



COVID IMPACT ON BANKING INDUSTRY: RESEARCH MAPPING USING R

Evania Herindar¹, Aam Slamet Rusydiana²

¹ Faculty of Islamic Economics and Business of IAI Tazkia, Indonesia

herindarevania@gmail.com

² Sharia Economics Applied Research & Training (SMART) Indonesia

aamsmart@gmail.com

Abstract: Introduction/Main Objectives: This study intends to evaluate literature studies and determine the evolution of research pertaining to the impact of Covid-19 on the banking industry by examining 121 documents from the Scopus database, including journals, book chapters, conference papers, and reviews. **Background of Problems:** The COVID-19 pandemic not only produces a crisis but also has the potential to alter the structure of the global economy, thereby influencing the banking industry and financial system. **Novelty:** Conduct a comprehensive literature review by identifying the presence of GAP in research, as well as to assist future researchers in determining the development of research and in exploring further research on the impact of Covid-19 on the banking industry. **Research Method :** This research employs R-studio and biblioshiny software for text analysis. **Findings/Result:** The findings indicate that the COVID-19 pandemic has an impact on the banking business, which can be both a threat and an opportunity. In addition, this study includes a summary of the keywords that frequently appear in this topic and a summary of the most pertinent word analysis, word treemap, co-occurrence network, thematic map, and conceptual structure. **Conclusion:** Our findings inform regulatory authorities concerned with enhancing the financial stability of the banking sector to enhance their policies and banking practitioners to seek innovative tactics to compel banks to

better align themselves with risks during the COVID-19 pandemic. In addition, this study reveals the existence of research gaps in order to provide future researchers with useful information.

Keywords: Covid, *Banking Industry*, *Bibliometrics*, *R*

INTRODUCTION

The COVID-19 pandemic results in a health crisis and has the potential to alter the global economic order. All economic actors (consumers, suppliers, financial intermediaries, etc.) face unprecedented crises as the coronavirus spreads (Carnevale and Hatak, 2020). In addition, the impact of this pandemic created economic crises and even recessions in numerous countries (Wu & Olson, 2020) and rattled the worldwide financial system, which had an effect on the stability of the banking sector's financial system.

Government measures to prevent the spread of the Covid-19 virus, such as social isolation, quarantine, and national lockdowns, have affected all sectors and brought unavoidable social and economic implications, resulting in unprecedented multidimensional conflicts around the globe. The stock market, the business sector, the health care industry, society, and individuals (Narayan et al., 2021). In addition, the financial industry is vulnerable to the effects of the Covid-19 pandemic (Wojcik and Ioannou, 2020) because the majority of economic activities are conducted via this sector, either directly or indirectly (Banna et al., 2020). Moreover, the standstill of economic activity creates worries over the banking sector's ability to continue performing its intermediate function (Beck, 2020; Cecchetti and

Schoenholtz, 2020), with changes in capital, assets, and liabilities increasing the danger of bank instability.

During the chaos caused by the Covid-19 pandemic, financial institutions such as banks were directly impacted, necessitating that they be prepared to confront the difficulties of a very challenging and diversified future. The spread of this virus has disrupted banking operations in numerous nations and prompted a cautious response from depositors (Sharma et al., 2020). The systemic impact also affects borrowers' ability to repay loans, consumer behavior, regulatory and supervisory requirements, and operational resilience. Moreover, study conducted by Disemadi and Shaleh (2020) indicates that the Covid-19 epidemic has impacted financial ability, particularly among debtors. These debtors' poor performance will enhance the possibility for credit risk. It will impair banking performance stability. Over the resiliency of banking operations, banks may face potential fraudulent claims from clients regarding access to support programs, cyber-attacks, data security issues, and money laundering activities (Lewis, 2020)

Both conventional and Islamic banks face the challenges of the COVID-19 pandemic in the financial sector (Disemadi & Salih, 2020; Mardhiyaturrositaningsih & Mahfudz, 2020). These obstacles can be both a threat and an opportunity for Indonesian banking performance. It is considered a threat since banks will face a number of potential hazards, including the risk of bad credit, the risk of asset depreciation, and market risk. It will damage bank profitability and performance (Wahyudi, 2020). In Islamic banking, it is also susceptible to increased credit and financing failures, as the real sector has witnessed a

reduction in income as a result of sales disruptions (Hadiwardoyo, 2020).

Ratnovski et al. (2020) attribute the increase in systemic risk vulnerability of the banking system to three factors. First, liquidity risk as a result of the economic slowdown, financial resilience, and restricted access to the capital market as a result of possible credit rating downgrades. Second, the loss of intermediation revenue resulting from regulatory and legislative actions, such as delays in loan payments and the availability of loans with extremely low interest rates. While these steps reduce the likelihood of default, a substantial increase in nonperforming loans is inevitable.

The durability of a nation's financial system is correlated with economic vigor and expansion. The dynamic expansion of the banking industry is a determinant of economic growth. If the financial sector declines, the economy will likewise decline. Therefore, to preserve economic stability, banks must conduct everyday activities (McKibbin and Fernando, 2020). To repair the banking system during the COVID-19 epidemic, the government and regulators must also play a role and take smart initiatives. The actions that can be implemented for the time being are providing governmental guarantees for bank loans and instituting a payment moratorium. Both government-guaranteed loans and loans subject to a suspension on payments have a risk-reducing effect on bank capital, which regulators should acknowledge (BCBS, 2020). The Government of Indonesia has published Law Number 2 of 2020 pertaining to State Financial Policy and Financial System Stability for Handling the Corona Virus Disease (Covid-19) Pandemic.

Along with the development of research relating to the impact of the coronavirus on the global banking industry and supported by the advancement of science, which is frequently associated with scientific productivity, i.e., the capacity to produce scientific publications, there has been an increase in scientific productivity (Franceschet and Costantini, 2011). This is a very interesting topic for academics to conduct additional research on in order to provide information and recommendations to the parties involved, particularly the Government and regulators, in order for them to take the necessary steps to combat the impact of the Covid-19 pandemic on the banking industry. Using text analysis to provide an overview of the most pertinent word analysis, word treemaps, co-occurrence networks, thematic maps, and conceptual structures connected to the research theme is one technique to evaluate these scientific papers. On the basis of this context, the purpose of this study is to conduct a comprehensive literature review by identifying the presence of GAP in research, as well as to assist future researchers in determining the development of research and in exploring further research on the impact of Covid-19 on the banking industry. In addition, this research describes the impact of the COVID-19 pandemic on the banking industry based on previous research and provides recommendations to the Government and regulators so they can implement policies and strategic measures to mitigate the negative effects of Covid-19 on the banking industry.

LITERATURE REVIEW

Repercussions of the Covid-19 Pandemic on the Banking Industry

The Covid-19 pandemic has impacted the economy, with direct and indirect economic effects in multiple nations and numerous industries. International organizations and banks have been compelled to reduce their growth projections due to the outbreak (Sharma, Leung, Kingshott, Davcik, and Cardinali, 2020). Especially in the banking sector, financial institutions are susceptible to foreign and domestic economic shocks (Fu et al., 2014; Montgomery, Harimaya, and Takahashi, 2014). As a result, banks are currently exposed to a high level of risk as a result of the effects of Covid-19; for instance, banks globally may face increased credit risk and default due to cash management and insolvency issues in paying debts as a result of a large number of business closures, lockdowns, and increased demand for goods. And diminished services during the pandemic as well as afterward. Moreover, bank lending rates have decreased as private sector investment and consumption have declined.

