the year 2006, followed by 153 papers in 2005 and the lowest papers (39) in the year 2009. The study indicates that multi-authored papers have dominated the contributions as the journal had produced 329 four authored papers, followed by three authored (295 papers) and five authored (277 papers). Further, the study also shows that CSIR-Central Institute of Medical and Aromatic Plants, Lucknow was the most productive institute with 152 publications. France was a highly productive country with 224 publications. Improving trend of co-authored papers and author productivity were observed in a scientometrics analysis of 633 articles study of Journal of Scientific and Industrial Research during 2005-2009 (Rajendran, 2011). Bala & Singh (2014) critically analyzed 316 articles published in the Journal of Biochemistry and Bio-Physics during 2009-2013 and observed tremendous growth of high-quality publication as well as citations. Dabirian et al. (2016) study conducted 23 years of bibliometric Analysis of the Journal of Food Products Marketing during 1992-2014. The study revealed that the journal has undergone a sea of changes during the studied period and preferred by many to communicate high-quality research work. Sridhar & Charles (2020) conducted a study to assess the overview of the Food Research International's research trends and achievements during 1992-2018. Data were collected from Scopus and WOS databases. This study examines the impact factor of most cited articles, institutes collaboration and Countries. This study stated and highlighted the evolution, productivity and quality of the food science and technology research international journal.

Objectives of the Study

The main objectives of the study are mentioned below:
- Annual distribution of research publication and citation impact
- To visualize the authorship pattern and collaboration trend
- To examine the prolific authors and the productive Institutions/Organizations
- To determine the author keywords analysis of publications in the *Food and Bioproducts Processing* journal.

Methodology

Elsevier's Scopus database covers wide journals, including science, technology, social science, humanities, etc. In the first phase, we searched using the source title '*Food and Bioproducts Processing*' and found that 1,878 research documents were published in this journal since its inception. We observed that in the year 1995, there is a significant increase in the number of publications. Considering the peak of publications of our study's journal duration was fixed at 1995-2019, n=1,548. In the second phase, the Annual publications, document type, leading institutes, active author(s), and significant country were analyzed in details to examine

the progress of the journal during the last 25 years. We also collected and analyzed the other parameters such as citations trends and collaboration trend. We have used the biblioshiny visualization tool (https://bibliometrix.org/Biblioshiny.html) to generate the cross country collaboration map, reference publication year spectroscopy, and word growth. Multiple correspondence analyses were used to map various clusters, trend topics and research directions. The summary of bibliographic statistics for analysis depicted in Table 1.

Table 1: Summary bibliographic statistics for FBP journal indexed in SCOPUS, 1995–2019

DESCRIPTION	CONSEQUENCE
MAIN INFORMATION ABOUT DATA	
Timeframe	1995:2019
Sources - *Food and Bioproducts Processing*	1
Total Articles	1548
Average years from publication	8.71
Average citations per documents	21.75
Average citations per year per doc	2.67
References	50665
DOCUMENT TYPES	
Research Article	1520
Review Article	28
DOCUMENT CONTENTS	
Keywords Plus (ID)	9062
Author's Keywords (DE)	4969
AUTHORS	
Authors	4746
Author Appearances	6317
Authors of single-authored documents	31
Authors of multi-authored documents	4715
AUTHORS COLLABORATION	
Single-authored documents	39
Documents per Author	0.33
Authors per Document	3.07
Co-Authors per Documents	4.08
Collaboration Index	3.12

Data Analysis and Results Discussion

Publishing Pattern and Citation Trend

Table 2 shows the annual scientific production of articles concerning the citations retrieved from twenty-five years of articles published on FBP in the Scopus database from 1995-2019. Based on Table 2 and Figure 1 (A & B), it can be seen that most of the article publications were published in 2015 (n=187), followed by 2019 with 161 articles.

