Economic Growth And Development During COVID-19: A Bibliometric Analysis

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Abstract

To make the bibliometric analysis (most-cited documents, authors, institutions, countries, sources, and most-used keywords) of economic growth and development during COVID-19. A total of 523 documents have been finally shortlisted for the bibliometric analysis after applying suitable filters like time (2020 to July 2021) and subject area (Economics, Business, and Social Sciences). We carried out empirical analysis and data network visualization on the selected literature, which included authors, journals, countries, research institutions, and citations using computer software such as Biblioshiny, VOSviewer, and Microsoft Excel. It is found that X. Zhang, Russian Academy of Sciences, United States, and Sustainability (Switzerland), was the most top productive authors, institutions, country, and sources, respectively. In terms of citations, S.A. Sarkodie, United Kingdom, and Sustainability (Switzerland) were the most influential authors, countries, and sources, respectively. The United States and the United Kingdom were the most co-authorship

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country and bibliographic couples. Out of 2691 all keywords and 1765 authors keywords, the most occurred keywords were COVID-19, economic growth, economic development.

Keywords: Bibliometric analysis, COVID-19, Economic growth, Economic development, VOS viewer, Biblioshiny

Introduction

The rapid spread of the pandemic forced nations to adopt full or partial lockdowns. However, the suspension of the economic activity and public movement adversely affected the country's economic health. Almost all countries witnessed a sharp fall in GDP accompanied by rising unemployment and poverty. The global supply chain networks and the international market collapsed. Unfortunately, few macroeconomic policies were in place to address the crisis (Al-Zaman, 2021; Dev Mahendra & Sengupta, 2020). Consequently, researchers from all over the world prioritized their work on COVID-19-related issues. The number of COVID -19 related publications rose exponentially surpassing 177616 in the Scopus database alone. Recently, researchers use a bibliometric method to systematically organize a huge corpus such as this. A wide range of studies in various disciplines, including business, economic and social sciences (Al-Zaman, 2021; Aristovnik et al., 2020; Handoko, 2021; Rusydiana, 2021), engineering (Belter & Seidel, 2013), and medical sciences (Hao et al., 2018), have published bibliometric works. However, a bibliometric analysis of economic growth and development during COVID-19 is still lacking. We intend to overcome this lacuna by thoroughly analyzing the scientific works dealing with COVID-19.

Specifically, our study intends to investigate the following research questions (R.Q.); RQ1: What are the most frequently cited articles on COVID-19 and economic growth and development? RQ2: Who are the leading authors on COVID-19 and economic growth and development-related issues? RQ3: Which frontier journals have published the most scientific works related to economic growth and development during COVID-19? RQ4: Which are the leading academic outlets (journals), institutions, and countries commonly associated with COVID-19 and economic growth and development? RQ5: What are the emerging keywords and future research themes on COVID-19 and economic growth and development? The contributions of the paper are manifold. First, it is the systemic arrangement of the exponentially growing literature. Second, the study has facilitated future collaborations among the scientific community by highlighting the prominent authors, affiliating institutions, and countries. Third, the paper has revealed the most frequently studied and understudied issues related to COVID-19and economic growth and development.

Methods

Figure 1 presents the data collection process. We preferred the Scopus database, the largest multidisciplinary database of peer-reviewed literature in social science research, was used to access the bibliographic data used in this study (Bartol et al., 2014; Donthu et al., 2020; Norris &

Oppenheim, 2007)(Bartol et al., 2014; Donthu et al., 2020; Norris & Oppenheim, 2007). Scopus is well-known and frequently used for quantitative analyses (Castillo-Vergara et al., 2018; Donthu et al., 2020, 2021; Martínez-López et al., 2018). The bibliographic data from the Scopus database was extracted on August 3rd, 2021. On the Scopus web page, the keywords ("COVID-19" OR "Coronavirus" or "Novel coronavirus" or "covid-19 disease") and ("Economic growth" or "Economic Development") were used in the title, abstract, and author keywords. The initial search yielded 928 papers (articles, reviews, conference papers, book chapters, editorials, short surveys, and books). A total of 523 documents have been finally shortlisted for the bibliometric analysis after applying suitable filters like time (2020 to July 2021) and subject area (Economics, Business, and Social Sciences). Before beginning the analysis, we spend a considerable amount of time and effort cleaning the corpus to make it free from errors. The process included removing blank cells, editing the keywords and institution names marked twice, and identifying the authors against unique IDs. We used Biblioshiny (Aria & Cuccurullo, 2017) and VOS viewer (Van Eck & Waltman, 2019), and Microsoft Excel for analyzing the corpus.