Beck (2020) noted that the impact of the Covid-19 epidemic will rely on three factors: the severity of the pandemic's global economic impact, the response of fiscal and monetary policies to shocks, and regulatory responses that address the possibility of bank instability. Moreover, Cecchetti and Schoenholtz (2020) suggest that the business model of banks is very susceptible to economic shocks, hence their failure during this pandemic will result in broad economic shocks. For businesses to thrive, they require resources from the external environment because they cannot rely just on their own resources, particularly in terms of operating capability. Additionally,

the organization requires resources that create value (Pfeffer, 1972). During this pandemic, however, it has become harder to obtain external environmental sources. Simultaneously, numerous central banks and public authorities responded proactively to this crisis in order to assist the resilience of the banking system, for instance, by decreasing interest rate policies in order to increase liquidity.

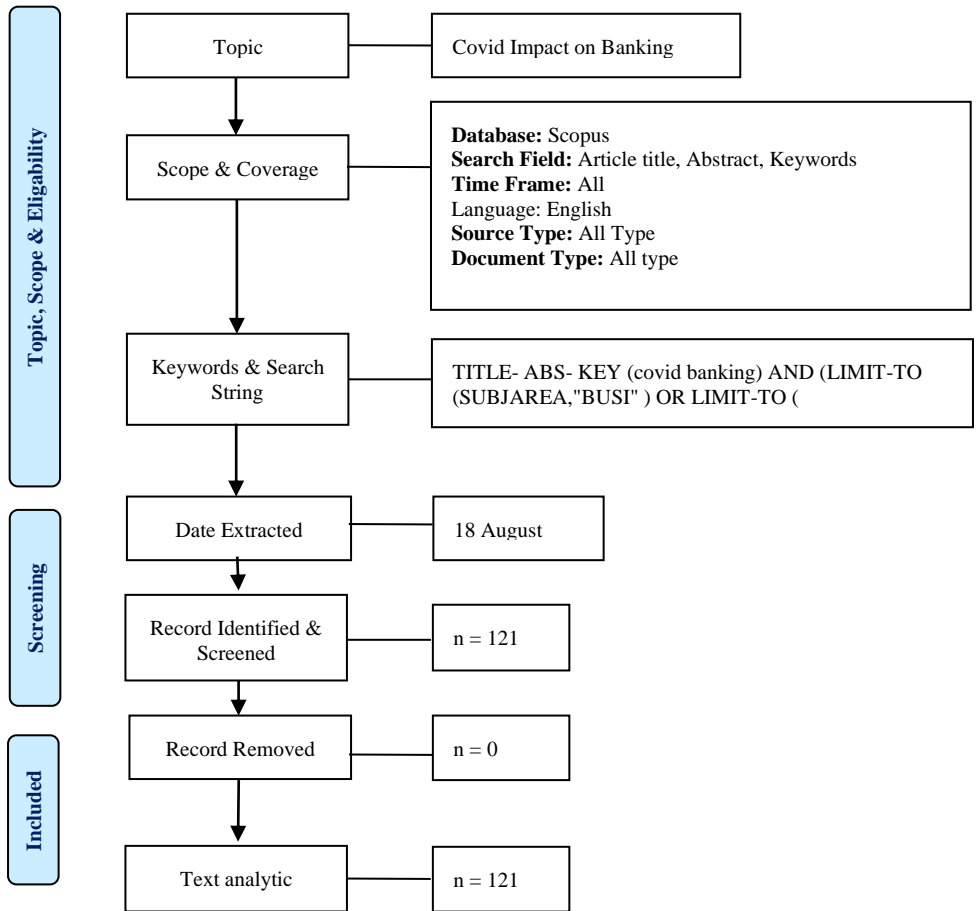
The discontinuation of business and commercial transactions increases the credit risk of the financial system. The financial system is rendered unstable by this condition. The banking system was negatively affected by the global financial crisis (Rughoo & Sarantis, 2014). In addition, governments in a number of nations have implemented various sorts of stimulus packages to alleviate the economic demands of their citizens (Narayan et al., 2020), which are subsequently disbursed through the banking sector. This can hurt the banking industry by heightening liquidity strain (Li et al., 2020). During this crisis, the liquidity issues encountered by households, governments, institutions, and the business sector resulted in the creation of non-performing loans in the banking sector, which had catastrophic effects on the global financial system (Wojcik and Ioannou, 2020).

Multiple studies address the influence of the Covid-19 epidemic on the banking business. The COVID-19 epidemic, according to the Economic Observer of PT Bank Mandiri, poses significant obstacles in many facets of life (Asmoro, 2020). The banking crisis had a substantial impact on the economic slowdown, according to Kenny et al. (2020). Tus, Maria Indriyani, and Hewe Tiwu found that the COVID-19 epidemic had a favorable and

significant effect on the NPL of Rural Banks. In addition, the coronavirus epidemic made it impossible for borrowers to repay bank credit. The defaults resulted from natural disasters or unforeseen calamities that were beyond human control (Hariyani, 2013). Extraordinary occurrences, such as international wars and the global financial crisis, might influence the credit expansion cycle (Bartoletto et al., 2019). Unsustainable credit expansion jeopardizes financial stability" (Bezemer & Zhang, 2019). Nonperforming loans are characterized as substandard loans, uncertain loans, and bad loans (Hariyani, 2013). Bad credit can be described as credit that is difficult to repay owing to intentional or external reasons that are beyond the debtor's control. Internal bank factors, internal debtor variables, and non-bank and debtor external factors influence the non-performing loans of Indonesian commercial banks (Barus, 2016). This is also consistent with Ade Novaliana and Rosadi's (2020) research, which evaluated the influence of COVID-19 on the rise of problematic loans in the banking sector. The Financial Services Authority (OJK) indicated in online media reports that the COVID-19 pandemic had a significant impact on banking credit growth, despite the fact that the Covid-19 pandemic has produced bad credit problems in the banking industry (Sitinjak & Ginting, 2020).

METHODS

Figure 1: Flow diagram of the search strategy



Source: Zakaria et al. (2020), modified

The evaluation was conducted on August 18, 2021. Figure 1 depicts the systematic review procedure's three processes for discovering research documents: eligibility, screening, and inclusion. The keywords chosen in this study attempt to answer the questions posed previously. Some broad statistics from the data set are offered to provide a summary of the research on covid-19's impact on the banking

industry. Textual analysis is performed on all articles that match the search query.

The research materials were then examined using the biblioshiny software, a free software supported by the R environment (CRAN, The Comprehensive R Archive Network, <https://cran.r-project.org/>), which offers a collection of tools for quantitative research in bibliometrics and scientometrics (Aria & Cucurrolo, 2017). In the bibliometric literature, the building of bibliometric maps receives the most attention. The effect of differences on the similarity of measures is the subject of research (Ahlgren et al., 2003), and different mapping approaches are used to examine them (Boyack et al., 2005). Next, text analysis will be performed on the results of "word"-related bibliometric mapping.

Following is a table of the document kinds utilized in the research with the keywords impact on the banking industry evidence. There were a total of 121 documents analyzed, which fell into four categories: journal articles (113 documents), anthology/book chapters (1 document), conference papers (1 document), and reviews (6 documents).

Tabel 1: Type of Documents

No	Type of Documents	Total Articles	Percentage
1	Journal Article	113	93.38%
2	Book Chapter	1	0.83%
3	Conference Paper	1	0.83%
4	Review	6	4.96%
Total		121	

Based on the results presented above, journal articles are the most frequently used document type as research subjects for the

keyword "covid impact on banking," with a percentage of 93.38 percent or as many as 113 documents, while book chapters and conference papers each have a percentage of 0.83 percent or one document. On the basis of the kind of document, it can be deduced that the majority of the cited sources are from scientific publications that are indexed by Scopus.

RESULT AND DISCUSSION

Text Analysis

Text analysis was conducted using R-studio and biblioshiny software created by Massimo Aria, Corrado Cuccurullo, and Luigi Vanvitelli of the University of Naples and Campania, respectively (Italy). The material is studied more thoroughly when searching for terms that frequently appear in the theme of Covid impact on the banking industry. This is designed to add references that the government can use to address economic issues, based on global research already conducted.