Table 2: Annual Scientific Production & Average Article Citations Per Year

| Year	No of Articles	Total Citations	Mean Total Citation per Article	Mean Total Citation per Year	Citable Years
1995	24	292	12.17	0.49	25
1996	25	268	10.72	0.45	24
1997	22	709	32.23	1.4	23
1998	25	504	20.16	0.92	22
1999	30	681	22.7	1.08	21
2000	20	428	21.4	1.07	20
2001	28	773	27.61	1.45	19
2002	41	1304	31.8	1.77	18
2003	32	753	23.53	1.38	17
2004	36	868	24.11	1.51	16
2005	35	828	23.66	1.58	15
2006	47	951	20.23	1.45	14
2007	43	1177	27.37	2.11	13
2008	40	1069	26.73	2.23	12
2009	42	1507	35.88	3.26	11
2010	58	2177	37.53	3.75	10
2011	73	3047	41.74	4.64	9
2012	106	4404	41.55	5.19	8
2013	84	2276	27.1	3.87	7
2014	47	1135	24.15	4.02	6
2015	187	3319	17.75	3.55	5
2016	130	2176	16.74	4.18	4
2017	132	1573	11.92	3.97	3
2018	80	874	10.93	5.46	2
2019	161	570	3.54	3.54	1
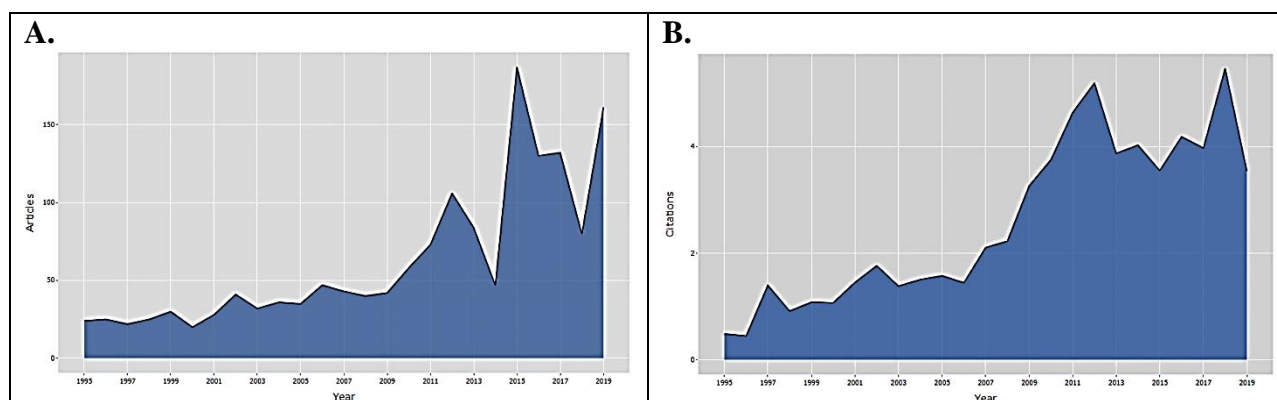
Figure 1: (A) Annual Publication Trend, (B) Annual Citations per year

Hence, in 46 volumes covering 106 issues, 1,548 research articles were published during 1995-2019. In total 33,663 citations were received from 1,548 research documents, that indicates the dominance of the journal in the field of Food Science and Technology.

Prominent Authors and their contributions

Table 3 depicted the top twenty active authors who communicated maximum research work in FBP. The resultant data reveals that Wilson DI publishes the highest number of research document (26) and ranked as the most prolific author in this journal. Fryer PJ, Bird MR, Datta AK, Chen XD and Campbell GM is another prominent contributor publishing a significant number of their research work in this journal. The research productivity in terms of publications of the top 20 authors varied from 8 to 26 (Sahoo & Pandey, 2020).

Table 3: Top 20 Prominent Authors and publications

Authors	Articles	Articles Fractionalized
Wilson DI	26	6.08
Fryer PJ	20	5.09
Bird MR	15	5.50
Datta AK	15	5.75
Chen XD	14	4.90
Campbell GM	12	4.12
Magee TRA	12	4.58
Zhang M	10	2.52
Meireles MAA	9	2.15
Nienow AW	9	3.10
Ramaswamy HS	9	3.75
Wang L	9	1.63
Wang Y	9	1.68
Whitehead KA	9	2.58
Augustin W	8	1.51
Chen X	8	1.38
Chew YMJ	8	1.81
Guiné RPF	8	4.07
Kechaou N	8	2.10
Majschak J P	8	1.46

Leading Institutions contributing maximum research

Table 4 shows the top 20 most relevant affiliations from which *Food and Bioproducts Processing* journal has been carried out (1995-2019). It is found that the United Kingdom and China were the dominant countries in terms of the number of papers and citation count; China Agricultural University situated in Beijing, China has topped the list with a maximum of 86 articles, followed by Jiangnan University in Wuxi, China and the University of Birmingham in Birmingham, the United Kingdom with 80 articles each and the University of Cambridge in the Cambridge United Kingdom with 75 articles. It is interesting to find that four institutions each from China and UK positioned in the top twenty leading instition, followed by two are from Germany based institutions and by one institution from other ten countries like Brazil, Denmark,

India, Ireland, Malaysia, New Zealand, Portugal, Serbia, Thailand and the USA were contributing in top 20 most affiliations.

