

# State of the Art of COVID-19 and Business, Management, and Accounting Sector. A Bibliometrix Analysis

Maura Campra<sup>1</sup>, Paolo Esposito<sup>2</sup> & Valerio Brescia<sup>1,3</sup>

<sup>1</sup> Department of Economics and Business Studies, University of Piemonte Orientale “Amedeo Avogadro”, Italy

<sup>2</sup> Department of Law, Economics, Management and Quantitative Methods, Sannio University, Italy

<sup>3</sup> Department of Management, University of Turin, C.so Unione Sovietica, 218 bis, Turin, Italy

Correspondence: Valerio Brescia, Department of Management, University of Turin, C.so Unione Sovietica, 218 bis, Turin, Italy. E-mail: [valerio.brescia@unito.it](mailto:valerio.brescia@unito.it)

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## Abstract

COVID-19 caused a global pandemic in 2020 that completely revolutionized our way of life, consequently affecting the research area of business, management and accounting sector. The study by Donthu & Gustafsson (2020) had produced some significant elements on the effect of COVID-19 in the considered study area. Since that time, all states and universities have engaged academics in the search for solutions and future prospects related to COVID-19. In 2020 alone, 48,038 results can be identified on Scopus, of which however only 155 related to the sector under investigation. This research seeks to fill the gap by performing a bibliometric review of 155 business, management and accounting articles considering the effects of COVID-19. The study shows that the effect influenced all research areas of the sector, although only some present bibliometric evidence with a global diffusion. Bibliometric analysis confirms the trend and studies introduced by Donthu & Gustafsson (2020). The main studies focus on transport, regulation, and the global economy's effect, considering both international trade and the redefinition of a series of services, including education. The changes in tourism, medical tourism, the business model in food administration, and new technologies related to teaching activities require more in-depth analysis and a major sharing of results.

**Keywords:** COVID, bibliometrix, bibliometric, biblioshiny, business, management, accounting, future trend

## 1. Introduction

### 1.1 Introduction

SARS-CoV-2 (the Betacoronavirus that causes COVID-19) is a new strain of coronavirus never previously identified in humans. At least at an early stage, the symptoms of influenza are very similar to those of other infections respiratory diseases, including the novel SARS-CoV-2 coronavirus (Andersen et al., 2020, pag. 2; Colasanti, Fantauzzi, & Frondizi, 2020). As evidenced by the Italian Higher Institute of Health from the recent study on Italian cases, fever and breathing difficulties together are the most common initial symptoms for Covid-19. Some people become infected but do not develop any symptoms. Most of the currently confirmed cases - especially children and young adults - appear to have mild, flu-like, and slow-onset illness. However, the disease can progress to a more severe form: pneumonia, severe acute respiratory failure, kidney failure, and in some cases, death (Yang et al., 2020). Those who are seriously ill and have breathing difficulties need hospitalization. Preliminary EU / EEA data indicate that approximately 20-30 percent of COVID-19 cases are hospitalized and 4 percent develop a type of serious disease (Mishra et al., 2020). For individuals over 60 and for those with underlying medical problems, hospitalization rates are higher. According to World Health Organization reports, 31, 375,325 infections were confirmed at the end of September 2020, compared with 966,399 deaths. The pandemic to date affects 235 countries. The Area of the Americas continues to bear the nation's largest COVID-19 burden, accounting for over 38 percent of all new cases recorded in the past seven days, while new deaths have decreased by 22 percent in the country. An rise in new COVID-19 deaths has continued to be recorded in the WHO South-East Asia Region, with over 9,000 deaths week, accounting for 25 percent of all confirmed deaths and increasing 100,000 total COVID-19 deaths since the outbreak of the pandemic. Moreover, 35 percent of new cases reported in the past week account for the area. Over the last three

weeks, the Eastern Mediterranean and Western Pacific regions have also recorded a small rise in confirmed cases and deaths. The African Area continues to show a marked downturn, with decreases of 12 percent and 16 percent in reported cases and deaths in the past week, respectively. Some studies invite us to investigate the effects and strategic transformations that pandemic is having on our world (Cepiku et al., 2020). COVID-19 has a worldwide effect and has had an economic impact with an impact on business models, approaches and business processes. As an effective vaccine has not yet been identified, companies and scholars are wondering about possible solutions to address an unforeseen global crisis. Despite international guidelines and containment measures (Garzaro et al., 2020), COVID-19 is still not under control and continues to affect our socio-economic system radically (O'Donoghue et al., 2020; S. F. Secinaro et al., 2020a).

Whose Director-General Tedros Adhanom Ghebreyesus announced at a press conference on COVID-19 on 11 March 2020 that "the number of COVID-19 cases outside China has increased 13 times and the number of countries affected has tripled," more than 118,000 cases have occurred in 114 countries, and 4,291 people have lost their lives. Thousands more are fighting in hospitals for their lives.". From that moment on, our world, including the corporate one, has undergone changes and evolutions (Remuzzi & Remuzzi, 2020). Academics have begun to investigate tools to ensure and sustain the resilience of companies and the public sector. Universities and governments have joined forces inviting researchers worldwide to investigate multidisciplinary aspects associated with COVID-19 (C. Anderson et al., 2020), the pandemic, and the lockdown effect has created a proliferation of publications in all sectors. To date, there are no systematic studies that highlight the issues already addressed and those to be developed in the context of business, management, and accounting sector.

