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Research Article


COVID-19 in Business, Management, and Economics: Research Perspectives and Bibliometric Analysis

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ABSTRACT

This document aims to analyze co-citations with computational tools to identify the research perspectives related to COVID-19 in the areas of business, management, and economy. In addition, a bibliometric analysis is carried out that includes annual productivity, the most relevant authors, countries and institutions, the most cited documents, collaboration networks, and co-authorship. Information obtained from the Web of Science database found 4,347 documents published between the years 2020 and 2021 that were scientifically mapped in this field. An analysis of the research perspectives was carried out. The perspectives were determined through an analysis of co-citations from the application of a clustering algorithm using Gephi. In addition, tools such as Bibliometrix and VOSviewer were used for the development of bibliometric analysis. Through open-access tools, five perspectives related to the impact of COVID-19 on business, management, and economics were found. The first analyzes the effects on financial markets; the second presents the effects on tourism and consumer behavior; the third indicates the socio-economic effects of applying policies; the fourth presents the environmental and public health impacts; and the fifth shows the impacts on gender.

Keywords: research perspectives; COVID-19; bibliometric analysis; economics; co-citation network

JEL Code: C8, I1, O3

INTRODUCTION

At the beginning of 2020, thanks to the appearance of a new respiratory virus called COVID-19 or SARS-CoV-2, the World Health Organization declared a global health emergency (Williams & Kayaoglu, 2020) due to its high contagion rates and high probability of causing the death of whoever is infected. The pandemic that this virus has generated has become a topic of interest for governments, the economic sector, and the general population (Açikgöz & Günay, 2020; Michie, 2020; Yue et al., 2020). This situation has revealed the fragility and vulnerability of the world and society in which we live (Corbet, Larkin, & Lucey, 2020).

Governments have been forced to choose between minimizing the effects of the pandemic and reducing its economic impact. For this, they have adopted mitigation strategies that seek to slow down the epidemic by isolating suspected cases and socially distancing the most vulnerable during the outbreak's peak. They have also implemented suppression strategies that aim to reduce the number of cases to a minimum level through the social distancing of the entire population with the added possibility of school and university closures (Şahin et al., 2020).

This situation has represented a significant challenge for the economies of the countries and their respective economic sectors. Governments have adopted suppression public policies such as: social distancing measures, the total closures of cities and countries, the establishment of quarantines, and the partial and total closures of various segments of the industry, services, and commerce (Al-Awadhi, Alsaifi, Al-Awadhi, & Alhammadi, 2020; Ashraf, 2020; Williams & Kayaoglu, 2020), which have profoundly affected them to the point of threatening their survival (Wang, Hong, Li, & Gao, 2020). In China, where the first cases of the disease were presented, extreme containment measures were implemented, which closed large cities and borders and established the restriction of people in their homes seeking to mitigate the spread of the virus (Al-Awadhi et al., 2020). In New Zealand, the first measures took place on February 3, 2020, in which the government imposed entry restrictions to the country on foreign citizens traveling from China, and subsequently closed its borders and restricted the mobility of its inhabitants, affecting the hospitality and commerce industries (Hall, Prayag, Fieger, & Dyason, 2020). France was the country in Europe that detected the first case of COVID-19, on January 24. It was not until March 16, 2020, that the government decreed a national quarantine for several months, in which public places, schools, public transportation, and workplaces were closed. In addition, the mobility of the population was restricted. Even to leave the houses, it was necessary to obtain permits, and there was the possibility of being fined if the quarantine was violated (Yan, Zhang, Wu, Zhu, & Chen, 2020).

The measures taken to confront the pandemic and COVID-19 are causing a destructive global economic impact. World markets in the first half of 2020 suffered declines of almost 30% (Haroon & Rizvi, 2020), unemployment increased, and incomes of dozens of millions of people went under (Ashraf, 2020). In China, approximately 85.01% of companies face the risk of bankruptcy due to the significant drop in their operating income and lack of cash flow (Ågerfalk, Conboy, & Myers, 2020; Wang et al., 2020).

Companies face declines in their orders, spending, and cost pressures such as rent, salary, and tax payments, a general increase in raw material prices, insufficient demand, and difficulty finding alternative suppliers (Wang et al., 2020). They have been forced to dive into and directly manage an unprecedented territory as they modify their workforce in technical, physical, and socio-psychological ways never seen before (Carnevale & Hatak, 2020). Learning, improvisation, and resilience have been vital in order to survive (Sheth, 2020).

Consumers have also suffered the effects of the pandemic in which the boundaries between work and personal life were blurred as they work, study, and rest at home (Sheth, 2020). Uncertainty about the risk of contracting the disease and being unemployed and the restriction of governments to leave have changed their purchasing behavior, leading to the adoption of conservative attitudes and the reduction of unnecessary expenses, which resulted in a sharp drop in company revenues in the first quarter of 2020 (Wang et al., 2020).

From a theoretical point of view, this situation, for all the above, represents a vital interest for researchers, evidenced in the number of studies carried out to date. Bibliometric analysis is a popular and rigorous method that provides a macroscopic view of a large amount of academic literature (Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021; Van Nunen, Li, Reniers, & Ponnet, 2018). This technique can also be used to identify strengths and weaknesses in research, the most relevant authors, countries, and affiliations in a topic (Shukla, Janmaiya, Abraham, & Muhuri, 2019). Bibliometric analysis is important because it has been widely used to identify trends in research (Chen & Ho, 2015; Franceschini, Faria, & Jurowetzki, 2016).

On the subject, some bibliometric analyses that have been published present limitations that this study aims to overcome. For example, this is the case of Alshater, Atayah, and Khan (2021), who carried out a meta-analysis of 477 documents published only in 2020 in the Scopus database and related to COVID-19 and business areas, finding as the main result the existence of six research streams. For their part, Verma and Gustafsson (2020) developed a bibliometric analysis of 142 published documents related to COVID-19 and the business research area in the Scopus and WOS databases. In addition, they carried out an analysis of four research perspectives. The document presents the limitation that the selected period only includes papers published between January 1, 2020 and May 11, 2020. Mobin et al. (2021) carried out a bibliometric analysis of 1,636 documents found in the WOS database related to COVID-19 and the economic category of WOS. They left out other business-related categories. In the same sense, there is the work of Liu, Xu, and Skare (2021). They carried out a bibliometric analysis of the documents found in WOS on the COVID-19 and economy in which the selected period was only the year 2020 and one document from 2019.

The following is a study that seeks to contribute to the literature in business, administration, and economics that has focused its efforts on deepening the effects that COVID-19 has had on business through a bibliometric review and analysis networks by answering the following questions: Which are the most influential countries, authors, and journals in business, administration, and economics literature around COVID-19? How is structured the business, management, and economics literature around COVID-19? What are the lines of research being defined on the subject?

For this, a bibliometric analysis is presented, including the annual productivity, authors, institutions, and most relevant countries. Furthermore, the most cited documents and the co-authorship, co-citation, and co-occurrence networks are also presented according to the bibliographic information of the papers published between 2020 and 2021, obtained from the Web of Science database. Finally, the research perspectives are presented according to an analysis of co-citations.