This section will give a graphical visual mapping of 121 documents linked to the impact of covid on the banking industry in order to examine the meta-analysis results. The results of the keyword analysis serve as the basis for mapping the document as well as the significant or distinctive aspects of a given document. Mapping is a process that enables one to recognize elements of knowledge and their configuration, dynamics, interdependencies, and interactions.

Most Relevant Sources

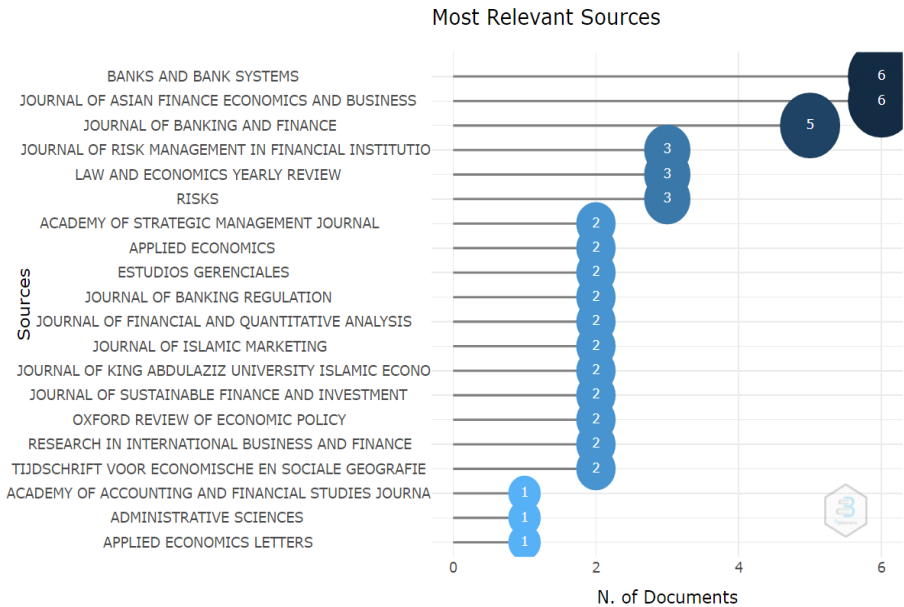


Figure 2: Most Relevant Sources

The figure above shows the number of research documents published by each journal based on their relevance to the theme of covid impact on the banking industry. The data displays a list of the names of the top published journals and the interval of the number of documents published with a blue bar chart. The darker the blue colour shows, the more quantity and relevance of the research theme. The number of documents published by all journals ranges from zero to six.

“Banks & bank system” and “Journal of Asian finance economics & business” are journals in the top position with a total of six documents published in a dark blue bar graph compared to other journal bars, this is because the journals are relevant to the theme discussed. An example of a paper published by the “Journal of asian finance economics and business” is entitled “Stock market response

during COVID-19 lockdown period in India: an event study”, written by Alam MN, Alam MS, Chavali K in 2020.

As for the journals that occupy the lowest position, there are three journals marked in bright blue. This means that the theme is still lacking in terms of the quantity and relevance of the COVID-19 impact on the banking industry. There are 20 journals listed in the most relevant data sources.

Source Impact

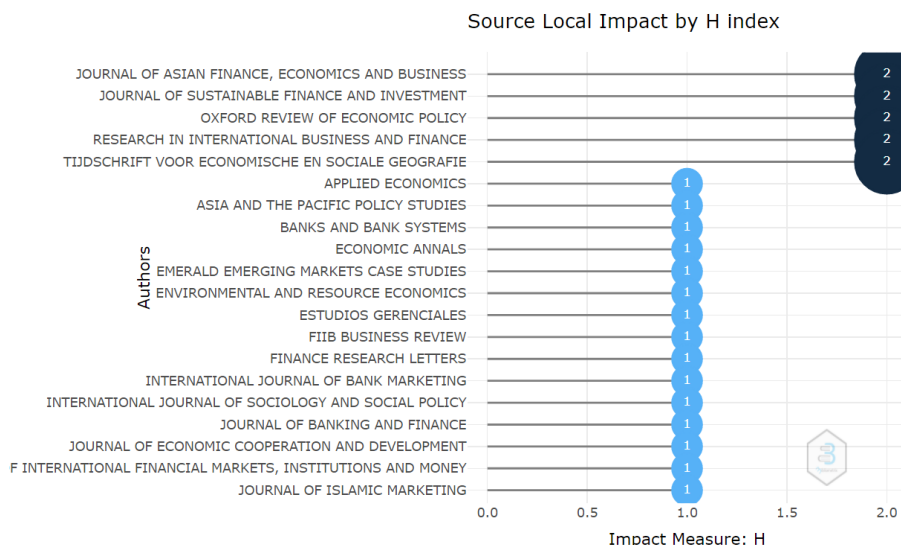


Figure 3: Source Impact

Journal estimates are based on more than just the quantity of output and its relevance. This research was also conducted based on the impact of each journal that publishes a paper on the topic of *covid impact on the banking industry* by calculating the publication's index, as indicated by the blue bar graph. In addition to displaying the journal's h-Index value, the influence caused by the journal is represented in blue base on the figure above. The stronger the journal's

impact, the darker the blue in the graph. In this study, the journal h-index interval ranged from zero to two.

The data shown in the figure above indicates that the “*Journal of Asian finance, economics, & business*”, “*Journal of sustainable finance & investment*”, “*Oxford review of economic policy*”, and “*Research in international business and finance*”, they have the highest h-index with the total two scores. In addition, there are 15 journals with the total one score, denoted in bright blue. These journals have a low impact.

The most influential publication is the “*journal of Asian finance, economics, and business*”. *Asosiasi Ilmu Distribusi Korea (KODISA)* publishes this journal, which focuses on economics, econometrics, finance, business, management, and accounting. This is consistent with the topic of covid's impact on the banking industry because it remains within the realm of financial discourse. Therefore, this journal has the greatest h-index and it becomes the journal with the greatest influence on the reviewed literature.

Source Expansion

This study also covers the evolution of journals that serve as research sources on *the impact of covid on the banking industry*. The aforementioned curve illustrates the development of the annual appearance of each journal from 2019 to 2021, allowing us to determine whether the journal has increased or decreased during the research period. The graph below demonstrates that economic and financial research on the topic of *covid impact on the banking industry* tends to have varying publication growth.

Source Growth

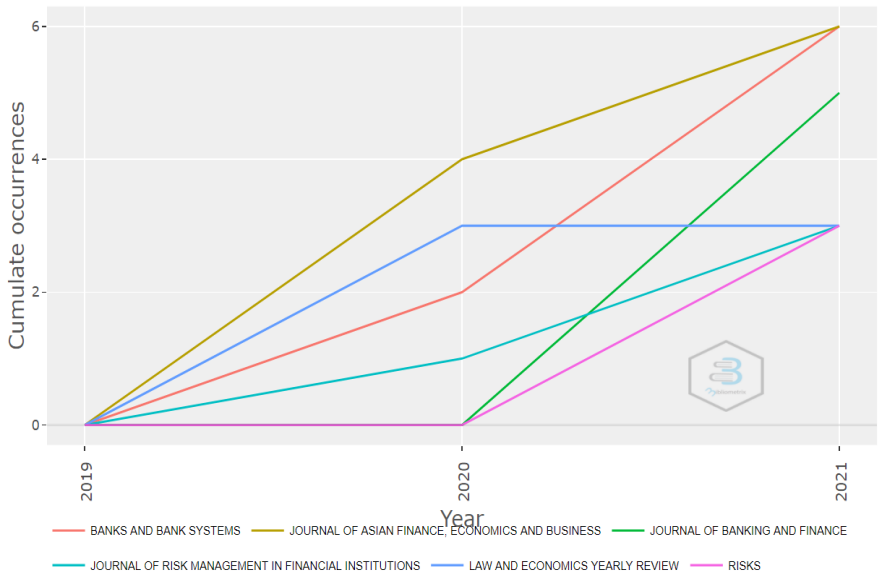


Figure 4: Source Growth

Several journals, like the “*journal of asian finance, economics, and business*” have began to grow since 2019 and will continue to do so until 2021, and it was indicated by the curve above. The first journal devoted to “*Asian finance, economics, and business economics*” and appeared in 2018. This journal featured articles on economics, econometrics, finance, business, management, and accounting for three years.