Figure.1 Flow chart of sampling Design
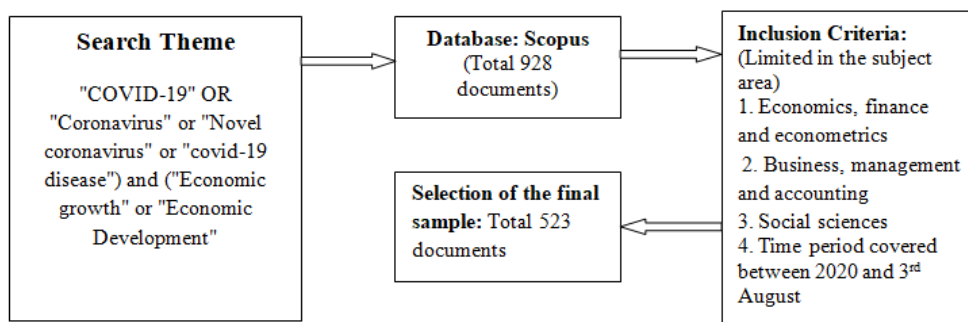
3. Results and Discussion

3.1 Summary

Table 1 shows the summary statistics of the bibliographic corpus. Seven types of published documents were found in the Scopus database, consisting of 523, spread through 333 sources with an average citation of 2.02. Among them, articles have the highest share (n=444, 85 percent), followed by reviews and conference papers with 11 each. The documents have 1414 total authors: 128 single-authored and 1286 multiple-authors, with a collaboration index of 3.4.

Table 1 Main information of documents

Description	Results	Authors information	No.	Documents type	No.
Sources (Journals, Books, etc)	333	Author	141 4	article	20 3

Documents	523	Author appearances	1483	article in press	40
Average years of publication	0.418	Authors of single-authored	128	book chapter	3
Average citations per document	2.029	Authors of multi-authored	1286	conference paper	11
Average citations per year per documents	1.371	Authors Collaboration		editorial	3
References	12062	Single-authored documents	144	final	241
		Documents per Author	0.369	note	9
		Authors per Document	2.71	review	11
		Co-Authors per Documents	2.84	short survey	1
		Collaboration Index	3.4	Keywords Plus (ID)	1153
				Author's Keywords (DE)	1743

Source: The Authors calculation through R software

3.2 Top cited documents

Table 2 lists the ten most-cited documents on COVID-19 and economic growth and development. The Economic Impact of the Coronavirus 2019 (Covid-2019): Implications for the Mining Industry (Laing, 2020), published in the journal Extractive Industries and Society, was the most cited article with 67 citations. Prideaux et al [17], Ibn-Mohammed et al [18], and van Barneveld et al [19] follow, with citations of 54, 48, and 45, respectively. However, it is intuitive that the citations of the listed documents may increase in the future.

Table 2 top-cited papers on Covid-19 and Economic Development

Authors	Title of the paper	Journal	TC
Laing (Laing, 2020)	The economic impact of the Coronavirus 2019 (Covid-2019): Implications for the mining industry	Extractive Industries and Society	67
(Prideaux et al., 2020)	Lessons from COVID-19 can prepare global tourism for the economic transformation needed to combat climate change	Tourism Geographies	54

(Ibn-Mohammed et al., 2021)	A critical review of the impacts of COVID-19 on the global economy and ecosystems and opportunities for circular economy strategies	Resources, Conservation and Recycling	48
Van Barneveld et al (van Barneveld et al., 2020)	The COVID-19 pandemic: Lessons on building more equal and sustainable societies	Economic and Labour Relations Review	45
(Everingham & Chassagne, 2020)	Post COVID-19 ecological and social reset: moving away from capitalist growth models towards tourism as Buen Vivir	Tourism Geographies	28
(Adamo, 2020)	How do you see infrastructure? Green energy to provide economic growth after COVID-19	Sustainability (Switzerland)	26
Leach et al.,(Leach et al., 2021)	Post-pandemic transformations: How and why COVID-19 requires us to rethink development	World Development	25
(Bahn et al., 2020)	A feminist perspective on COVID-19 and the value of care work globally	Gender, Work, and Organization	25
(del Rio-Chanona et al., 2020)	Supply and demand shocks in the COVID-19 pandemic: An industry and occupation perspective	Oxford Review of Economic Policy	25
(Zhang et al., 2020)	Impact of COVID-19 on China's macro economy and agri-food system â€ "an economy-wide multiplier model analysis	China Agricultural Economic Review	23

Note: Only the first authors' names and references are given in the bracket.