MATERIALS AND METHODS

The methodological procedures followed in this paper can be organized in three stages, which are detailed in the sequence:

Stage 1: Search criteria

For the development of the bibliometric analysis, the information provided by the Web of Science database was used. This database was selected because, over time, it has become the source of bibliographic data traditionally used for journal selection, research evaluation, and bibliometric analysis (Li, Rollins, & Yan, 2018). The search equation was proposed by title, and a filter was made by the management, business, and economics areas. In addition, a filter was applied by type of document, including only research articles. The search was conducted on November 24, 2021 and returned a total of 4,347 articles. The search criteria are shown in Figure 1.

Applied filters	Database
	Web of Science (WOS)
Search equation	"COVID-19" OR "SARS-CoV-2" OR "coronavirus" OR "pandemic" OR "outbreak"
Filter areas	Management, Business, Economics, Business Finance
Total	4,347
Time restriction	2020-2021
Document type	Article
Web of Science core collection: citation indexes	Science Citation Index Expanded (SCI-EXPANDED) Social Sciences Citation Index (SSCI) Arts & Humanities Citation Index (A&HCI) Emerging Sources Citation Index (ESCI)

Figure 1. Search criteria.

Stage 2: Bibliometric analysis

The search results of the previous stage were exported from WOS to a plain text file, including full record and cited references. The scientometric and bibliometric analysis was developed by importing bibliographic data from the database using the open-source tool bibliometrix (Aria & Cuccurullo, 2017) in RStudio. The tool allows evaluating bibliometric indicators such as the annual scientific production, authors, countries, and most relevant institutions. The resulting data was analyzed and presented using PowerBi.

Stage 3: Visualization of co-authorship networks and co-citations

For the visualization of the networks, the VOSviewer software was used (Van Eck & Waltman, 2010). This tool allows connections to networks of scientific publications, researchers, research organizations, countries, keywords, or terms based on co-authorship, co-occurrence, citation, bibliographic coupling, or co-citations. In the software, we created a map based on the bibliographic data collected in stage 1. The type of co-authorship analysis was chosen among three analysis units: authors, countries, and organizations. For each co-authorship analysis, a minimum number of documents and citations was taken into account. The importance of these analyses is that they allow us to know the dynamism between collaboration networks (Shafiq, Alhaji, & Rokne, 2015).

Stage 4: Analysis of perspectives

For the development of the perspectives, a co-citations analysis was used according to the methodology proposed by Buitrago, Duque, and Robledo (2020). The R-Tos package was used to extract the references of the records obtained from the databases and prepare the data file in .graphml format, which was used as input for Gephi. This package uses graphics algorithms to optimize the search and selection of published articles (Robledo, Osorio, & Lopez, 2014) and RStudio to generate the co-citations and word cloud network. For the clustering of the network and selecting the primary documents of each cluster, the Gephi software and the indicators mean grade, network diameter, modularity, and page rank were used. The five most representative clusters of the network were chosen, each graphic presentation was made, and the most representative articles were reviewed by the number of citations and page rank indicator.

RESULTS AND DISCUSSION

The results and their discussion were organized into two sections. Initially, the results of the bibliometric analysis are presented, followed by the analysis of the networks and research perspectives.

Bibliometric analysis

Through the information obtained from Web of Science, the most relevant results of the bibliometric analysis are presented below.

Annual scientific production

According to information obtained from Web of Science, 4,347 articles have been published. In 2020, 1,066 documents were published, equivalent to 24.5% of the total, and in 2021, 3,281 articles were published, which is equivalent to 75.5% of the total. The immense interest in publishing on the subject is evident and responds to the growth in publishing articles from one year to the next. In 2021, some time passed since the pandemic's start. Therefore, it is already possible to measure the adverse effects of the pandemic, and therefore the academic interest in investigating this phenomenon.

Author's productivity

Table 1 shows the 10 most relevant authors according to the number of articles and total citations. Kim is the author with the highest number of documents, with 14, and ranks first according to the h-index, with 7. Ratten is the second in published articles, with 11. In the relation of citations per number of documents, Salisu has the best relationship, with a value of 28.5.

Table 1

Author's productivity

Author	NP	h-index	TC	TC/NP
Kim, J.	14	7	171	12.21
Ratten, V.	11	7	150	13.63
Javaid, M.	10	4	81	8.1
Kumar, A.	10	5	84	8.4
Haleem, A.	9	4	79	8.77
Bouri, E.	8	5	80	10
Demir, E.	8	5	201	25.12
Huynh, T.	8	5	174	21.75
Salisu, A.	8	6	228	28.5
Bahl, S.	7	2	44	6.28

Most relevant journals

The 4,347 articles on the subject have been published in 723 journals. Figure 2 shows the 20 journals with the highest number of publications. Within them, 1,076 articles have been published, representing 24.75% of the production reported in Web of Science. *World Development* journal, edited by Elsevier and with an h-index of 164, tops the list with 85 publications. The second place, with 84 articles, is *Gender, Work and Organization*, edited by Wiley-Blackwell and

with an h-index of 60. In third place is *Finance Research Letters*, published by Elsevier; it has 81 publications made on the subject.

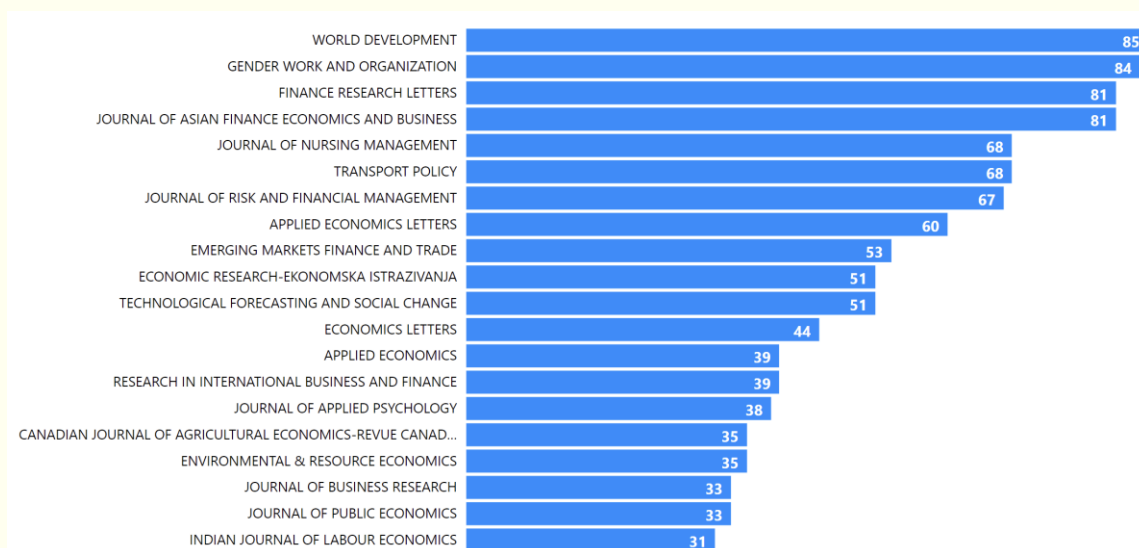


Figure 2. Most relevant journals.

Most relevant affiliations

The articles published are by authors linked to 3,691 different institutions. Figure 3 shows the 20 most relevant institutions according to the number of publications. The University of Oxford leads the list with 61 articles, followed distantly by University of Sidney and the University of Economics Ho Chi Minh City with 44 and 39 papers, respectively. The list includes five American, five Australian, and three British universities.