Table 4: Top 20 most leading Affiliations and publications

Affiliations	Articles
China Agricultural University, Beijing	86
Jiangnan University, Wuxi	80
University of Birmingham, Birmingham	80
University of Cambridge, Cambridge	75
University of Bath, Bath	46
University of Novi Sad, Novi Sad	46
Indian Institute of Technology, Kharagpur	40
Jiangsu University, Zhenjiang	38
King Mongkut's University of Technology Thonburi, Tungkru	38
Cornell University, Ithaca	36
University of Porto, Porto	36
Technical University of Denmark, Lyngby	33
Tianjin University, Tianjin	32
University of Campinas, Campinas	32
Technische Universität Dresden, Dresden	30
University College London, London	29
University of Auckland, Auckland	29
Technische Universität Braunschweig, Braunschweig	28
University College Cork, Cork	28

Demographic distribution and country productivity

Figure 2 (A) shows the scientific production by country-wise. The map was generated through "Biblioshiny", a web-interface for Bibliometrix software that provides different shades, representing three colours, i.e., blue signifies different productivity rate, dark blue with high productivity and grey with no articles respectively.
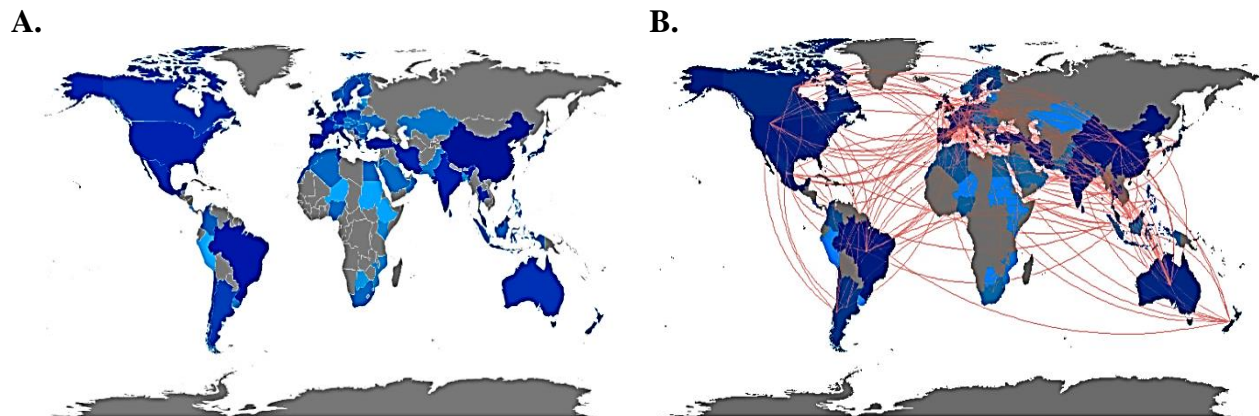
A.   B.

Figure 2: (A) Cross Country-wise Scientific Production and (B) Collaboration Map

The most productive countries (clearly stated only in 1235 out of 1548 articles), relating to published articles in *Food and Bioproducts Processing* (1995-2019) were the United Kingdom (176 articles, 14.25%), followed by China (110 articles, 8.91%), and Brazil (90 articles, 7.29%) (Fortuna et al., 2020). In contrast, the highest number of citations was attributed by the United Kingdom 3688 with mean citations per article (MCA) of 25) followed by China (3091 with an MCA of 19) and Spain (1483, with an MCA of 13.00). The country collaboration map analysis shows in Figure 2 (B), the United Kingdom as the country with the broadest collaboration network, presenting scientific relationships with 24 other countries. China and Australia had the second and third highest collaborations (22 and 21 countries), followed by Malaysia and Spain (15 and 12 countries), respectively.

