



Crisis Management: A Bibliometric Analysis

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ABSTRACT - This study aims to analyse research on crisis management using a bibliometric review of 1569 articles collected from the Scopus database for the period between 1968 and 2022. Using Bibliometrix package in RStudio and Biblioshiny web apps, the current study analysed the annual publication trends, most active source titles, corresponding authors' countries, most productive affiliations and examined citations pattern of the publication on crisis management. This study also discusses the themes based on occurrences and terms of the keywords of the documents. The number of publications on crisis management followed the major crisis of the world. Since COVID-19 has a global impact, the number of publications has increased during the last three years. This study reviewed publications related to crisis management over the past five decades. Accordingly, it can aid interested researchers in gaining a more in-depth understanding of crisis management.

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INTRODUCTION

A crisis is defined as an event that has the potential to cause a large detrimental change to the social system and in which there is lack of proportionality between cause and consequence (Walby, 2015). Doern et al. (2019) argued that an occurrence can be categorised as a crisis if it is severe, unexpected, and unanticipated. According to the nature of the risks involved, crises can be categorised into five categories: economic, environmental, geopolitical, social, and technology (Asgary et al., 2020). The fundamental cause of economic crises, such as the Great Recession of 2007-2009, is the financial crisis, which impacts entrepreneurs in a variety of ways. Castro and Zermeo (2020) discussed some of these effects of financial crisis including an increase in operating costs (Duarte Alonso & Bressan, 2015), business interruptions (Herbane, 2018), business closure, financial and organisational difficulties, a higher unemployment rate, diminished financing opportunities (Andres & Round, 2015), and social and urban degradation (Sabatino, 2016).

Castro and Zermeo (2020) claimed that the environmental crisis was caused by climate change and natural calamities including earthquakes, volcanic eruptions, and mudslides. From this crisis, tourism is the most negatively impacted industry since it destroys biodiversity (Biggs, 2011) and mother nature, causing tourists to seek out other options. Geopolitical crisis refers to the regional war that generated economic crises and institutional changes such as German reunification in 1990 (Gebhardt, 2012; Castro & Zermeo, 2020). On the other hand, social crisis refers to actions that undermine the social stability of the community (Doern, 2016). All these

crises must be prudently managed to ensure the resilience of the associated industries.

Recently, in the year 2020, the COVID-19 epidemic created a global health crisis. It precipitated the COVID-19 Recession or the Great Lockdown, which crippled the global economic and financial system. More than half of the world's population was placed under lockdown, causing the economy to decline. Several economic and social sectors were impacted (Castro & Zermeo, 2020). The largest effects of economic sectors were felt by small and medium businesses (Tsilika et al., 2020). Restriction on social distancing and movement control limit the economic activities, and as a result, some of the small and medium businesses have been forced to terminate operations.

United Nations (2020) reported the social impact of the crisis on the mental health of the global population. The crisis' isolation and financial strain contribute to sadness and anxiety, and as a result, suicides and drug usage may increase globally. Crisis management is what almost all businesses have to have expertise in if success is sought (Khodarahmi, 2009). Appropriate crisis management enables businesses to control (Trachsler & Jong, 2020) and mitigate the impact of the crisis (Asgary et al., 2020) and, as a result, return to normalcy (Boin et al., 2013). Among businesses, Ansell and Boin (2019) suggest that implementing the new entrepreneurial approach such as pivoting as the most effective method of crisis management.

Numerous studies have discussed and used bibliometric analysis to investigate research on crisis management, with the majority of topics focussing on crisis management in relation to financial and economic crisis (Geiger & Kufenko, 2018; Hsu & Chiang, 2015; Pattnaik et al., 2020; Sampaio, 2022), crisis management and COVID-19 (Ayoko et al., 2021; Baji & Jowkar, 2022; Karakose et al., 2021; Krishnan et al., 2022) and few on tourist crisis management (Della Corte et al., 2021; Jiang et al., 2017). Other studies on crisis management were associated with entrepreneurs, businesses, and organisations (Ciampi et al., 2021; Corrales-Estrada et al., 2021; Krishnan et al., 2022). However, these previous studies have not revealed a comprehensive review of published research on crisis management.