Authors Analysis

Most Relevant Authors

The graph below depicts the amount of economic and financial research publications produced by each author according on their relevance to the topic of covid impact on the banking industry. The data presents a list of the most prolific authors and blue bars chart indicating the number of documents. The deeper of the blue color, the

greater the amount and significance with the research topic. Between zero and two documents are published by all journals.

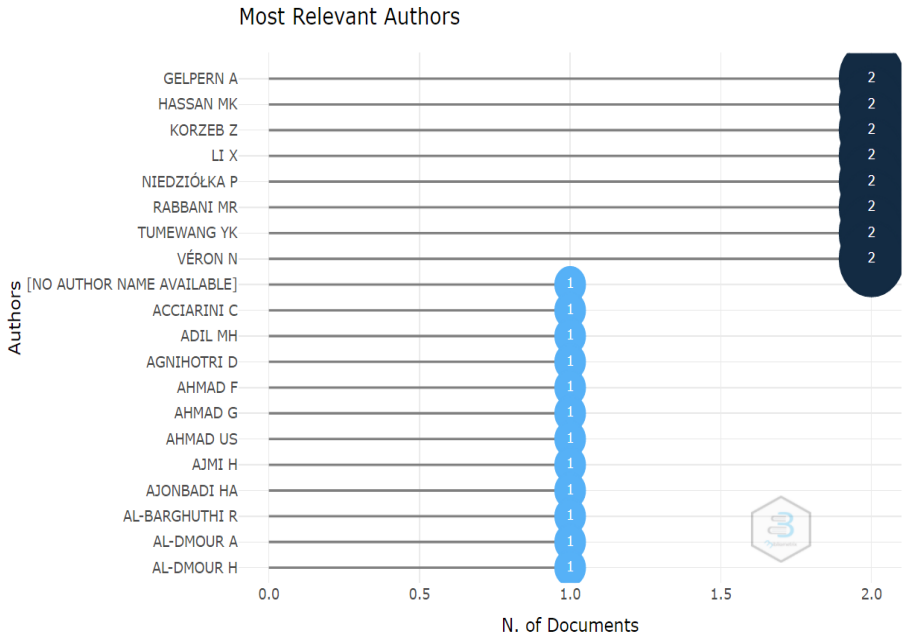


Figure 5: Most Relevant Authors

Gelpern A., Hassan MK., Korzeb Z., Li X., Niedziolka P., Rabbani MR., Tumewang YK., and Veron N. are the leading writers with a total of two documents published in the graph. This is due to the journal's relevance to the discussed topic. Then, there are twelve writers with the total one publications hold the lowest rank which is highlighted in bright blue. This indicates that the amount and relevance with the theme is still insufficient.

Top Author’s Production over the time

Not only may productivity be assessed in journals, but also in individual authors. The figure below depicts the output of various prominent authors throughout the research period of 2019 to 2021. A red line represents the author's production from the year. In addition, the circle on the red line represents the number of papers published during the relevant year.

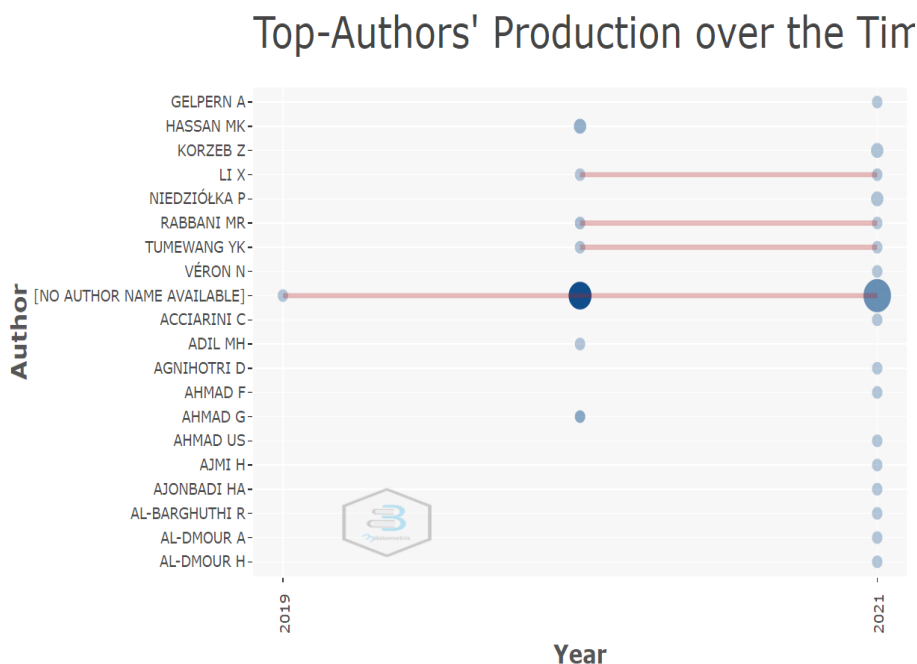


Figure 6: Top Author’s Production over the time

Since a number of years, the figure below provides an overview articles with the theme *covid impact on the banking industry*. The author, who has been publishing for a long time and has a long track, namely “no author name available” from 2019 to 2021, and he still productive in writing.

Most Relevant Affiliations

The most relevant affiliation shows the number of research papers with the theme of *covid impact on the banking industry* in economic and financial research based on the author's affiliation. The figure shows the top 20 affiliates and the number of published document intervals with a blue bar chart. The darker the blue color indicates the more affiliation of the researcher.

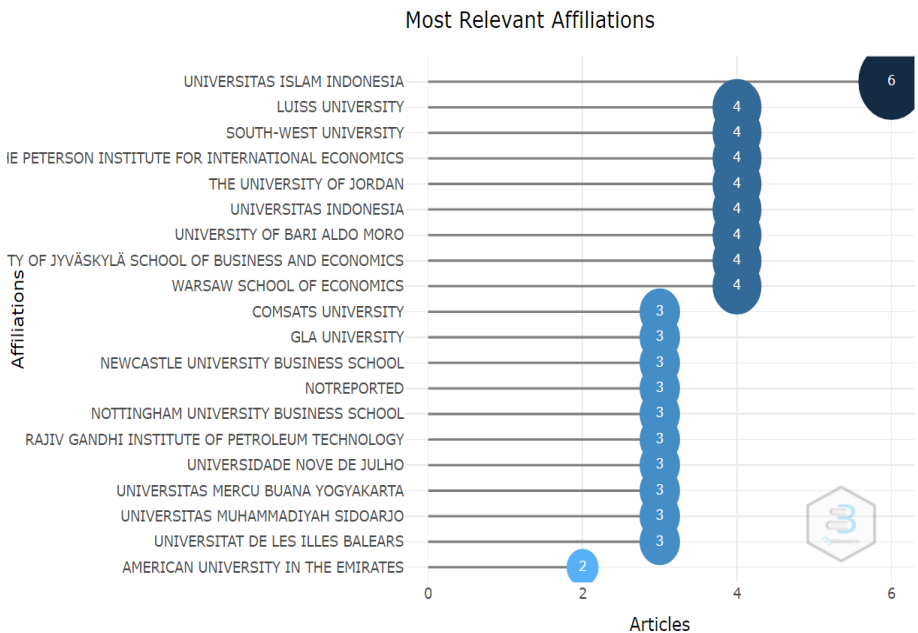


Figure 7: Most Relevant Affiliations

Universitas Islam Indonesia is the author's affiliate who is in the top position with the number of publications of more than six documents. Journal of Universitas Islam Indonesia is an electronic journal management system published by Universitas Islam Indonesia itself and managed based on the *Sistem Akreditasi Jurnal Kemristekdikti ARJUNA* and become part of the *Sitasi Jurnal dari*

Indonesian Science Index (SINTA). Then, Universitas Islam Indonesia as an online journal publisher has become a member of DOAJ (*Directory of Open Access Journals*) with BASE (*Bielefeld Academic Search Engine*) indexed.