Factorial analysis based on keywords

The factorial analysis is a pictorial representation of the collections of words related to a specific parameter. The author's keywords or keyword plus of Scopus indexed words w.r.t the articles published in FBP from 1995-2019. The following parameters are analyzed based on the keywords.
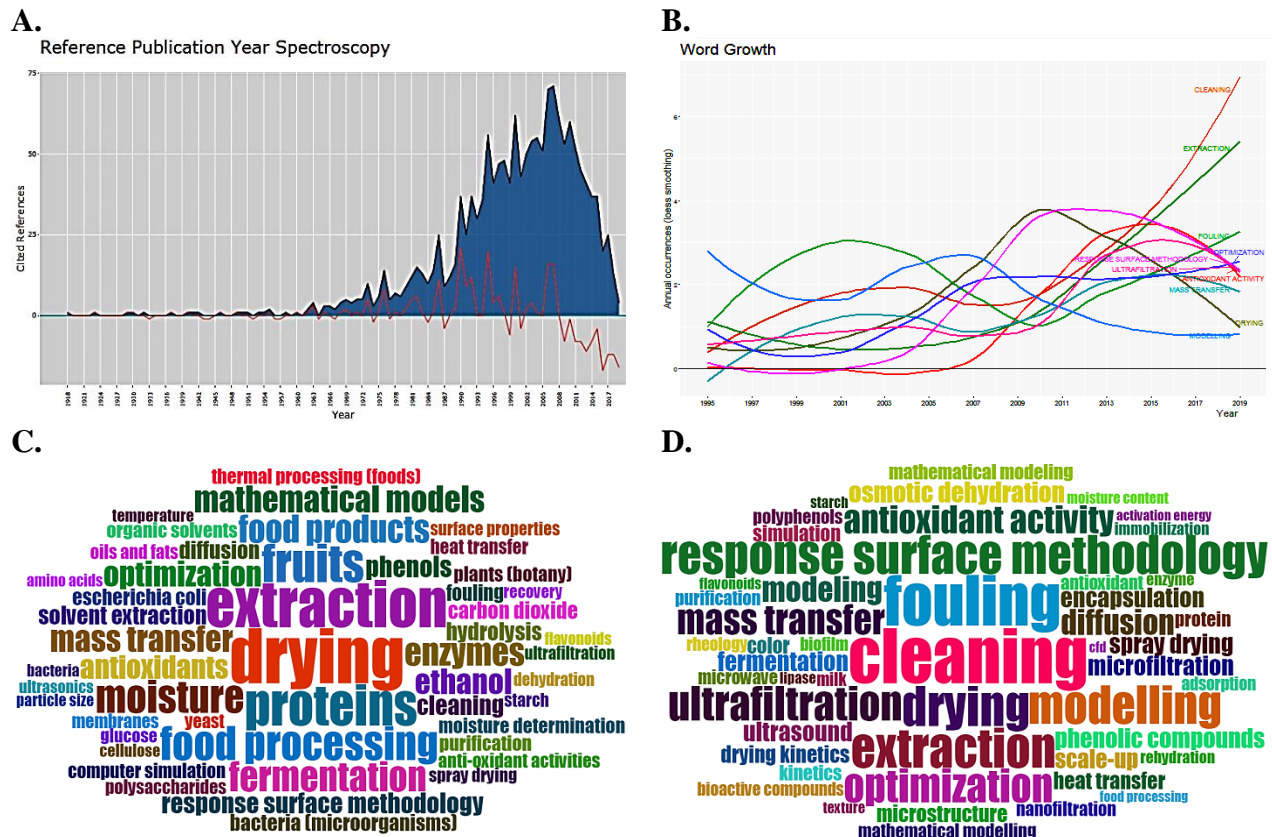

Figure 3: (A) Reference Publication year-wise spectroscopy (B) Top 10 dynamic of author keywords growth, (C) WordCloud of top 50 most frequent words by keywords plus and (D) WordCloud of top 50 most frequent words by authors keywords

Reference Publication, year-wise spectroscopy investigation, focuses around the references referred in distributions. It utilizes a retrogressive view from the distributed papers, rather than multiple times cited analysis which uses a forward and backward interpretation.

Figure 3 (A) shows the year-wise spectrogram, with two related arcs, the strong line indicates the number of references each year, and the red line shows the deviation from the four-year middle determined for every year on the one past, the current two years, and the one after a year (Ballandonne, 2019). The total number of citations to FBP articles gradually increased over time from 1988, and since 2014 the slope of the growth has been markedly increased and could reach its peak in 2007-2017, but after it has fallen quickly. Figure 3 (B) shows that the dynamic of the time-dependent occurrences of author keywords was investigated. The number of all main-term occurrences per year increased over time, but some grew more dynamically than others. The terms with the highest increase in occurrences over time were 'cleaning', 'extraction', 'fouling', 'optimization' and 'antioxidant activity. The word growths that often appear have started to develop and are used since 2010 and continue to increase every year. Figure 3 (C) depicts a word cloud of keywords plus in FBP articles where content metadata will be considered to perform content analysis. The general terms are highlighted in the figure were having 9062 keywords frequencies, such as *drying* (184 frequency), followed by *extraction* and *proteins* with (159 and 138 frequencies), and (*fruits* and *food processing*) with 128 and 116 frequencies, respectively. According to the Scopus database, Figure 3 (D) presents the wordcloud of top 50 most frequently used by authors in their publications (Fosso Wamba, 2020). The word with the highest number of occurrences being *cleaning* (60), then the second word with the highest number of occurrences is *fouling* (55), followed by *drying* and *extraction* (44 each) and *response surface methodology* with 43 occurrences.