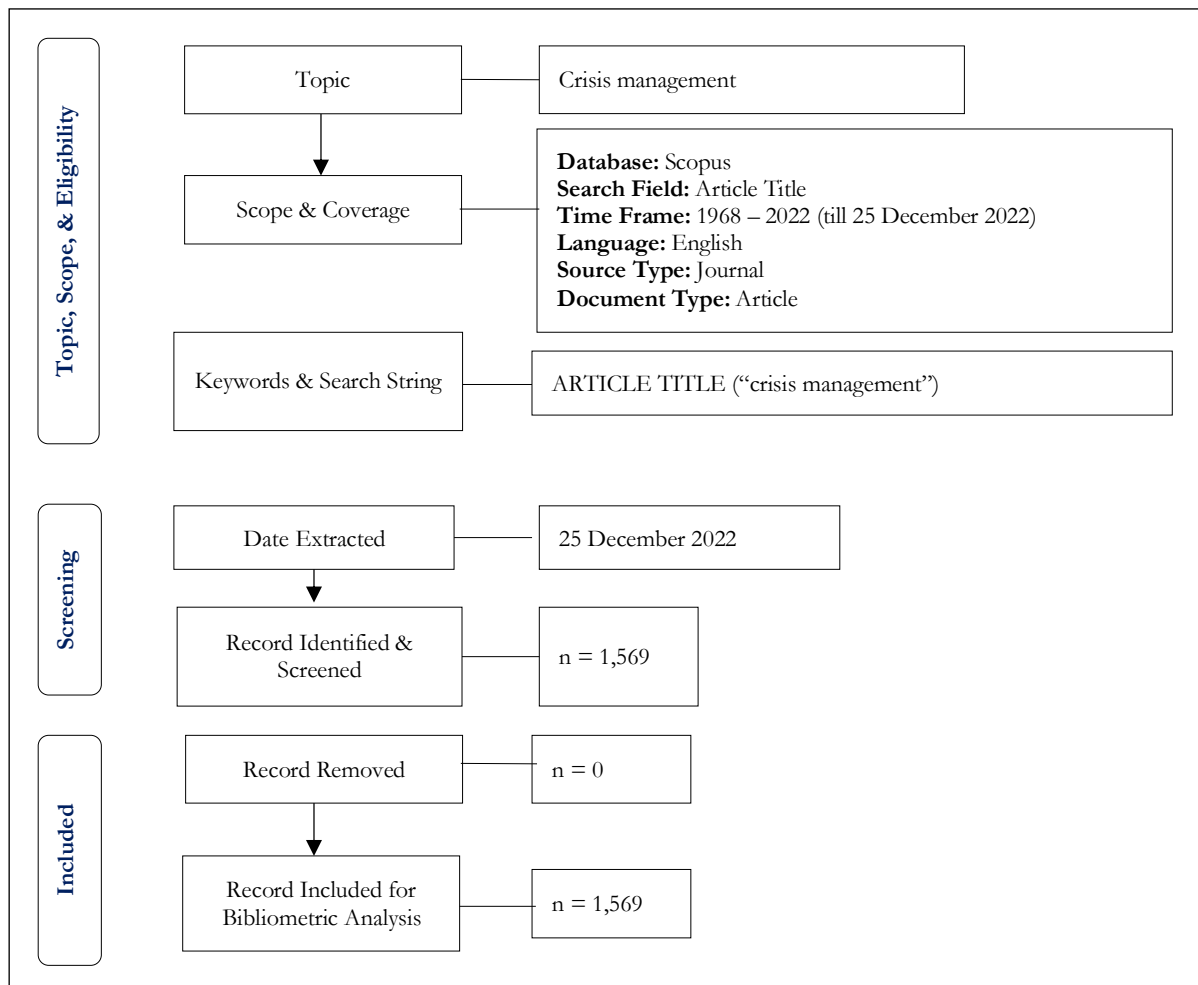
Hence, the current research is an effort to perform the bibliometric analysis of published research on crisis management. The following research questions (RQs) are addressed in this study: RQ1: What is the current publication trend on crisis management? RQ2: What are the current citation patterns of publication on crisis management? RQ3: Which themes involving the crisis management are the most popular among scholars? The answers to these questions help to gain a more in-depth understanding of crisis management, particularly with respect to the themes to help researchers propose recommendations for future research. This paper is divided into five sections. The next section describes the methodology used in this paper. It is then followed by results of the bibliometric analysis, discussions, and the last section presents the conclusions.

METHODOLOGY

This study uses the Scopus database in bibliometric analysis and mapping aims to better understand the current publication trend of publications on crisis management. According to Wahid et al. (2020), Scopus is recognised by the international scientific community as one of the main sources of relevant information and bibliometric study has been increasing in popularity as one of the approaches in demonstrating trends among studies (Ahmi & Nasir, 2019). The bibliometric method is “more objective and reliable” than other literature review techniques (Aria & Cucurullo, 2017). This analysis significantly improves the quality of the literature review by introducing a transparent, systematic, and reproducible review process (Nasir et al., 2020). The bibliometric approach is thus appropriate for this study because it aids in the identification of research clusters, offers information on present research interests, and identifies trends for new areas of study (Munim et al., 2020).

As shown in Figure 1, data were extracted from the Scopus database on 25 December 2022. For this study, the keyword search in Scopus was set to include article title that contained “crisis management” only. Only article journals published in the English language were selected

and all documents were checked to ensure no duplication occurred in the sample. This led to the extraction of a total of 1569 records or article journals, and since no duplicates were found, all records were included in the bibliometric study.



Source: Zakaria et al. (2020)

Figure 1: Flow Diagram of the Search Strategy

RESULTS AND ANALYSIS OF FINDINGS

Current Publication Trends on Crisis Management

To address the current publication trends on crisis management, this study analysed the following data: a) annual publication trends, b) most active source titles, c) corresponding authors' countries, and d) most productive affiliations.

Annual Publication Trends

Figure 2 shows the annual publication on crisis management from the year 1968 until 2022 (including 25 December 2022). Based on Figure 2, it is observed that the publication trends followed the occurrence of major crisis whereby the number of publications on crisis management was high throughout the early 1980s, early 1990s, mid-2000s, and the period between 2020 and 2022. Between 1980 and 1983 and between 1990 and 1991, countries all over the world experienced severe recession. The root cause of early 1980s recession was due to the Iranian revolution between October 1978 and February 1979, while early 1990s revolution was ignited by the Gulf War between August 1990 and February 1991. Both crises created oil price shocks which in turn led to an increase in inflation rates and later triggered the recessions (Barsky & Kilian, 2004). Challenges during that period prompted researchers to explore crisis management as a

means of coping with the uncertainties during the hard period. During the recovery period, the number of published articles on crisis management climbed tremendously from a single digit per year into 12 and 13 articles in 1983 and 1984, respectively. Similarly, the number of published articles during the second recovery period in 1993 was double to 26 articles.

Then, the 2000s energy crisis that occurred between 2003 and 2008, which was caused by a mismatched between the shortage of supply and the infinite demand had continuously increase the price of crude oil. It reached the highest at USD108 per barrel in year 2008 from USD25 per barrel in year 2003 (Siddiqi & Naseer, 2018). Scarcity of the resources had motivated researchers to explore crisis management further. In the year 2005, the number of published articles on crisis management climbed dramatically to 51 articles. The number of published articles continued to increase following several crises, particularly the global financial crisis (GFC) between 2007 and 2008. However, during this period the growth rate of crisis management related articles produced was moderate. It might be because the GFC primarily affects the financial sectors and not giving huge influence on commodities as compared to the past crises, which were caused by the spike in oil prices and shortage of energy.