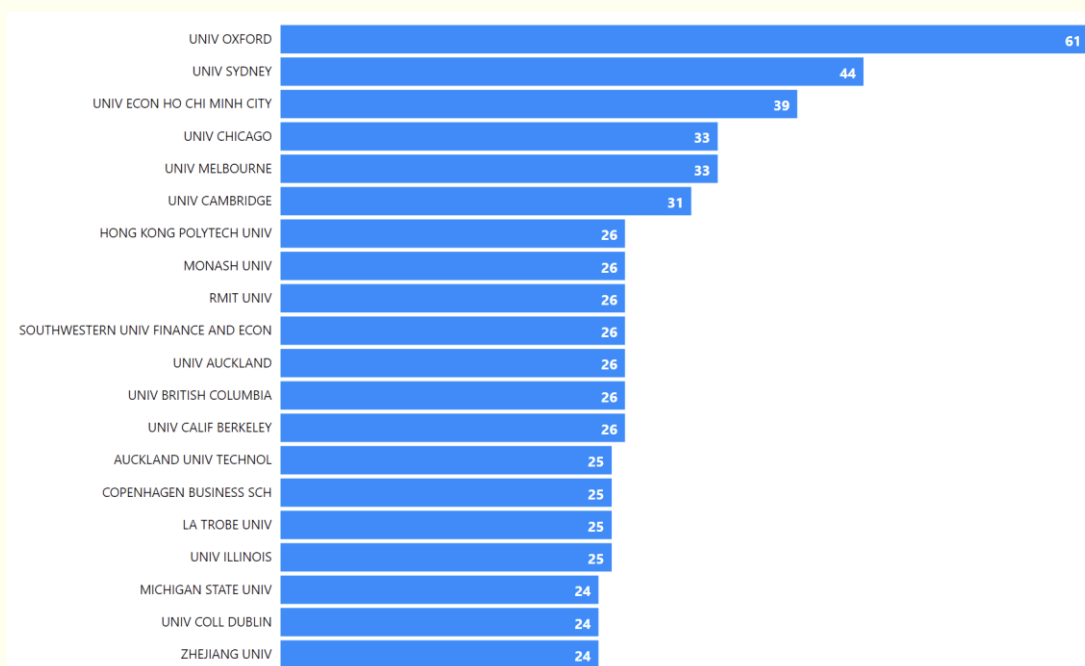


Figure 3. Most relevant affiliations.

Most productive countries

There are publications from 123 countries. Figure 4 shows the 20 most relevant countries by participation in the publications and number of citations received. The United States, China, and United Kingdom lead the ranking, and they have participation in 68.78% of the total publications. There is little participation from Latin American and African countries. Only Brazil is part of the list and there is no presence of African countries.



Figure 4. Most productive countries.

Most cited documents

Table 2 shows the 10 most cited documents. First, with 428 citations, Zhang, Hu, and Ji (2020) developed a study that aims to map the general patterns of country-specific risks and systemic risks in global financial markets. Second, with 408 citations, a study explores seven plausible scenarios of COVID-19 and the macroeconomic outcomes using a global hybrid DSGE/CGE general equilibrium model (McKibbin & Fernando, 2021). Furthermore, the publication has the best citation ratio per year, with a total of 408. With 399 citations, Ivanov (2020) raises a study whose objective is how the simulation-based methodology can be used to examine and predict the impacts of epidemic outbreaks on the performance of supply chains using the example of the coronavirus COVID-19 and the simulation and optimization software anyLogistix.

Table 2

The 10 most-cited documents

Title	Author/s	Source	TC	Year	C/Y
Financial markets under the global pandemic of COVID-19	Zhang, D., Hu, M., & Ji, Q.	Finance Research Letters	428	2020	214
The global macroeconomic impacts of COVID-19: Seven scenarios	McKibbin, W., & Fernando, R.	Asian Economic Papers	408	2021	408
Predicting the impacts of epidemic outbreaks on global supply chains: A simulation-based analysis on the coronavirus outbreak (COVID-19/SARS-CoV-2) case	Ivanov, D.	Transportation Research Part E: Logistics and Transportation Review	399	2020	199.5
COVID-19 and finance: Agendas for future research	Goodell, J. W.	Finance Research Letters	295	2020	147.5
COVID-19 pandemic, oil prices, stock market, geopolitical risk and policy uncertainty nexus in the US economy: Fresh evidence from the wavelet-based approach	Sharif, A., Aloui, C., & Yarovaya, L.	International Review of Financial Analysis	290	2020	145
Tourism and COVID-19: Impacts and implications for advancing and resetting industry and research	Sigala, M.	Journal of Business Research	254	2020	127
Work stress among Chinese nurses to support Wuhan in fighting against COVID-19 epidemic	Mo, Y., Deng, L., Zhang, L., Lang, Q., Liao, C., Wang, N., ... & Huang, H.	Journal of Nursing Management	232	2020	116
Food supply chains during the COVID-19 pandemic	Hobbs, J. E.	Canadian Journal of Agricultural Economics/Revue Canadienne d'agroéconomie	221	2020	110.5
Effects of COVID-19 on business and research	Donthu, N., & Gustafsson, A.	Journal of Business Research	220	2020	110
Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns	Al-Awadhi, A. M., Alsaifi, K., Al-Awadhi, A., & Alhamadi, S.	Journal of Behavioral and Experimental Finance	214	2020	107

Co-authorship between countries in publications

Figure 5 shows the co-authorship relationships between countries. The size of the nodes is related to the number of publications, and the thickness of the links is related to the number of relationships between countries. Each of the countries shown in the figure has at least 20 documents within the network. The United States is the country with the highest number of documents, with 1,073. However, England has the highest number of relations with other countries with a total of 47. Within the network, there are three main clusters, the yellow group led by the United States and a presence from five Ibero-American countries, the red one with England leading the group with 10 European countries, and the blue group led by China with eight Asian countries.