Trend topics & research direction

The historiographic map is a graph proposed by (Garfield 2004) to represent a chronological network map of the most relevant direct citations resulting from a bibliographic collection. Historiographic mapping of knowledge domain literature generates a chronological direct citation network matrix that can be plotted using Biblioshiny. The citation network's historiographic map illustrated in Figure 4 visualizes a chronological mapping of the top 50 most internally cited papers *Food and Bioprocessing Products* during 1995-2019. According to the local citation scores (LCS) and global citation score (GCS) generated algorithmically using the historiographic relationships. Each historical path (shown in various colour) represents a research concept and its core documents. The node represents the document included in the analyzed collection cited by other documents, and the edge indicates direct citation, and the horizontal axis represents the publication years (Aria & Cuccurullo, 2017). Each historical path (shown in various colour) represents a research concept and its core documents.

Historical path (pink) represents mills' performance evaluation and separators by authors (*Al-Mogahwi HWH, 2005; Campbell et al., 2007 and Dal-Pastro F., 2016*). Historical path (red) represents the innovation in whey proteins and their development over time (*Christian GK, 2009; Saikhwan et al., 2010*). Historical path (brown) represents the cleaning studies and their development by (*Saikhwan P., 2010 and Saikhwan P., 2015*). Historical path (green) represents the nano to the meso-scaling by authors (*Akhtar N., 2010 and Cole PS., 2010*). Historical path (blue) represents the effects of spray drying and its applications over time (*Fazaeli M., 2011; Daza LD., 2016 and Moreno T., 2018*), respectively.
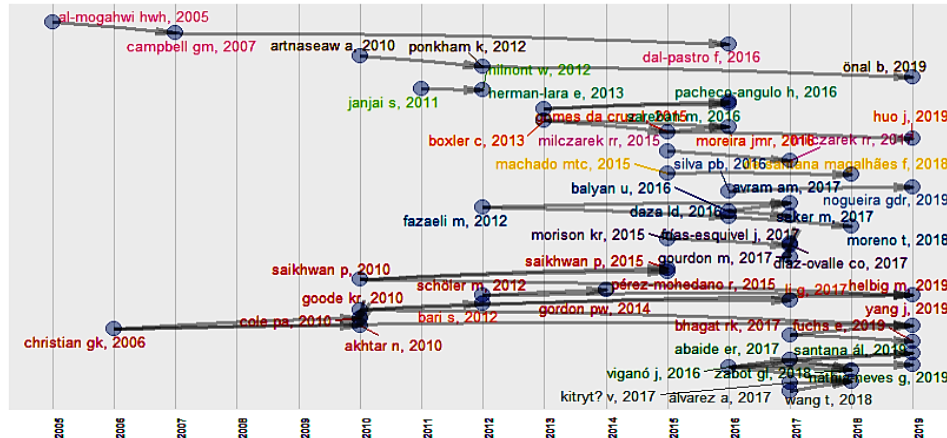
Figure 4: Historical direct citation network of top-cited papers in FBP from 1995-2019

Cluster analysis and Multiple Correspondence analysis of High-Frequency Keywords

The study conducted the Multiple Correspondence Analysis (MCA) of the keywords included in our dataset. The conceptual structure of the keywords associated with the resilience articles included in this study was presented in Figure 5. It compresses extensive data with multiple variables into a low-dimensional space to form an intuitive two-dimensional (or three-dimensional) graph that uses plane distance to reflect the similarity between the keywords. Keywords approaching the centre point indicate that they have received close attention in recent years (Xie et al., 2020).
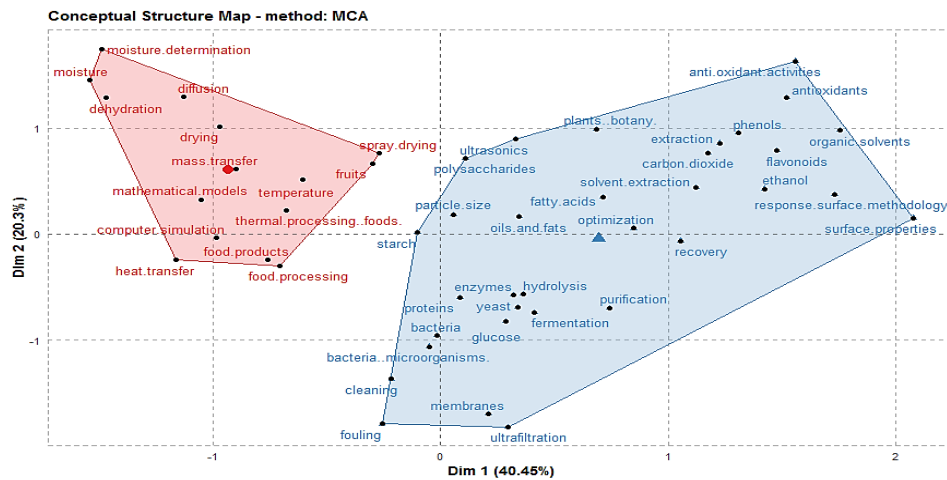