Towards the end of the observation period, the number of crisis management related articles published increased from two digits into three digits. Record shows that in the year 2020, 108 articles were published, and in 2021, 166 articles were published. Year 2020 and year 2021 recorded significant history to the world after the World Health Organisation (WHO) declared the novel coronavirus (COVID-19) outbreak as a global pandemic on 11th March 2020. The whole world was shutting down and people need to follow the movement control order (MCO) in attempt to control the spread of the virus throughout the globe. Business and social activities were facing huge impact. This has demonstrated living in VUCA (volatility, uncertainty, complexity, and ambiguity) world. People need to be prepared to face the VUCA reality. The pandemic inspired scholars to study, write, and publish additional articles on crisis management. At the time data were extracted for this study (25 December 2022), 160 articles on crisis management have been published in the year 2022. Since the outbreak of COVID-19 at the end of 2019, industries have been plagued in uncertainties, and this scenario is especially evident among businesses; it is anticipated that the number of publications will continue to rise.

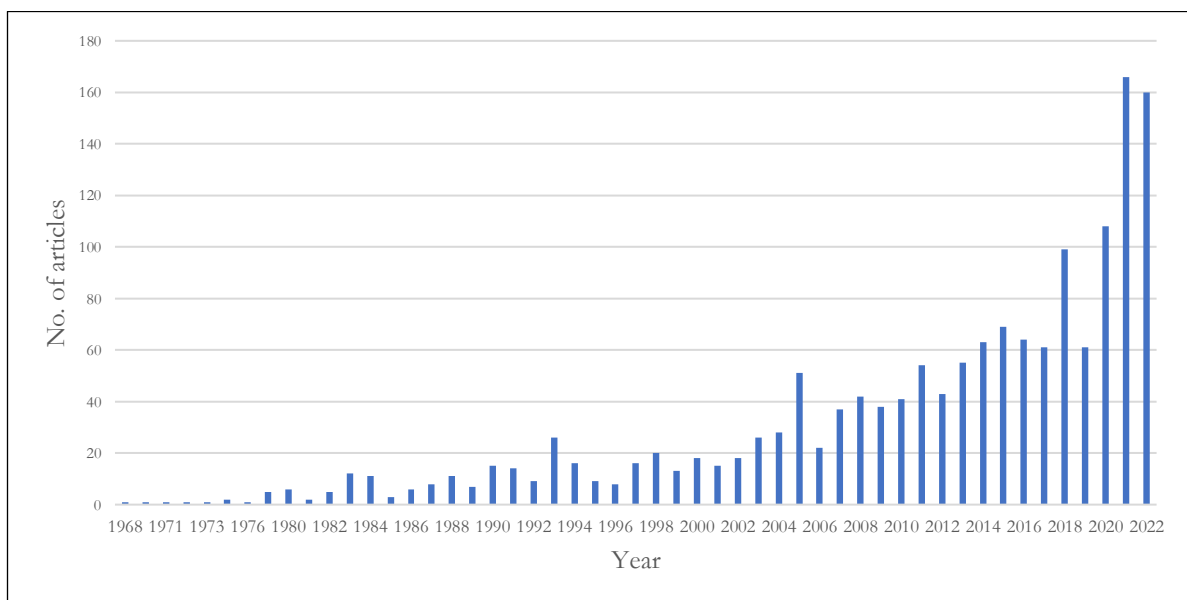


Figure 2: Annual Trends in Publications on Crisis Management

Most Active Source Titles

Table 1 presents the 15 most active source titles on crisis management. Based on Table 1, Journal of Contingencies and Crisis Management contributed 68 articles, representing 4.33% of the 1569 articles published. Due to the title of the journal itself, “crisis management”, it may have attracted the researchers to publish their studies in this journal. In addition, the journal is currently ranked as Q1 by Scopus with an impact factor of 1.14 in 2021, indicating the quality and standard of the Journal. Scholars might be drawn to publish their work there as there would be a higher chance of future study being cited by other researchers.

The following 14 journals contributed between 10 to 50 articles related to crisis management. In the second position, Quality & Safety in Health Care contributed 24 articles or 1.5% of the total articles. Public Relations Review came in third place documenting 19 articles (1.2%), followed by Organisation & Environment in the fourth place with 17 articles (1.1%). Scopus presently ranks these third and fourth journals as Q1 in 2021, with an impact factor of 1.83 and 1.57, respectively. Sustainability (Switzerland) was ranked fifth with 14 articles while International Journal of Emergency Management was ranked in the sixth position (with 13 articles) and Journal of Travel and Tourism Marketing was ranked seventh (with 12 articles each), and AORN Journal and European Security were placed in the eight position with 11 articles each. The remaining journals listed in Table 1 published between 8 and 10 articles each. In sum, these top 15 most active source titles published 242 papers, which accounted for 15.4% of the total 1569 articles analysed.

Table 1: Most Active Source Titles

Sources	Articles
Journal of Contingencies and Crisis Management	68
Quality & Safety in Health Care	24
Public Relations Review	19
Organisation & Environment	17
Sustainability (Switzerland)	14
International Journal of Emergency Management	13
Journal of Travel and Tourism Marketing	12
AORN Journal	11
European Security	11
International Journal of Disaster Risk Reduction	10
Disaster Prevention and Management: An International Journal	9
Organization Development Journal	9
Public Administration	9
Business Horizons	8
International Journal of Hospitality Management	8

Corresponding Authors' Countries

Table 2 shows the top 15 corresponding authors' countries on articles related to crisis management. It is observed that all 15 corresponding authors' multiple countries production (MCP) ratio were relatively low (less than 50%). Nevertheless, the MCP ratios were considered higher among Asian countries such as China (33.3%) and Korea (34.7%) as compared to the United States of America (13.7%) and the United Kingdom (17.3%). The ratios indicate that there was high international collaboration among authors from Asian countries in publishing article on crisis management. According to Eliasson and Kreuter (2000) cited in Khodarahmi (2009), crisis management may differ from country to country and organisation to organisation due to variations in level of turbulence in different situations in different corners of the globe. As a result, cultural

dimensions and legal aspects of each country need to be analysed for appropriate action plans. Hence, this may have contributed to the low MCP ratios in crisis management research.