3.3 Top authors, institutions, counters, and sources

Table 3 shows the top ten authors, institutions, counters, and sources based on the total number of publications between 2020 and August 3rd, 2021. X. Zhang, affiliated with Tsinghua University, leads with five published documents, followed by Zhang Y. with four publications from the Institute of Economics in China, and Lee k. with three from Seoul National University. Similarly, with 23 publications, the Russian Academy of Sciences was the most productive institution, followed by Financial University (n=11), National Research University Higher School of Economics (n=8), University of Cambridge (n=8), and Chinese Academy of Sciences (n=7). When

it comes most productive country, the United States was the top (n=68), followed by China, Russia, the United Kingdom, Australia with a total number of documents 67, 59, 55, and 24, respectively. Apart from these, Sustainability (Switzerland) became the most abundant source (Journals), with a total of 54 publications, followed by the Economic Outlook (n=9), World Economy and International Relations (n=9), and Economic Annals Xxi (n=5).

Table 3 Most productive authors, institutions, countries, and sources based on publications

Rank	Author	TP	Institutions	TP	Country	TP	Sources	TP
1	Zhang X.	5	Russian Academy of Sciences	23	United States	68	Sustainability (Switzerland)	54
2	Zhang Y.	4	Financial University	11	China	67	Economic Outlook	9
3	Lee K.	3	National Research University Higher School of Economics	8	Russian Federation	59	World Economy And International Relations	9
4	Sarkodie S.A.	3	University of Cambridge	8	United Kingdom	55	Economic Annals-Xxi	5
5	Yu Z.	3	Chinese Academy of Sciences	7	Australia	24	Environmental And Resource Economics	5
6	Aganbegyan A.G.	2	Russian Presidential Academy of National Economy and Public Administration	7	Spain	24	The Lancet Planetary Health	5
7	Ahmad F.	2	University of Chinese Academy of Sciences	6	India	23	Voprosy Ekonomiki	5
9	Ahmed M.Y.	2	Institute of Geographical Sciences and Natural Resources Research Chinese Academy of Sciences	6	Canada	20	World Development	5
9	Báger G.	2	Universiti Teknologi MARA	5	Italy	20	Bulletin Of Indonesian Economic Studies	4
10	Cao Y.	2	Harvard University	5	Germany	18	Canadian Journal Of	4

									Development Studies	

Note: TP=Total Publication up to August 3rd, 2021

3.4 Top cited authors, countries, and sources

Table 4 displays the top ten most influential authors, countries, and sources based on the total citations between 2020 and August 3rd, 2021. With the 26 total citations, Sarkodie S. A. from the Nord University Business School ranked one, followed by Zhang Y. (n=24) from the Institute of Economics, Owusu P. A. (n=24) from the Nord University Zhang X. from Tsinghua University with 22 citations. On the other hand, the United Kingdom was the most influential country with a total of 237 citations, followed by Australia (n=159), the United States (n=156), China (n=107), and Italy (n=103). Finally, in terms of journals, Sustainability (Switzerland) received the most citations (102), followed by Tourism Geographies (n=82), Extractive Industries and Society (n=67), Resource, Conservation and Recycling (n=55), and Economic Labour and Relations Review (n=46).

Table 4 most influential authors, countries and sources based citations

Rank	Authors	TC	Country	TC	Sources	TC
1	Sarkodie S.A.	26	United Kingdom	237	Sustainability (Switzerland)	102
2	Zhang Y.	24	Australia	159	Tourism Geographies	82
3	Owusu P.A.	24	United States	156	Extractive Industries And Society	67
4	Zhang X.	22	China	107	Resources, Conservation And Recycling	55
5	Chen Z.	22	Italy	103	Environmental And Resource Economics	47
6	Sergi B.S.	15	Nigeria	57	Economic And Labour Relations Review	46
7	Zhang F.	8	Malaysia	53	World Development	44
9	Zhang S.	6	Russian Federation	51	Environment, Development And Sustainability	32
9	Yu Z.	5	Spain	48	Journal Of Cleaner Production	28
10	Pelizzo R.	5	Canada	43	Gender, Work And Organization	25