Figure 5: Factorial analysis of conceptual structure map-method: MCA of high-frequency keywords

The results are interpreted based on the relative positions of the points and their distribution along the dimensions; as words are more similar in distribution, the closer they are represented in the map (Aria & Cuccurullo, 2017). Cluster 1 (red colour) of 15 keywords comprises papers regarding *moisture determination, spray drying, mathematical models, thermal processing foods,*

food products and food processing. Cluster 2 (blue colour) is the most significant consists of 35 keywords that focus on the documents related to surface properties, organic solvents, response surface methodology, antioxidant activities, flavonoids, and *solvent extraction and fermentation*.

Three-fields plot relations between top 20 (Affiliations, Authors, Countries)

A multi-field plot between top authors, top affiliations and countries in the top 20 rankings. Figure 6 depicts that most top authors and top affiliations are from China, the United Kingdom, Malaysia, Germany and Brazil. Most of the top affiliations from other countries have a relationship with the China and United Kingdom institutions, for example, Malaysia with the University of Bath and University of Birmingham. Brazil, France, Germany, India, Iran, Italy, Japan, Malaysia, Portugal, and Turkey do not appear to have a relationship with the China institutions. Besides, some countries have none to a minimal international relationship with the institutions and authors. This conveys active international collaboration amongst various countries and the concentrated collaboration structure within several countries and institutions (Baek & Doleck, 2020).
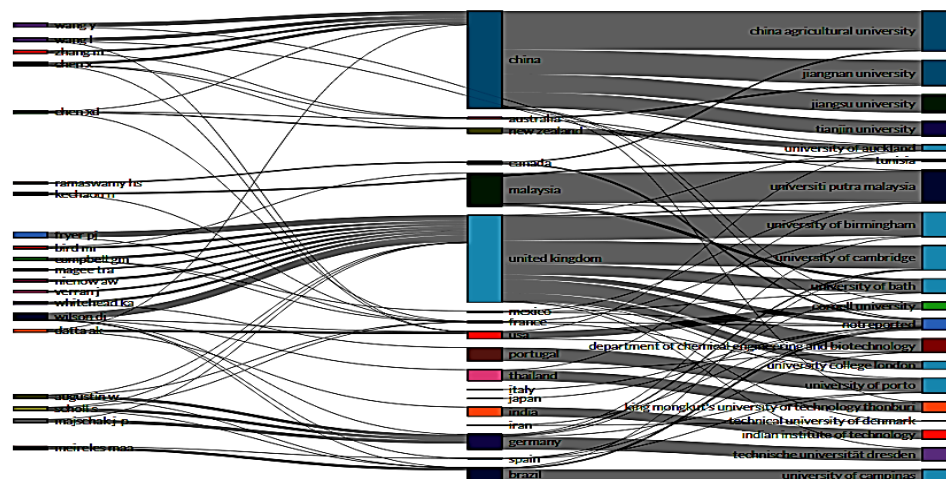

Figure 6: Three-fields plot relations among the Top Authors, Top Affiliations and Top Countries

Top 10 most cited paper

The top 10 critical paper were identified based on their most citation count and depicted in Table 5. It has been observed that these most cited paper were published between 2001- 2013. The paper published by D Krishnaiah and his co-authors has focused on the antioxidant characteristics of the potential of medicinal plant species and received the most excellent attention from the research community.