The quantitative variables of a specific research subject are defined by Bibliometrics (Junquera & Mitre, 2007). Aria and Cuccurullo (2017a) also identified the 5 methodological steps that must be applied to achieve an authoritative result. The study adopts bibliometrix "R" package to carry out the processing of the results on the topic (Aria & Cuccurullo, 2017b; S. Secinaro et al., 2020). Biblioshiny is adopted to define dendrogram, future topics related to the topic and analysis maps, it is an application of "R" package. The analysis of the previous factors allows us to answer the following key questions (Zupic & Čater, 2015):

Q1: What is the scientific publication trend in the world of business, management and accounting in the "COVID" field?

Q2: Given this pattern, what knowledge is left uncovered?

Q3: What are the future directions for research in this area?

The purpose of this bibliometric review is:

- (a) Include bibliometric data on 155 research studies from the Scopus database;
- (b) Use R software with 'bibliometrix' codes and biblioshiny software to obtain and document quantitative data in the various chosen articles;
- (c) To understand the leading authors in this research field, use variables as authors per article and the author's dominance index;
- (d) To understand the network of this study stream, use the citation analysis and collaboration map;
- (e) Research countries within each country to analyze output, citations and networks.

The paper is structured as follows. The next chapter describes a brief analysis of the starting literature that led to the adoption and deepening of some elements and strands. Chapter two identifies the methodology adopted and the results; the results present a subdivision able to answer the previous questions. Finally, the conclusions represent a comparison with the starting literature results and the streams implemented and developed.

### *1.2 Related works*

Donthu & Gustafsson's study (2020), introduced the possible changes that COVID-19 could have on business and management studies by identifying effects on the economy and consequently, on the economic growth of each country; this critique is due not only to the lockdown but to a change of approach to work, consumption and business organization and business models (Donthu & Gustafsson, 2020). The study refers to numerous aspects that could be considered. The first aspect is related to the possible return on assets comparable to similar historical periods (Jordà et al., 2020); a decrease in personal protection policies is also noted (Funk et al., 2009). The study also predicted future relapses and attention to specific goods, such as food, energy and medical equipment, with the prospect of foreign trade reorganization. Processes related to health and safety, the supply chain, the workforce, cash flow, customer demand, revenue, and marketing are likely to be the biggest improvements. The predicted economic crisis is associated, according to scholars, with the American Great

Depression of the 1930s, which could lead to difficulties in finding work for those who do not already have one, although many governments have taken action to support jobs and companies. The study predicted an increase in the purchase of cleaning products and the consumption of junk food. The lockdown has led many people to identify a real-life channel in social media in the process of communication, consumption, and access to health visits (Nowland et al., 2018). Many companies have seen bankruptcy and closure due to the lockdown (Tucker, 2020). On the other hand, several have sought the acquisition of new markets by adopting technologies, sometimes drawing a competitive advantage (Jaworski et al., 2000). There are some planned impacts on the paradigm of university education in which pupils are no longer in the classroom. With a view to future continuing education, students will also need to personalize the study course; artificial intelligence and technology can assist and assist the learning process, the course can be accessible through algorithmic interaction, animation / video / augmented reality, face-to - face instruction, or any data mixture of it. It will help and help the learning process, the course can be accessible through algorithmic interaction, animation / video / augmented reality, face-to - face teaching, or any data mixture thereof. The learning process, even with new technologies, should be based on ethical principles. Tourism studies and associated activities will suffer considerable repercussions, which require a rapid rethinking of business models and access by anticipating long-term effects on international tourism.

## 2. Methodological Approach

The methodological approach of this study includes five main phases. The process of this study includes (1) Study Design, (2) Data Collection, (3) Data Analysis (4) Data Visualization, and (5) Interpretation (Aria & Cuccurullo, 2017a; Cobo et al., 2011; S. Secinaro et al., 2020; Zupic & Čater, 2015).

### 1) Study Design

The study starts with the definition of three research questions. In the Scopus database, the phrase 'COVID' was selected as the primary keyword. Two are the primary methods of choosing keywords, according to (Chen & Xiao, 2016). Firstly, the use of high-level publication keywords; secondly, the use of important keywords that define a broad area of research and their micro-level relationship. The second technique is embraced by the paper. In fact, the phrase "COVID" represents a vast search fields which includes 48,038 results on Scopus. Therefore, it requires non-limitation to articles published in peer-reviewed journals and the expansion towards conference proceedings and results that can help investigate a current issue. The selected period is not related to the implementation of specific filters but to the rise of the theme and the analysis of the problem from 2020 with an impact on worldwide publications. The selection of only the articles having a subject area "business, management, and accounting". The analysis has enabled to find 155 relevant. The number has reduced due to the limitation consider

### 2) Data core choose.

In order to construct the business streams, the second stage requires the use of open-source statistical framework R. The stage of data collection allows creating the ".bib" file ready for the next phase.

### 3) Data Analysis.

The program R and the bibliometrix codes were used to produce descriptive bibliometric analysis and to construct a matrix in this third level. Capable of classifying, including all records. In addition, "biblioshiny," a web-interface bibliometrix, has been used to build a conceptual map and network for co-citation.

### 4) Data Visualisation

The analysis of the results then continued with the visualization of them using data reduction technique.

### 5) Interpretation data.

Finally, data have been interpreted.

#### 2.1 Bibliometric Analysis

The analysis of the findings begins with the critical overview of the key bibliometric statistics. The inquiry then begins to recognize the metrics and data of the writer. Countries are eventually considered. In each of these main categories, the following information is then thoroughly examined: (1) type of text, (2) annual research output, (3) research sources, (4) source growth, (5) number of articles per author, (6) author supremacy rating, (7) author keywords.

