



Research Article

COVID-19 and consumer behaviour: A bibliometric analysis

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ABSTRACT

Purpose- This study was aimed at extending the understanding of Covid-19 literature regarding Consumer Behaviour by using bibliometric technique of analysis. **Design/Methodology/ approach-** The current study adopts bibliometric analysis and was based on the records extracted from Scopus database. Scopus database was selected since it was known to be major citation and abstract database of peer-reviewed literature covering an extensive collection of topics. **Findings-** The findings suggested that the most influential authors in the area were Graffigna, G. was leading others by producing the most documents (16) in the searched area. Furthermore, key co-occurrence showed 'pandemic', 'social media', 'consumer behavior', 'social distancing', and 'lockdown' as main keywords. **Research limitation/ Implications-** This research applied specific keywords which might have limited the results. We also applied different thresholds while screening and analyzing the records which might exclude the important and worth-noticing piece of data in the documents. We categorized the keywords which were relevant to Covid-19 and Consumer Behavior. It might overlook other more important keywords used in the documents. **Originality/value-** The current study was designed to extend the understanding of Covid-19 literature with Consumer Behaviour by using bibliometric technique of analysis. It was first of its kind which would aid in comprehending the phenomenon and future research directions.

Keywords: COVID-19; Consumer Behaviour; Bibliometric Analysis; Pandemic

1. INTRODUCTION

In the history, several disease outbreaks and pandemics had been recorded which included Spanish Flu, Hong Kong Flu, and SARS, Infectious disease outbreaks had potential to cross borders with ease, and damage economic and regional stability, since the HIV, H1N1, H5N1, and SARS epidemics and pandemics had demonstrated (Verikios, Sullivan, Stojanovski, Giesecke, & Woo, 2016). However, in December 2019 a novel COVID-19 pandemic had been reported in the Wuhan city of the Hubei province of China. The COVID-19 pandemic has intensely impacted the people and finances around the globe in addition to this; it has stricken the range of sectors within society into diverse ways. This extraordinary circumstance has numerous consequences on the daily life of consumers. It has noticeably altered the way companies and customers behave (Donthu & Gustafsson, 2020; Pantano, Pizzi, Scarpi, & Dennis, 2020).



In line with this, Wright and Blackburn (2020) also has stated that COVID-19 has compelled individuals to live in a different way, buy another way, and thinking a different way. Customers have become accustomed to house quarantine for a long-standing time periods(Eger, Komárková, Egerová, & Mičík, 2021). COVID-19 being a novel concept, still needed more studies to unpack this phenomenon, yet the bibliometric survey by Nowakowska, Sobocińska, Lewicki, Lemańska, and Rzymiski (2020) attempted to recognize, based on the systematic analysis of 2062 peer-reviewed and pre-print papers, the major subjects, authors, and nationality of COVID-19 articles published in the initial three months of pandemic. Bonilla-Aldana, Dhama, and Rodriguez-Morales (2020) and Radanliev et al. (2020) carried on further studies through evaluation of the scientific literature on corona virus types and probable vaccine treatment. Furthermore, Verma and Gustafsson (2020) in the socioeconomics conducted a bibliometric study of COVID-19 literature in the business and management area for identifying existing research areas and suggest potential research lines. In the similar period, effort was being carried out to construct COVID-19-related scientific papers databases to constantly revise the scientific aid to the topic. Such as the Organization (2020)and the Control and Prevention (2020)database.

Furthermore, the word '*bibliometrics*' was first coined by Pritchard (1969) that was intended for applicability of the mathematical and statistical techniques to diverse types of communication material. Amongst such materials, a bibliographic material was the one , which was analyzed quantitatively through a process recognized as bibliometric analysis (Broadus, 1987). Researchers applied this technique within a variety of disciplines, such as neuromarketing (ALSHARIF, SALLEH, & BAHARUN, 2020), strategic management (Ferreira, Fernandes, & Ratten, 2016), Service quality in healthcare (Ali et al., 2021), information sharing (Abbas et al., 2022), neuroimaging techniques (Alsharif et al., 2021), electronic service quality (Ali et al., 2021), mobile healthcare (Ali, Jusoh, Idris, Abbas, & Alsharif, 2021b), SERVQUAL & Healthcare (Ali et al., 2021), Community Buying (Wan et al., 2021), and Wellbeing (Ali et al., 2021), corporate social responsibility (Bhattacharyya & Verma, 2020), medicine (Liao et al., 2018), and corporate universities (Singh, Verma, & Chaurasia, 2020).

Therefore, the current study was designed to extend the understanding of Covid-19 literature with Consumer Behaviour by using bibliometric technique of analysis. It was first of its kind which would aid in comprehending the phenomenon and future research directions. This study intended to answer following research questions.

RQ 1. What is the publication output of extracted documents regarding Covid-19 & Consumer Behavior till 2020?

RQ 2. Who are the most prolific authors and journals in 'Covid-19 & Consumer Behavior' search?

RQ 3. What are the most prominent countries, and institutions in 'Covid-19 & Consumer Behavior' research?

RQ 4. What are the links and collaborations among authors, countries, and keywords related to 'Covid-19 & Consumer Behaviors' research?

2. METHODOLOGY

However, the current analysis in this study was based on the records extracted from Scopus database. Scopus database was selected since it was known to be major citation and abstract database of peer-reviewed literature covering an extensive collection of topics (Khudzari, Kurian, Tartakovsky, & Raghavan, 2018). Therefore, to unpack the search area comprehensively, Scopus database was better platform than Web of Science or MedLine database.

2.1. SEARCH STRATEGY

Data were extracted from the Scopus database for the year 2020 and 2021. PRISMA guidelines were followed to screen the documents for the analysis as exhibited in Fig 1. The search was begun in the month of May 2021. The search was begun with main keywords (e.g., covid-19 & consumer behavior). Records mentioned in the year 2022 were excluded. Search was limited to articles as document type, journals as source and English as language of the document only. Further, search was extended to the exact keywords (refer appendix for the keyword applied) applied for the final number of documents. The number of studies selected for the analysis was 2190.