Table 5: Top 10 most cited having a more significant influence and received the maximum citation

Sl. No.	Articles bibliographic information	Scopus	Google Scholar
1	Krishnaiah, D., Sarbatly, R., & Nithyanandam, R. **(2011)**. A review of the antioxidant potential of medicinal plant species. FBP, 89(3), 217–233.	503	1056

2	Al-Muhtaseb, A. H., McMinn, W. A. M., & Magee, T. R. A. **(2002)**. Moisture Sorption Isotherm Characteristics of Food Products: A Review. FBP, 80(2), 118–128.	332	576
3	Daufin, G., Escudier, J.-P., Carrère, H., Bérot, S., Fillaudeau, L., & Decloux, M. **(2001)**. Recent and Emerging Applications of Membrane Processes in the Food and Dairy Industry. FBP, 79(2), 89–102.	244	366
4	Galanakis, C. M. **(2013)**. Emerging technologies for the production of nutraceuticals from agricultural by-products: A viewpoint of opportunities and challenges. FBP, 91(4), 575–579.	233	295
5	Fazaeli, M., Emam-Djomeh, Z., Kalbasi, Ashtari, A., & Omid, M. **(2012)**. Effect of spray drying conditions and feed composition on the physical properties of black mulberry juice powder. FBP, 90(4), 667–675.	217	410
6	Frascareli, E. C., Silva, V. M., Tonon, R. V., & Hubinger, M. D. **(2012)**. Effect of process conditions on the microencapsulation of coffee oil by spray drying. FBP, 90(3), 413–424.	194	332
7	Bimakr, M., Rahman, R. A., Taip, F. S., Ganjloo, A., Salleh, L. M., Selamat, J., Hamid, A., & Zaidul, I. S. M. **(2011)**. Comparing different extraction methods for the extraction of major bioactive flavonoid compounds from spearmint (Mentha spicata L.) leaves. FBP, 89(1), 67–72.	162	353
8	Doymaz, İ., & İsmail, O. **(2011)**. Drying characteristics of sweet cherry. FBP, 89(1), 31–38.	154	265
9	Rocha, G. A., Fávaro-Trindade, C. S., & Grosso, C. R. F. **(2012)**. Microencapsulation of lycopene by spray drying: Characterization, stability and application of microcapsules. FBP, 90(1), 37–42.	138	220
10	Whitehead, K. A., & Verran, J. **(2006)**. The Effect of Surface Topography on the Retention of Microorganisms. FBP, 84(4), 253–259.	136	215

Conclusion

In the present study, we analyzed the growth and publication trends of "*Food and Bioproducts Processing* (FBP)" journal. The journal has gone tremendous change in terms of both quantities as well quality. There are much visibility and impact of the research work it has published during the last 25 years. Overall, 33,663 citations were found from 1,548 documents. The annual growth of the published documents was observable from the analysis. Starting with around 24 research publications at the beginning of the study period, the journal now publishes around 150–180 documents in a year. Wilson DI contributed the highest number of research documents (26) and ranked as the most active author in this journal. The research productivity in terms of publications of the top 20 authors varied from 8 to 26. The United Kingdom has the highest research contribution and broadest collaboration network, presenting scientific relationships with 24 other countries. It has been found four institutions, each from China and the United Kingdom, are positioned in the top 20 leading institutions. Factorial analysis of conceptual structure map indicated that Cluster 1 research focuses on moisture determination, spray drying, mathematical models, thermal processing foods, food products and food processing. In contrast, Cluster 2 focuses on the dimension of surface properties, organic solvents, response surface methodology, antioxidant activities, flavonoids, solvent extraction and fermentation. Although citations have increased significantly need wider publicity of the work.

The paper published by D Krishnaiah and his co-authors has focused on the antioxidant characteristics of the potential of medicinal plant species and received the highest attention of the research community. There is a scope for further improvement, particularly in the publication time. Our study will be a benchmark for identifying and evaluating journal quality and impishness in communicating high-quality research work in different domains.

References

Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, *11*(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007

Baek, C., & Doleck, T. (2020). A Bibliometric Analysis of the Papers Published in the Journal of Artificial Intelligence in Education from 2015-2019. *International Journal of Learning Analytics and Artificial Intelligence for Education (IJAI)*, *2*(1), 67–84.

Bala, M., & Singh, M. (2014). A scientometric study of Journal of Bio-Chemistry and Bio-Physics (IJBB). *Library Philosophy and Practice (e-Journal)*, *1168*, 1–8.

Ballandonne, M. (2019). The historical roots (1880–1950) of recent contributions (2000–2017) to ecological economics: Insights from reference publication year spectroscopy. *Journal of Economic Methodology*, *26*(4), 307–326. https://doi.org/10.1080/1350178X.2018.1554227

Biswas, B. Ch., Roy, A., & Sen, B. K. (2007). Economic Botany: A bibliometric study. *Malaysian Journal of Library & Information Science*, *12*(1), 23–33.