### 3. Results

#### 3.1 Description of bibliometric analysis

Table 1 displays the critical extracted details from the Scopus database of 155 papers published between 2020 and expected in 2021. Those articles have been published in 64 sources consisting mainly in scientific journals and to a small extent in conference proceedings. Nine times the number of keywords used is greater than the number of related objects. At the same time, "keywords plus" is three times greater than the number of posts, which is the number of keywords that also appear in the title of the post. The study period includes one year of scientific output and the results obtained in September 2020 were collected. On average, two authors write per article (2.41); and the Collaboration Index (CI) of the Total Authors of Multi-Authored Articles (Total Multi-Authored Articles) is 3,088 (Elango & Rajendran, 2012).

Table 1. Main information about COVID in business, management, and accounting sector

Description	Results
Documents	155
Sources (Journals, Books, etc.)	64
Keywords Plus (ID)	75
Author's Keywords (DE)	449
Period	2020 - 2021
Average citations per documents	0,5097
Authors	354
Author Appearances	373
Authors of single-authored documents	55
Authors of multi-authored documents	299
Single-authored documents	58
Documents per Author	0,438
Authors per Document	2,28
Co-Authors per Documents	2,41
Collaboration Index	3,08

We have already seen that 155 scientific articles and conference proceedings have been considered. The distribution of the articles does not present a significant concentration. However, table 2 highlights that Journals deals with issues of business, management, and accounting related to COVID. The table make visible the fact that, except for the journal "Statistical Journal Of The Iaos ", all the journals deal with issues related to management, accounting, economics, risk assessment in production processes, personnel management, market and taxation. It is interesting to note that the pandemic theme has affected almost all the lines of research related to accounting, management and business. Given the impact on the world context, many journals have this orientation.

Table 2 Sources that involves “COVID”

Sources	Articles
INTERECONOMICS	13
EMERALD EMERGING MARKETS CASE STUDIES	11
FISCAL STUDIES	9
JOURNAL OF INDUSTRIAL AND BUSINESS ECONOMICS	8
RESEARCH IN INTERNATIONAL BUSINESS AND FINANCE	6
JOURNAL OF PUBLIC POLICY AND MARKETING	5
PROCEEDINGS - 2020 INTERNATIONAL CONFERENCE ON E-COMMERCE AND INTERNET TECHNOLOGY ECIT 2020	5
CONTEMPORARY ECONOMIC POLICY	4
ENTREPRENEURSHIP AND SUSTAINABILITY ISSUES	4
HUMANITIES AND SOCIAL SCIENCES COMMUNICATIONS	4
JOURNAL OF SUSTAINABLE FINANCE AND INVESTMENT	4
ECONOMIC AND LABOUR RELATIONS REVIEW	3
INTERNATIONAL JOURNAL OF ECONOMICS AND BUSINESS ADMINISTRATION	3
INTERNATIONAL JOURNAL OF MANAGEMENT	3
JOURNAL OF INTERNATIONAL BUSINESS STUDIES	3
JOURNAL OF MANAGEMENT	3
STATISTICAL JOURNAL OF THE IAOS	3
ACCOUNTING AUDITING AND ACCOUNTABILITY JOURNAL	2
ECONOMISTS' VOICE	2
GENEVA RISK AND INSURANCE REVIEW	2

### 3.2 Authors

The most cited authors concerning "COVID" are listed in this section. It is also possible to recognize the keywords of the author, dominance ranking factor, and total citations in this section. Table 3 identifies the authors and their publications in the 20 top rankings. Four authors have the largest number of publications with three articles each. Costa Dias Monica is a Director at the IFS and a Research Economist at the University of Porto 's Centre for Economics and Finance. She studies the complexities associated with human resource management. The specific studies related to the COVID are focused on the fallout of the COVID in the dynamics of the earning of human resources and the family's well-being on socio-demographic characteristics (Blundell et al., 2020; Cloyne et al., 2020; Costa Dias et al., 2020). In the Department of Management, La Trobe Business School at La Trobe University, Melbourne, Australia, Vanessa Ratten is an Associate Professor of Entrepreneurship and Innovation. She teaches entrepreneurial business planning, organizational creativity and entrepreneurship management, and her research focuses on the macro and micro effects of COVID on family enterprises (Ratten & Jones, 2020) and rural health enterprises (Apostolopoulos et al., 2020) in Europe. Caren Brenda Scheepers is an assistant professor at the University of Pretoria, South Africa. Her studies focused on the resistance that companies have in sharing value before and after COVID demonstrating the ability to share value through the Nestlé case study in South Africa (Pillay & Scheepers, 2020a). Furthermore, she studies the effect that COVID on her area related to the transport of food in South Africa using taxi sector (Pillay & Scheepers, 2020b, pag. 19) and on the use of UBER as a suitable technology to deal with, manage and adapt to social emergencies such as the flight of abused women or the management of travel in post-pandemic Sub-Saharan Africa countries (Scheepers & Bogie, 2020, pag. 19). Mike Ward is Chair of Finance at GIBS, where he lectures at the University of Pretoria (Africa) on the MBA, DBA and Executive Education programmes. He studied the impact of COVID on large companies such as the Eskom electricity company, which in Africa suffers from mismanagement linked to bribery and corruption (Ward, 2020a). During the COVID period, it dissolved several management contracts with effects on the community local. Ward's studies are therefore oriented to the effect that COVID has on the market; other examples are the increase in the issuance of money in Africa following the economic crisis generated by the pandemic (Ward, 2020b, pag. 19) and the dilemmas related to the policies undertaken due to COVID and expected effect (Ward, 2020c). It is immediately interesting to note how the African continent authors have a greater propensity to study their reality through case studies, unlike the overseas authors who mainly aim to orient research in the international context.

