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What do we know about business and economics research during COVID-19: a bibliometric review

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ABSTRACT

The destructive COVID-19 has emerged as the most lethal disease and dented the global economies in every aspect. Consequently, a large amount of research emerged to understand the dynamics of COVID-19. Using meta-literature approach with combination of both bibliometric (quantitative) and content analysis (qualitative) approach, this study aims to present a comprehensive review of COVID-19 business-related research of 477 articles. The results reveal the most the most relevant and influential scientific aspects of the literature such as authors, articles, institutions, journals, and countries. We also identify intellectual structure within six streams: 1) COVID-19 and global economy, 2) Dynamics of COVID-19 in business and management research, 3) COVID-19 and financial markets, 4) COVID-19 and its implication for tourism & hospitality industry, 5) Dynamic of supply chain and COVID-19 and 6) COVID-19 and functionality of government. Lastly, the review of the literature helps us to identify the research gaps and present 62 future research directions.

1. Introduction

The destructive COVID-19 has emerged as the most lethal disease and dented the global economies in every aspect. In the beginning of 2020, the virus has expanded rapidly and devastating lives and livelihoods in Wuhan, China and across the whole world with confirmed cases 139,501,9340 and 2,992,193 deaths.[1] Consequently, the governments and civil societies are striving to control its impact on human lives along with providing fiscal stimulus to sustain business activities and control rising unemployment especially in developing (Goodell, 2020).

Governments reacted by implementing a variety of policies to mitigate the pandemic's impact such as travel bans with closure of domestic and international borders, lockdowns (restricting people's movement), and recovery programs (to help workers and companies who have lost employment and production, respectively) were introduced all over the

world. Regardless of the policies the policymakers wanted to implement, the novel coronavirus was bound to take lives and reduce economic growth with a real negative productivity shock. However, the disease's effects, as well as the steps taken to combat it, have raised concerns about outbreak preparedness (Leach et al., 2021).

Recent literature primarily focused on government responses towards the pandemic (Abdullah & Kim, 2020; Ashraf, 2020; Dong & Lu, 2020; Ghosh, 2020), supply chain management (Ivanov, 2020b, 2020a; Ker & Cardwell, 2020), financial markets reaction (Mirza et al., 2020a; Rizvi et al., 2020; Salisu et al., 2020; Sharif et al., 2020) tourism management (Choe et al., 2021; Haywood, 2020; Qiu et al., 2020; Sönmez et al., 2020; Williams, 2021). Albeit the literature is in its early stage but quickly growing, therefore it has become imperative to synthesize the overall literature related to COVID-19 in the context of business, economics and management.

The study explores the extent to which the researchers would benefit from a wider application of the relationship between the pandemic and business research (Economics, finance, accounting, marketing, and management, etc.). This study contributes to the literature by providing up to date review of the most recent studies related to COVID-19 and business research and, also to help other researchers carry out studies in various subjects related to the pandemic. This study is expected to contribute to the literature in terms of the link between business research and the COVID-19 pandemic. The classification of the literature between epidemic outbreaks and business research can lead to identifying several open research questions to be explored very shortly.

Earlier reviews on COVID-19 have mainly focused on business & management (Verma & Gustafsson, 2020) and dynamics of marketing (Maulana, 2020). Overall, these studies employed both qualitative and quantitative approaches with limited implications for business.

This study differs from the existing literature in the following ways: Firstly, in contrast to a study by Verma and Gustafsson (2020) that focused solely on business and management research, we provide the influential and intellectual structure literature in economics, finance, business, tourism, and government. Secondly, we collect and scrutinize a comprehensive dataset of 477 articles to draw a better and extensive picture for readers who are interesting to know the overall impact of the pandemic on all business-related fields. Thirdly, we provide researchers with comprehensive content analysis and future research agenda which is very vital part of this study to further enhance scholarly work related to pandemics and uncertainty within the broader context of the business field.

The organization of this research was the aforementioned introduction followed by section 2 which identifies in details our methodological approach, section 3 presents the results of the study (the influential actors and the network analysis), section 4 presents the content analysis and future research directions and finally, we have at section 5 the conclusion of the paper.

2. Methodology

2.1. Data selection strategy

For selecting the data, we relied on the Scopus database. It is the largest multidisciplinary database in social sciences, economics, finance and business studies and is widely used for conducting bibliometric studies (Baker et al., 2021; Donthu et al.,

Table 1. Query description.

Category	Limitation	No. of refined documents
Query outcomes before search refine		97,414
TITLE ('epidemic' OR 'COVID-19' OR 'coronavirus' OR 'corona-virus' OR 'corona virus' OR 'pandemic' OR 'outbreak' OR 'COVID-19')		
Access	Types including both open access and others.	
Years	Including only years (2020) documents (1,191)	(96,223)
Subject area	Limit the search to the following subjects:	(186)
	Business, Management, and Accounting (478)	
	Economics, Econometrics, and Finance (396)	
	Decision Sciences (68)	
	We excluded engineering, computer, medical, biology, and other subjects (186)	
Document type	Limiting the documents to articles (764) and review (82); while excluded all other resources as chapters, Note, Erratum, Books, and others. (147)	(87)
Publication stage	Final documents (519) and articles in press (327)	(0)
Source type	We kept the journals (844) and excluded trade journals (2).	(2)
Language	We excluded all languages other than English (794)	(122)
Final number refined search		794
Manual Refinement:		(317)
We reviewed the 794 documents titles and abstracts and excluded the irrelevant documents (317)		
Final remaining documents after manual refine		477

Source: Author.

2020). Scopus is considered a middle choice in terms of the rigorousness of vetting research between Web Of Science (WOS) and other databases and provides researchers with a friendly interface to extract and refine data.

The reliability of our study outcome is significantly affected by the accuracy of the queries used in collecting the data. We develop a list of all possible phrases associated with the topic, including epidemic, COVID-19, outbreak, coronavirus, and pandemic and then we combined them with keywords from business fields. Our designed query yields 97,414 documents published till the month of August 2020 which are then subject to two primary refinement processes. First, an online refinement which includes articles and reviews in English language and related to the field of business, management, accounting, economics, econometrics, finance, and decision sciences. This step excluded a bunch of related articles that were published in non-specialized journals such as journals related to the medical and clinical field. This refinement stage left us with 794 documents. In the second stage by following Paltrinieri et al. (2019) and Khan et al. (2020), we carried out a subjective refinement which helps us to confirm whether all the extracted articles are business-related. Two independent researchers conduct the in-depth and cursory examinations of each article; we only include in the sample, if the COVID-19 is discussed within the broader field of business in a non-flimsy and non-marginal way. This stage yields us 477 articles and excluded 317 irrelevant documents. Table 1 presents a detailed query description of our collection process and the remained data input for analysis.