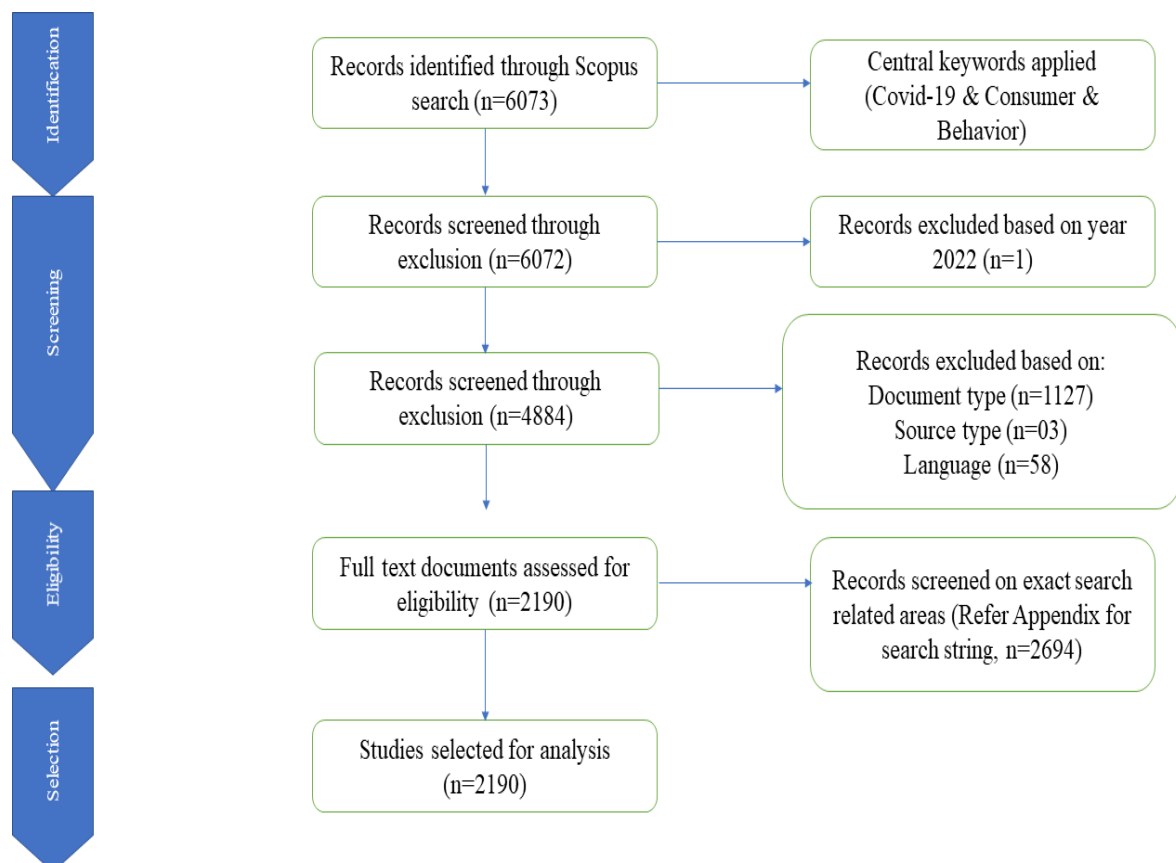


Fig. 1. Search Flow Diagram based on PRISMA

3. ANALYSIS AND RESULTS

This section of the paper presents the document analysis and the results.

3.1. INFLUENTIAL AUTHORS, COUNTRIES, AND INSTITUTIONS

We identified the most influential authors in the 'Covid-19 & Consumer Behavior' search. Results revealed that Graffigna, G. was leading others by producing the most documents (16) in the searched area. She was followed by Barello, S. (11), Ratten, V. (8), Basch, C.H. (7), Han, H. (7), Kim, J. (7), Kim, J.J. (7) and others mentioned in Fig 2.

We also identified the most productive countries and institutions around the world which contributed to the development of 'Covid-19 & Consumer Behavior' search. Results showed that United States was at the top by producing 579 documents. It was followed by China (275), United Kingdom (259), Australia (166) and others mentioned in Fig 3.

On the other hand, Hong Kong Polytechnic University and Università Cattolica del Sacro Cuore were found the leading institutions from the top by producing 24 documents. They were followed by University College London (22), Sejong University (21), Harvard Medical School (18), Zhejiang University (18), Sapienza Università di Roma (18) and others as mentioned in Fig 4.