Table 2: Top 15 Corresponding Authors' Countries

Country	Articles	SCP	MCP	MCP Ratio
USA	219	189	30	0.137
United Kingdom	98	81	17	0.1735
China	60	40	20	0.3333
Australia	52	44	8	0.1538
Canada	46	33	13	0.2826
Sweden	45	37	8	0.1778
France	41	32	9	0.2195
Germany	34	28	6	0.1765
Netherlands	34	25	9	0.2647
Iran	26	21	5	0.1923
Italy	24	18	6	0.25
Korea	23	15	8	0.3478
Greece	20	15	5	0.25
India	18	15	3	0.1667
Poland	15	14	1	0.0667

SCP = single country production, MCP = multiple countries production. MCP ratio stands for the proportion of MCP in total articles.

Most Productive Affiliations

Table 3 shows the top 15 most productive affiliations that contributed the highest number of publications on crisis management. Leiden University contributed the highest number of publications with 22 articles. The University has its own special research group that is focusing on the symptoms, causes, and dynamics of crises, as well as the difficulties of crisis management, known as Leiden University's Governance of Crises. The establishment of this research group may have resulted in the highest number of publications on crisis management. University of Toronto was ranked second with 21 published articles relating to crisis management. The University offers a Crisis Prevention, Management, and Communication Executive Programme. The programme aims to assist executives in gaining confidence to face crises and to avert future crisis. It is believed that researchers in this programme were actively publishing articles on crisis management. Then, Islamic Azad University is the third university with the most publications pertaining to crisis management, with 16 articles.

The remaining 12 affiliations published between 10 and 15 articles related to crisis management between 1968 and 2022. Swedish Defence University contributed 14 articles, followed by the University of California with 12 articles, and Uppsala University with 11 articles. Other affiliations listed in Table 3 published ten or less articles. These top 15 affiliations contributed a total of 169 publications, which represents 10.8% of the total 1569 articles analysed.

Table 3: Top 15 Most Productive Affiliations

Affiliations	Articles
Leiden University	22
University of Toronto	21
Islamic Azad University	16
Swedish Defence University	14
University of California	12
Uppsala University	11
Lund University	10
University of Central Florida	10
University of New South Wales	9
Mid Sweden University	8
Vrije Universiteit Amsterdam	8
New York University	7
Thammasat University	7
University of Florida	7
University of Ottawa	7

Citation Pattern

To address the second RQ on the citation patterns of publication on crisis management from the data gathered from Scopus database, the following analyses were conducted: a) citation metrics and b) highly cited articles.

Citation Metrics

As shown in Table 4, a total of 1569 articles from 964 journals were identified from the Scopus database from 1968 to 2022 (till 25 December 2022). The average citations per document was 17.76, and the average citations per year per document was 2.008. The importance of a published work is determined largely by its number of citations (Szomszor et al., 2020). In addition, a total of 3399 authors wrote these documents. 509 documents were with a single author, while the remaining (2890) documents were multi-authored. Data on Table 4 also indicate the collaboration index was 2.9, which means, on average, almost three authors have written an article.

Table 4: Citations Metrics

Metrics	Data
Period	1968-2022
Sources (Journals)	964
Documents	1569
Average citations per documents	17.76
Average citations per year per doc	2.008
Authors	3399
Authors of single-authored documents	509
Authors of multi-authored documents	2890
Single-authored documents	574
Documents per Author	0.462
Authors per Document	2.17
Co-Authors per Documents	2.51
Collaboration Index	2.9

Highly Cited Articles

Table 5 shows top 10 highly cited articles published on crisis management. Based on Table 5, article titled “Reframing crisis management” by Pearson and Clair (1998) obtained the highest number of citations. The article published in the *Academy of Management Review* received a total of 1086 citations. The study investigated integrating and improving current knowledge to give multidisciplinary approaches to crisis management research based on psychological, social-political, and technological structural research. The authors provide definitions of organisational crisis and crisis management, and a framework depicting the crisis management process.

Then, an article entitled “Chaos, crises and disasters: A strategic approach to crisis management in the tourism industry” by Ritchie (2004) was ranked second in the highly cited articles. The author investigated and analysed a strategic and holistic approach to crisis management for the tourism industry in the paper. The study recommends a strategic approach to their management, beginning with proactive pre-crisis planning and progressing to strategic implementation, evaluation, and feedback. The paper received a total of 656 citations.

The third highly cited article was published by Heath and Luff (1992) and received 514 citations. The article titled "Collaboration and control crisis management and multimedia technology in London underground line control rooms" examines the idea of using current sociological advancements, namely naturalistic analysis of organisational behaviour and social interaction, as a foundation for the design and development of tools and technology to promote collaborative work.

Table 5: Top 10 Highly Cited Articles

Author (Year)	Title	Source	Total Citations (TC)	TC per year
Pearson and Clair (1998)	Reframing crisis management	Academy of Management Review	1086	43.44
Ritchie (2004)	Chaos, crises and disasters: A strategic approach to crisis management in the tourism industry	Tourism Management	656	34.5263
Heath and Luff (1992)	Collaboration and control crisis management and multimedia technology in London underground line control rooms	The Journal of Collaborative Computing and Work Practices	514	16.5806
Williams et al. (2017)	Organisational response to adversity: Fusing crisis management and resilience research streams.	Academy of Management Annals	504	84
Comfort (2007)	Crisis management in hindsight: Cognition, communication, coordination, and control.	Public Administration Review	483	30.1875
Boin and McConnell (2007)	Preparing for critical infrastructure breakdowns: The limits of crisis management and the need for resilience.	Journal of Contingencies and Crisis Management	454	28.375
Bundy et al. (2017)	Crises and crisis management: Integration, interpretation, and research development.	Journal of Management	382	63.6667
Quarantelli (1998)	Disaster crisis management: A summary of research findings.	Journal of Management Studies	354	10.1143
Blake and Sinclair (2003)	Tourism crisis management: US response to September 11.	Annals of Tourism Research	298	14.9
Jin et al. (2014)	Examining the role of social media in effective crisis management: The effects of crisis origin, information form, and source on publics' crisis responses.	Communication Research	284	31.5556

Themes

The following analyses were carried out: a) keyword analysis, b) co-occurrence network, and c) thematic map to understand the common themes of research flowing among scholars within the crisis management research.