2.2. Study approach

Our study adopts a meta-literature approach using both (quantitative) and (qualitative) aspects to provide an in-depth review of the literature. We use the bibliometric

Table 2. General description.

Description	Results
Main information about data	
Timespan	2020
Sources (Journals)	157
Documents	477
Average years from publication	0
Average citations per documents	3.91
Average citations per year per doc	3.91
References	15471
Document types	
Article	446
Review	31
Document contents	
Keywords plus (ID)	515
Author's keywords (DE)	1275
Authors	
Authors	1092
Author appearances	1213
Authors of single-authored documents	133
Authors of multi-authored documents	959
Authors collaboration	
Single-authored documents	150
Documents per author	0.43
Authors per document	2.3
Co-Authors per documents	2.55
Collaboration index	2.95

Source: Author.

Country Production
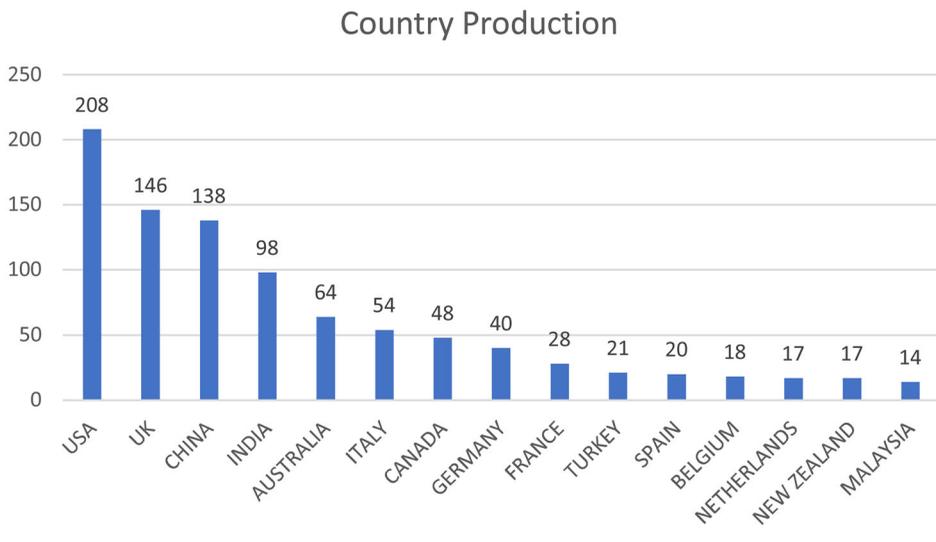
Figure 1. Most relevant countries.
Source: Author.

method to conduct citation and network analysis. Following the framework in earlier literature (Dwekat et al., 2020; Khan et al., 2020; Li & Xu, 2021; Nasir et al., 2021; Paltrinieri et al., 2019), we conduct our analysis in the following five dimensions: 1) a bibliometric citation analysis, 2) a bibliometric co-authorship analysis, 3) Keyword analysis, 4) a bibliographic coupling analysis and 5) a content analysis. To analyse the

data, we mainly use 'bibliometrix' package of RStudio which provides a user-friendly tool called biblioshiny (Nasir et al., 2021; Singh et al., 2019). We also use VOSviewer to generate network analysis and mapping graphs of the relations and connectedness of the literature (Van Eck & Waltman, 2009).

3. Results

3.1. General information and performance analysis

Table 2 presents the main features of the input data used for our analysis. This study is based on 477 documents on COVID-19 related to business disciplines which are published in 157 journals. Out of 1092 authors, only 150 articles are single-authored which emphasis the increasing trend of collaboration in scholarly work related to COVID-19 and business field. The global distribution of COVID-19 papers in business is presented in Figure 1. The research outputs of this topic are widely distributed around the countries. The United States, United Kingdom, China, India, Australia and Italy are the most influential countries that contributed to the global distributions of the publications in COVID-19 papers in business. It is worth mentioning that the

Table 3. Most relevant institutions.

No.	Affiliations	Articles
1.	The University of Manchester	47
2.	North China Electric Power University	14
3.	University of Guelph	14
4.	Sichuan University	10
5.	Southwestern University of Finance and Economics	10
6.	Texas Am University	10
7.	Renmin University of China	9
8.	University of Cambridge	8
9.	University of Hohenheim	8
10.	Csir-National Environmental Engineering Research Institute (Csir-Neeri)	7

Source: Author.

Table 4. Most relevant sources.

Rank	Journal name	No. of published articles	Total citation	Impact factor (2019)	SJR ranking (2019)	Publisher
1	Finance Research Letters	25	88	3.527	Q1	Elsevier
2	Environmental and Resource Economics	19	20	2.286	Q1	Springer
3	Canadian Journal of Agricultural Economics	18	49	0.855	Q2	Wiley
4	Emerging Markets Finance and Trade	18	12	1.214	Q1	Taylor & Francis
5	Tourism Geographies	16	68	3.159	Q1	Taylor & Francis
6	Public Administration Review	14	25	4.063	Q1	Wiley
7	Journal of Business Research	13	26	4.874	Q1	Elsevier
8	Transportation Research Interdisciplinary Perspectives	7	13	Not Defined	Not Defined	Elsevier
9	Annals of Tourism Research	6	15	5.908	Q1	Elsevier
10	Journal of Risk Research	5	13	1.931	Q1	Elsevier

Source: Author.

Most relevant authors

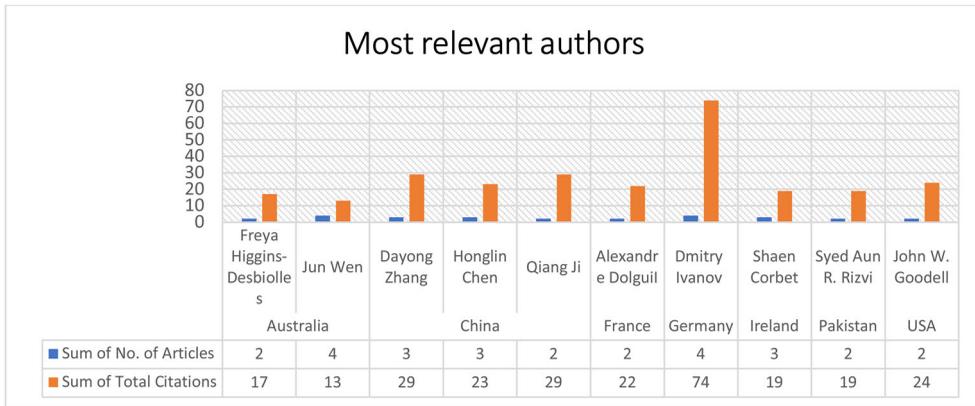|	Freya Higgins-Desbiolles	Jun Wen	Dayong Zhang	Honglin Chen	Qiang Ji	Alexandre Dolguil	Dmitry Ivanov	Shaen Corbet	Syed Aun R. Rizvi	John W. Goodell
	Australia		China			France	Germany	Ireland	Pakistan	USA
Sum of No. of Articles	2	4	3	3	2	2	4	3	2	2
Sum of Total Citations	17	13	29	23	29	22	74	19	19	24