Corresponding Author's Country

The figure below shows the author's correspondence countries contained in each article by calculating the total form of collaboration between SCP (*Single Country Collaboration*) and MCP (*Multiple Country Collaboration*). There are top 20 countries included in this data and the document quantity interval is between zero and more than ten documents issued with the theme of *covid impact on the banking industry*. The result shows that the United Kingdom become the first rank as the country with the highest number of correspondent authors with more than ten published papers.

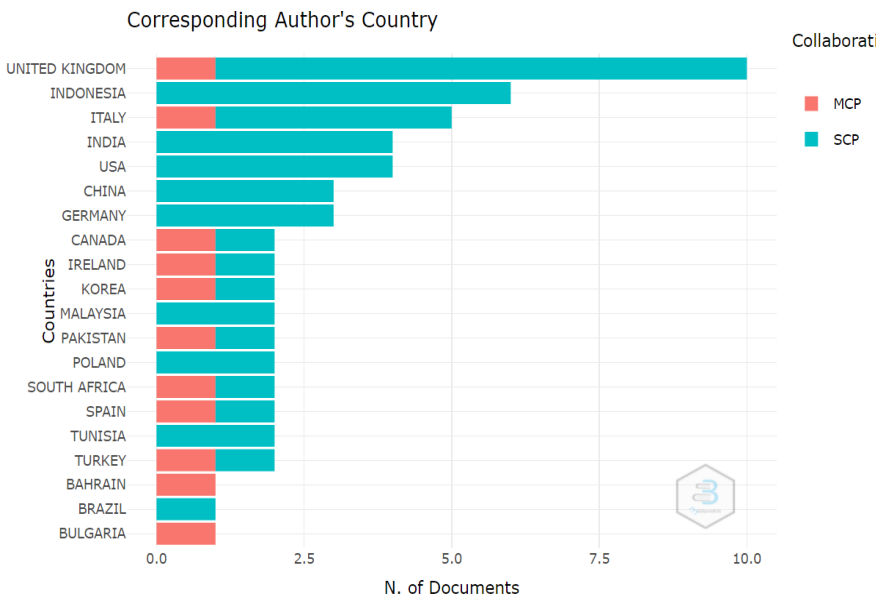


Figure 8: Corresponding Author's Country

One of the papers with the author come from the United Kingdom is the paper with entitled “*Reforming the UK financial system to promote regional development in post-COVID Britain*” written by Collier, P., Mayer, C. (2020). Furthermore, Indonesia reaches second position with the number of papers published less than six papers. Meanwhile for another countries published documents under five papers. The figure above shows the results that almost all countries have a form of MCP collaboration while SCP is owned by nine countries, namely Tunisia, Poland, Malaysia, Germany, China, USA, India, and Indonesia.

Most Cited Countries

This study also classifies research with the theme of *covid impact on the banking industry* based on the author's country of origin which is widely cited. The number of published document citations is shown through a blue bar chart. The blue gradation indicates that the darker blue indicates the greater the number of citations. There are several words with several occurrences between zero and more than 32 times. The appearance of the top 20 countries listed, marked with a blue diagram showing the comparison of the number of citations and their relevance to the theme of *covid impact on the banking industry* in economic and financial research.

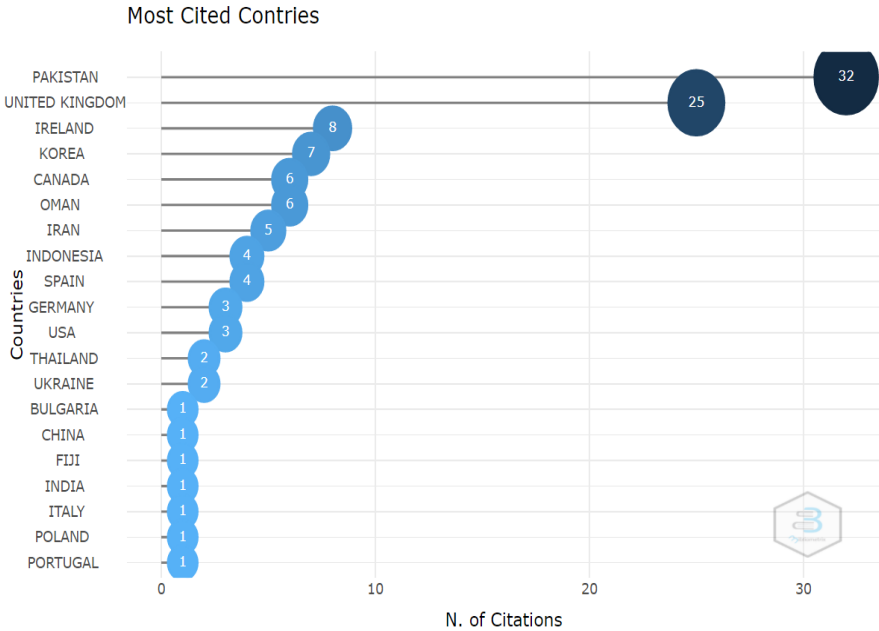


Figure 9: Most Cited Countries

Based on the graph above, the country with the most cited articles is in Pakistan with 32 citations. Then followed by the United Kingdom which became the country in second place with less than 25 citations. Among the papers from Pakistan that became the most active country, namely the paper written by Alharthi, M., Hanif, I., Ur Rehman, H., Alamoudi, H. in 2021 with the title “*Satisfaction of Pakistan's Islamic Banking System During the COVID-19 Pandemic Logistics Model-Based Identification of The Determinants to Improve Customer*”.

Documents Analysis

Most Cited Documents

Most cited documents show the citation data for articles in the theme of *covid impact on banking industry* which contains the name of

the author, year of publication, and the journal. The darker of the blue color, the greater the number of citations. The total of citations between zero and greater than 32.

It was found that Rizwan MS (2020) become the top article citations of more than 32 citations with the title “*Systemic risk: The impact of COVID-19*”. Then we found a significant increase in systemic risk among the sample countries initially, while stagnation (at an increasing rate) was observed during April 2020 excluding China, which shows some recovery. Using spillover measures, we also identify systemically important institutions.