Keywords Analysis

Table 6 summarises the most frequently used author keywords in crisis management research while Figure 3 provides a visual representation of the terms that appeared most frequently in crisis management related publications. A keyword analysis was conducted to determine the most prevalent themes in crisis management publications. The author's keywords are those provided by the authors at the time the article was published. According to Zheng et al. (2016), authors use keywords as a clear, representative, and succinct description of the research content; thus, hot topics and themes of a research domain can be identified based on a keywords analysis. Based on data in Table 6, "crisis management" was the most prevalent associated keyword (n=520). Additionally, "Covid-19" (n=110), "crisis" (n=71), "management" (n=30), and "crisis communication" (n=25) were frequently associated keywords. Following the fact that Covid-19 has recently spread all over the world, Table 6 and Figure 3 show that a rising number of studies have been conducted on crisis management in relation to Covid-19.

Table 6: Most Frequent Keywords used by Authors

Words	Occurrences
crisis management	520
covid-19	110
crisis	71
management	30
crisis communication	25
pandemic	23
social media	22
leadership	19
simulation	19
tourism	18

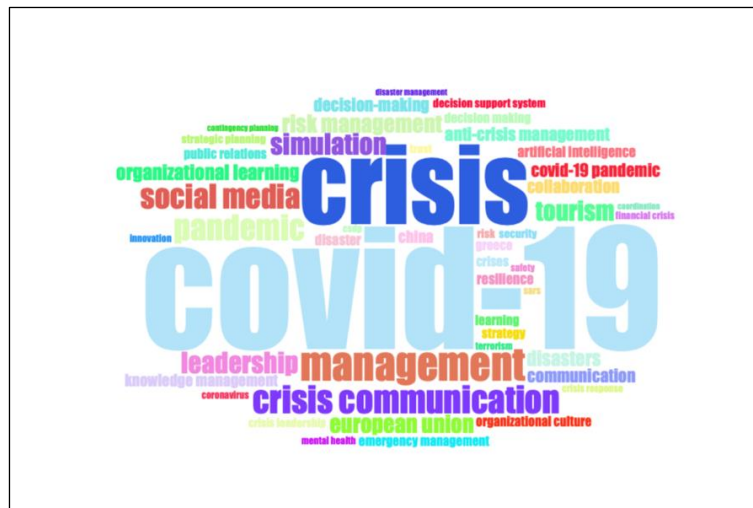


Figure 3: Word Cloud

Co-occurrence Network

This study also performed the co-occurrence network analysis to determine the subjects of interest in the collection of crisis management studies articles. Co-occurrence of keywords occurs when two keywords appear in an article simultaneously, indicating a relationship between the two concepts (Baker et al. 2020). The examination of keyword co-occurrence in published papers reveals three broad groupings. As illustrated in Figure 4, the three discovered clusters are as

follows: Cluster one (coloured red) features "crisis management" as a major node and groups together additional terms such as "Covid-19", "pandemic", "leadership", "simulation", "disaster", and "risk management." Thus, the cluster is associated with research on crisis management that focuses on how organisations' management may respond to unforeseeable occurrences such as disease and disaster. The second cluster is the blue cluster, consisting of "crisis" keyword and surrounded by other important terms such as "management", "tourism", "communication," and "disaster". This cluster focuses on crisis management research in relation to tourism industry. For instance, Ritchie (2017) analysed a strategic and holistic approach to crisis management for the tourism industry. Then, in Cluster 3 (which is coloured green) contains the following keywords: "crisis communication", "social media", and "public relation". This cluster highlights the critical role crisis communication plays in crisis management.