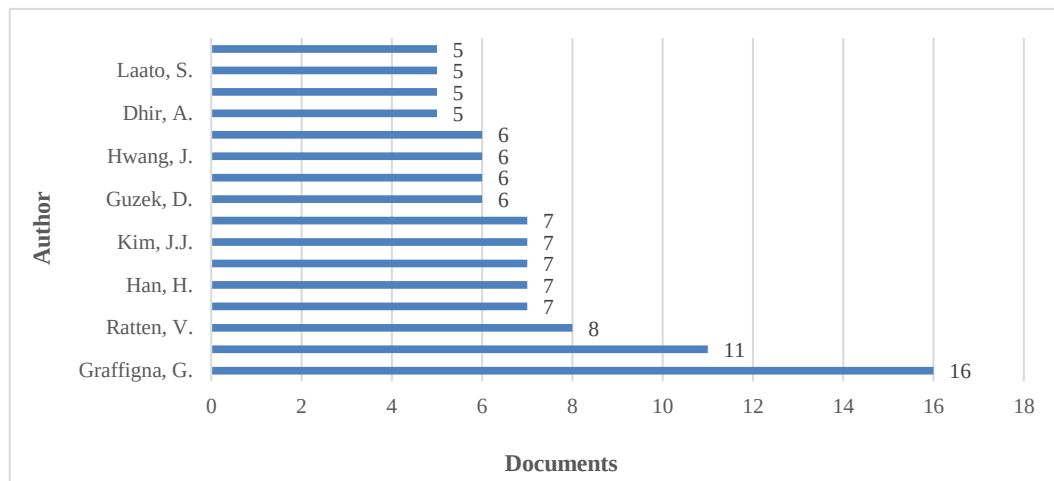


Fig. 2. The most influential authors

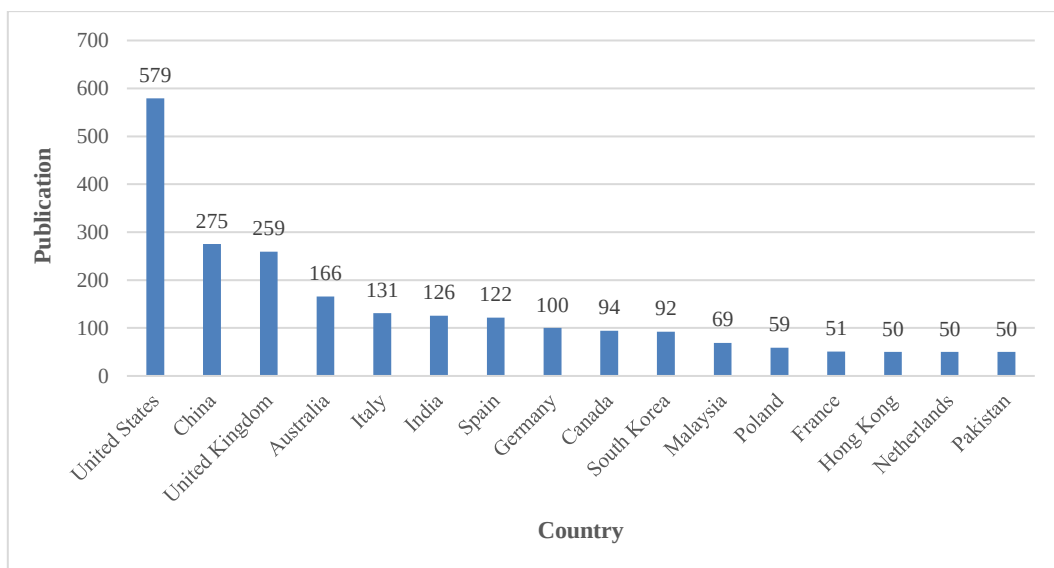


Fig. 3. The most productive countries

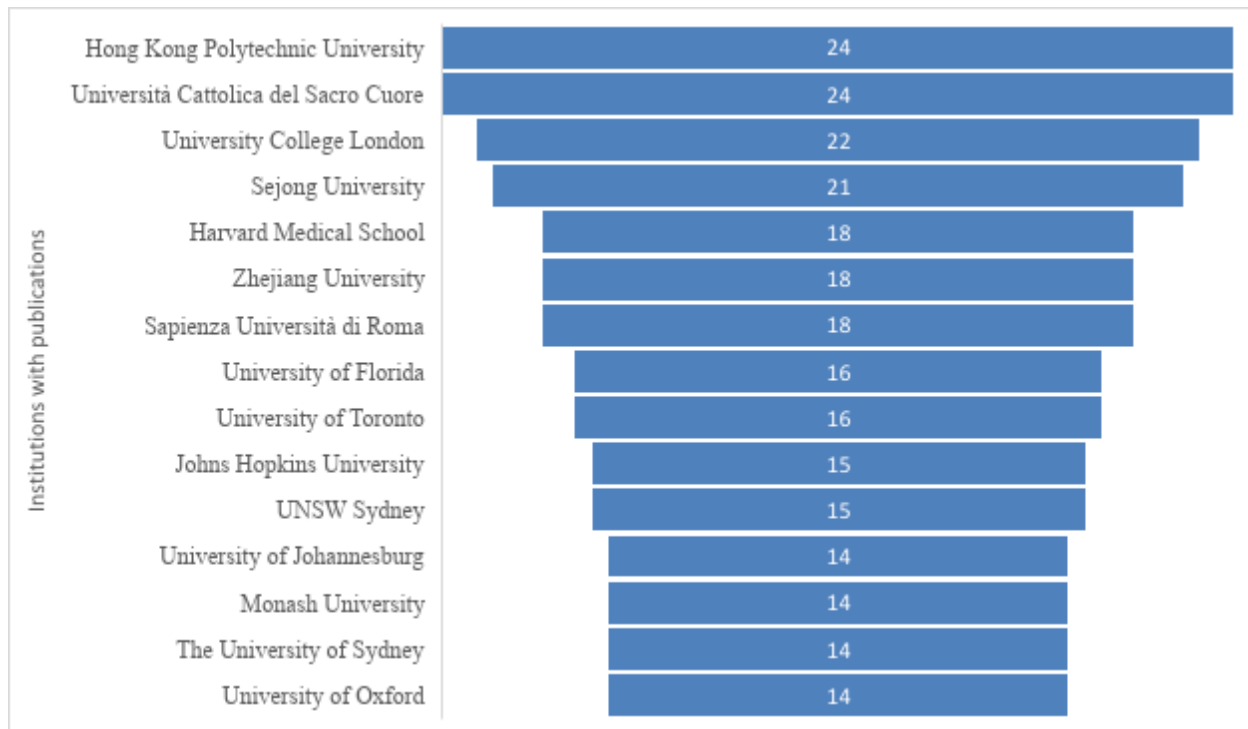


Fig. 4. The most productive institutions

3.2. CO-AUTHORSHIP ANALYSIS (AUTHORS)

The co-authorship analysis refers publication of one document by two authors. We used the VOSviewer software to analyze co-authorship. Different thresholds were applied. The maximum number of documents of an author was set at 25. The minimum number of documents of an author was set at 02 and the minimum number of citations of an author was set at 00. Out of the 7808 authors, 694 met the criteria.

Results showed Graffigna G. had scored the highest total link strength (TLS) of 46 with 16 documents and 240 citations. Subsequent names of authors were listed in Table 1 as per their TLS score. Different maps were created from VOSviewer software. The overall map of items (authors) consisted of 694 items, 174 clusters, 1517 total links and 2439 total link strength. It showed the dominance and prominence of authors based on TLS Fig 5. We also created the different maps of largest connected set which contained 331 items (authors). It included 24 clusters, 972 links and 1293 TLS (Fig 6). It showed the network visualization of connected authors and their dominance as per their TLS score. Similarly, other maps included different weights such as documents (Fig 7), and citation (Fig 8). We also created map showing the density of different connected authors who published more studies on 'covid-19 and consumer behavior' research. Yellow areas of the map represented the areas where more co-authorship had been occurred among the connected authors (Fig 9).

Table 1. The list of top authors based on their TLS score

Item (Author)	Documents	Citations	TLS	Item (Author)	Documents	Citations	TLS
Graffigna G.	16	240	46	Murphy J.	4	55	43
Bentall R.P.	3	55	43	Shevlin M.	3	55	43
Gibson-Miller J.	3	55	43	Stocks T.V.A.	3	55	43

Item (Author)	Documents	Citations	TLS	Item (Author)	Documents	Citations	TLS
Hartman T.K.	3	55	43	Vallières F.	3	55	43
Hyland P.	3	55	43	Barello S.	11	217	33
Karatzias T.	3	55	43	Kim J.	14	85	31
Levita L.	3	55	43	Bennett K.	2	44	30
Martinez A.P.	3	55	43	Hoang M.T.	3	41	30
Mason L.	3	55	43	Tran B.X.	3	41	30
Mcbride O.	3	55	43	Nguyen T.T.	3	85	25
Mckay R.	3	55	43	Palamenghi L.	7	157	25

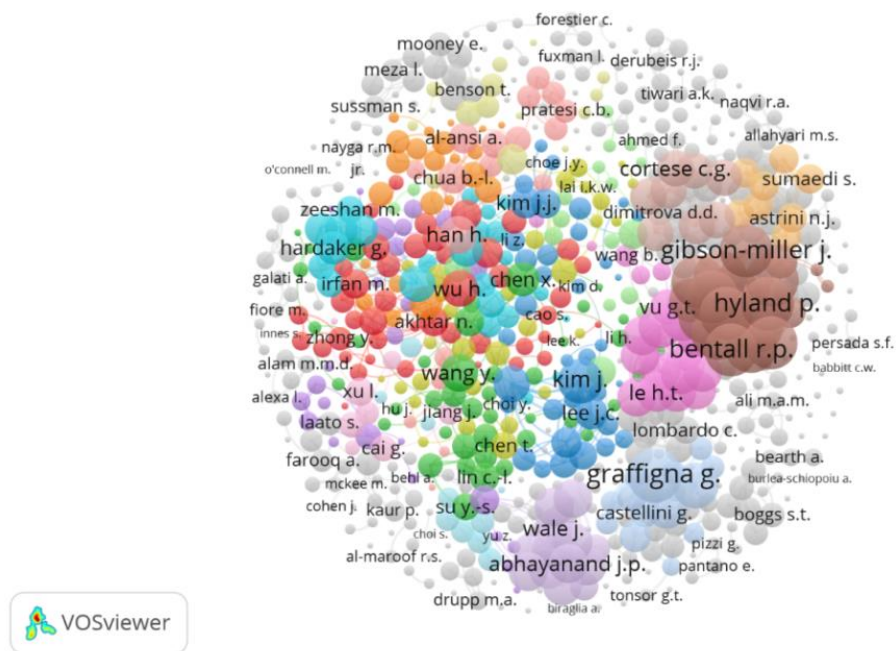


Fig. 5. Screenshot showing the network visualization of co-authorship (authors) for all items (n=694).