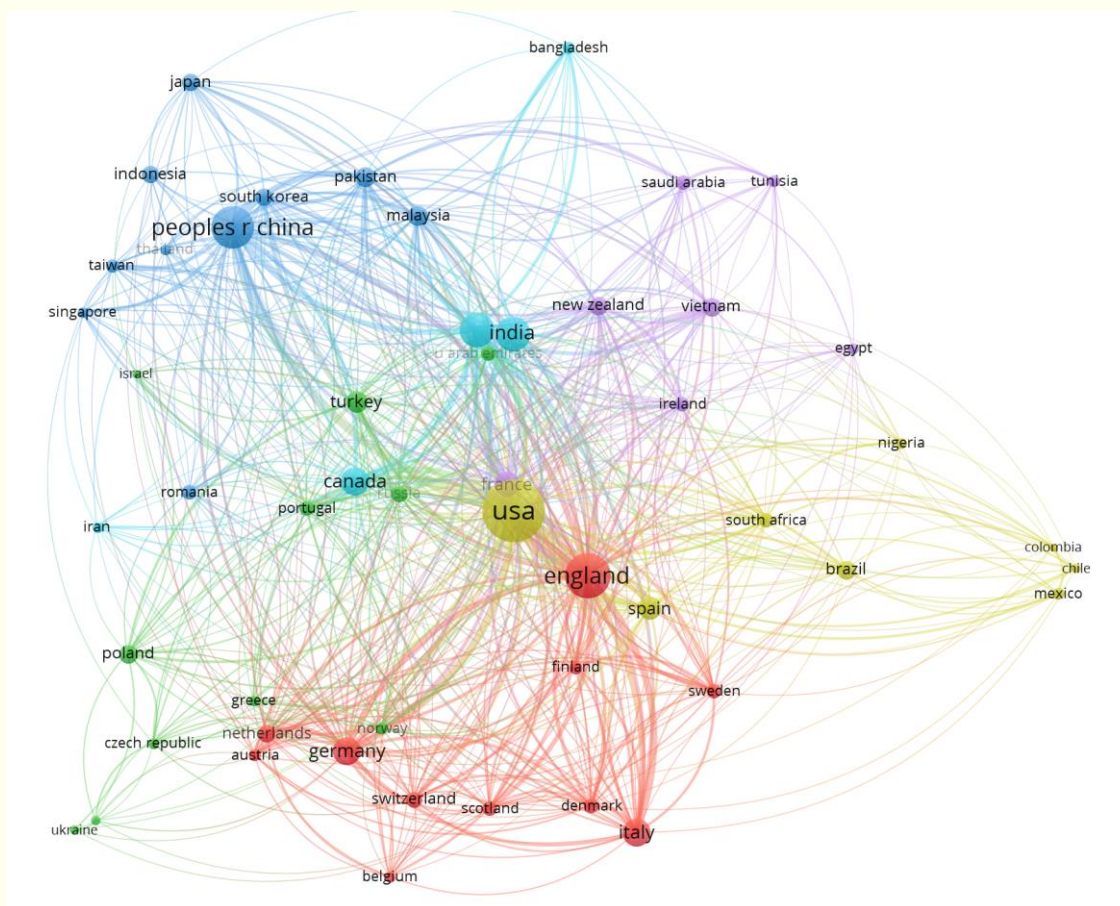


Figure 5. Co-authorship between countries.

Collaboration network between authors

Figure 6 shows the collaboration network between authors. Of 11,236 authors, only eight have at least four publications and have relationships with other authors. These are grouped into three clusters. In the red group, Shaen Corbet is the node with the highest number of documents, with eight, and leads the number of links with three. The participation of Goodell and Goutte as connectors of the blue and green clusters is of great importance. The nodes of the network have few relationships with other documents on the subject.

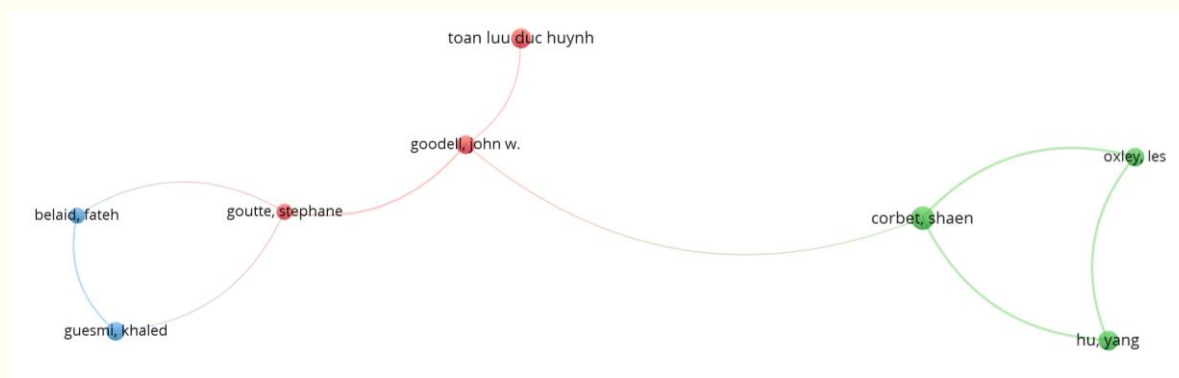


Figure 6. Co-authorship between authors.

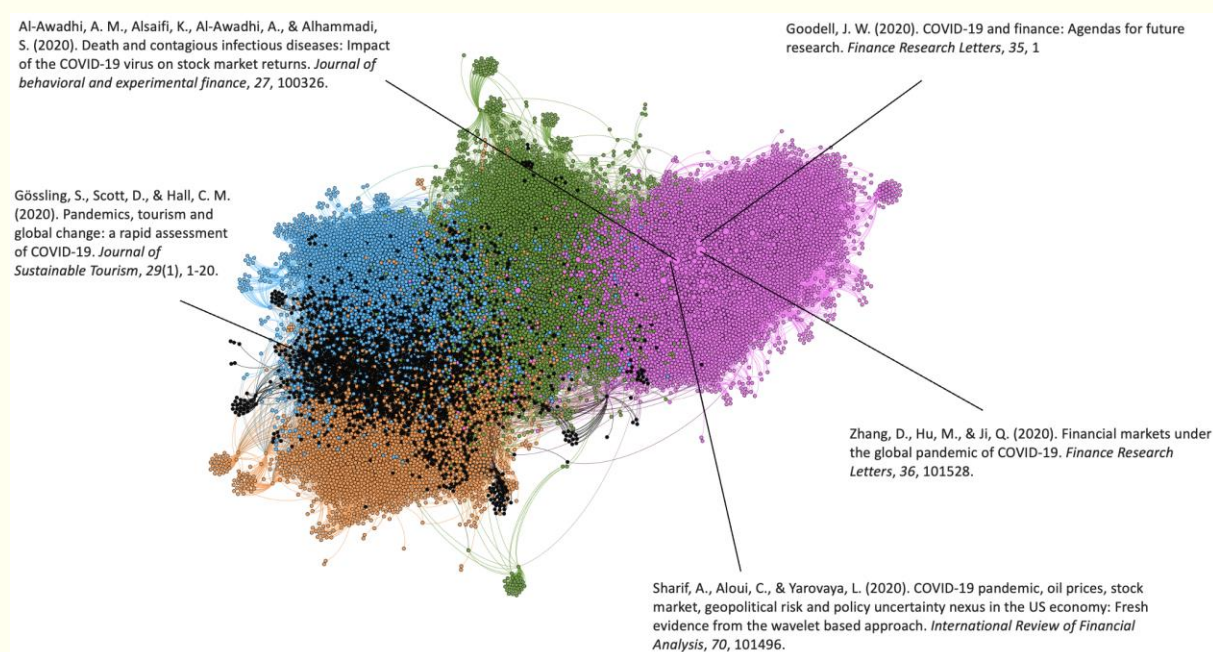


Figure 8. Network with main clusters.

Perspective 1. Financial markets

This perspective focuses on the effect of COVID-19 in the financial markets (Figure 9). The financial market allows individuals and companies to buy and sell financial securities such as bonds, stocks, currencies, and commodities based on a transaction price reflecting the supply and demand of the market. Under this cluster are authors who have made considerable contributions that can be classified into three analysis groups. The first focused on the impacts that COVID-19 had on the volatility of stock markets in the world (Al-Awadhi et al., 2020; Ali, Alam, & Rizvi, 2020; Zhang, Hu, & Ji, 2020) and the high level of risk that investors had to assume. They had large losses and a significant decrease in the profitability of their shares. This was influenced by the different measures taken by the government sector in different countries of the world and how each country has reacted and taken measures to mitigate the impact of this disease and the panic generated by the media regarding the virus (Haroon & Rizvi, 2020). Among these studies, the one carried out by Goodell (2020) stands out since it considers several articles that have predicted similar events such as pandemics, epidemics, and their economic consequences. This author considers the impacts of COVID-19 on markets and financial institutions. It also suggests future lines of research. A second group focuses on research that analyzes the behavior of oil, one of the most traded commodities in the financial markets. Since these studies, the scientific community has used different methodologies to analyze the interaction between the COVID-19 pandemic and the oil market (Apergis & Apergis, 2020; Gil-Alana & Monge, 2020; Narayan, 2020). A third group focuses on the incidence of COVID-19 in the energy industry and its negative impact on the corporate performance of these companies (Fu & Shen, 2020).