Note: TC=Total Citation up to August 3rd, 2021

3.5 Visualization analysis of data with VOS viewer and Biblioshiny

Figure 2 depicts the co-authorship of authors' affiliated countries, with a minimum of five documents from each country between 2020 and August 3rd, 2021. Out of 108 nations, 37 met the

threshold criteria. These nations are scattered across the six clusters, as indicated by the different colors in the Figure. The larger the node size, the greater the total link strength, showing the strongest collaborative network with researchers from other countries. With 26 links and 69 total links, the United Kingdom (U.K.) had the most collaborative work with the others, followed by the United States (U.S.) (n=25, 56), China (n=25, 53), Germany (n=18, 31), Spain (n=17, 28), and Australia (n=13, 24).
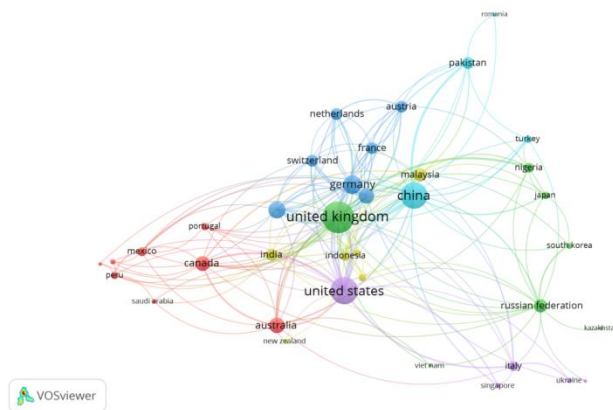
Figure 2. Co-authorship of the country with at least a minimum of five documents of a country. This graph is created with VOS viewer software.

Bibliographic coupling occurs between two countries when authors from country X and Y cite the same document in their paper from country Z. Fig. 3 depicts the bibliographic coupling of authors' affiliated countries, with a minimum of five documents and ten citations between 2020 and August 3rd, 2021. However, 27 met the threshold out of 108 countries, and it spread to six clusters in different colors. With 25 links, and 2543 total link strength, UK leads the category, followed by the US (n= 25, 1924) China (n=23, 1838), Malaysia (n=20, 1249), Australia (n=21, 926), Canada (n=19, 917), and Italy (n=16, 905).
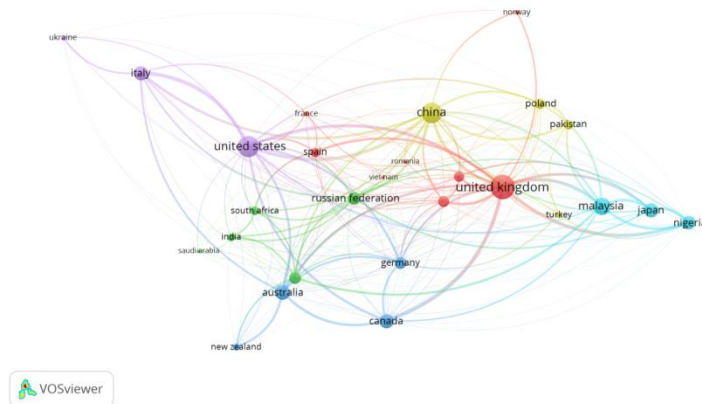
Figure 3. Bibliographic coupling of the country with at least five documents and 10 citations on each country. This graph is created with VOS viewer software.

Figure 4 depicts the visualization of authors' keywords with a minimum of four co-occurrences. 60 out of 1765 keywords met the criteria with 306 links and 559 total link strength. COVID-19 (n=207), economic growth (n=52), pandemic (n=37), Covid-19 pandemic (n=28), economic development (n=26), and coronavirus (n=19) have the most frequent occurrences. Besides, there are seven clusters with different colors: cluster 1 (red color with 13 keywords), cluster 2 (green with ten keywords), cluster 3 (blue with ten keywords), and cluster 4 (yellow with eight keywords), and cluster 5 (pink with eight keywords), and cluster 6 (light blue with six keywords), and cluster 7 (orange with five keywords) has also been identified.