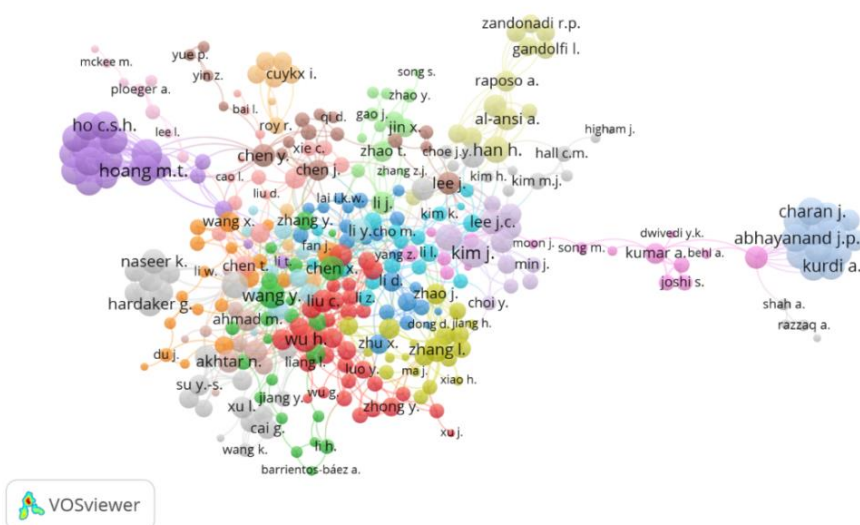


Fig. 6. Screenshot showing the network visualization of co-authorship (authors) for the connected set (n=331) based on TLS.

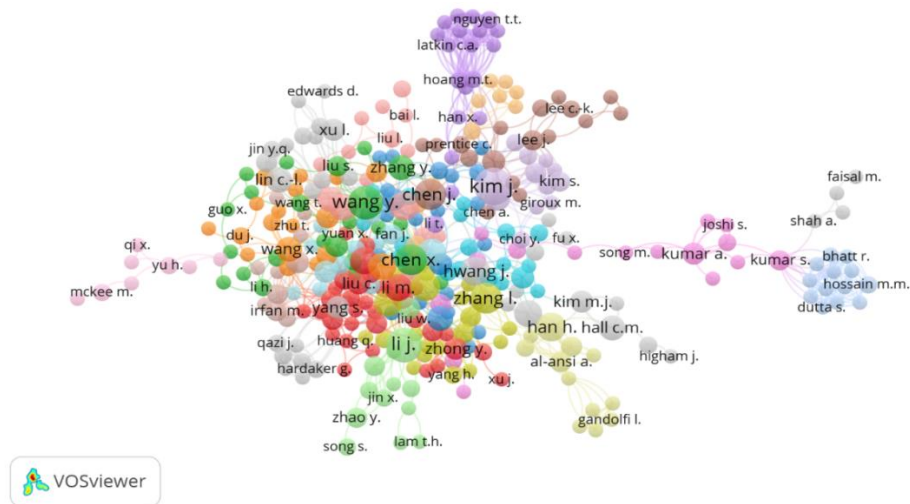


Fig. 7. Screenshot showing the network visualization of co-authorship (authors) for the connected set ($n=331$) based on document.

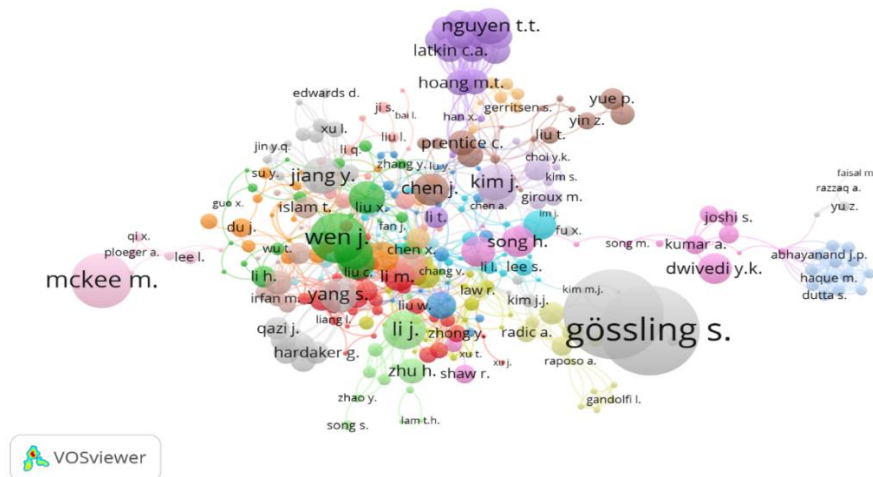


Fig. 8. Screenshot showing the network visualization of co-authorship (authors) for the connected set ($n=331$) based on citations.

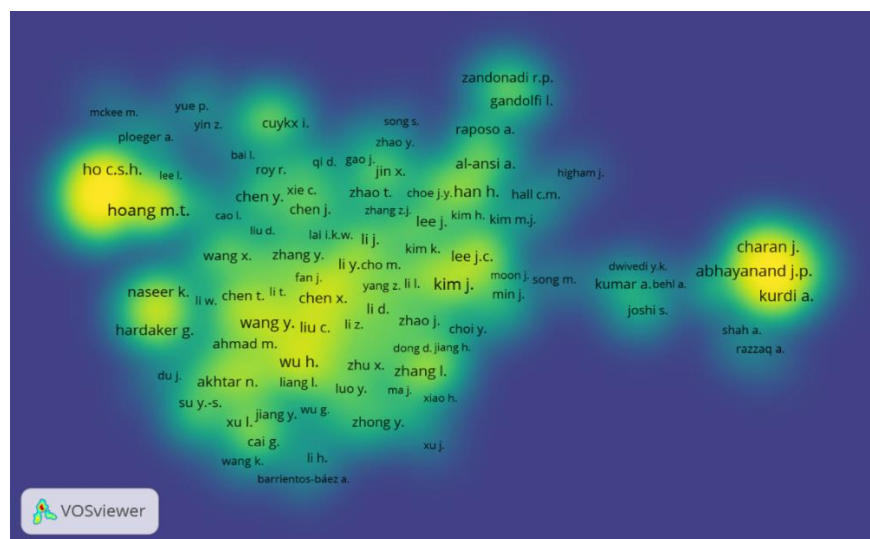


Fig. 9. Screenshot showing the density visualization of co-authorship (authors) for connected set ($n=331$).