These studies made it possible to demonstrate the tremendous economic impact that the pandemic generated in the stock markets, in commodities as necessary to the world economy as

oil, and the impact on the energy industry. Without a doubt, financial entities and governments had to implement policies that, although they had financial repercussions that destabilized the markets, were necessary at the time since public health and the well-being of people prevailed. However, although the cases of contagion by COVID-19 have been reduced, the financial market is reflecting the consequences of decisions made by governments, which have caused an upward trend in inflation, higher prices for raw materials, and an increase in the price of oil, among others.

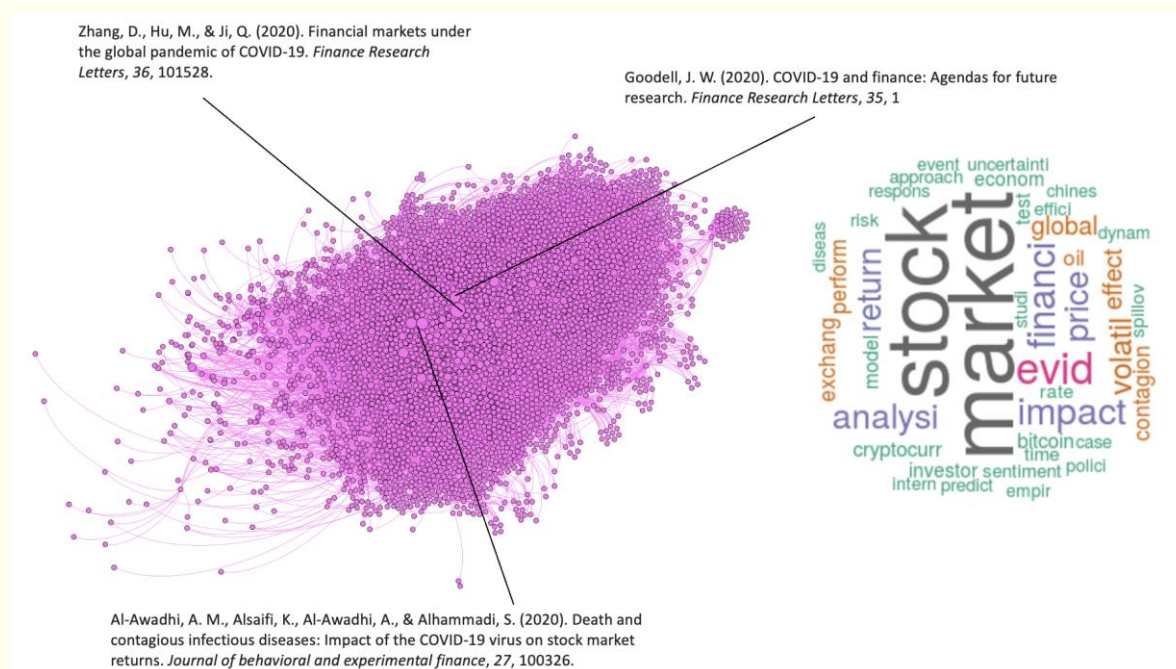


Figure 9. Perspective 1.

Perspective 2. Tourism and consumer behavior

This perspective focuses on the effect of COVID-19 in tourism and consumer behavior (Figure 10). From a marketing perspective, consumer behavior refers to the activities that people carry out to satisfy their needs with a good or service, which can be affected by internal and external variables. In this cluster, issues related to the tourism sector, consumer purchasing behavior at a general level, the role of aid for developing countries, and strategic alliances to overcome the problems generated by COVID-19 were identified.

The tourism industry comprises different actors such as tour operators, hotel operators, cruise ships, providers of recreational activities, restaurants, transportation companies, among others, which are responsible for offering activities and experiences to tourists who are the applicants. From this cluster, articles were identified that analyze from different psychological theories the attitudes and the will to travel by some tourists, managing to identify behaviors and conducts of protective trips before the arrival of the pandemic (Zheng, Luo, & Ritchie, 2021), in addition to the tourist's risk perception attitude being related to the will to travel (Liu-Lastres, Mirehie, & Cecil, 2021). Likewise, tourism administrators play a fundamental role in the implementation of

risk management methods and manage to develop public and private policies that seek to support and maintain the operational levels of the tourism and travel sector (Škare, Soriano, & Porada-Rochoń, 2021). Among the investigations, the study by Gössling, Scott, and Hall (2020), which questions the volume growth tourism model defended by tourism organizations such as the OMT, OACI, CLIA, WTTC, among others, stands out.

Other studies focus on the consumer buying behavior and how these behaviors have been affected during the pandemic. Some authors apply the theoretical guidelines of models such as stimulus-organism-response, competitive arousal model (Islam et al., 2021), scarcity theory, mass psychology, and contagion theory (Prentice, Quach, & Thaichon, 2021) to explain impulsive and obsessive buying behaviors due to the panic generated by the pandemic. In addition, the study by Hofmann, Stokburger-Sauer, Wanisch, and Hebborn (2021) is highlighted, which analyzes whether the role of face masks influences customer behavior since sellers must use non-verbal facial expressions to communicate and increase online purchases by consumers.

On the other hand, some authors focus on the role of aid donors for developing countries, which is essential for projects to be carried out that seek to improve the social-economic well-being of these countries. However, Kobayashi, Heinrich, and Bryant (2021) showed that these aids are generally cut during the pandemic. Likewise, Mariano (2021) used heuristic methods to demonstrate the importance of having prosocial behavior. Spontaneous initiatives are based on acquired experience and seek to benefit the community, so it is essential to develop collaborations, partnerships, or alliances to overcome common problems related to the pandemic. One of the documents with the most significant impact is the study by Zarocostas (2020), who highlights the role developed by the World Health Organization (WHO) not only to stop COVID-19 but also to stop the infodemic. He mentions the importance of social and conventional media to better understand the information and do not anticipate the evidence to inform the population more responsibly, since some authors, such as Torales, O'Higgins, Castaldelli-Maia, and Ventriglio (2020), have shown that the pandemic has had a significant impact on people's mental health, and collective concerns influence people's behaviors and the economy.

One of the most affected sectors was tourism due to its paralysis during the pandemic. For this reason, the governments, ministries, and associations of this sector had to focus their efforts on implementing strategies that would allow them to reactivate. Some of them were the implementation of price reductions, future purchases, cancellations without cost, and designing marketing strategies that could be disseminated through multimedia pieces to offer destinations on different platforms, among others. In this case, it is recognized that this industry has had faster recovery than other sectors, which could be attributed to the effectiveness of the strategies implemented and the exhaustion of people after two years of confinement and restrictions.