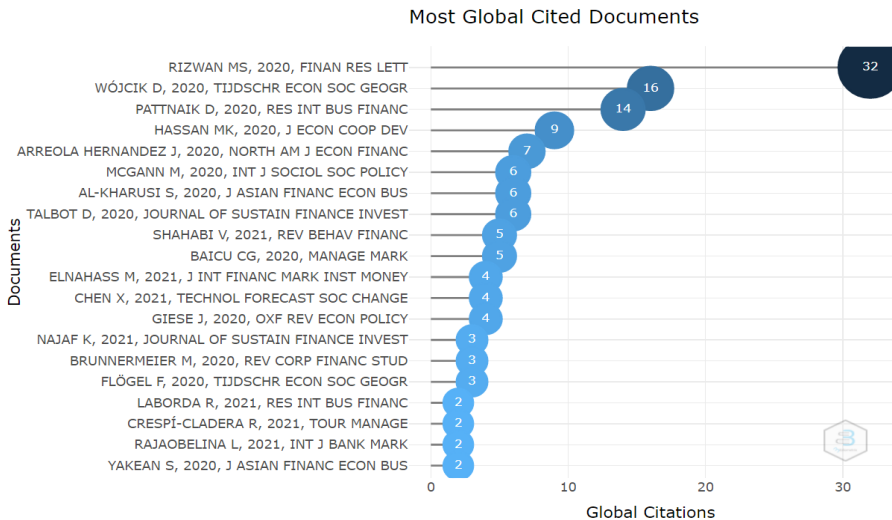


Figure 10: Most Cited Documents

Most Relevant Words

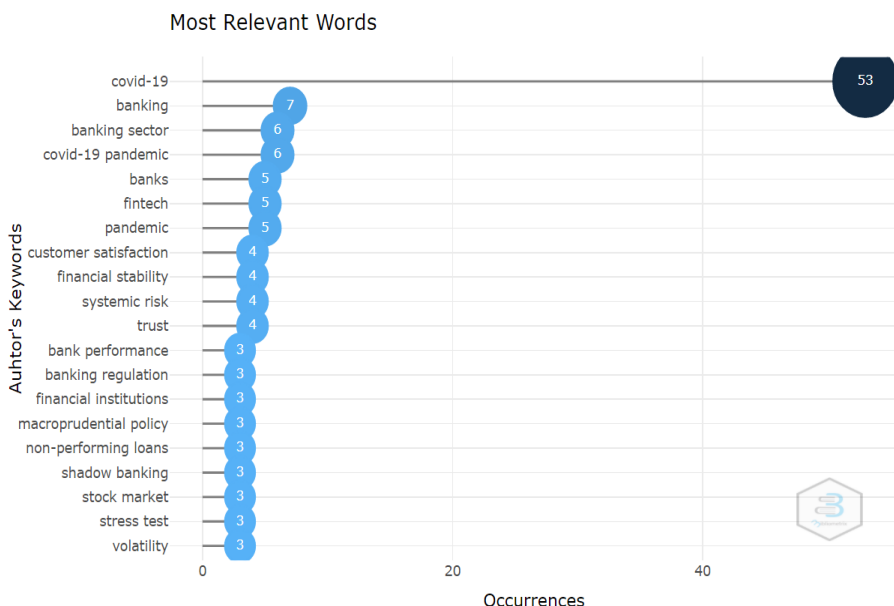


Figure 11: Most Relevant Words

The most relevant word analysis was carried out on the keywords from each document, where there were several words with some occurrences between zero to 53 occurrences. The image above shows the 20 most relevant words used in the collection related to the keyword “*the impact of covid on banking industry*”.

The top word with the number of occurrences and the most relevant to the keyword *the impact of covid on the banking industry* is the word “*covid-19*” itself, with the number of occurrences as much as 53 times. The second word that is most relevant to the theme of *covid impact on the banking industry* is the word “*banking*” with seven occurrences. Furthermore, the third and fourth words that are most relevant to the theme of *the impact of covid on the banking industry*

with the word appearing six times, namely the word “*banking sector*” and “*covid-19 pandemic*”.

Word Cloud

Furthermore, relevant words in research related to the theme of *covid impact on the banking industry* will be displayed in the form of a word cloud. Word cloud is a description of words that often appear in a collection of data papers researched with keywords from the title with the theme "*covid impact on banking industry*". The word cloud displays an image of the words displayed in various sizes

according to the quantity of the number of words that appear. In terms of placement, word clouds tend to be random but the words that dominate are placed in the middle so that they are more visible with a relatively larger size. In this study, the results of the word cloud were obtained based on an analysis of the document title.



Figure 12: Word Cloud

Based on the figure above, it was found that the most dominant words related with the theme *the covid impact on the banking industry*, namely "Covid", "Banking", "Pandemic", "Financial", "Crisis", and "Impact". Most of the research with the theme *covid impact on banking industry* currently discusses about "Covid". This is because the word "Covid" is relatively closely related to the current pandemic in society.

WordTree Map

Furthermore, the relevant words related to the theme of *covid impact on the banking industry* will be displayed in the form of a word treemap. Word TreeMap displays words that often appear in boxes similar to regions on a map, where the more words that appear, the larger the square area.

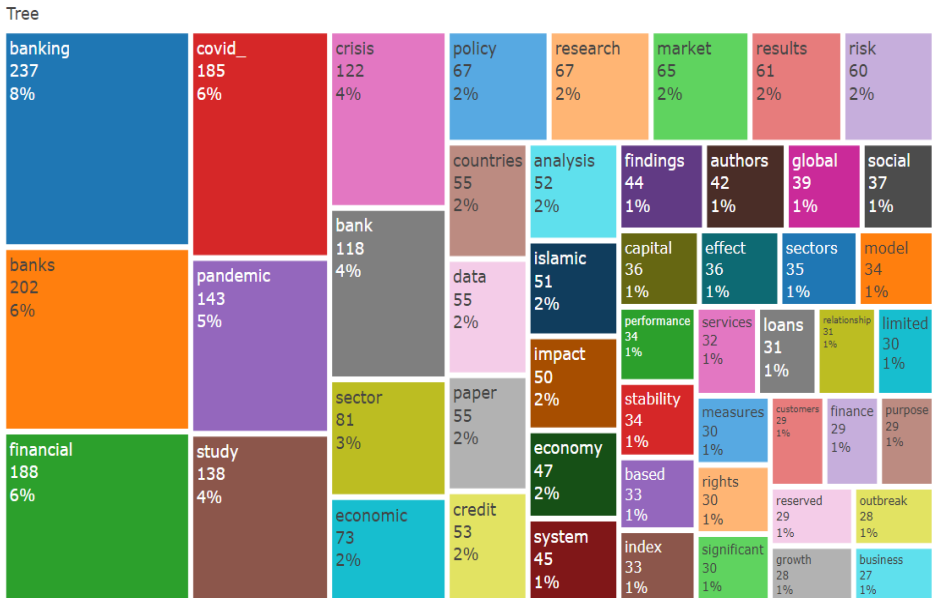


Figure 13: Word Tree Map

Based on the figure of the analysis from the abstract, it was found that the most dominant words with the theme of *covid impact on banking industry* are “Banking”, “Banks”, “Financial”, “Covid”, and “Pandemic”. Most of the current research related to the theme discussed about “banking”. This is because the word “banking” related to the financial problems that are rampant in Indonesia.

Word Dynamic

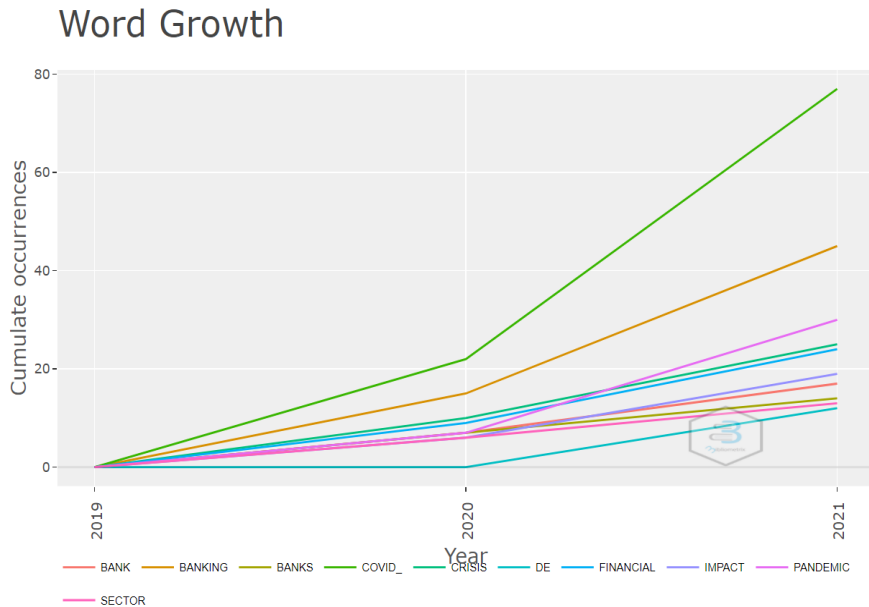


Figure 14: Word Dynamic

Based on the figure above, the words that often appear are also described in the form of a development curve each year with an annual occurrence value. Where these results show the average number of occurrences of these keywords in the data collection with the theme of *covid impact on banking industry*.