3.3. CO-AUTHORSHIP ANALYSIS (COUNTRIES)

We analyzed the countries for their co-authorship in the chosen search area. Different thresholds were applied in analyzing the countries for their co-authorship. The maximum number of documents of a country was set at 25. The minimum number of documents of a country was set at 01 and the minimum number of citations of a country was set at 00. Results showed 116 items (countries) from which one item was excluded which was not representing the name of a country. Therefore, the analysis was based on 115 items (countries). It was found that United States was leading all the countries with the highest total link strength (TLS) of 489 with 579 documents and 2803 citations. It was followed by United Kingdom, Australia, and China. Their facts and others were mentioned in Table 2. Results revealed the countries which had not collaborated with other countries by having 00 total link strength. These were Latvia, Libya, Mauritius, and Sri Lanka.

Both maps of all items were created that included not connected items and the largest connected set which contained 111 items (countries). The total number of clusters was 12 with 1086 links and 2696 total link strength among the countries of the largest connected set. Map of overall items showed the connections and associations among the 115 countries which were connected to each other. It showed the countries (e.g, Latvia, Libya, Mauritius, and Sri Lanka) that were not connected to any other country, Fig 10 depicts it. Moreover, maps of the connected items (n=111) were created based on the scores of TLS Fig 11, documents Fig 12, and citations Fig 13. These maps represented the contributions, associations and collaborations of countries based on the weights assigned to them (e.g., TLS, documents, and citations).

Table 2. List of top scoring countries based on TLS

Item (Country)	Documents	Citations	TLS	Item (Country)	Documents	Citations	TLS
United States	579	2803	489	South Africa	47	254	128
United Kingdom	259	2209	415	South Korea	92	263	127
Australia	167	1349	306	Pakistan	50	170	119
China	275	1122	292	France	51	371	117
Germany	99	665	158	Sweden	38	627	113
Canada	94	1006	151	New Zealand	46	769	107
Italy	131	782	150	Hong Kong	50	277	103
India	126	495	149	Netherlands	50	264	90
Malaysia	69	337	145	Viet Nam	35	292	85
Spain	122	428	143	Denmark	28	435	82

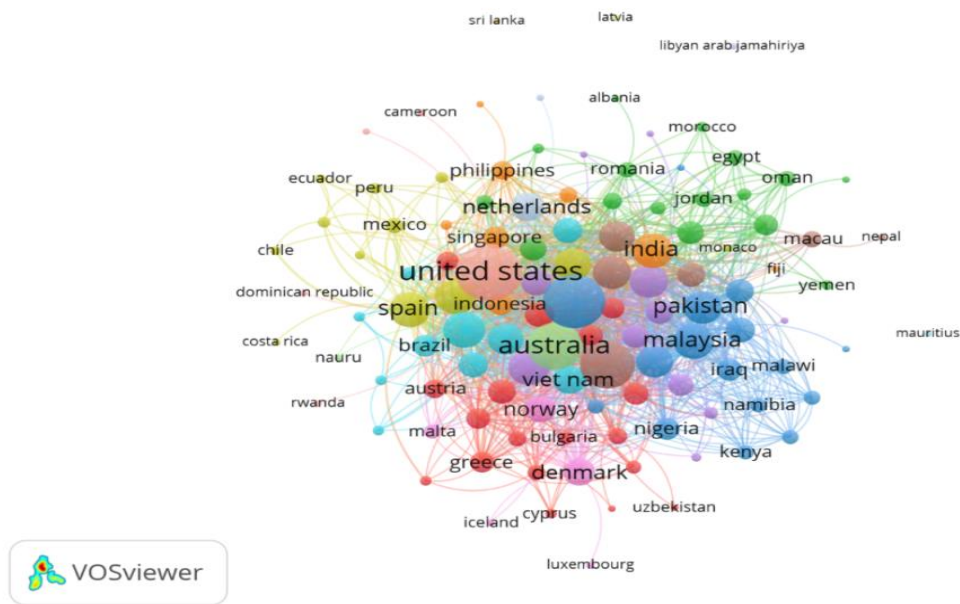


Fig. 10. Screenshot showing the network visualization of co-authorship (countries) for all items (n=115).

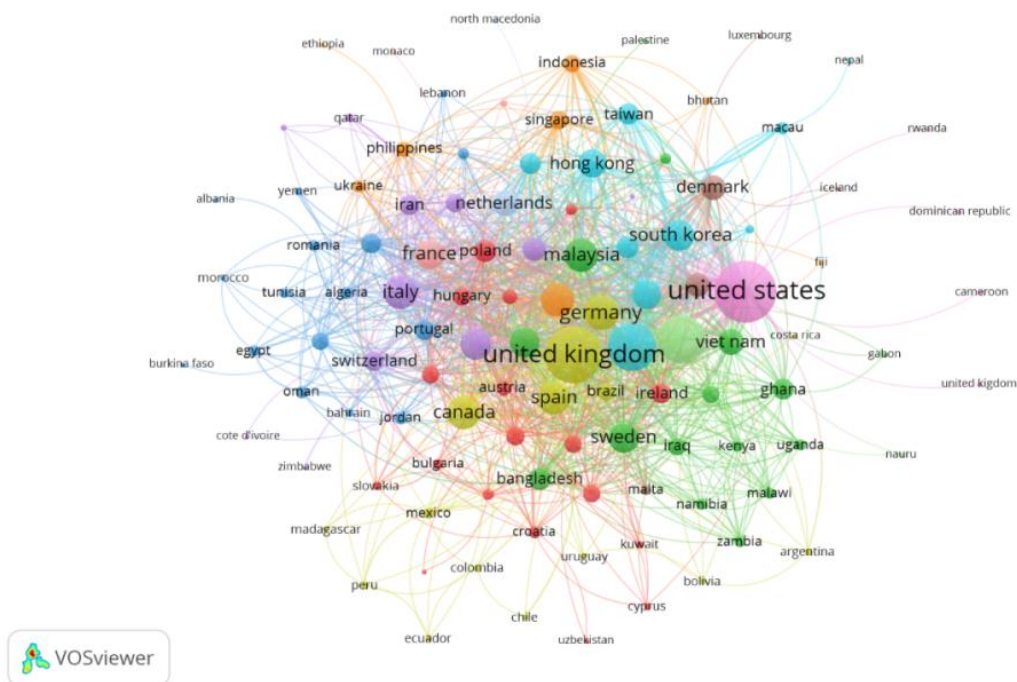


Fig. 11. Screenshot showing the network visualization of co-authorship (countries) for all items (n=111) based on TLS.