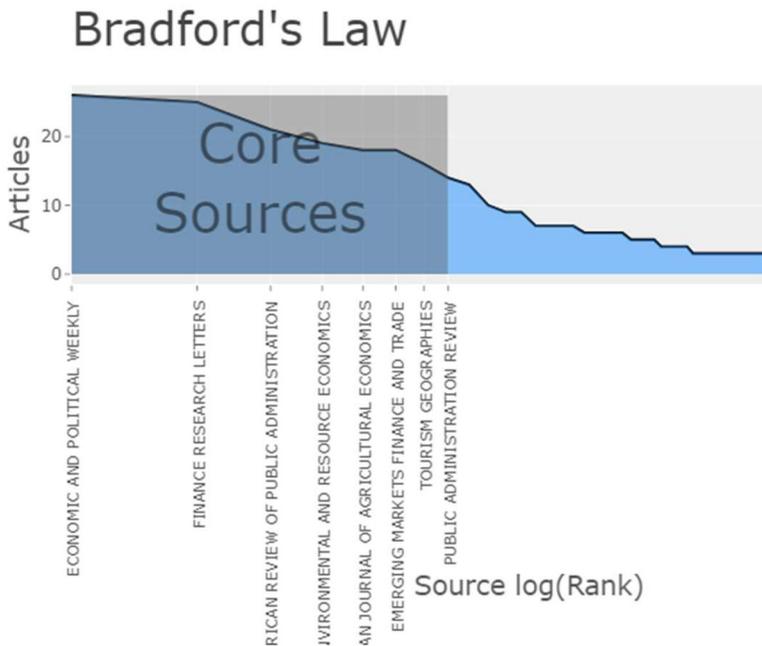**Figure 2.** Most relevant authors.
Source: Author.

Figure 3. Bradford's Law.
Source: Author.

aforementioned countries are the severely hit the COVID-19 pandemic with highest number of COVID cases in the United States and India. The average time of publication is less than a year which fairly classifies the COVID-19 research in the business field as a growing research trend (Tunger and Eulerich 2018).

Several organizations and institutions around the world have produced research in the field of COVID-19 and business. Table 3 lists the top 10 most productive institutions. The University of Manchester ranks first with 47 contributions, followed by North China Electric Power University and The University of Guelph that

Table 5. Most cited documents.

Authors	Title	Source title	Cited by
Ivanov D.	Predicting the impacts of epidemic outbreaks on global supply chains: A simulation-based analysis on the coronavirus outbreak (COVID-19/SARS-CoV-2) case	Transportation Research Part E: Logistics and Transportation Review	43
Zhang D., Hu M., Ji Q.	Financial markets under the global pandemic of COVID-19	Finance Research Letters	26
Al-Awadhi A.M., et al	Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns	Journal of Behavioral and Experimental Finance	21
Ivanov D., Dolgui A.	Viability of intertwined supply networks: extending the supply chain resilience angles towards survivability. A position paper motivated by COVID-19 outbreak	International Journal of Production Research	21
Goodell J.W.	COVID-19 and finance: Agendas for future research	Finance Research Letters	20
Ali M., Alam N., Rizvi S.A.R.	Coronavirus (COVID-19) — An epidemic or pandemic for financial markets	Journal of Behavioral and Experimental Finance	19
Kuckertz A., et al	Startups in times of crisis – A rapid response to the COVID-19 pandemic	Journal of Business Venturing Insights	18
Higgins-Desbiolles F.	Socialising tourism for social and ecological justice after COVID-19	Tourism Geographies	17
Hall C.M., Scott D., Gössling S.	Pandemics, transformations and tourism be careful what you wish for	Tourism Geographies	17
Helm D.	The Environmental Impacts of the Coronavirus	Environmental and Resource Economics	16

Source: Author.

contributed 14 publications each. Sichuan University, Southwestern University of Finance and Economics, and Texas Am University contributed equally with 10 publications. It is worth mentioning that four of the most productive institutions are based in China with a total number of published are 43.

Further, we also identify the most influential journals which will help the researchers to target these journals to publish their research. We classify the top journals based on number of published articles. Following the previous literature (Khan et al., 2020; Paltrinieri et al., 2019), we set a minimum threshold of at least five published articles and 10 citations. The results reveal that the Finance research letter is the most influential and highly cited journal with 25 published articles and received 88 citations, followed by Environmental and Resource Economics, Canadian Journal of Agricultural Economics and Emerging Markets Finance and Trade with published articles 19, 18 and 18 respectively (see Table 4).

Figure 2 categorizes the most productive and highly cited authors in the field of COVID-19 research in business. We rank the leading 10 authors based on their contributions in terms of published articles and citations. The results show that Dmitry Ivanov, who is the professor of supply chain and operations management in Berlin School of Law and Economics Germany, is the most productive author based on the
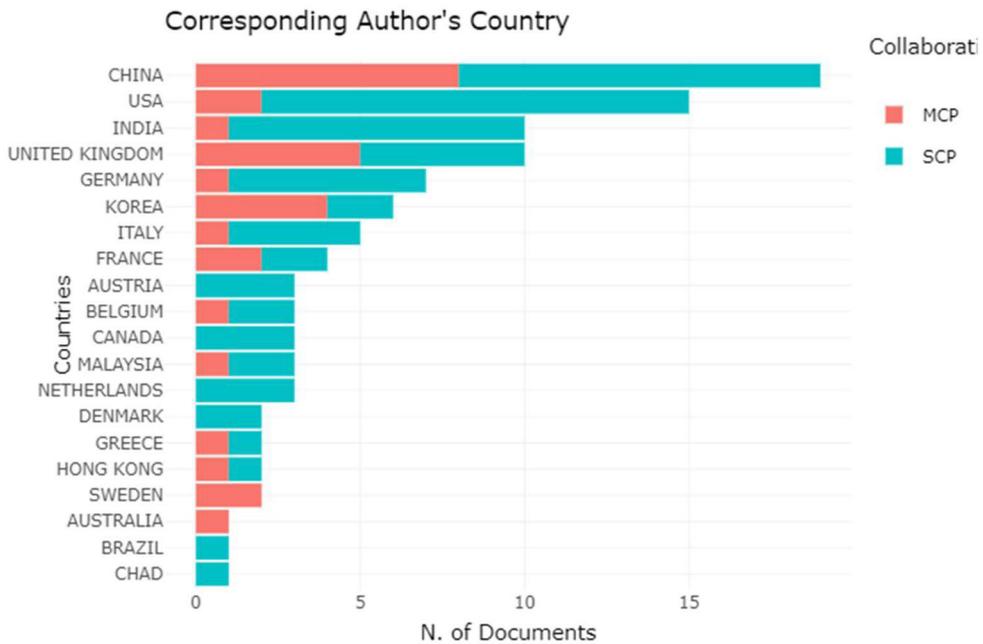
Figure 4. Most cited authors by country.
Source: Author.

number of documents and citations, followed by Jun Wen with 4 articles, Honglin Chen, Shaen Corbet and Dayong Zhang who produced 3 articles each.