Dabirian, A., Diba, H., Tareh, F., & Treen, E. (2016). A 23-year bibliometric study of the Journal of Food Products Marketing. *Journal of Food Products Marketing*, *22*(5), 610–622. https://doi.org/10.1080/10454446.2016.1141141

Demiroz, F., & Haase, T. W. (2020). The concept of resilience: A bibliometric analysis of the emergency and disaster management literature. In G. Y. Reinhardt & L. Drennan (Eds.), *Local Disaster Management* (1st ed., pp. 16–35). Routledge. https://doi.org/10.4324/9781003036234-3

Fortuna, G., Aria, M., Iorio, C., Mignogna, M. D., & Klasser, G. D. (2020). Global research trends in complex oral sensitivity disorder: A systematic bibliometric analysis of the framework. *Journal of Oral Pathology & Medicine*, *49*(6), 555–564. https://doi.org/10.1111/jop.13076

Fosso Wamba, S. (2020). Humanitarian supply chain: A bibliometric analysis and future research directions. *Annals of Operations Research*. https://doi.org/10.1007/s10479-020-03594-9

Garfield, E. (2004). Historiographic Mapping of Knowledge Domains Literature. *Journal of Information Science*, *30*(2), 119–145. https://doi.org/10.1177/0165551504042802

Jelvehgaran Esfahani, H., Tavasoli, K., & Jabbarzadeh, A. (2019). Big data and social media: A scientometrics analysis. *International Journal of Data and Network Science*, 145–164. https://doi.org/10.5267/j.ijdns.2019.2.007

Jia, J., Ge, Y., & Wei, X. (2019). Innovation of Food Physical Processing Technology in China. In J. Jia, D. Liu, & H. Ma (Eds.), *Advances in Food Processing Technology* (pp. 1–32). Springer Singapore. https://doi.org/10.1007/978-981-13-6451-8_1

Kalyane, V. L., & Sen, B. K. (1995). A bibliometric study of The Journal of Oilseeds Research. *Annals of Library and Information Studies*, *42*(4), 121–141.

Mamdapur, G. M. N., Hadagali, G. S., Verma, M. K., & Kaddipujar, M. (2020). A Scientometric Analysis Of "Flavour And Fragrance Journal" Indexed In Scopus during 2000-2019. *International Journal of Information Dissemination and Technology*, *10*(4), 211–218. https://doi.org/10.5958/2249-5576.2020.00039.4

Poornima, A., Surulinathi, M., Amsaveni, N., & Vijayaragavan, M. (2011). Mapping the Indian research productivity of food science and technology: A scientometric analysis. *Food Biology*, *1*(1), 36–41.

Rajendran, D. P. (2011). Scientometric analysis of contributions to Journal of Scientific and Industrial Research. *International Journal of Digital Library Services*, *1*(2), 79–89.

Sahoo, S., & Pandey, S. (2020). Evaluating research performance of Coronavirus and Covid-19 pandemic using scientometric indicators. *Online Information Review*, *44*(7), 1443–1461. https://doi.org/10.1108/OIR-06-2020-0252

Schram, F. R. (2010). The first 30 years of the Journal of Crustacean Biology—Systematics and evolution. *Journal of Crustacean Biology*, *30*(4), 550–556. https://doi.org/10.1651/10-3359.1

Scopus. (2020). *Welcome to Scopus Preview*. Scopus. https://www.scopus.com

Sridhar, K., & Charles, A. L. (2020). Twenty-six years anniversary (1992–2018) of Food Research International: An overview of research trends. *Food Research International*, *130*, 108932. https://doi.org/10.1016/j.foodres.2019.108932

Suryanarayana, Y. V. (2000). Bibliometric analysis of contributions of Journal Tobacco Research. *Annals of Library and Information Studies*, *47*(3), 81–100.

Thanuskodi, S. (2011). Bibliometric analysis of the Indian Journal of Chemistry. *Library Philosophy and Practice (e-Journal)*, *630*, 1–7.

Tiew, W. S. (1998). Journal of Natural Rubber Research 1987-1996: A ten-year bibliometric study. *IASLIC Bulletin*, *43*(2), 49–57.

Xie, H., Zhang, Y., Wu, Z., & Lv, T. (2020). A Bibliometric Analysis on Land Degradation: Current Status, Development, and Future Directions. *Land*, *9*(1), 28. https://doi.org/10.3390/land9010028