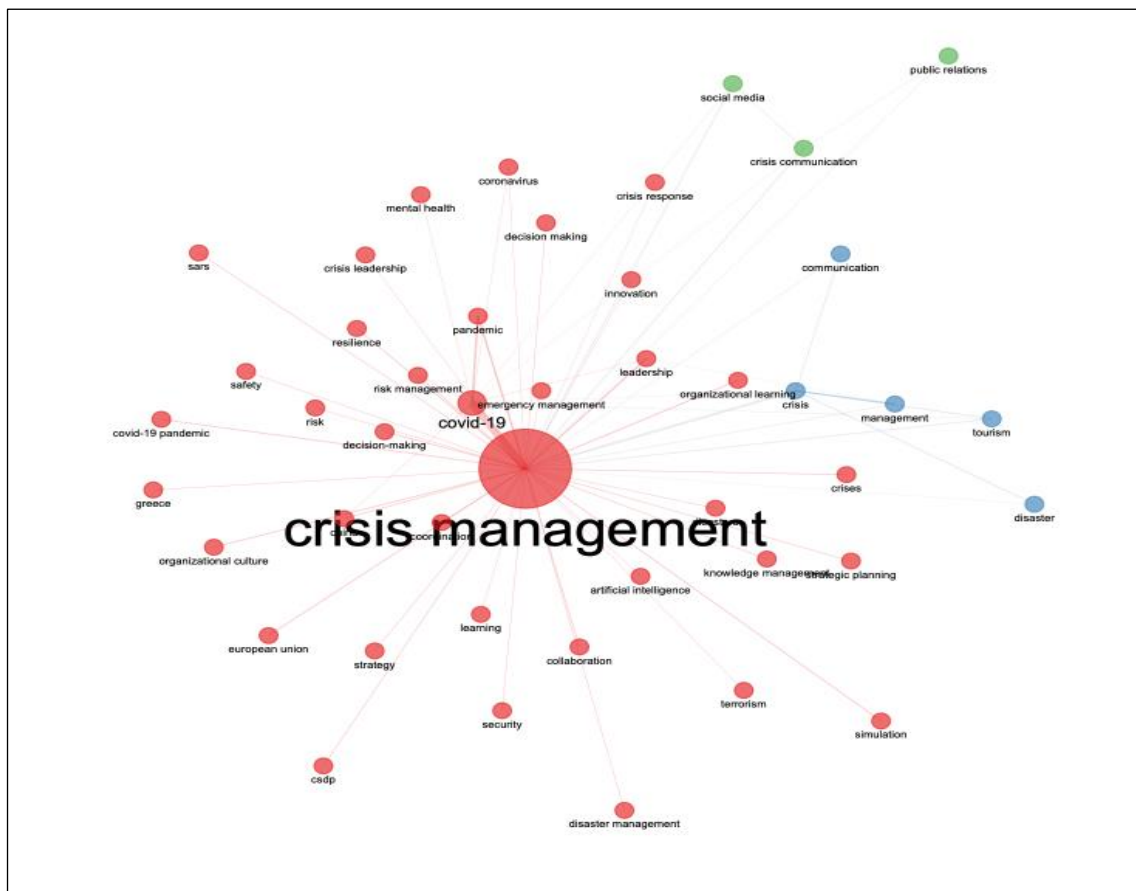


Figure 4: Co-occurrence Network

Thematic Map

A thematic map allows four different typologies of themes in publications within crisis management. The themes were defined according to the quadrant in which they are placed. As shown in Figure 5, the thematic map is based on density (y-axis) and centrality (x-axis). The centrality measures the significance of the selected theme, while the density measures the development of the chosen theme (Uluyol et al., 2021). Themes in the lower-right quadrant are the basic or transversal themes with high centrality and low density. Themes in this quadrant are represented by "crisis management", "crisis communication", "disasters", "Greece", and "crisis". Basic themes are important for the development of a research field, but internally they are not sufficiently developed (Martinez et al., 2015). Hence, these themes are important within the crisis management research and much more research need to be done on these themes. The themes in the upper-right quadrant are known as the motor themes. They are characterised by

both high centrality and density. This means that they are developed and important for the research field. Themes in this quadrant are represented by “simulation” and “European Union”.

Themes in the upper-left quadrant are niche themes. These themes are known as highly developed but isolated themes. The terms “preparedness”, “contingency planning”, and “hotel industry” are found in this quadrant. Themes that appear on the lower left part are emerging or declining themes. They have both low centrality and density, meaning they are weakly developed and marginal. Topics under this theme include “emergency response” and “artificial intelligence”.

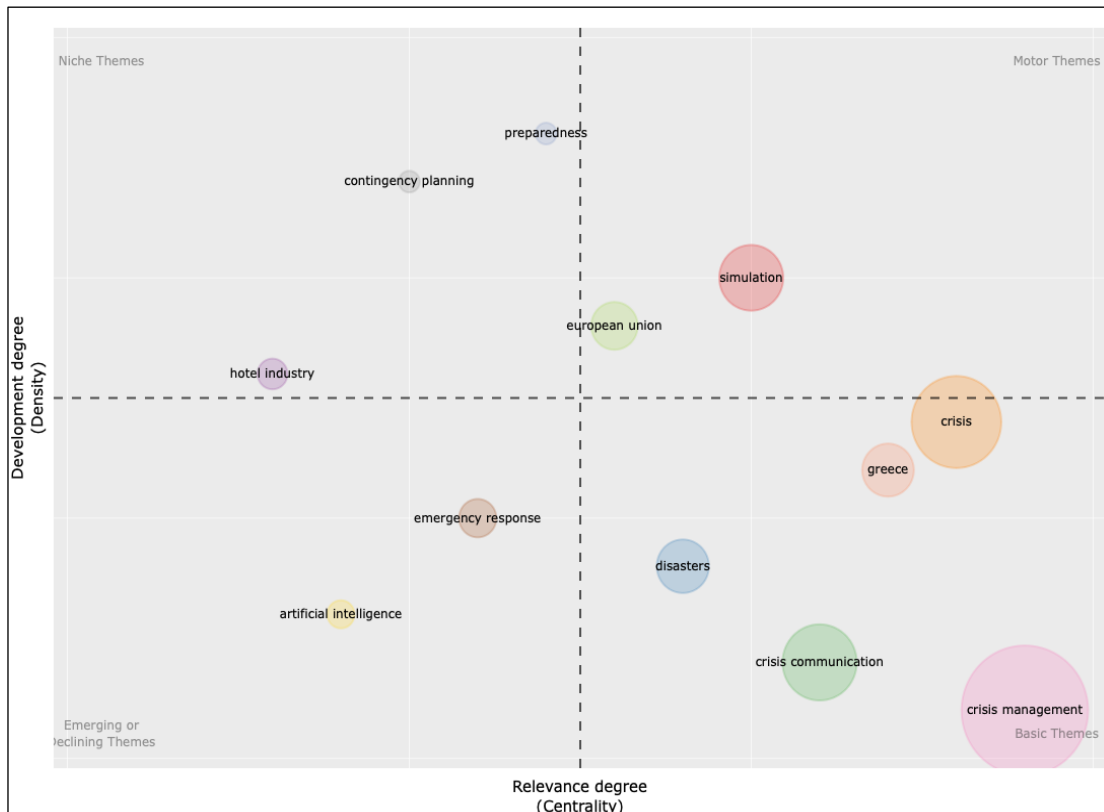


Figure 5: Thematic Map

DISCUSSION

This section discusses the findings above by revisiting the following RQs.

RQ1: What is the current trend of the publication in the crisis management?