3.2. Citation analysis

Figure 3 displays the results of Bradford's law analysis, indicating that a small number of journals are contributing and containing the most published papers in the field of COVID-19 research in business. The results also show a large number of journals publishing a few numbers of documents (Tunger & Eulerich 2018).

Table 5 reports the most cited documents published in the field of COVID-19 business research. Clarivate Analytics (2018a) contemplates that 'Highly Cited Papers are considered to be indicators of scientific excellence and top performance and can be used to benchmark research performance against field baselines worldwide'. This measure is important to understand the overall dynamics of literature and separate each highly cited article in relation to the literature and define a particular dimension of the literature (Merediz-Solà & Bariviera, 2019). The most cited paper authored by Ivanov (2020a, 2020b) has 43 citations so far. The paper focuses on the impact of COVID-19 on the supply chains. The next most cited papers are Zhang et al. (2020) and Al-Awadhi et al. (2020) with 26 and 21 citations respectively, both articles examined the impact of COVID-19 on stock markets. Table 6 includes the most cited 16 documents, 2 documents analysed the impact of COVID-19 on supply chains, 4 papers on finance and financial markets, 2 papers in tourism management, one paper on start-ups, and one documents on the environment.

Looking at the corresponding author countries' analysis presented in Figure 4, the analysis shows three countries produced the highest number of documents and citations in the field of COVID-19 research in business, these countries include China, the United Kingdom, and South Korea. These countries seem to devise the most influenced research on this topic.

3.3. Network analysis

3.3.1. Keywords/cartography analysis

Using VOSViewer, we apply keyword/cartography analysis to find the most repeated keywords used in the literature. This analysis further substantiates our selection criteria to search the literature on COVID-19 studies within the domain of the business field. The cartography analysis assumes that resulting keywords reflect the content of the article and eventually define the main cluster discussed with the related literature (Khan et al., 2020; Paltrinieri et al., 2019). The result in Figure 5 shows that the most repetitive keywords besides the main topic 'COVID-19' are associated with 'crisis', 'economic impact', 'crisis management', 'viral disease', 'china', 'tourism', 'resilience' and 'tourism development'. Overall the literature is evolved related to COVID-19 with its impact on economies along with early response by the governments, how it has deteriorated the tourism around the globe and contagion effect and resilience of financial markets against this health crises.
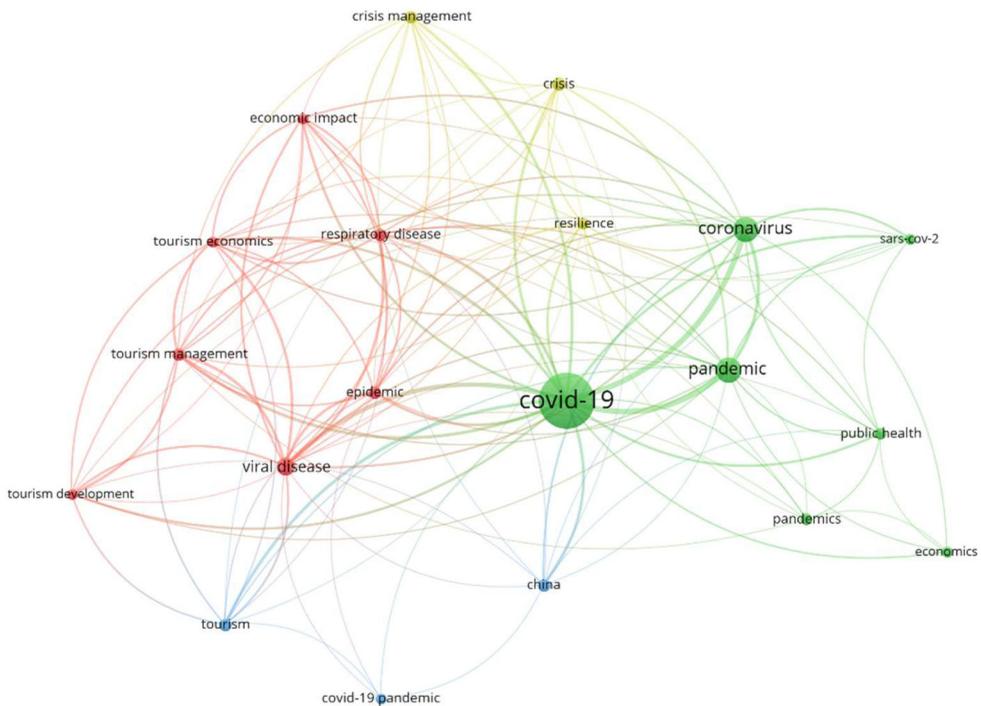

Figure 5. Keywords/cartography analysis.
Source: Author.

4. Content analysis and future research directions

4.1. Content analysis

To complement our findings (from a qualitative aspect), we conduct the following content analysis of the collected data. Specifically, this study analysed 477 documents that investigated the COVID-19 and its implication on business; this study classifies similar articles into streams and then discuss them to the benefit of researchers as presented in Figure 6.

4.1.1. Covid-19 and the global economy

In this major stream, many scholars paid vital attention to scrutinize the implications of the current pandemic on the economy. Since the beginning of 2020, the global arena is facing significant uncertainty and risks in various human being aspects. As a result, all parties, e.g., governments, international bodies and other institutions are working to measure the affected aspects in the global economy, finance, management, health, and others (Danylyshyn, 2020). Their effort extended to assess and implement proper strategies and policies to mitigate the implications of COVID 19 on the social and economic aspects. As the economy in concern in this stream, scholars carried 158 studies to investigate the consequences of COVID 19 on economics. The analysis shows that relevant research falls into three main themes: macroeconomic and micro-economic, international trade and the socio-economy and environmental economic aspects.