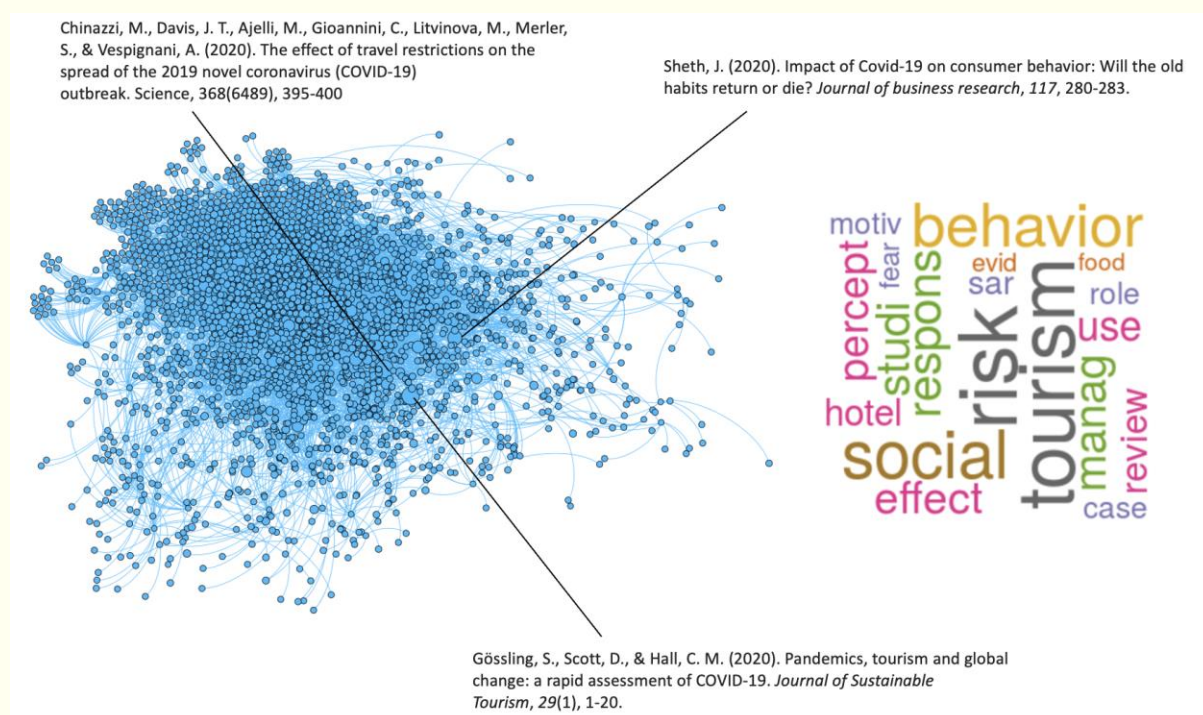


Figure 10. Perspective 2.

Perspective 3. Policies and their socio-economic effects

This perspective focuses on the policies and their socio-economic effects (Figure 11). Socio-economic factors are related to society – that is, a group of people who live in the same territory and follow specific rules and policies; economic factors refer to the administration of resources for that society. From this cluster, articles related to the impact of COVID-19 at a general level on the economy and the effect of some economic factors such as the reduction in consumer spending significantly impact companies' commercial income and the increase in the unemployment rates (Chetty, Friedman, Hendren, & Stepner, 2020). Chesbrough (2020) highlights the importance of open innovation for pandemic recovery processes. Likewise, it is highlighted that strong leadership, effective planning processes, formulation of socio-economic development plans by sector, and entrepreneurship promotion are essential to overcome the crisis (Nicola et al., 2020).

Other considerable studies in this cluster are related to the labor market. Authors such as Alstadsæter et al. (2020) identify that although the business sector has been dramatically affected, the pandemic has had more significant effects on small organizations since they are generally less productive and financially weaker, leading to permanent layoffs for workers. Likewise, some studies acknowledge that job losses have been concentrated in workers with lower salaries and that organizations have seen the need to cut these to stay in the market (Cajner et al., 2020), while others analyze how the employment modality has been changed by working at home (Dingel & Neiman, 2020) and online education (Bao, 2020).

As an essential aspect, it is worth noting that unemployment and the closure of small businesses were common factors in different countries during the pandemic. However, some governments implemented unemployment subsidies to maintain the number of employees and support entrepreneurs of different kinds, which allowed the economy to reactivate gradually. Furthermore, this crisis generated an increase in people working from virtuality, which led employers to reflect on the importance of labor flexibility in terms of hours and person at their workplaces, the work performance of their collaborators, the reduction of costs in business infrastructure, and the possibility of hiring employees globally. In addition, it allowed employees to reflect on the number of hours spent at work versus their quality of life and time shared at the family level.

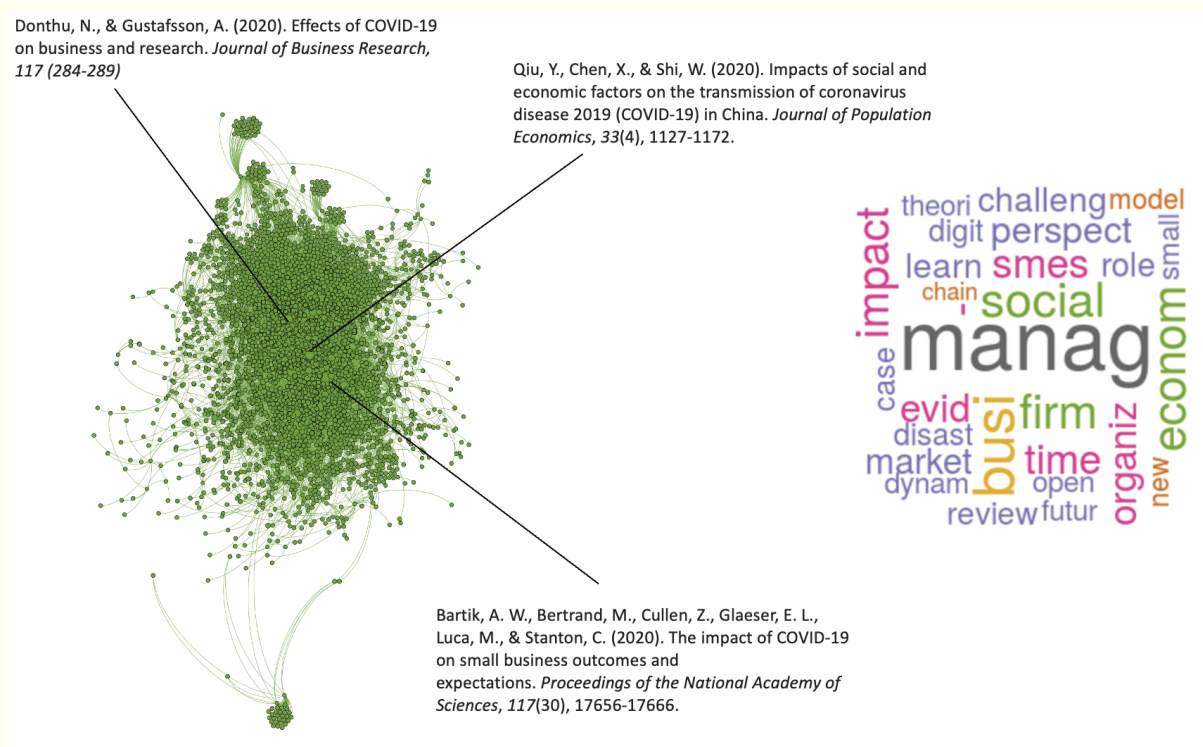


Figure 11. Perspective 3.