Figure 14 shows that the majority of words that appear frequently and have started to develop since 2019 and continue to increase until 2021. From the figure above, it can be concluded that the research with the most significant increase in occurrence is keywords related to *covid* and has very significant potential to grow.

Tren Topics

The tren topic has important part of this research, the figure below shows an overview of the development of topics related to the *covid impact on the banking industry* from time to time, so that it is known what topics have been used for a long time and what topics have been used recently. The trend of this topic also considers the frequency of each word indicated by the long axis.

So, in addition to looking at annual trends, the emergence of topics is also adjusted to the frequency of the number of words appearing in research themes related to the theme. The higher indicates, so the more the word has been used. And the further to the right, the more recently the word has been used. The development of the theme of *covid impact on banking industry* began to experience a significant increase since 2020.

Based on the description of the data above, the topics have been used since 2020, namely “*credit*”, “*analysis*”, “*finance*”, “*crisis*”, “*banking*”, and “*covid*”. Then, they continue to grow until 2021. Next, a new topic that appears in 2021 is related to the theme, namely “*pandemic*”.

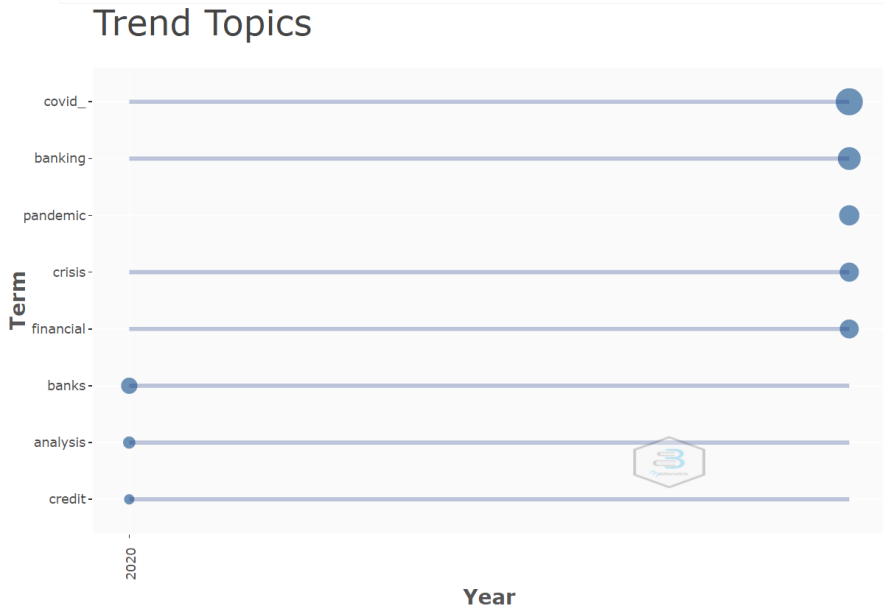


Figure 15: Tren Topics

Co-occurrence Network

The co-occurrence network displays words related to the theme of covid impact on the banking industry, in the form of colored clusters by considering the relationship between one word and another. Some of the keywords that often appear in research with the theme of covid impact on banking industry are divided into 4 clusters, consist of:

- Cluster 1 in red color consists of keywords: *Crisis, Credit, Economic, Covid, Policy.*
- Cluster 2 in green color consists of keywords: *de, el, la, las, en*
- Cluster 3 in purple color consists of keywords: *Banking, Financial, Sector, System, Digital, Study, Islamic, Social, Role, Outbreak, Evidence, Global, Shadow, Stability.*

- Cluster 4 in blue color consists of keywords: *Covid, Pandemic, Impact, Banks, Finance, Market, Impact, Risk, Bank, Adoption, Capital, Performance, Capital, Potential, Approach, Analysis.*

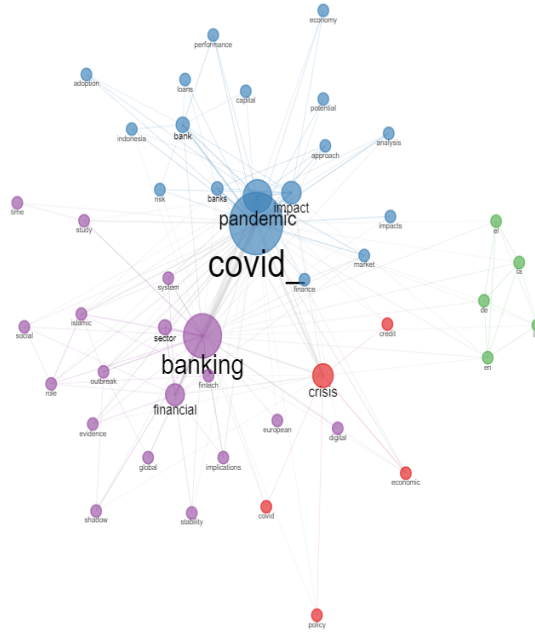


Figure 16: Co-occurrence Network

Thematic Map

In this study, a thematic map that appears based on density and centrality will also be analyzed based on the title of the document with the theme of *covid impact on banking industry* which is divided into four quadrants. This result is obtained from a semi-automatic algorithm by reviewing the titles of all references to the object of research.

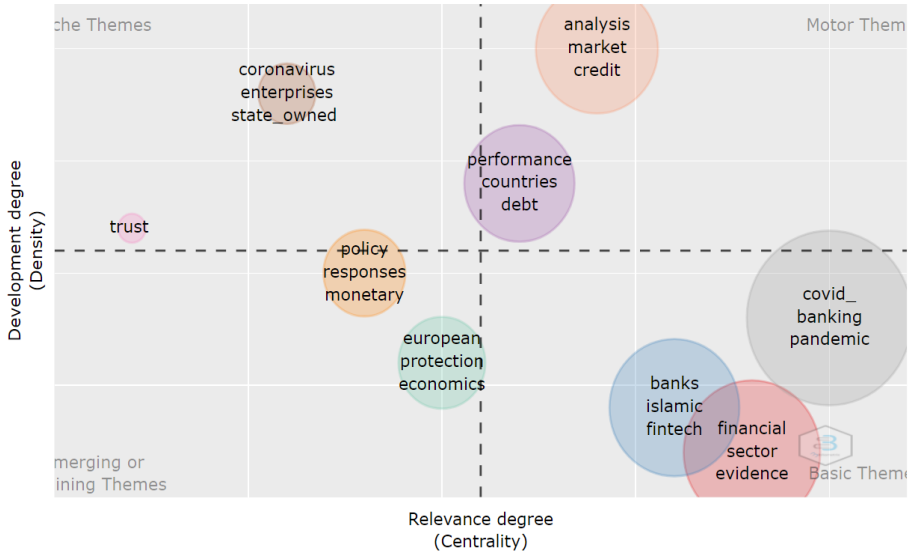


Figure 17: Thematic Map

The upper left quadrant is a highly developed and isolated theme. This quadrant shows specific themes and are rarely studied, but have high development, which is indicated by high density but low centrality. The themes in this quadrant are *Coronavirus*, *Enterprises*, *State-Owned*, *Trust*. While the lower left quadrant represents emerging or declining themes, this quadrant shows themes that have been used for a long time but experience an increasing or decreasing trend with low density and centrality. The themes in this quadrant are *Policy*, *Responses*, *Monetary*, *European*, *Protection*, *Economics*. Seeing developments with the sub-theme of *covid impact on the banking industry* in recent years, the trend of words in this quadrant has increased.

While the upper right quadrant is a motor theme or a driving theme that is characterized by high density and centrality, so it needs to be developed and is important to be studied in further research. The

themes that appear in this quadrant are *Analysis, Market, Credit, Performance, Countries, Debt*. Finally, the lower right quadrant is the basic and transverse themes which are characterized by high centrality but low density. These themes are important to be included in the research because they are general topics that are commonly used. The themes that appear in this quadrant are *Covid, Banking, Pandemic, Banks, Islamic, Fintech, Financial, Sector, Evidence*.