The first sub-stream of the literature is related to the COVID-19 impact on the macroeconomic and microeconomic levels. The literature addressed several economic challenges raised due to the COVID-19, which summed to the collapse of trade, an increase of unemployment rates and the contraction of the economic cycle (Gill, 2020; Gräbner et al., 2020; Ng, 2020; Welfens, 2020; Yotzov et al., 2020). Despite the hardness of measuring macroeconomic uncertainty in the initial stage of the current
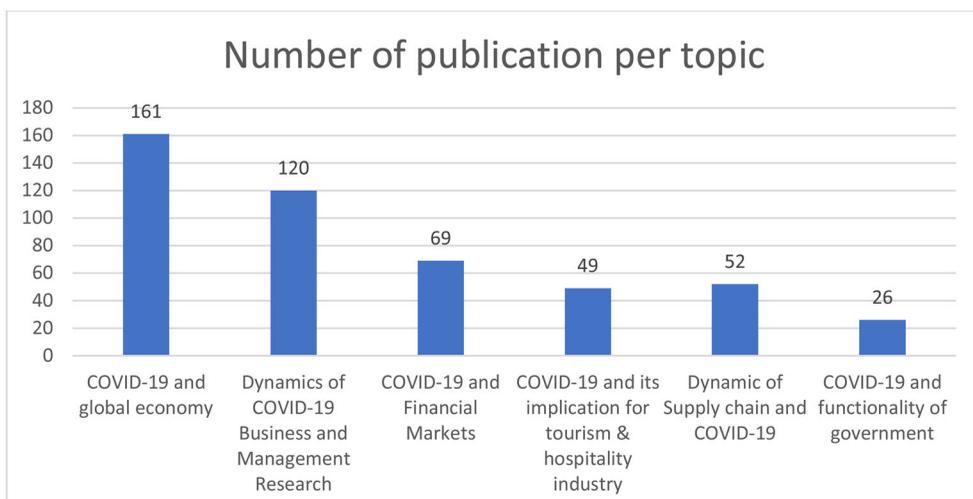

Figure 6. Number of publications per topic.
Source: Author.

pandemic, many governments started their intervention during the emergence of the crisis through controlling and monitoring the fiscal and monetary policy (Chakraborty & Thomas, 2020; Sarkodie & Owusu, 2021) while other researchers investigated the labour market and poverty rates (Deaton & Deaton, 2020; Ker, 2020; Lawley, 2020; Suryahadi et al., 2020). Few studies stated that the COVID 19 has mutual relationships with the unemployment rate, poverty rate, formal education, and housing availability rate; those variables determinants for the COVID-19 mortality rates; and on the other hand, COVID 19 increases the unemployment rate and poverty rate (Goutte et al., 2020).

The second sub-stream discussed the caused disruption by the COVID 19 on international trade (Evenett, 2020; Welfens, 2020). The researches focused on specific international trade and movement of specific items such as the meat trade (McNamara et al., 2020), agriculture import and export (Barichello, 2020; Ker & Cardwell, 2020). While other prior studies went deeper and measured the change in international trade by comparing international trade before and during the pandemic, aiming to provide a forecast for the future of international trade. The studies concluded that 'trade interconnectedness, connectivity, and density among countries after the COVID-19 outbreak' would not be the same as the situation before the pandemic, as the world witnessed a change in the structure of international trade, China trading does not significantly affect by the pandemic. Moreover, studies expected a decline in international trade to continue until the end of 2020 (Vidya & Prabheesh, 2020).

The last sub-stream is the socio-economy and environmental aspects. The literature expects to have severe socio-economy implications on the well-being of the population, showing a high possibility for the current crisis to be transformed into a sociological subject. Ozili (2020) added that policymakers should pay more effort to authorize social policies and communicate with citizens to reduce social anxiety. Hence, environmental aspects have been investigated by many researchers (e.g., Helm, 2020; Kecinski et al., 2020; López-Feldman et al., 2020) and documented in a survey that respondents remain considering the environmental aspects and climate change, even during the existing health risk. While other studies have investigated the air quality pre and during the lockdown, the outcomes reported that the air quality improved, due to the stop of vehicles, the pause of construction works reduced the dust particles (Amankwah-Amoah, 2020; Bera et al., 2021).

4.1.2. Dynamics of COVID-19 in business and management research

This stream discussed business and management during the COVID 19 in 117 studies. The COVID-19 pandemic has been designated as a black swan disaster for businesses. The high uncertainty and significant decrease in the business revenue have presented a challenge for business managers to maintain their healthy financial position and keeping their operation wheel rolling (Donthu & Gustafsson, 2020). After examining articles, we categorize the this cluster into four sub-streams i.e., 1) business management, 2) entrepreneurship and leadership, 3) consumer behaviour and 4) culture and habits.

The first sub-stream is business management; it investigated many aspects of the field. Including the capability of the business to manage the current crisis and

disaster, the potential solution to face the current difficulties and challenges (Lee et al., 2020; Miles & Shipway, 2020; Mostafanezhad, 2020; Trachsler & Jong, 2020). More detailed research has been conducted to investigate the COVID-19 implications on specific sectors such as hotels (F. Hao et al., 2020; Jiang & Wen, 2020), health care management (Fanelli et al., 2020; Marin-Garcia et al., 2020) and retail grocery (Wang et al., 2020).

The second sub-stream discussed entrepreneurship and leadership in the time of COVID-19, the main theme in this field were assessing the going concern of entrepreneurs, especially from the financing perspective and governmental support (Bacq et al., 2020; Brown & Rocha, 2020; Brown et al., 2020; Giones et al., 2020). Moreover, other studies discussed the entrepreneurship education directions and the nature of its operations (Ratten, 2020b, 2020a). The third theme navigates the role of leadership commands to guide their businesses safely from the pandemic impacts (Dirani et al., 2020; Gedro et al., 2020; Grint, 2020).

The last sub-stream navigates consumer behaviour, culture and habits during the pandemic. The virus spread, considering the health well-being, lockdown and social distancing, disrupted the consumption behaviour and habits (Sheth, 2020), this argument encouraged the researchers to investigate and explore if the old consumption habits will continue or die (Foss, 2020; Kirk & Rifkin, 2020; Soofi et al., 2020; Zwanka & Buff, 2021). More advance, a study was conducted to figure out the trend of online consumption during the pandemic and the expectation after the pandemic (N. Hao et al., 2020), this study is limited to the online grocery sector.

4.1.3. Covid-19 and financial markets

Finance is also one of the major streams, which has gained researchers' attention during the pandemic; we found 66 published articles focus on this domain. financial vulnerabilities have been documented in many studies before the COVID-19 pandemic in many economies, namely, the debt rising, weak liquidity and a decrease in credit quality. Given that, a weaker financial system is expected after the pandemic that brought the researcher to question further the implications on financing. These studies contribute to the literature on behavior of financial markets during turmoil times and we classified them into four important sub-streams, 1) the financial markets such as stock, currency and commodity markets, 2) implications of COVID-19 on the financial system, 3) financial sector position and 4) risk and uncertainty management.