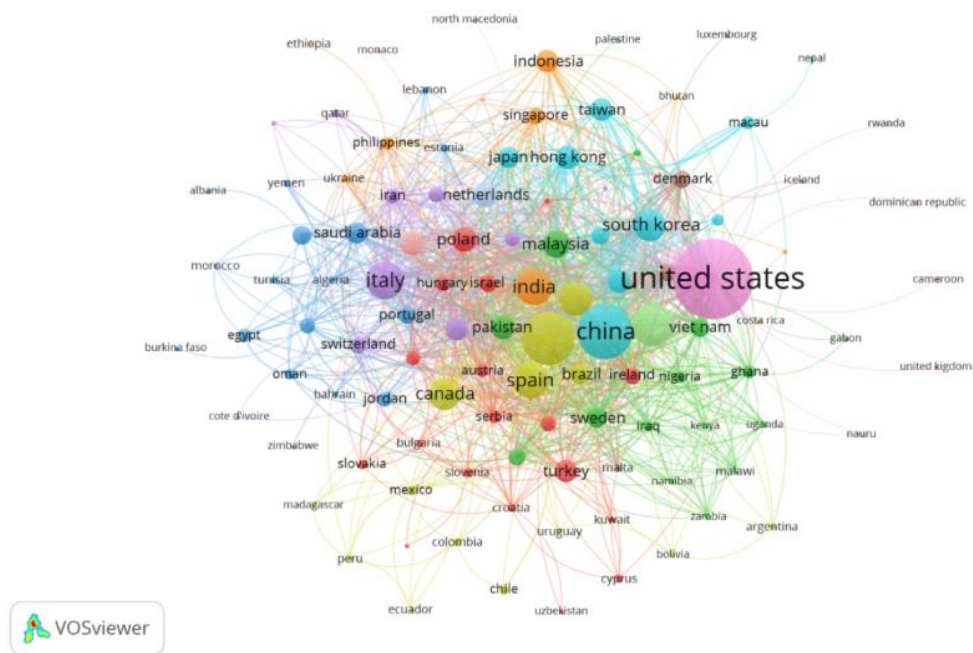


Fig. 12. Screenshot showing the network visualization of co-authorship (countries) for all items (n=111) based on documents.

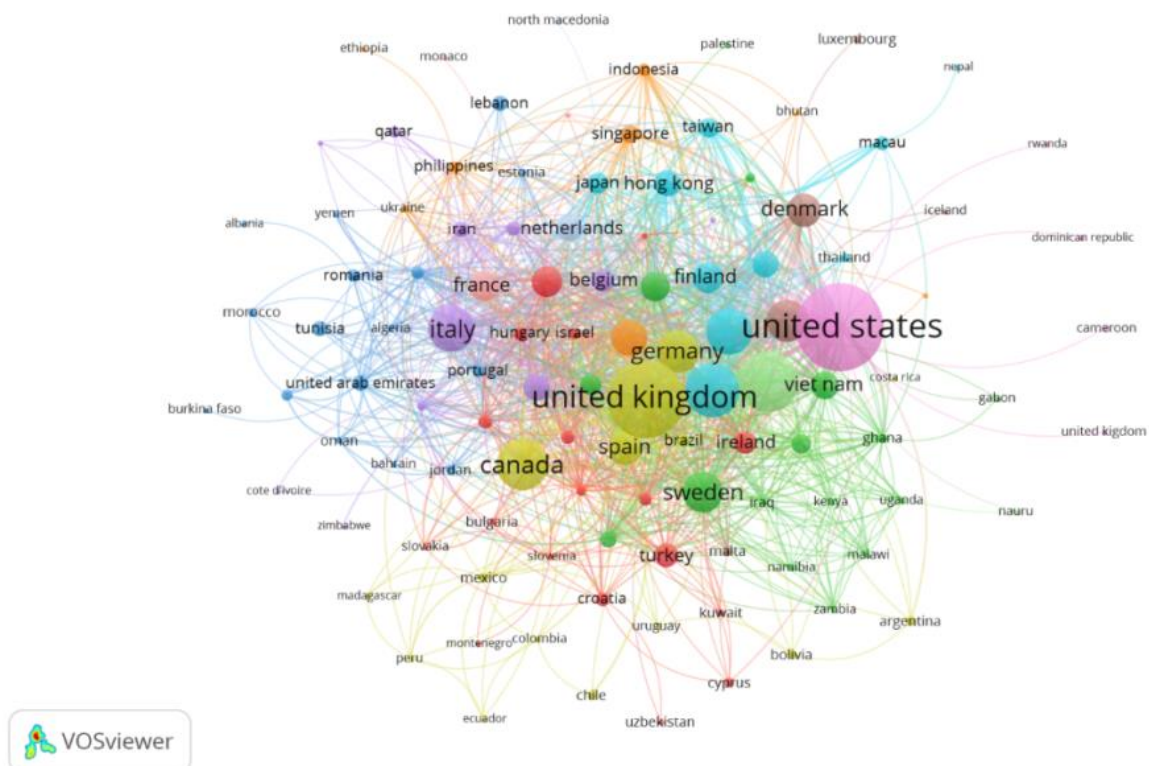


Fig. 13. Screenshot showing the network visualization of co-authorship (countries) for all items (n=115) based on citations.

3.4. CO-OCCURRENCE (AUTHOR KEYWORDS)

Co-occurrence analysis represents the occurrence of keywords used in the documents and links between them. We performed co-occurrence analysis on author keywords by applying certain thresholds. Minimum occurrence of a keyword was set at 05. Out of 5940 total items (keywords), 238 items met the threshold and proceeded to analysis. Results contained 238 connected items, 11 clusters, 2153 links and 5311 TLS. Layout visualizations were set as layout at 08 and repulsion at -02. Two maps were created which represented the co-occurrence of all connected keywords with each other. Figure 14 showed the dominance of author keywords based on their total link strength. Similarly, Fig 15 indicated the dominance of author keywords based on their occurrence scores.

Results showed the prominence of keywords. The central keywords e.g., Covid-19 contained the similar keywords for example, Coronavirus, Covid 19, and Corona, and Consumer Behavior contained the keywords e.g., consumer behaviour(s) and consumer behaviors. The main keyword 'covid-19' had the highest total link strength of 2664 and it occurred 1765 times. It was followed by 'pandemic' (occurrence, 218; TLS, 541), 'social media' (occurrence, 88; TLS, 267), 'consumer behavior' (occurrence, 77; TLS, 146), 'social distancing' (occurrence, 68; TLS, 145), and 'lockdown' (occurrence, 58; TLS, 144).