Perspective 4. Environmental and public health impacts

This perspective focuses on the effect of COVID-19 in environmental and public health (Figure 12). The environmental impact is related to the modification of the environment, either by man or by nature. However, these changes have severe consequences for humanity, which can be reflected in people's health. This cluster reveals two themes that are analyzed by the academic community. The first one studies the impacts that COVID-19 will have on climate change and how this crisis could impact the current economic system that is intensive in fossil fuels (Hepburn, O'Callaghan, Stern, Stiglitz, & Zenghelis, 2020). It also highlights that as a result of this pandemic, it is possible to further de-globalization, intergenerational environmental impacts, including the burden of debt and pollution for future generations, and possible behavioral changes in the environment, both positive and negative. One of the lessons of the virus is that

pollution and GDP are correlated, thus highlighting the importance of designing policies aimed at mitigating climate change and biodiversity loss (Helm, 2020). However, some authors highlight that there has been a temporary reduction in daily global CO₂ emissions during the pandemic, which is a positive factor from an environmental point of view (Le Quéré et al., 2020).

The second topic in this cluster analyzes how COVID-19 has been a significant threat to public health, which has affected thousands of people worldwide. However, some pathologies have been identified that make people more prone to face the virus, such as patients with pneumonia (Zhu et al., 2020), the elderly (Verity et al., 2020), and gender (Jin et al., 2020). It should be noted that some authors refer to the insufficient capacity of the existing intensive care to handle the outbreak of the disease, which highlights the importance of policies that promote self-isolation and paid sick leave as mechanisms to delay the peak of the epidemic (Moghadas et al., 2020). Likewise, the measures taken by China, the lessons learned, and the contributions that have been received from the scientific, sanitary, and international public health fields to combat this virus are analyzed (Wu & McGoogan, 2020). In addition, the complex link between public health, science, and politics could be identified when a virus like this threatens economies and global reputation (McCloskey & Heymann, 2020). Finally, Dong, Du, and Gardner (2020) developed an interactive online dashboard to view and track reported cases of coronavirus disease in real time, which illustrates the location, number of confirmed cases, deaths, and recoveries in all affected countries.

This perspective allows us to analyze that the world is hyper-globalized. However, with the COVID-19 crisis, governments were forced to create policies to protect the internal consumption of countries, reduce expenses, consume more environmentally friendly products, sustainability, and generate collaborative local supply chains. As industry and global consumption came to a standstill, CO₂ emissions decreased drastically but temporarily since environmental damage is reactivated with the economy generally based on fossil fuels. However, it would be expected that after the pandemic's peak, the world will find an industry and consumers more aware of the importance of caring for natural resources, making a structural change to protect the environment, and guaranteeing sustainable development for the future generations. We do not know if this type of pandemic will occur again. However, we were able to appropriate the knowledge of lessons learned regarding the health measures, policies, and strategies implemented by different governments, which allowed us to overcome the global crisis gradually.

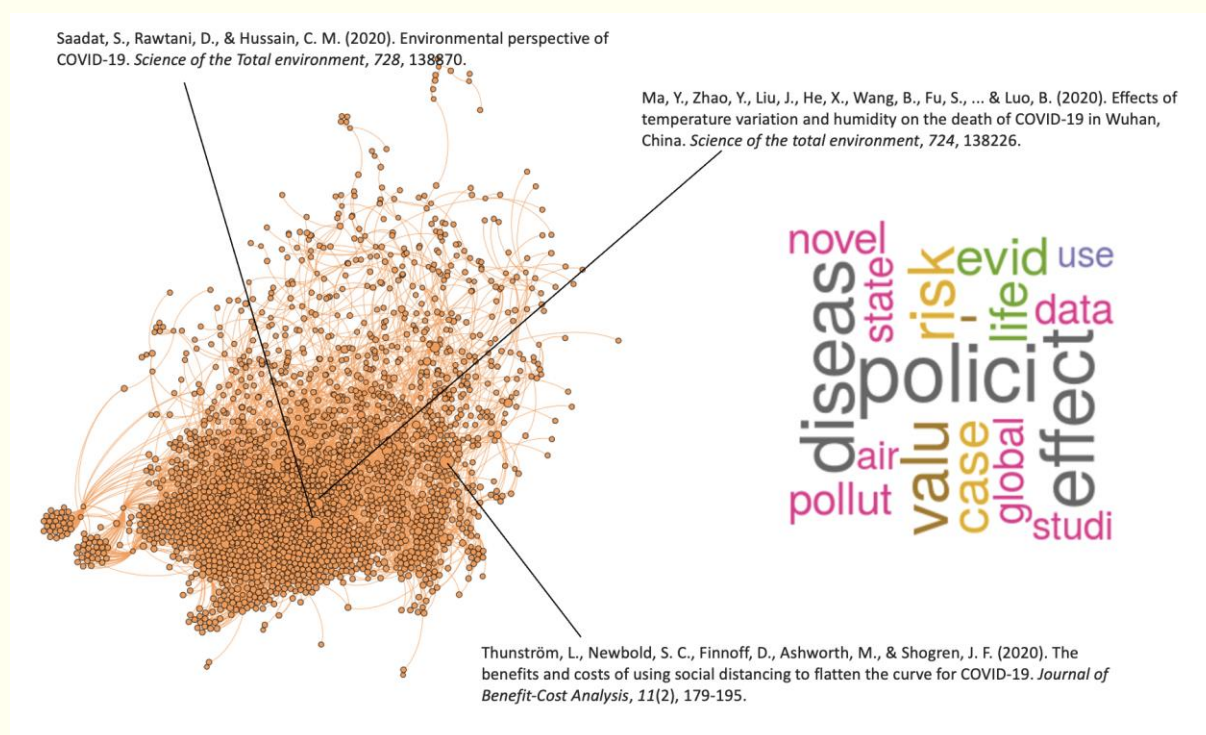


Figure 12. Perspective 4.

Perspective 5. Work and gender impacts

This perspective focuses on the gender impacts (Figure 13). This cluster is related to the pandemic's effects on women and men and how it affects them independently. In the literature, studies were found related to the importance of governments and health institutions considering the effects of gender and direct and indirect factors in COVID-19 outbreaks to implement measures to mitigate the impact of this virus (Wenham, Smith, & Morgan, 2020). Likewise, some investigations analyze the gender gap in the working day (Collins, Landivar, Ruppanner, & Scarborough, 2021).

Articles focused on the female gender are evidenced, offering reflections on how women have been affected in the personal and professional spheres, having to work only part-time in a pandemic, which is directly reflected in the decrease in their income, increased activities at home, and increased stress (Bahn, Cohen, & Rodgers, 2020; Boncori, 2020; Power, 2020). Other studies are related to the negative impacts on the psychological conditions of people during the pandemic, identifying factors such as post-traumatic stress, confusion, anger, boredom, among others (Brooks et al., 2020). However, some studies propose that health services be provided comprehensively to patients taking into account physical and emotional health (Pfefferbaum & North, 2020).

In this perspective, it was possible to identify that women were the most affected by COVID-19. This situation shows an overload at a general level since women, in many cases, have to assume part of the household economy and have to carry out housework and childcare, which directly

affects their physical and emotional health. Hence the importance of co-responsibility between companies and the state to generate policies that allow balancing the burdens between men and women and to analyze the possibility of recognizing domestic work that is currently not recognized.