The first sub-stream discussed the impact of COVID-19 on the financial markets, as the sudden and quick spread of COVID-19, caused a significant increase in the market risk and caused a huge loss for the investors in a short time (Zhang et al., 2020). On the other hand, researchers measured the price volatility, market return, and pandemic news (Albulescu, 2021; Cepoi, 2020; Harjoto et al., 2020; Huo & Qiu, 2020). Moreover, some studies discussed oil price volatility, market risk and uncertainty (Gharib et al., 2021; Mirza et al., 2020a; Rizvi et al., 2020; Salisu et al., 2020; Sharif et al., 2020) and corporate solvency (Mirza et al., 2020b). Few studies also considered Human Capital Efficiency (HCE) an important predictor of fund performance during pandemic times and found that funds with higher HCE performed better than funds which ranked lower in HCE (Mirza et al., 2020c; Yarovaya et al., 2021).

Besides, gold attracts the attention of researchers, as it is a safe investment in uncertain conditions (Corbet et al., 2020).

The second sub-stream discussed the potential of a global financial crisis, the decline in the trust of financial system participants, and in the time of COVID 19 and the uncertain economic situation, the cost of hedging cost increased significantly (Akhtaruzzaman et al., 2020; Cojoianu et al., 2020; Shehzad et al., 2020). Moreover, the economies need extraordinary assessment, measuring and control tools (Mirza et al., 2020c; Öncü, 2020).

The third sub-stream is a group of researches that discussed the impact of the COVID-19 on the financial sector, starting with the measurement of the role of banking sectors on the liquidity supplies (Flögel & Gärtner, 2020) and the banks' ability to play its role in maintaining liquidity and offer a cushion to the economic decline (Talbot & Ordonez-Ponce, 2020). Other studies investigated the possibility of the current pandemic to lead to more profit for the banking sector due to restructuring, reduce branches, and rely more on the online services in the Iran banking sector (Shahabi et al., 2020). On the other hand, a study also documented that the commercial insurance return, growth rate, insurance intensity and insurance depth decreased in China's insurance market during the pandemic (Wang et al., 2020).

The fourth sub-stream addressed risk management during the current difficult time. The first research measured the economic risk through identifying the exposure, elasticity and vulnerability of South Asia and Southeast Asia economies, the final findings proved that the economy facing high risk due to the epidemic (Noy et al., 2020). Other researchers measured the systematic and structural risk during the pandemic (Azimli, 2020; Rizwan et al., 2020).

4.1.4. Covid-19 and its implication for the tourism & hospitality industry

Researchers have also focused on the stream that measures the implication of COVID-19 on the tourism sector. The tourism stream consisted of 49 studies. Unquestionably, tourism was among the most affected sectors as the pandemic left tremendous implications on it. Tourism scholars over the world are currently digging to spot the gap of tourism, discussing the potential response, recovery and remodelling of the tourism sector. They aimed to explore and investigate the most powerful event in the 21st century in the tourism sector (Galvani et al., 2020). Precisely, a review and content analysis carried to identify the main sub-streams in the tourism field; we found that the 49 studies fall in four sub-streams that include 1) travel and mobility, 2) hospitality, 3) airlines and 4) travel behaviour.

Starting with travel and mobility, worldwide governments have utilized policies and procedures to mitigate the health cost of the COVID-19 pandemic. Mainly, they imposed containment and closure to slowdown the pandemic that offered temporary effective shields to save the health. On the other hand, lockdown significantly affected the economy and distinctly influenced the tourism and hospitality industry. In this sub-stream, the prior studies identified the current pandemic implications on travel and mobility (Choe et al., 2021; Ioannides & Gyimóthy, 2020; Qiu et al., 2020; Williams, 2021; Yang et al., 2020; Zenker & Kock, 2020). Other researchers digging deeper and aimed to find the suitable response and restructuring to the tourism

sector shock, and they stated that the current situation offers an opportunity to push and moves the industry toward transforming the shape, model and style of future tourism (Brouder, 2020; Haywood, 2020; Sheller, 2020).

The second sub-stream is hospitality; the researchers handled many dimensions concerning hospitality. The first dimension related to the workforce retains mater in the sector, and the implication of COVID-19 on the health and safety of the hospitality workforce (Sönmez et al., 2020), the ecological justice after the pandemic for the hospitality workforce (Everingham & Chassagne, 2020), and the employability of hospitality workforce taking in consideration the economic implications of COVID-19 on the sector (Baum et al., 2020). The other dimension discussed the shock in the hospitality sector due to lockdown and discussed the self-improvement to face the pandemic impact (Galvani et al., 2020; Tsionas, 2020).

The airline industry is considered as the second sub-stream of Tourism. This aims to determine the demand for airline services during the pandemic, and how it is affected by the COVID-19 pandemic (Gallego & Font, 2020; Sharma & Nicolau, 2020). While other studies discussed the response techniques to the decrease in demand during and post to the pandemic, including cutting costs, persevering, innovating and exit the market (Albers & Rundshagen, 2020; Renaud, 2020). Moreover, there is dire need to cover the gap in assessing and planning for the readiness of the airline industry to handle the COVID 19 vaccine to the world in efficient and effective manners.

The last sub-stream discussed the current and expected travel behaviour changes. The public is now focusing on their safety, well-being and distancing, which affected travel behaviour (De Vos, 2020; Li et al., 2020). The implication on travel behaviour is discussed in many countries, such as New Zealand (Carr, 2020), China (Wen et al., 2021), Netherlands (de Haas et al., 2020) and South Korea (Bae & Chang, 2021).

4.1.5. Dynamic of supply chain and COVID-19

The supply chain at the time of the current pandemic was discussed in 23 studies. Virtually all supply chain participants (i.e., manufacturers, wholesalers, retailers, and end-users) are striving to maintain a steady flow of goods and services. This stream will help the industry leaders to recognize the needed actions and adapt proper solutions to mitigate the disruption risk and enhance industry sustainability.

Specifically, researches shed light on COVID-19 and its impact on the supply chain due to the lack of cohesive consumption patterns and the sudden change in the market demand (Atkinson et al., 2020), in addition to the courtiers' border closure (Ker & Cardwell, 2020). In this study, the authors carried a comprehensive review of the mentioned articles and determined two sub-streams in the supply chain field.