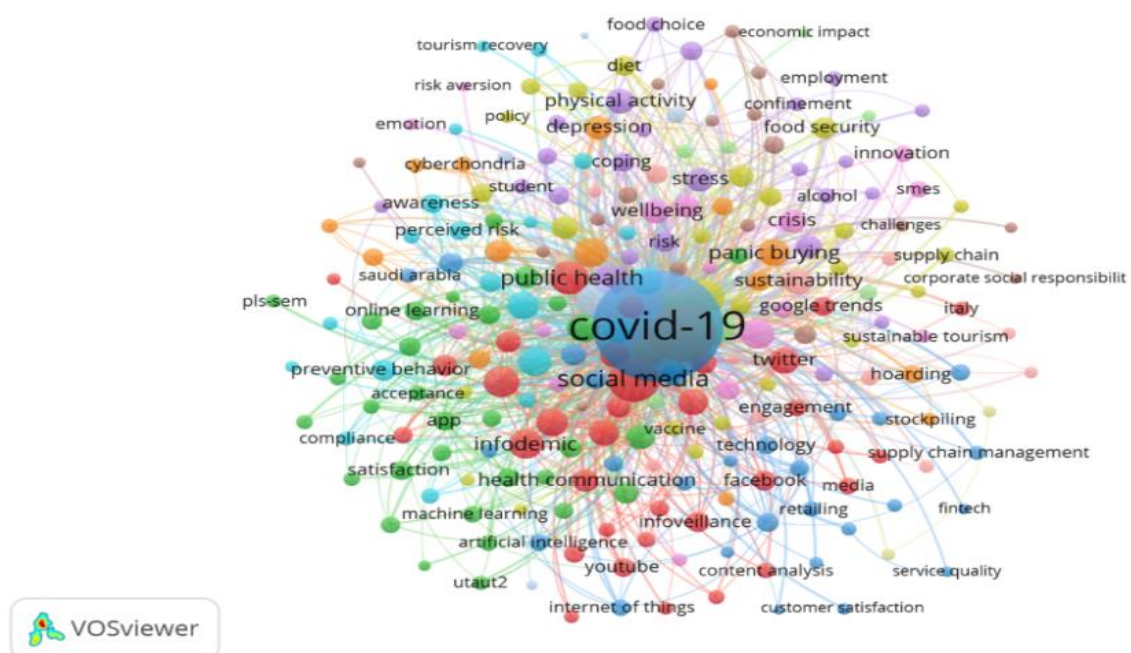


Fig. 14. Screenshot showing the network visualization of co-occurrence (author keywords) for all items (n=238) based on TLS.

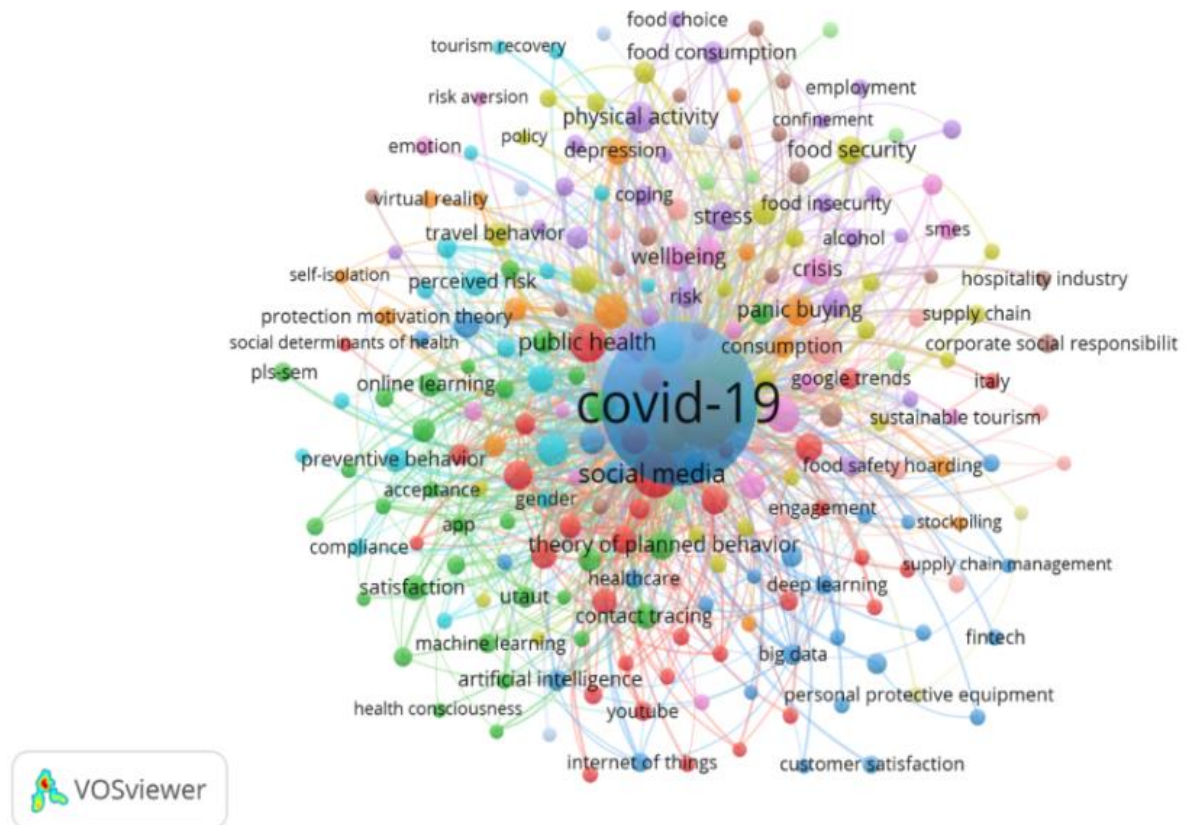


Fig. 15. Screenshot showing the network visualization of co-occurrence (author keywords) for all items (n=238) based on their occurrence.

We categorized the keywords found in different categories. We identified the Covid-19 and Consumer Behavior related keywords with their occurrence and total link strength scores in Table 3. We also highlighted the keywords of importance pertaining to Covid-19 pandemics (Table 4). We identified the link strength between certain keywords of importance and the central keywords. We found that these keywords are more associated with Covid-19 rather than Consumer Behavior as per their link strength found.

Table 3. List of keywords related to Covid-19 & Consumer Behaviour

Covid-19 related keywords			Consumer Behaviour related keywords		
Item (Keyword)	Occurrence	TLS	Item (Keyword)	Occurrence	TLS
Pandemic	218	541	Panic Buying	32	79
Social Distancing	68	145	Preventive Behaviour	19	45
Lockdown	58	144	Food Consumption	14	35
Quarantine	22	53	Online Learning	15	35
Outbreak	7	27	Travel Behaviour	15	34
Vaccination	6	21	Online Shopping	10	20
Vaccine	7	20	Food Choice	6	19
Physical Distancing	6	16	Smoking	5	13
Vaccine Hesitancy	6	14			
Self-Isolation	5	18			

Table 4. List of author keywords with relative importance to pandemic and their link strength with Covid-19 & Consumer Behaviour

Keywords of relative importance with pandemic.			Link strength with	Link strength with
Item	Occurrence	TLS	Covid-19	Consumer Behaviour
Public Health	49	133	41	0
Mental Health	41	107	37	0
Anxiety	39	106	35	0
Wellbeing	25	67	23	1
Physical Activity	30	63	22	0
Health	22	58	21	1
Stress	23	58	21	1
Depression	20	57	19	0
Fear	15	49	13	2
Awareness	12	35	12	0
Lifestyle	8	24	7	1
Psychological Distress	10	23	10	0
Obesity	8	17	6	0
Work From Home	8	17	8	0
Loneliness	5	12	5	0
Safety	5	12	4	0

3.5. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The current study was not free from the limitations. We applied specific keywords which might have limited the results. It might not cover all aspects of the searched area. We also applied different thresholds while screening and analyzing the records which might exclude the important and worth-noticing piece of data in the documents. We categorized the keywords which were relevant to Covid-19 and Consumer Behavior. It might overlook other more important keywords used in the documents.