The publication trend in the crisis management followed the major crisis of the world whereby publications was high throughout the early 1980s, early 1990s, mid-2000s, and between 2020 and 2022. It is expected that the number of research involving crisis management will grow along with the prevalence crisis. The analysis also revealed that Journal of Contingencies and Crisis Management contributed the highest publications on crisis management with 68 articles. This might be because of the journal’s name, “crisis management,” that encouraged the researchers to publish their work there. Also, this present study shows that although most corresponding authors’ countries were from western countries (such as the USA and the UK), the collaboration ratios among authors were higher among authors from Asian countries such as China and Korea. Based on the growth of publication presented in Figure 2 in the previous sections, the number of publications on crisis management seems to be an upward trend in the future. This is anticipated due to the active participation among researchers such as Leiden University and University of Toronto that have established dedicated research groups and programmes on crisis management.

RQ2: What are the current citation patterns of publication on crisis management?

A total of 1569 articles were gathered from Scopus database for the purpose of this study. The 1569 articles were extracted from 964 journals. The average citations per document was 17.76, and the average citations per year per document was 2.008. The publications on crisis management have involved 3399 authors with majority (2890) of the articles were multi-authored. The article by Pearson and Claire (2009) has so far achieved the highest number of citations within crisis management studies.

RQ3: Which themes involving the crisis management are the most popular among scholars?

This paper found three themes based on the analysis of the co-occurrences of the keywords, namely “crisis management”, “crisis management in tourism” and “crisis communication”. In addition, the thematic analysis found several important themes in this visualisation map. Themes on “crisis management”, “crisis communication”, “disasters”, “Greece”, and “crisis” were found under basic theme while “simulation” and “European Union” were grouped in the motor theme. Themes that appear in niche themes were “preparedness”, “contingency planning”, and “hotel industry” and topics under emerging theme include “emergency response” and “artificial intelligence”. These themes appear to be at the centre of research on crisis management.

CONCLUSION

This study aims to provide an insight into crisis management. This paper adopted a bibliometric analysis using a freely available, Biblioshiny programme to analyse 1569 documents from the Scopus database. This study's findings conclude as follows. Firstly, the number of publications on crisis management followed the major crisis of the world. The number of publications has shown an upward trend in the past three years since the whole world is affected by COVID-19. Secondly, the highest number of publications related to crisis management have been published in *Journal of Contingencies and Crisis Management*. Thirdly, most publications on crisis management had low MCP. This may be contributed to the nature of crisis management that depends on culture. Fourthly, the most cited article in crisis management obtained 1086 citations. The article investigated the integration and improvement of current knowledge to give multidisciplinary approaches to crisis management research based on psychological, social-political, and technological structural research. To understand the common theme of research flowing among researchers within the crisis management research, keyword frequency revealed “Covid-19” as the second most frequent keyword used by author after “crisis management”. The co-occurrence network analysis revealed three broad clusters namely crisis management (Cluster 1), crisis management in tourism (Cluster 2), and crisis communication (Cluster 3). These three research clusters demonstrate the wide range of topics examined and researched in publications for crisis management.

In conclusion, the research may have some limitations because it was based on the constantly updated Scopus database. Thus, there can be differences in the analysis depending on the number of articles published because of frequent updates to the Scopus database. Future studies may use other databases such as Web of Science to ensure complete and thorough selection of sources. In addition, future research should include other sources such as review papers, books, chapters, and conference proceedings as the current bibliometric analysis solely used empirical studies. Finally, other aspects of bibliometric analysis such as social structure (i.e., collaboration network and world map) could be examined in the future. Despite the limitations, this paper presents trends and themes of crisis management.

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REFERENCES

- Ahmi, A., & Nasir, M. H. (2019). Examining the trend of the research on extensible business reporting language (XBRL): A bibliometric review. *International Journal Innovation*, 5(2), 1145-1167.
- Andres, L., & Round, J. (2015). The creative economy in a context of transition: A review of the mechanisms of micro-resilience. *Cities*, 45, 1-6. DOI: 10.1016/j.cities.2015.02.003
- Ansell, C., & Boin, A. (2019). Taming deep uncertainty: The potential of pragmatist principles for understanding and improving strategic crisis management. *Administration & Society*, 51(7), 1079-1112.
- Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959-975. <http://dx.doi.org/10.1016/j.joi.2017.08.007>
- Asgary, A., Ozdemir, A.I., & Özyürek, H. (2020). Small and medium enterprises and global risks: Evidence from manufacturing SMEs in Turkey. *International Journal of Disaster Risk Science*, 11(1), 59-73. <https://doi.org/10.1007/s13753-020-00247-0>
- Ayoko, O. B., Caputo, A., & Mendy, J. (2021). Management research contributions to the COVID-19: A bibliometric literature review and analysis of the contributions from the Journal of Management & Organization. *Journal of Management & Organization*, 1-27.
- Baji, F., Jowkar, T., Leydesdorff, L., & Felt, U. (2022). COVID-19 Across social sciences literature: A co-word study. *Journal of Scientometric Research*, 11(1), 125-129.
- Baker, H. K., Pandey, N., Kumar, S., & Haldar, A. (2020). A bibliometric analysis of board diversity: Current status, development, and future research directions. *Journal of Business Research*, 108, 232–246. <https://doi.org/10.1016/j.jbusres.2019.11.025>
- Barsky, R. B., & Kilian, L. (2004). Oil and the macroeconomy since the 1970s. *Journal of Economic Perspectives*, 18(4), 115-134.
- Biggs, D. (2011). Understanding resilience in a vulnerable industry: The case of reef tourism in Australia. *Ecology and Society*, 16(1), 30.
- Boin, A., Kuipers, S., & Overdijk, W. (2013). Leadership in times of crisis: A framework for assessment. *International Review of Public Administration*, 18(1), 79-91.
- Castro, M. P. and Zermeño, M. G. G. (2020). Being an entrepreneur post-COVID-19—resilience in times of crisis: A systematic literature review. *Journal of Entrepreneurship in Emerging Economies*, 13(4), 721-746.
- Ciampi, F., Giannozzi, A., Marzi, G., & Altman, E. I. (2021). Rethinking SME default prediction: A systematic literature review and future perspectives. *Scientometrics*, 126(3), 2141-2188.
- Corrales-Estrada, A. M., Gómez-Santos, L. L., Bernal-Torres, C. A., & Rodríguez-López, J. E. (2021). Sustainability and resilience organisational capabilities to enhance business continuity management: A literature review. *Sustainability*, 13(15), 8196.
- Della Corte, V., Del Gaudio, G., Sepe, F., & Luongo, S. (2021). Destination resilience and innovation for advanced sustainable tourism management: A bibliometric analysis. *Sustainability*, 13(22), 12632.
- Doern, R. (2016). Entrepreneurship and crisis management: The experiences of small businesses during the London 2011 riots. *International Small Business Journal*, 34(3), 276-302.
- Doern, R., Williams, N., & Vorley, T. (2019). Special Issue on entrepreneurship and crisis: Business as usual? An introduction and review of the related literature. https://www.researchgate.net/publication/329173620_Special_issue_on_entrepreneurship_and_crises_business_as_usual_An_introduction_and_review_of_the_literature
- Duarte Alonso, A., & Bressan, A. (2015). Resilience in the context of Italian micro and small wineries: An empirical study. *International Journal of Wine Business Research*, 27(1), 40-60. <https://doi.org/10.1108/IJWBR-08-2014-0035>
- Eliasson, A. C., & Kreuter, C. (2000). *On currency crisis models: A continuous crisis definition*. Quantitative Analysis, Deutsche Bank Research.