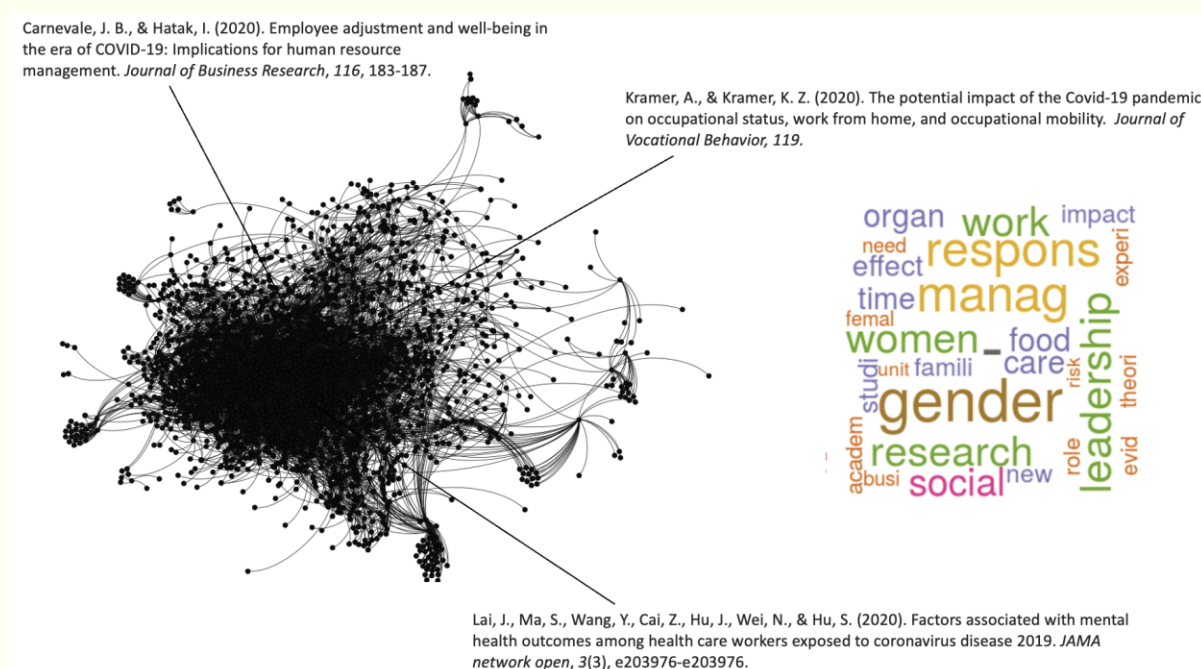


Figure 13. Perspective 5.

CONCLUSIONS

A bibliometric analysis was carried out on articles related to COVID-19 in the areas of business, management, and economy, published in 2020 and 2021, through information obtained from the Web of Science database, where the annual scientific productivity, countries with the highest productivity, authors, journals, and the most relevant institutions were analyzed.

The co-authorship networks of authors, institutions, and countries were also presented and analyzed, as well as the network of document co-citations.

There is a large production related to COVID-19 and economic issues, with 4,347 articles included within the Web of Science. The most relevant author by the number of publications is J. Kim, with 14 published articles. The University of Oxford leads the ranking of institutions with a total of 61 publications. At the level of production by country, the United States has participated in 1,950 documents. In addition, it is concluded that *World Development* journal has published 85 related articles.

At the level of co-authorship networks, it can be concluded that the United States and England are the countries with the highest number of publications and relationships with other countries. At the institutional level, the University of Oxford appears as the central node of the network, interacting with 10 universities.

Through open-access tools, five perspectives related to the impact of COVID-19 on economic issues were found. The first analyzes the effects on financial markets; the second presents the effects on tourism and consumer behavior; the third indicates the socio-economic effects of applying policies; the fourth presents the environmental and public health impacts; and the fifth shows the impacts on gender.

Agenda for future research

Table 3 presents the future research topics that could be addressed by future research from the scope of each perspective analyzed in this study.

Table 3

Agenda for future research

Perspective	Future Research
Financial markets	<p>Develop research that analyzes how the role of governments and the policies implemented to protect the financial systems of the countries affected their financial behavior.</p> <p>Conduct studies to understand the behavior of the financial markets during the COVID-19 emergency and its impact on the stock market's performance (stocks, Bitcoin, commodities, etc.).</p> <p>Analyze how COVID-19 affected the planning of the pension system.</p> <p>Develop longitudinal research to assess the impact of COVID-19 on the liquidity and financing of companies.</p> <p>Expand the understanding of the pandemic's impact on the most important economic variables such as oil market prices, inflation, and employment in different countries.</p> <p>Explore the influence of the news broadcast by the different media on oil and its impact on the prices of this commodity in the stock market.</p>
Tourism and consumer behavior	<p>Investigate the change in consumer behavior in terms of spending levels and domestic demand with COVID-19.</p> <p>Understand how the COVID-19 pandemic influenced consumer behavior in the tourism sector.</p> <p>Investigate the perception and behavior of tourists and business people to examine the causal relationships between the variables of self-protection, coping, resilience, and travel intentions during the pandemic.</p> <p>Conduct studies to validate the fear of traveling scale in tourist contexts.</p> <p>Understand how COVID-19 impacted sustainable tourism.</p> <p>Explore successful cases of tourism policies and strategies adopted by countries and regions that have allowed their recovery and transformation.</p>
Policies and their socio-economic effects	<p>Analyze the main changes produced in labor relations caused by the pandemic.</p> <p>From a socio-economic point of view, compare the impact that COVID-19 has had on the population and companies.</p> <p>Understand what are the essential complementarities between jobs that can be done at home and those that cannot.</p> <p>Analyze to what extent monetary and fiscal policy stimuli will be increased to recover the world economy.</p>

Continues

Table 3 (continued)

Perspective	Future Research
Environmental and public health impacts	<p>Study the economic recovery strategies of the different countries that contribute significantly to the improvement of the environment.</p> <p>Explore how the consumers and their social practices and beliefs have changed with the pandemic and the climate implications of these changes.</p> <p>Analyze the impact of the pandemic on green agreements between countries and the spending associated with the greening of transport, energy, and agriculture.</p> <p>Carry out research that studies the coronavirus pandemic's impact on the environment and natural resources.</p> <p>Carry out research to identify how the vaccination plans established by governments have affected the behavior of companies.</p>
Work and gender impacts	<p>Carry out studies that seek to understand how the types of contracts, working hours, and ways of working in companies have changed.</p> <p>Compare the productivity levels of workers when they work at home and in their usual workplace.</p> <p>Explore how COVID-19 has affected men and women.</p> <p>Identify lessons learned about preparedness policies and practices that may serve as future responses to COVID-19.</p> <p>Analyze the relationship between the reduction of working hours and the domestic work of mothers in households.</p> <p>Analyze the division of labor at home and gender roles in times of pandemic.</p> <p>Explore how the nature of work has changed with the pandemic in the context of gender roles.</p>

Research limitations

This study presents a bibliometric analysis that, despite its rigor and the contributions it makes, presents certain limitations that we consider may be the beginning of future research, as follows:

First, even though the study carries out a bibliometric analysis based on quantitative methods that have been tested and validated by the scientific community, it does not present an exhaustive analysis of the content of all the publications on the subject.

Second, the analysis used only the publications included in the Web of Science database. Although it is considered one of the most important thanks to its rigorous indexing and quality criteria, it does not contain all the publications on the subject. Therefore, it is recommended to expand the proposed analysis and include other databases such as Scopus.

Finally, the study covers the publications made in 2020 and 2021. Thanks to the analysis, it was possible to identify that the topic addressed presents a high interest for the scientific community. Therefore, it presents a dynamic nature and exponential growth, which requires monitoring the literature's progress from continuous bibliometric analyses.

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