This study, thereby, suggested different avenues for future research studies. The current study was based on Scopus records only; more studies would be needed by utilizing the Web of Science and other databases available and would be compared with the results of the current study. Most of the countries had collaborated with other countries in producing the documents but Latvia, Libya, Mauritius, and Sri Lanka. More studies would be needed in collaboration with these countries. The current study included 'Consumer Behavior' in relation to 'Covid-19. Consumer Behavior was a broader concept and was not showed stronger association with Covid-19 as per their association strength. Therefore, consumer behavior could be broken down in specific behavior such as panic buying, online shopping and health related behavior and could be studied with Covid-19 in future.

4. CONCLUSION

The present paper was aimed at exploring the 'COVID-19 and Consumer Behavior' literature. Consequently, 2190 documents were selected after screening from Scopus database. The most influential authors, the most productive countries and institutions were identified. Bibliometric mapping of the literature was performed for Co-authorship of Authors and Countries, and Co-occurrence of Author Keywords. Links and connections among authors and countries were highlighted with total link strength. Author keywords

were categorized in relation to Covid-19, Consumer Behavior, and for their importance with respect to pandemic.

Conflict of Interest

Author has no conflict of interest.

Reference:

- Ali, J., Jusoh, A., Abbas, A. F., & Nor, K. M. (2021). Global Trends of Service Quality in Healthcare: A bibliometric analysis of Scopus Database. *Journal of Contemporary Issues in Business and Government*, 27(1), 2917-2930.
- ALSHARIF, A. H., SALLEH, N. Z. M., & BAHARUN, R. (2020). BIBLIOMETRIC ANALYSIS. *Journal of Theoretical and Applied Information Technology*, 98(15).
- Bhattacharyya, S. S., & Verma, S. (2020). The intellectual contours of corporate social responsibility literature. *International Journal of Sociology and Social Policy*.
- Bonilla-Aldana, D. K., Dhama, K., & Rodriguez-Morales, A. J. (2020). Revisiting the one health approach in the context of COVID-19: a look into the ecology of this emerging disease. *Adv Anim Vet Sci*, 8(3), 234-237.
- Broadus, R. N. (1987). Toward a definition of "bibliometrics". *Scientometrics*, 12(5-6), 373-379.
- Control, C. f. D., & Prevention. (2020). National diabetes statistics report, 2020. Atlanta, GA: Centers for Disease Control and Prevention, *US Department of Health and Human Services*, 12-15.
- Donthu, N., & Gustafsson, A. (2020). Effects of COVID-19 on business and research. *Journal of Business research*, 117, 284.
- Eger, L., Komárková, L., Egerová, D., & Mičík, M. (2021). The effect of COVID-19 on consumer shopping behaviour: Generational cohort perspective. *Journal of Retailing and Consumer Services*, 61, 102542.
- Ferreira, J. J. M., Fernandes, C. I., & Ratten, V. (2016). A co-citation bibliometric analysis of strategic management research. *Scientometrics*, 109(1), 1-32.
- Khudzari, J. M., Kurian, J., Tartakovsky, B., & Raghavan, G. V. (2018). Bibliometric analysis of global research trends on microbial fuel cells using Scopus database. *Biochemical engineering journal*, 136, 51-60.
- Liao, H., Tang, M., Luo, L., Li, C., Chiclana, F., & Zeng, X.-J. (2018). A bibliometric analysis and visualization of medical big data research. *Sustainability*, 10(1), 166.
- Maurice, J. (2016). Cost of protection against pandemics is small. *The Lancet*, 387(10016), e12.
- Nowakowska, J., Sobocińska, J., Lewicki, M., Lemańska, Ż., & Rzymiski, P. (2020). When science goes viral: The research response during three months of the COVID-19 outbreak. *Biomedicine & Pharmacotherapy*, 129, 110451.
- Organization, W. H. (2020). Novel Coronavirus (2019-nCoV): *situation report*, 3.
- Pantano, E., Pizzi, G., Scarpi, D., & Dennis, C. (2020). Competing during a pandemic? Retailers' ups and downs during the COVID-19 outbreak. *Journal of Business research*, 116, 209-213.
- Pritchard, A. (1969). Statistical bibliography or bibliometrics. *Journal of documentation*, 25(4), 348-349.

- Radanliev, P., De Roure, D., Walton, R., Van Kleeck, M., Montalvo, R. M., Santos, O., & Cannady, S. (2020). COVID-19 what have we learned? The rise of social machines and connected devices in pandemic management following the concepts of predictive, preventive and personalized medicine. *EPMA Journal*, 1-22.
- Rewar, S., Mirdha, D., & Rewar, P. (2015). Treatment and prevention of pandemic H1N1 influenza. *Annals of global health*, 81(5), 645-653.
- Singh, V., Verma, S., & Chaurasia, S. S. (2020). Mapping the themes and intellectual structure of corporate university: co-citation and cluster analyses. *Scientometrics*, 122(3), 1275-1302.
- Verikios, G., Sullivan, M., Stojanovski, P., Giesecke, J., & Woo, G. (2016). Assessing regional risks from pandemic influenza: a scenario analysis. *The World Economy*, 39(8), 1225-1255.
- Verma, S., & Gustafsson, A. (2020). Investigating the emerging COVID-19 research trends in the field of business and management: A bibliometric analysis approach. *Journal of Business research*, 118, 253-261.
- Wright, O., & Blackburn, E. (2020). How COVID-19 will permanently change consumer behavior, Accenture.

APPENDIX

SEARCH STRING

COVID-19 AND consumer AND behavior AND (EXCLUDE (PUBYEAR, 2022)) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (EXACTKEYWORD, "COVID-19") OR LIMIT-TO (EXACTKEYWORD, "Coronavirus Disease 2019") OR LIMIT-TO (EXACTKEYWORD, "Coronavirus") OR LIMIT-TO (EXACTKEYWORD, "Coronavirus Infections") OR LIMIT-TO (EXACTKEYWORD, "Coronavirus Infection") OR LIMIT-TO (EXACTKEYWORD, "Consumer Behavior") OR LIMIT-TO (EXACTKEYWORD, "COVID-19 Pandemic") OR LIMIT-TO (EXACTKEYWORD, "Covid-19") OR LIMIT-TO (EXACTKEYWORD, "Consumption Behavior"))