The first sub-stream, namely logistics systems and supply chain disruptions, investigated and explored the impact of COVID-19 outbreaks on the logistics and supply chain sector. The researches aimed to contribute in hedging the gap between literature and actual industry practice during the pandemic and develop more resilient practice in the supply chain (Govindan et al., 2020; Ivanov, 2020a, 2020b; Sharma et al., 2020). While a structured literature review study has been carried to map the available studies that measured the impact of COVID-19 on the supply chain

(Queiroz et al., 2020). On the other hand, few researchers went further and attempted to figure out solutions to the current severe disruption in the logistics and supply chain. These solutions will enhance the ability of sector companies' survival and sustainability. Some of the recommended strategies to diversify the nature of provided service, to include local and international supply chain operation, diversify supply chain clients sectors, use of advanced technologies in the operations and coordinate with supply stakeholders to find more relevant strategies (Handfield et al., 2020; Ivanov, 2020b; Sharma et al., 2020).

The second sub-stream explored the impact of COVID-19 on transportation, air cargo, and shipping. Specifically, explored how the capacity and dynamics of the transportation and shipping sector influenced during the lockdown, especially that transportation and shipping have affected other domains, such as food security, agriculture, food industry, meat, healthcare supplies and others (Gray, 2020; Loske, 2020; Vadavalli & Subhashini, 2018). One study has been carried to measure the impact of COVID-19 on transportation in Nigeria (Mogaji, 2020), and the other one measured the fright market in Germany (Michail & Melas, 2020). Moreover, a SWOT analysis was conducted in the air cargo industry in China (Li, 2020).

4.1.6. Covid-19 and functionality of government

This stream addresses the role and functionality of government in the current pandemic. The total of published articles in the field was 46 studies. Up to date, no country spared from COVID-19 or its implications. Bearing in mind, the degree of pandemic consequences vastly differs from one country to another (Trivedi, 2020). In such situations, the intervention of the government has a significant implication. Many researchers have paid attention to measure and investigate government response efficiency. Drawing upon the related articles, we found that studies in this stream embrace three areas: governments' response, government's communication, disclosure and government intervention from the perspective of economics and financial policies.

The first sub-stream is the government response performance; worldwide governments faced a challenge to innovate a proper response to the pandemic. In general, most governments followed the same actions to combat the pandemic and reduce the cost of human life. To defeat the current outbreak, a preventive set of procedures are undertaken, such as severe travel limitation and restriction; impose lockdown, indirect and direct surveillance, mandatory mask-wearing, and social distancing procedures (Abdullah & Kim, 2020; Ghosh, 2020; Kim, 2020; Maher et al., 2020; Trivedi, 2020).

The second sub-stream navigated the governments' communication and disclosure in regards to the pandemic updates, the lack of transparency and information asymmetry negatively influenced and limits the nation's ability to efficiently respond to the pandemic (Hatcher, 2020; Polischuk & Fay, 2020; Santis, 2020). Norwegian government, for example, responded successfully to the COVID-19 pandemic spread, due to the high communication quality, and the public trust in the released information and government actions (Christensen & Laegreid, 2020).

The last sub-stream discussed government intervention in economic and financial aspects. The COVID-19 is an unprecedented event, which scrambled the world

Table 6. Future research directions.

Main streams	Sub stream		Questions	Reference
COVID-19 and global economy	Macroeconomic and microeconomic	1	Do the well-known theories applied to the COVID-19 period?	(Craighead et al., 2020)
		2	Will the pandemic shock motivate countries to produce equipment and medicine internally?	(Elliott et al., 2020)
		3	Does the use of outsourcing in the last mile service could affect customer satisfaction, business profitability?	(Ketchen & Craighead, 2020)
		4	What is the implication of contactless commerce on the economy?	(Yawson, 2020)
		5	Does the ability of advanced countries to cope with the economic crisis will increase the migrations?	(Elliott et al., 2020)
		6	Measure the impact of COVID-19 experience on the labour market.	(Yawson, 2020)
		7	Will the current shock enhance the ability of countries to combat future economic shocks?	(Elliott et al., 2020)
		8	Does the COVID-19 will lead to a decrease the labour demand?	(Queiroz et al., 2020)
		9	Does the COVID-19 will lead to a change the labour policies?	(Verma & Gustafsson, 2020)
		10	Does the COVID-19 will lead to a decrease the labour demand?	(Queiroz et al., 2020)
	International trade	11	What is the impact of COVID-19 on the economic globalization	(Goodell, 2020)
		12	Does the economic implication of COVID-19 need a political change?	(Goodell, 2020)
		13	Does the COVID-19 will lead to relocating the manufacturing firms around the world?	(Queiroz et al., 2020)
		14	Will the shipping disruption lead enforce the corporation to manufacture all their product parts in one country?	Authors' suggestion
		15	Does the COVID-19 will lead corporations to rethink in investing in low wages countries?	Authors' suggestion
		16	Does the COVID-19 will lead to a change the global trade policy?	(Verma & Gustafsson, 2020)
		17	What are the environmental implications for remote working?	(Yawson, 2020)
		18	Does COVID-19 will lead a transformation to a more socio-economic and more environmental economy?	(Elliott et al., 2020)
Dynamics of COVID-19 Business and Management Research	Business management	19	How companies can benefit from this crisis to be more innovative?	(Sigala, 2020)
		20	Explore the needed talent, competencies needed in the current period and the future.	Authors' suggestion
		21	What is the new management styles needed to manage the virtual teamwork	(Yawson, 2020)
		22	Does the COVID-19 will lead to reducing the complexity of the manufacturing process?	(Queiroz et al., 2020)

(*continued*)

Table 6. Continued.

Main streams	Sub stream		Questions	Reference
		23	Does the COVID-19 will increase the reliance of markets on the online business?	Authors' suggestion
		24	How to measure the performance of remote workers?	(Hoek, 2020)
		25	Investigate the crisis impact on the international and national sport events	(Miles & Shipway, 2020)
		26	What are the missing competencies needed for uncertain periods of leadership?	Authors' suggestion
		27	What are the valid sustainable work practices in the time of COVID-19?	(Bierema, 2020)
		28	How to manage international and national sports events during the crisis?	Authors' suggestion
		30	How can the entrepreneurial firms manage their supply chain during the crisis?	(Ketchen & Craighead, 2020)
		31	Does the disruption of the supply chain affect the entrepreneurial companies' performance?	(Ketchen & Craighead, 2020)
		32	What are the determinants of leadership success in the time of the COVID-19 pandemic?	(Goodell, 2020)
	Entrepreneurship and leadership.	33	How to trade-off between multiple pressure aspects during the crisis	(Miles & Shipway, 2020)
		34	What are the missing competencies needed for crisis leadership?	Authors' suggestion
		35	What is the impact of new customers' behaviour on pricing, promotion, and marketing strategies?	Authors' suggestion
COVID-19 and Financial Markets	Financial market (Stock, Currency, and Commodities)	36	Detailed impact of pandemics on the financial markets	(Goodell, 2020)
	Implications of COVID-19 on the financial system	37	What is the role of governments to protect financial systems	(Mascio et al., 2020)
	Financial sector position.	38	Impact of COVID-19 on banking and insurance	(Goodell, 2020)
	Risk and uncertainty management	39	How is the pension should be managed in the crisis periods	Authors' suggestion
COVID-19 and its implication for tourism & hospitality industry	Travel and mobility	40	Does the tourism sector benefited from the current pandemic and enhanced their ability to face the future effectively?	Authors' suggestion
		41	Measure the impact of expected economic recession on the tourism demand	(Sigala, 2020)
	Hospitality	42	How is the booking and cancelation policies affect the tourism trend and tourists' attitude	Authors' suggestion
		43	What are the actions and proper reactions to COVID-19 in the tourism sector?	Authors' suggestion