Findings

Several studies discuss the impact of the Covid-19 pandemic on the banking industry, where these studies show mixed results. Based on the results of a review from several studies, it can be concluded that the Covid-19 pandemic has impacted the banking industry. The occurrence of the Covid-19 pandemic has become a threat and opportunity for banking performance. It can be said as a threat because the banking sector will experience several possible risks (bad loans, asset decline, and market risk) and it will affect the performance and profitability of banks (Wahyudi, 2020). This is supported by the research of Lalu Rahman et al. (2020), which states that Covid-19 and lockdown will harm banking performance in Bangladesh, both conventional banks and Islamic banks.

Elnahass, Trinh, & Li (2021) stated that in the global banking sector, the Covid-19 outbreak harmed financial performance (accounting-based and market-based performance measures) and financial stability (default risk, liquidity risk, and asset risk). This is similar to Hardiyanti's (2021) research, which states that the spread of the COVID-19 pandemic has a statistically significant negative impact and affects credit risk in the banking sector, financial distress, and

profitability solvency, and has a significant effect on non-performing loans.

Regarding comparing Islamic and conventional banking, they are also facing the challenges of this COVID-19 pandemic (Mardhiyaturositaningsih & Mahfudz, 2020). Hasan and Dridi's research (2010) compares the performance of Islamic banking and conventional banking during the crisis caused by the Covid-19 pandemic. The result found that the profitability of the two banks decreased more than before the crisis. Still, the average profitability of Islamic banks with conventional banks was the same. The development of financing and credit between the two types of banks declined during the crisis. Still, at least Islamic banks experienced two times greater growth in credit and assets than conventional banks.

Regarding the profitability of Islamic banking, this is similar to Effendi and Prawidya's (2020) research, which found that the profitability of Islamic banking decreased during Covid-19. However, contrary to research by Sutrisno et al. (2020) found that the effect of the COVID-19 pandemic on the profitability of Islamic banking was not significant. Then, Elhanass et al. (2021) conducted a study on the stability and performance of 116 global banks during the pandemic. His research shows the significance of the impact of the Covid-19 pandemic on bank performance and stability, both in terms of inter-regional research, bank size, bank risk level, classification of state income, and types of banks (conventional and sharia). Although the impact of this pandemic is significantly negative, the study also show that the resilience of Islamic banks is better than conventional banks in terms of profitability.

As is known from several research results above, which show that COVID-19 has an impact on systemic risk in the banking sector in several countries. Therefore, the role of regulators is needed in managing systemic risk during the Covid-19 period because there is a positive response between systemic risk and policy response (Rizwan, Ahmad, & Ashraf, 2020). In addition, the authorities' role is also needed in regulating the improvement of financial stability by strengthening their policies to force banks to better align with capital requirements and risks during the COVID-19 pandemic (Mateev, Tariq, & Sahyouni, 2021).

In addition to strengthening terms of policies or regulations, the banking industry must have strategy to carry out its intermediation function during the Covid-19 pandemic. Several studies provide recommendations for practitioners and policymakers regarding what strategic steps should be taken for the banking industry to overcome these problems, including:

In their research, Jan, Mata, A. Albinsson, Martins, Hassan, & Mata (2021) suggest that Islamic banking requires exploration and categorization of business strategies before moving on to the alignment phase. The trick is to establish a separate sustainability division. This structural reform aims to help Islamic banks to play their social role in defeating the virus by offering Islamic solutions.

Jamaruddin & Markom (2020), in their research, stated that during a crisis pandemic, to overcome operational problems, Islamic banking needs to adopt Islamic Fintech and learn how to apply Islamic fintech in Islamic banking, the legal framework of Islamic fintech, issues in managing operations, Islamic banking documentation.

Therefore, government support is needed in providing an adequate legal framework for fintech instruments, and consultations by experts are also needed (Coelho & Prenio, 2020).

Wojcik and Ioannou (2020) said that during the Covid-19 pandemic, Digital Financial Inclusion (DFI) can be a potential factor in maintaining banking stability in ASEAN, the implementation of DFI can accelerate ASEAN banking stability which not only reduces the risk of bank default but also increase financial mobility in the region (Banna & Alam, 2021). Digital Financial Services (DFS) is needed for smooth banking operations so that people can maintain basic transactions without having to be exposed to the virus. Efficient and comprehensive implementation of DFS is considered important for the banking industry, especially during the Covid-19 period, so banks can maintain their stability (Wojcik and Ioannou, 2020).

Shahabi, Azar, Razi, & Syams (2020) state that banking transactions and bank financial resources will increase by implementing a package policy of reducing the number of branches, encouraging incentive policies, and increasing bank budget levels in the field of Information Technology (IT). Furthermore, introducing new technology to customers, the Covid-19 pandemic is considered a positive factor for branchless banking. From a larger perspective, the acceptance and development of E-banking and branchless banking have advantages, including significant reductions in traffic, lower fuel consumption, reduced spread of infectious diseases, better public health, and less paper consumption.

CONCLUSION

This study tries to evaluate the topic of the covid impact on the banking industry using text analysis from 2018-2021. The conceptual structure of R 'biblioshiny' provides the network and the main research themes. We have identified two research networks using the co-occurrence network. Furthermore, this study includes a summary of the keywords that frequently appear in this topic and a summary of the most pertinent word analysis, word treemap, co-occurrence network, thematic map, and conceptual structure.

Furthermore, based on the results of a review of several studies, it was found that the Covid-19 pandemic had an impact on the banking industry, both conventional banks, and Islamic banks. The impacts arising from the Covid-19 pandemic are quite diverse, including 1) The banking industry experiences the risk of bad credit, the risk of asset decline, market risk, and financial distress, 2) The banking industry will also encounter liquidity, profitability, solvency, and non-performing problems. performing loans, 3) The Covid-19 pandemic has an impact on bank performance and stability due to changes in capital, assets, and liabilities, 4) Banks experience operational resilience problems because they can experience potential fraud claims from customers, especially in terms of accessing support schemes, cyber-attacks; data security risks, as well as money laundering activities.

Recommendation

It is known that COVID-19 has an impact on the systemic risk of the banking sector in several countries, including Indonesia. The resilience of a country's financial system is related to economic

strength and economic growth. The dynamic development of the banking sector is a determining factor for economic development, if the banking sector slumps, the economic sector will also decline. Therefore, an effort is needed to minimize the negative impact of the Covid-19 pandemic on the banking industry. The recommendations or suggestions that can be made are as follows:

1. The spread of COVID-19 in Indonesia is a situation that has no practical basis and requires changes to the Bank Indonesia Law as an alternative solution. In addition, the proposed amendments are not yet relevant to address the impact of COVID-19 on banking. Therefore, there is a need for supportive regulations from BI and OJK regulators so that the banking industry is more flexible and more aligned with capital requirements and risks during the COVID-19 pandemic.
2. In addition to strengthening in terms of policies/regulations, the banking industry must also take strategic steps so that it can continue to carry out its intermediation function during the Covid-19 pandemic. The steps that can be taken are as follows:
 - a) The banking industry requires exploration and categorization of business strategies by carrying out structural reforms, namely by establishing a separate sustainability division to assist Islamic banks in playing their social role during the Covid-19 virus pandemic.
 - b) In overcoming banking operational problems during the Covid-19 pandemic, banks need to adopt Fintech and study the application of fintech and the fintech legal framework.

c) Conducting business efficiency by:

- Digital Financial Inclusion (DFI) because can accelerate banking stability, reduce the risk of default, and increase financial mobility
- Optimizing internet and mobile banking services.

E-banking and branchless banking to reduce substantial traffic, lower fuel consumption, minimize the spread of infectious diseases, reduce paper consumption, and so on.

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