Table 3. Authors with a number of articles

Number of articles	Authors (top 20)
3	COSTA DIAS M RATTEN V SCHEEPERS CB WARD M
2	BLUNDELL R CALDECOTT B GRIFFITH R JOYCE R LEVELL P MARTIN KD MICKLITZ HW PILLAY R PROPPER C TWIGG-FLESNER C XU X
1	ABDULLAH FM ABEYRATNE R AGOSTO A AGRAWAL A AKEEL H

### 3.3 Authors' Dominance Ranking

The Dominance Factor is the proportion of the number of first author (Nmf) multi-authored publications of an author to the total number of author (Nmt) multi-authored publications. (Kumar & Kumar, 2008). Some authors deepen this element that allows a thorough investigation and not limited to the single number of citations per author. (Elango & Rajendran, 2012; Gatto & Drago, 2020). It is calculated with following formula:

$$DF = Nmf / Nmt$$

Table 4 lists the leading top 20 DF rankings and highlights that Blundell Richard and Pillay Ravi (who appeared with two publications), are the firsts and foremost authors in publications with multi-authors articles. In-depth research indicates that Blundell Richard holds David Ricardo 's Chair of Political Economics at University College London, where he was named Professor of Economics in 1984 and, from 1988 to 1992, was Chair of the Department. While Pillay Ravi works and has published on the subject with Caren Brenda Scheepers. The relationship between authors with a more significant impact on the topic is evident and represents a cohesive flow of issues. Therefore, the network generated by the various authors affects and guides the development of specific themes based on previous studies and didactic activities undertaken.

Table 4. Author's dominance

Author	Dominance Factor	Tot Articles	Single-Author ed	Multi-Author ed	First-Author ed	Rank by Articles	Rank by DF
BLUNDELL R	10000000	2	0	2	2	14	1
PILLAY R	10000000	2	0	2	2	14	1
AGOSTO A	10000000	1	0	1	1	1	1
AKEEL H	10000000	1	0	1	1	1	1
ALAM MN	10000000	1	0	1	1	1	1
ALCIDIC	10000000	1	0	1	1	1	1
ALDERMAN R	10000000	1	0	1	1	1	1
ALSHAKETHEEP KMKI	10000000	1	0	1	1	1	1
ANDERSON J	10000000	1	0	1	1	1	1
APERGIS N	10000000	1	0	1	1	1	1
APOSTOLOPOULOS N	10000000	1	0	1	1	1	1
ARELLANA J	10000000	1	0	1	1	1	1
ASHOFTEH A	10000000	1	0	1	1	1	1
ASLAM F	10000000	1	0	1	1	1	1

AUDRETSCH DB	1000000	1	0	1	1	1	1
RATTEN V	0.500000	3	1	2	1	18	16
GRIFFITH R	0.500000	2	0	2	1	14	16
PROPPER C	0.500000	2	0	2	1	14	16
COSTA DIAS M	0.333333	3	0	3	1	18	19
SCHEEPERS CB	0.333333	3	0	3	1	18	19

### 3.4 Author's Keywords

This section provides information between the keyword's "COVID" in business, management, and accounting area. In the posts, researchers insert several keywords.

In order to evaluate the research trend, identify any holes in the topic, and identify the fields that may be important as research areas, this study is necessary. In the top 20 places, Table 5 highlights the total number of keywords per author. Electronic commerce and e-learning and viral diseases are remembered in the ranking. The ranking recalls electronic commerce and e-learning and viral disease. These elements are predictive and recall the other keywords used. If we focus on the following keywords, we find important aspects of management and accounting related to "COVID" such as The effect that the entire healthcare management has had on patient care and at the same time, the substantial effect that CORONAVIRUS, the restrictive activities to travel and social contacts have had on everyday life, affecting both university and non-university teaching only, and on the possibility of purchasing by increasing models and online purchasing systems.

Table 5. Author's keywords in "COVID"

Words	Occurrences
electronic commerce	5
e learning	3
viral disease	3
coronavirus	2
covid 19	2
disease control	2
disease transmission	2
infectious disease	2
online teaching	2
respiratory disease	2
activity patterns	1
air transportation	1
behavioural changes	1
china	1
colleges and universities	1
continuous learning	1
critical analysis	1
cross border	1
current practices	1
disease incidence	1

The TreeMap highlights the combination of possible keywords. These can be identified from figure 1 and we can say what they represent "COVID" in the research field of analysis. The World TreeMap confirms the trend of words adopted and anticipates some strands identified through the dendrogram.



Figure 1. Word tree map

On the other side, the dendrogram in Graph 1(Appendix) represents the hierarchical order and the relationships between the keywords spotted by hierarchical clustering. The representation weights each object according to the clusters and measures the links among them. In other words, each object refers to a series of keywords associated with “COVID” on business, management and accounting topic.