Similarly, the analysis of all keywords, with the threshold of minimum occurrences' of five keywords, 109 out of 2691 all keywords met the criteria, with 1706 links and 3631 total link strength, as shown in Figure 4. COVID-19 (n=248), economic growth (n=103), economic development (n=76), coronavirus (n=48), pandemic (n=48), sustainability (n=40), epidemic (n=35), and viral disease (n=35) are the most frequently repeated words, as shown in Figure 5. Moreover, Fig. 5 splits all keywords into six clusters, as indicated by the different colors: cluster 1 (red color with 28 keywords), cluster 2 (green with 24 keywords), cluster 3 (blue with 22 keywords), and cluster 4 (yellow with 15 keywords), and cluster 5 (orange with 11 keywords), and cluster 6. (Light blue with nine keywords).
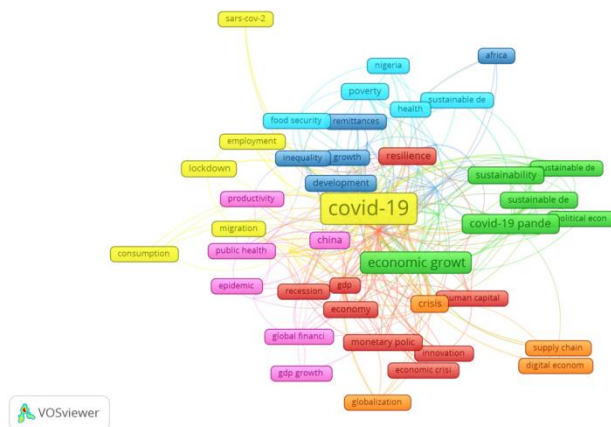

Figure 4. Visualization of authors' keywords with at least four times occurrences. This graph is created with VOS viewer software.

Figure 5. Visualization of all keywords with at least five times occurrences. This graph is created with VOS viewer software.

Figure 6 presents the bibliographic corpus's thematic map based on the author keywords' density and centrality. The map is divided into four quadrants: upper right (motor themes), upper left (niche theme), lower right (basic theme), and lower left (emerging or declining theme). Business, economic sustainability, environmental sustainability, economic recovery, economic policy, and global economy are among the research topics represented in the upper left quadrant of the Figure, with a high density and low centrality. Since it is located in the left upper quadrant, it can be advanced further for future research. Besides this, the lower quadrant (basic theme or general research topics) contains covid-19, economic crisis, economic growth, economic development, and china, with high centrality and low density.

On the contrary, no topic is found in the upper right and lower left quadrant. Still, interestingly, issues like resilience, development, and poverty are in the center of the Figure 6, which has low density and centrality, have been used frequently. However, it still has room to grow in the upper quadrants.

Figure.6. A thematic map is based on the relevance and development degree of the author's keywords. This graph is created by Biblioshiny software.

As shown in Figure 4 and 5, the occurrences of the authors' keywords and all keywords are divided into seven and six clusters, respectively. COVID-19 was the most frequently occurring word in both authors' keywords and all keywords, followed by economic growth, pandemic, Covid-19 pandemic, economic development (authors' keywords), and economic growth, economic development, pandemic, and sustainability (all keywords). Apart from this, other keywords that are critical in dealing with the world's current economic situation were displayed (shown in Figures 4 & 5). Meanwhile, Figure 6 shows that future research should focus on economic and environmental sustainability, economic recovery, policy, and the global economy, as these are located in the Figure's upper left quadrant.

Conclusion

This is the first study to propose a bibliometric analysis on COVID-19 and economic growth and development. A total of 523 documents have been finally shortlisted for the bibliometric analysis after applying suitable filters like time (2020 to July 2021) and subject area (Economics, Business, and Social Sciences). We carried out empirical analysis and data network visualization on the selected literature, which included authors, journals, countries, research institutions, and citations using computer software such as Biblioshiny, VOS viewer, and Microsoft Excel. The most productive authors, institutions, countries, and sources were found to be X. Zhang, Russian Academy of Sciences, United States, and Sustainability (Switzerland), respectively. S.A.Sarkodie, the United Kingdom, and Sustainability (Switzerland) were the most influential authors, countries, and sources, respectively, in terms of citations. The United States and the United Kingdom had the highest number of co-authorships and bibliographic pairs. COVID-19, economic growth, and economic development were the most frequently used keywords out of 2691 total keywords and 1765 author keywords. Furthermore, the country's bibliographic coupling and co-authorship have provided some notions about the country to these literary works. This study has two significant constraints; first, it is limited to economics, business, and social sciences. Secondly, it was based solely on the Scopus database; however, if the Web of Science database had also been used, there is a chance that some new insights would have emerged.

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