Table 6. Continued.

Main streams	Sub stream		Questions	Reference
	Airlines	44	What is the impact of new customer behaviour on the booking patterns?	Authors' suggestion
	Travel behaviour	45	What is the impact of crisis news on the tourists' attitudes and behaviour?	Authors' suggestion
		46	What are the satisfaction determinants of tourists in the time of COVID-19	Authors' suggestion
		47	What are the efficient communication methods during the pandemic to avoid reputational risk?	Authors' suggestion
		48	How is the booking and cancelation policies affect the tourism trend and tourists' attitude	Authors' suggestion
		49	What is the impact of government communication on tourism?	(Sigala, 2020)
		50	Examining the tourism stakeholders (behaviour, emotional, ideological, and cognitive).	(Sigala, 2020)
Dynamic of Supply chain and COVID-19	logistics systems and supply chain disruptions	51	Identify supply chain risk challenges	(Hoek, 2020)
		52	Explore ways to improve current technologies or develop new technologies in the supply chain?	Authors' suggestion
		53	How can technology participate in creating a sustainable supply chain?	(Bierema, 2020)
		54	What are the needed resources and capabilities to build an automation supply chain	(Hoek, 2020)
		55	What are the factors to create a more sustainable supply chain?	Authors' suggestion
		56	Investigates proper tools and actions to mitigate the risk in the supply chain	(Hoek, 2020)
	Transportation, air cargo, and shipping	57	Fill the gap between academic research and industry practice in the disruption period.	Authors' suggestion
COVID-19 and functionality of government	Government response performance.	58	Do the governments now able to respond to the future crisis more efficiently?	Authors' suggestion
		59	Measure the cost and benefits of regulation and policies authorized during COVID-19.	(Yawson, 2020)
		60	Does the COVID-19 will lead to a change in the policies and authoritative around the world?	Authors' suggestion
	Government communication and disclosure.	61	What is the impact of government communication on the level of disclosure?	Authors' suggestion
	Government intervention in economic and financial aspects	62	To what extent government economic intervention useful in financial aspects?	Authors' suggestion

Source: Author.

governments to execute emergency actions, such as lockdown and stay at home, which negatively affected the country's economy and financial position of the business (König & Winkler, 2020). This stream have focused on the actions, which have

been deployed to reduce the pandemic economic cost and stabilize the economy, researches indicate many actions, such as business support packages, unemployment compensations, low-interest loans, and institutional grants (Ashraf, 2020; Dong & Lu, 2020; Fong et al., 2021; König & Winkler, 2020; Park & Maher, 2020; Wilson et al., 2020; Zaremba et al., 2020).

5. Future research directions

Both the bibliometric analysis and content analysis play a crucial role in identifying the main directions of new research along with suggested future research questions for each stream of the literature (Khan et al., 2020; Paltrinieri et al., 2019). The future research questions in Table 6 will be helpful for researchers even after this outbreak ends, as it can be utilized and useful for studies about similar situations and for economic planning for crises and confronting global risks.

Although the COVID-19 virus is an unwelcomed visitor, it reminds us that pandemics, like any other unusual hazards, happened in the past and will happen in the future. We cannot prevent or stop such disasters, but still, we can collaborate to mitigate their consequences on civilization. This study contributes to the body of knowledge by inspiring scholars for future research agenda to advance a responsible measurement, investigation, and to address outbreak-related concerns. Furthermore, taking the outcome of this work into account, further studies can build solid and clear outcomes that enable us to reduce the uncertainty of current pandemic consequences and equip society for future hazards.

6. Conclusion

Globally, the COVID-19 outbreak is crushing all work of life. Although the newly imposed regulations were undertaken by governments worldwide to protect societies, the pandemic consequences impacted both the public and private sectors across all nations; the business sector was the most severely affected.

This study sought to identify the worldwide research trends of this disease on the business fields from a bibliometric perspective. The impact of COVID-19 is seen in different sectors. This study conducted a content analysis to investigate the published research into the area of COVID-19 implication on business. The content analysis is driven by bibliometric analysis and accompanied by presenting the agenda for advancing and inspire future research. The outcome of the study revealed mainly six streams 1) COVID-19 and global economy, 2) Dynamics of COVID-19 business and management research, 3) COVID-19 and financial markets, 4) COVID-19 and its implication for tourism & hospitality industry, 5) Dynamic of supply chain and COVID-19 and 6) COVID-19 and functionality of government. The first stream discussed the sub-streams such as macroeconomic and microeconomic, international trade, socio-economy, and environment aspects and identified the challenges such as the increase in the unemployment rate and reduced economic cycle. The second stream highlighted that the high uncertainty and significant decrease in the business revenue present a challenge for all sectors as well as business management,

entrepreneurship and leadership, consumer behaviour, culture, and habits. The stream of COVID-19 and financial Markets identified the impact of COVID-19 on financial markets to understand the risk-return spillover between different markets along with the behavior of investors to find a safe haven. In the fourth stream, tourism scholars are currently digging to spot the gap in tourism, discussing the potential response and the transformation of the tourism sector. The Dynamic of Supply chain and COVID-19 stream attempt to realize and articulate solutions to the challenges facing the supply chain sector. Lastly, COVID-19 and functionality of the government stream exhibit that no country spared from COVID-19 or its implications. Bearing in mind, the degree of pandemic consequences vastly differs from one country to another.

Moreover, we also present the major research gaps and future research direction which strengthen the scholarly work and develop the literature on pandemic and business field. Similarly, this study is helpful for major stakeholders including policy-makers to provide them with the behaviour of economic agents along with their impact on economies and help them to formulate the policies in the future to surmount the impact of COVID-19 or similar sort of natural disaster.

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Note

1. https://covid19.who.int/

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