The observable clusters were split into two large groups. Considering the first one, it is possible to observe that studies have resulted to be divided into two strands, a first cluster is associated with the effects of COVID on primary services that require intervention and direct policies for safety involves the service and organization of public land and air transport, the second is associated with secondary services that have an effect on the economy and quality of life, the main sectors considered are the use of new technologies to ensure continuing and university education, health-care, the effect on tourism and instrumental activities , e-commerce activity and regional manufacturing activities. The first cluster mainly includes the study of transport model and market. In Colombia, the incidence and economic crisis on local transport were mapped by evaluating the impact on air transport, freight transport, and urban transport and looking for alternative solutions for a sustainable service (Arellana et al., 2020). There are also studies on aerial activities and the limitations created by COVID both on passenger transport and goods, consequently impacting the economy. In these studies, the infrastructures and the relationship between Government and external bodies are crucial and of interest to the European Commission and Governments (Agrawal, 2020; Savych & Shkoda, 2020; Vinod, 2020) regarding also public contributions and cash flow crisis. The severity of the pandemic has also affected the supply chain and the entire transport system, especially regarding the relationship between states and the previously active corporate international exchange models. The effect of changes related to the procurement process has volatility effects on prices, especially food (Tanaka & Guo, 2020). There are changes in approach and business model searching for supplementary or replacement systems for part of the alternative food transport system (Pillay & Scheepers, 2020b, pag. 19).

The first group that collects the learning system, virtual communities, social networks, tourism, and analyses conducted with interviews is associated with two macro-groups. The first refers to socio-health and demographic variables that affect the economy (Tripathi & Bagga, 2020), on the analysis and quality of data (Ashofteh & Bravo, 2020), or on new technologies with Artificial Intelligence (Vaidya et al., 2020) able to map the pandemic's progress and care with consequent economic effect (Sarita & Datta, 2020; Ward, 2020c). The second macro-area investigates specific sectors, such as e-commerce, education, sport, and tourism. Some studies focus on the effect of the Procedures concerning public health emergencies of international concern (PHEIC) on COVID issued by the WHO on trade between countries, investigating, in particular, the export process and taxation between countries (Evenett, 2020, pag. 19; König & Winkler, 2020; X. Liu, 2020; Tanaka & Guo, 2020). The pandemic has also radically affected the models and teaching methods and continuing education with repercussions in various sectors. The first effect is on university education (Akeel & Khoj, 2020; Alharbi, 2020; Feng et al., 2020; Hall, 2020), although there are numerous studies on continuing education courses and skills provided temporarily online, such as music training courses (He, 2020) or professional courses for reorienting sightseeing through a substitute virtual world (Y. Liu et al., 2020). The pandemic has seriously affected the sports events sector, limiting the same even after the lockdown. The first study explores the effect of the COVID-19 pandemic across the major league sports leagues in North America, defining alternatives in the absence of revenue and reorganizing the sports system (Ehrlich et al., 2020). The studies also investigate the macro and

micro effects on small companies' family businesses, investigating the effect in the sports sector (Ratten & Jones, 2020). Sport topic also refers to some sports stars' communicative effect on fans to promote actions to prevent the spread of COVID to sports companies, a new perspective according to the guidelines and actions of ISO 26000 "Social Responsibility Guidance" (Zhao & Zhou, 2020).

Being the first year of the onset of the problem and the proliferation of publications in this area, it is not yet possible to define a trend.

### 3.5 Total Citations

The number of citations in articles put inside the top 20 rankings is represented in Table 6 given the innovative theme and the pandemic's effect in 2020, there are only articles related to the reference year.

Several authors combine tourism management with other areas. This greatly influences the number of citations, especially when "COVID" has an impact on market or fiscal aspects. The study with the highest incidence analyzed the effect of the pandemic on financial markets on a global level and the speed with which the market responds to the studies of trends linked to the virus's infections (Ashraf, 2020). COVID 19 also affects the cryptocurrency market, thus not creating a safe market except for investors in the Chinese CSI 300 index (Conlon et al., 2020). The medical aids market finds in the particular period of crisis an interest of scholars who identify in the limitations and taxes on imports from other countries of these products a potential constraint with an impact on health and rapid access to the prevention measures of COVID-19 (Evenett, 2020).

Table 6. Articles that receive citations

Paper	Total Citations	TC per Year
Ashraf, B. N. (2020). Stock markets' reaction to COVID-19: cases or fatalities?. Research in International Business and Finance, 101249.	9	9
Conlon, T., Corbet, S., & McGee, R. J. (2020). Are Cryptocurrencies a Safe Haven for Equity Markets? An International Perspective from the COVID-19 Pandemic. Research in International Business and Finance, 101248.	6	6
Evenett, S. J. (2020). Sicken thy neighbour: The initial trade policy response to COVID-19. The World Economy, 43(4), 828-839.	6	6
van Barneveld, K., Quinlan, M., Kriesler, P., Junor, A., Baum, F., Chowdhury, A., ... & Friel, S. (2020). The COVID-19 pandemic: Lessons on building more equal and sustainable societies. The Economic and Labour Relations Review, 31(2), 133-157.	5	5
Caligiuri, P., De Cieri, H., Minbaeva, D., Verbeke, A., & Zimmermann, A. (2020). International HRM insights for navigating the COVID-19 pandemic: Implications for future research and practice. Journal of International Business Studies, 1.	4	4
Propper, C., Stoye, G., & Zaranko, B. (2020). The wider impacts of the coronavirus pandemic on the NHS. Fiscal Studies, 41(2), 345-356.	4	4
Prante, F. J., Bramucci, A., & Truger, A. (2020). Decades of Tight Fiscal Policy Have Left the Health Care System in Italy Ill-Prepared to Fight the COVID-19 Outbreak. Intereconomics, 55, 147-152.	4	4
BAPUJI, H., PATEL, C., ERTUG, G., & ALLEN, D. G. (2020). Corona crisis and inequality: Why management research needs a societal turn. Journal of Management.	3	3
Filipe, J. A. (2020). Epidemics and Pandemics: Covid-19 and the "The Drop of Honey Effect". International Journal of Economics & Business Administration (IJEBA), 8(2), 240-249.	3	3
Homburg, S. (2020). Effectiveness of Corona Lockdowns: Evidence for a Number of Countries. The Economists' Voice, 1(ahead-of-print).	3	3
Martarelli, C., & Wolff, W. (2020). Too bored to bother? Boredom as a potential threat to the efficacy of pandemic containment measures. Humanities and Social Sciences Communications, 7 (1), 1 - 14.	2	2
Motta, M., & Peitz, M. (2020). State Aid Policies in Response to the COVID-19 Shock: Observations and Guiding Principles. Intereconomics, 55(4), 219-222.	2	2
Platt, L., & Warwick, R. COVID-19 and Ethnic Inequalities in England and	2	2

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Wales. Fiscal Studies.

Kim, J. (2020). Impact of the perceived threat of COVID-19 on variety-seeking. <i>Australasian Marketing Journal (AMJ)</i> .	2	2
Goutte, S., Péran, T., & Porcher, T. (2020). The role of economic structural factors in determining pandemic mortality rates: evidence from the COVID-19 outbreak in France. <i>Research in International Business and Finance</i> , 54, 101281.	1	1
Aslam, F., Awan, T. M., Syed, J. H., Kashif, A., & Parveen, M. (2020). Sentiments and emotions evoked by news headlines of coronavirus disease (COVID-19) outbreak. <i>Humanities and Social Sciences Communications</i> , 7(1), 1-9.	1	1
Tanaka, T., & Guo, J. (2020). How does the self-sufficiency rate affect international price volatility transmissions in the wheat sector? Evidence from wheat-exporting countries. <i>Humanities and Social Sciences Communications</i> , 7(1), 1-13.	1	1
Luo, S., & Tsang, K. P. (2020). China and World Output Impact of the Hubei Lockdown During the Coronavirus Outbreak. <i>Contemporary Economic Policy</i> .	1	1
Fana, M., Pérez, S. T., & Fernández-Macías, E. (2020). Employment impact of Covid-19 crisis: from short term effects to long terms prospects. <i>Journal of Industrial and Business Economics</i> , 47(3), 391-410.	1	1
Strange, R. The 2020 Covid-19 pandemic and global value chains. <i>Economia e Politica Industriale: Journal of Industrial and Business Economics</i> , 1-11.	1	1

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The other papers focus on three main streams.

The first is linked to the pandemic's effects on society, leading to inequalities in both the health and social and employment systems. Filipe (2020) highlights how the virus that left Wuhan to the world caused a systemic shock caused mainly by the wrong and unstable underlying health, finance, and economic models. This evidence is given by the speed with which the virus has revolutionized, significantly affecting a few months from the pandemic situation. The current pandemic has led to a reformulation of the health system. The exit of England from the European Union, for example, has exasperated the British health system, which will see a crisis in the system in the long term that will lead to the area of health, spending, and resource management at the center of the English national debate. However, the pandemic is certainly driving away from the health system's attractiveness through the use of additional safeguards and health risks while increasing the inequality of care where it was already present (Propper, Stoye, & Zaranko, 2020). Other studies highlight the inequalities between social minorities and population within the same state at the time of the pandemic (Platt & Warwick, 2020), or the studies that show that the mortality rate increases based on the state of unemployment and poverty, educational shortage, and homelessness of those affected by the virus, this accentuates the evidence of how the pandemic increases inequality and social difference (Goutte, Péran, & Porcher, 2020). The studies have initiated some possible solutions related to the social system crisis and the promotion of inequalities. The current pandemic has affected the corporate organization; the study invites academics to rethink companies' organizational roles. Instead of increasing inequalities increased by remote work, it should support and improve the current welfare system. According to Bapuji et al. (2020), only by rethinking organizations' role and structure, is it possible to overcome the current crisis. A macroeconomic and public policy view is offered by Tanaka and Guo (2020). The shock caused by the pandemic on prices in international markets, even on necessities such as food, has been overcome in several countries through autarchic or self-production policies. The influence between states and the market is two-dimensional, and in the pandemic period, it has created distortions that are still visible. The pandemic led to a global crisis that affected all companies. In particular, the crisis has affected liquidity in all production activities, requiring the intervention of various governments. To this end, the European Union has launched a series of activities aimed at solving short-term problems with purchase vouchers, recapitalization of some sectors and incentives for others, although this in some cases has led to inequalities due to some lobbies (Motta & Peitz, 2020).

The second stream focuses on the effect of covid on workers and the current system. The countries most affected by the pandemic, Spain, and Italy, and also the UK, will be those that, according to European data, will have a more significant impact on jobs due to a previously present crisis caused by temporary contracts and job instability within the production systems (Fana, Pérez, & Fernández-Macías; 2020). The effect on jobs is focused not only on European states and local systems but also on countries' relationship. This highlights a possible

impact both on developing nations and with a system dependent on richer Western ones. International business suffered a strong impact due to covid, particularly considering the remote human resource management. This impact involved the entire system linked to coordination, training, placement, and updating of human figures and protecting their health differently in each country. The current pandemic has led to a significant incidence that requires more studies and solutions to avoid layoffs due to the impossibility of eliminating the barriers between states currently generated by the pandemic (Caligiuri et al., 2020). The research conducted in Hubei confirms the global trend linked to job losses and the reduction of corporate liquidity (Luo & Tsang, 2020).

The third stream is associated with the change in several areas of business, management, and accounting. The crisis leads to an overcoming of the previous system with an impact on environmental sustainability, change towards a universal public system, revision of working relationships with principles of minimum protection of workers, education as a common good and to be developed for general well-being, reduction of speculation financial due to variations over time, taxation towards multinationals to equate giants with small entrepreneurs by eliminating inequity, pushed to avoid anti-collusion, generalized social protection to eliminate inequalities (van Barneveld et al., 2020). The pandemic has led to differences between social classes and minorities and between countries leading to nationalist currents that have devastating economic effects on several states that benefited from international investments worldwide. Therefore, the pandemic effect finds a multiplier due to the impossibility of continuing the previous business models based on international investments (Strange, 2020). The change is also taking place in current health planning and programming systems. The health systems present in Europe and the Italian health system, in particular, suffer the effects of austerity pushed on the health budget from 2008 to 2010. The reduction of intensive care areas currently have a significant impact due to COVID, which affects the ability to care, and that will affect in the long run despite Italy being one of the states to best deal with the crisis due to the pandemic through its health system (Prante, Bramucci, & Truger, 2020). Homburg (2020) considers the planning public health policy and analyzes the coronavirus's 23-day effect in states that have adopted the lockdown compared to those that have not adopted it, demonstrating that the lockdown significantly reduces infections, not deaths but hurts the economy of nations adopting lockdown.

The psychological effect of the pandemic and the approach to consumption are changing. The incidence of covid is also relevant from a psychological point of view, where boredom and self-control can influence social behaviors and change the behavioral study during the phases of a lockdown or social distancing in each state (Martarelli & Wolff, 2020). The pandemic affects the population's mood, defining it through the National Research Council Canada (NRC) Word-Emotion Lexicon in three stages. The stage of anger and fear involves consumption by having an indirect effect on the world economy (Aslam et al., 2020). The pandemic has led to a change in consumer behavior who, from habitual consumers, have increased the search for a differentiated variation of the offer by seeking greater varieties of the product. This behavior has had a significant impact on the theories of consumption and on existing markets. Moreover, pandemic has led to a change in consumer behavior. It has increased the search for a differentiated variation of the offer from habitual consumers by seeking more significant varieties of the product. This behavior has had a considerable impact on the theories of consumption and existing markets (Kim, 2020).

### 3.6 Country

This section analyses the geographical development of publishing about “COVID” topic. The section highlights the number of citations and the frequency and capacity of publication in each state, the representation of the diffusion, and the relationship between countries in analyzing the topic.

#### 3.6.1 Country Total of Articles

Figure 2 and Table 7 display the countries where the “COVID” theme has been studied. First place goes to USA (48). Most studies analyze the economic effect that COVID will have on the American and world economy, highlighting a similarity with the great recession (Kus, 2020; Lee et al., 2020). However, many studies, despite being written by American authors, have been made with authors present in other countries. Second and third place for UK (40) and Australia (19). USA, UK, and Australia are characterized by not having a universal health system, and they have a system based on private insurance systems or, as in England, hybrid systems, their interest in COVID is mainly driven by the effect of the lockdown and the pandemic on the population, which often leads to inequalities of health and work treatment (Platt & Warwick, 2020; van Barneveld et al., 2020). However, numerous articles regard the effects of COVID on the economy and the relationship between countries. Italy is the fourth country considered for the number of publications (16) in the sector; the interest is due to the impact the virus has had on the nation first in Europe after China. The studies on Italy include some comparative publications with other European countries regarding the health economy (Prante et al., 2020) and the effect of

the lockdown on the economy of the countries considered (Homburg, 2020). Although the area investigated is accounting, management, and business, several studies focus on the economic effects in search of possible solutions.

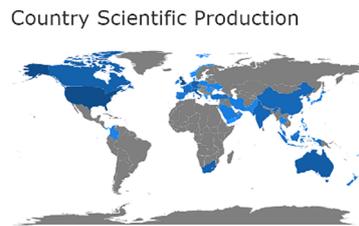


Figure 2. Country's production

Table 7. Total of articles in the country

region	Freq
USA	48
UK	40
AUSTRALIA	19
ITALY	16
CANADA	15
SOUTH AFRICA	14
GERMANY	13
INDIA	11
CHINA	10
FRANCE	7
INDONESIA	6
TURKEY	6
AUSTRIA	5
DENMARK	5
SWITZERLAND	5
MALAYSIA	4
NEW ZEALAND	4
PORTUGAL	4
SPAIN	4
BELGIUM	3

### 3.6.2 Country Publications and Collaboration Map

This section discusses articles on "COVID" in each region, considering single or multiple publications. It also aims to observe cooperation and networking among researchers working and studying the subject in different countries. Table 8 highlights the average number of citations by state China has the highest citations concerning the number of publications; the data has a historical and trend relevance; it was the first country where the Virus spread and was detected, leading to the first lockdown before the global spread. The subsequent global diffusion did not significantly affect the studies, although it is possible to identify a greater incidence of articles published in Denmark, Portugal, and Singapore, due to a faster publication on the subject than in other states.

Figure 3 shows the cooperation path in the world: the blue colour on the map represents the existence of research networks with other nations. It is interesting to notice that the countries with a major number of publications on "COVID" are the one with higher partnership rates meaning that they have shared information and helped each other to find scientific relevant results. Italy, USA, Australia, Canada and United Kingdom are the countries that were found to have the most significant networking rates with other countries which are sometimes very far away from each other and which were shown to be conditioned by policies and practices related to government rules for preventing and combating COVID. The exchange of acceptable practices between countries and, above all, data and case studies is one of the most significant factors among the overcoming policies and global study of the pandemic caused by COVID-19 (M. Anderson et al., 2020; Xu et al., 2020).

Table 8. Country with a total of citations

Country	Total Citations	Average Article Citations
CHINA	9	4,5
GERMANY	5	0,833
DENMARK	4	4
PORTUGAL	3	3
SINGAPORE	3	3
UNITED KINGDOM	3	0,3
NEW ZEALAND	2	2
SPAIN	2	2
USA	2	0,333
CANADA	1	0,333
ITALY	1	1
MACEDONIA	1	1
MALAYSIA	1	0,5
AUSTRIA	0	0
BELGIUM	0	0
FRANCE	0	0
INDIA	0	0
INDONESIA	0	0
JORDAN	0	0
LUXEMBOURG	0	0

Country Collaboration Map

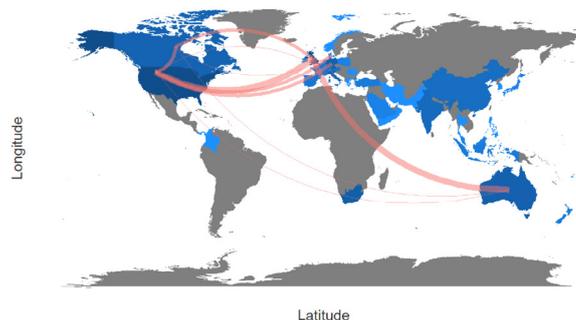


Figure 3. Country's collaboration Map

#### 4. Discussion and Conclusion

COVID-19 is a current problem that requires solutions and studies capable of supporting the economy and companies through studies aimed at a multiplicity of sectors. The most cited authors are found in States that in an initial phase of the spread of the virus had not yet found a significant impact on their country in terms of the number of cases and deaths. International collaboration has pushed academics from all over the world to activate their networks to address the issue by seeking, as suggested by the WHO guidelines and by the various states, the best solutions to deal with the fallout of COVID-19. Bibliometric analysis confirms the trend and studies introduced by Donthu & Gustafsson (2020). The main studies focus on transport, regulation, and the global economy's effect, considering both international trade and the redefinition of a series of services, including education.

The effect and change of COVID-19 on the health system and personnel organization is still underestimated, perhaps due to a priority of epidemiological data over the simultaneous collection of economic and organizational variables. The difference between health systems active in each State greatly influences international collaboration in identifying common solutions in the managerial, organizational, and accounting fields, although studies within common areas could be developed. Although the theme of tourism has been

developed and the studies suggest future trends (Gössling et al., 2020), it is necessary to investigate the change affecting this sector carefully, the theme of medical tourism is completely unexplored which due to the limitations related to international travel, the closing of the hotels finds a particular period of crisis and a primary need for new solutions. The search for a change in the business model and approach dealt with within international trade has found development, particularly on necessities such as food and health care and the fiscal aspects. However, the redefinition of business models is absent except for some studies launched on local and air transport. The study of new approaches to fundraising in health care in order to support the moment of pandemic crisis does not find adequate indexing and attention (Meneguzzo et al., 2020). Similarly, there is little attention paid to leadership and governance skills capable of handling the turbulent period (Ansell, Sørensen, & Torfing, 2020). Studies on the sports sector initiate an interest in the sustainability of events and the possibility of reorganization. Sustainable solutions and application case studies are not yet present in literature. There are cross-sectional analyzes of corporate ethics and the added value produced in some sectors, but more surveys and best practices are needed.

However, further studies on ethics and sustainability are needed to verify the effect of the pandemic on corporate performance (Secinaro et al., 2020b), which pay particular attention to the environment, a primary theme up to 2019 among SDGs in the survey sector (Pizzi, 2020). Inequality is the only area analyzed at a social and working level. There are no lines developed on the application of smart working capable of supporting the new concept. Various companies have given continuity in the public and private sectors without considering the new perception and impact of social media on the market and communication. Although some studies are related to the new approach in education systems and in continuing professional training, there is no evidence in the literature related to new technologies. Teaching activities that combine artificial intelligence, automatic decision-making through big data, and direct remote classroom management have not yet been studied. Despite the analysis of conference proceedings and articles already published, there is a low number of publications in the business, management, and accounting fields. From the analysis conducted, accounting is underestimated or underdeveloped, despite numerous state interventions and reforms on the specific principles to be adopted following the pandemic. The analysis of the actual effect of companies' policies is not yet evident; it is assumed that in-depth company studies will only be available next year at the time of closing and publishing the company financial statements. This delay in the transparency process limits developments in this area and, consequently, the possibility of introducing and expanding corrective actions and business changes that are significantly efficient and generalizable. The study highlights how the different solutions identified on specific case studies have been developed in the reference context; there are also not many cases in which the study proposes a generalization of the solutions identified due to the risk of not finding an adequate development context. Although the analysis sector focuses on business, management, and accounting, numerous researches developed in the macroeconomic field have a more significant impact on a bibliometric level. The results are limited to the Scopus indexed sources; this could significantly affect the reality of some national academic strands that, for reasons of more significant territorial impact or speed of publication, have not been published in indexed journals. The theme is constantly evolving, and the speed of publication could completely change the gaps and future lines of research in a short time.

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