- www.economia.uniroma2.it/ceis/conferenze_convegni/banking2001/papers/mercoledì/Eliasson-Kreuter.pdf
- Gebhardt, C. (2012). The entrepreneurial state: The German entrepreneurial regions' programme as an attenuator for the financial crisis. *European Planning Studies*, 20(9), 1469-1482. DOI: 10.1080/09654313.2012.709062
- Geiger, N., & Kufenko, V. (2018). *Business cycles and economic crises: A bibliometric and economic history*. Routledge.
- Herbane, B. (2018). Rethinking organisational resilience and strategic renewal in SMEs. *Entrepreneurship and Regional Development*, 31(5/6), 476-495. DOI: 10.1080/08985626.2018.1541594
- Hsu, C. L., & Chiang, C. H. (2015). RETRACTED ARTICLE: The financial crisis research: A bibliometric analysis. *Scientometrics*, 105(1), 161-177.
- Jiang, Y., Ritchie, B. W., & Benckendorff, P. (2019). Bibliometric visualisation: An application in tourism crisis and disaster management research. *Current Issues in Tourism*, 22(16), 1925-1957.
- Karakose, T., Yirci, R., Papadakis, S., Ozdemir, T. Y., Demirkol, M., & Polat, H. (2021). Science mapping of the global knowledge base on management, leadership, and administration related to COVID-19 for promoting the sustainability of scientific research. *Sustainability*, 13(17), 9631.
- Khodarahmi, E. (2009). Crisis management. *Disaster Prevention and Management: An International Journal*, 18(5), 523-528.
- Krishnan, C. S. N., Ganesh, L. S., & Rajendran, C. (2022). Entrepreneurial interventions for crisis management: Lessons from the Covid-19 Pandemic's impact on entrepreneurial ventures. *International Journal of Disaster Risk Reduction*, 72, 102830.
- Martínez, M. A., Cobo, M. J., Herrera, M., & Herrera-Viedma, E. (2015). Analyzing the scientific evolution of social work using science mapping. *Research on Social Work Practice*, 25(2), 257-277.
- Munim, Z. H., Mariia, D., Veronica, J. J., Mohammad, H.S., & Marius, I. (2020). Big data and artificial intelligence in the maritime industry: A bibliometric review and future research directions. *Maritime Policy & Management*, 47(5), 577-597.
- Nasir, A., Shaukat, K., Hameed, I. A., Luo, S., Alam, T. M., & Iqbal, F. (2020). A bibliometric analysis of corona pandemic in social sciences: A review of influential aspects and conceptual structure. *IEEE Access*, 8, 133377-133402.
- Pattnaik, D., Hassan, M. K., Kumar, S., & Paul, J. (2020). Trade credit research before and after the global financial crisis of 2008—A bibliometric overview. *Research in International Business and Finance*, 54, 101287.
- Sabatino, M. (2016). Economic crisis and resilience: Resilient capacity and competitiveness of the enterprises. *Journal of Business Research*, 69(5), 1924-1927. DOI: 10.1016/j.jbusres.2015.10.081
- Sampaio, C., Farinha, L., Sebastião, J. R., & Fernandes, A. (2022). Tourism industry at times of crisis: A bibliometric approach and research agenda. *Journal of Hospitality and Tourism Insights*, (ahead-of-print). <https://doi.org/10.1108/JHTI-08-2021-0223>
- Siddiqi, M. M., & Naseer, M. N. (2018). A sustainable integrated water and energy production plan to meet future requirements—A case study of Pakistan. *Journal of Research in Environmental Science and Toxicology*, 8(1), 38-45.
- Szomszor, M., Pendlebury, D. A., & Adams, J. (2020). How much is too much? The difference between research influence and self-citation excess. *Scientometrics*, 123(2), 1119-1147.
- Trachsler, T., & Jong, W. (2020). Crisis management in times of COVID-19: Game, set or match? *Journal of Contingencies and Crisis Management*, 28(4), 485-486.

- Tsilika, T., Kakouris, A., Apostolopoulos, N., & Dermatis, Z. (2020). Entrepreneurial bricolage in the aftermath of a shock. Insights from Greek SMEs. *Journal of Small Business and Entrepreneurship*, 1, 1-18. DOI: 10.1080/08276331.2020.1764733
- Uluyol, B., Secinaro, S., Calandra, D., & Lanzalonga, F. (2021). Mapping waqf research: A thirty-year bibliometric analysis. *Journal of Islamic Accounting and Business Research*, 12(5), 748-767. <https://doi.org/10.1108/JIABR-01-2021-0031>
- United Nations. (2020). Faced with a possible increase in coronavirus suicides, the UN calls for action to take care of mental health. <https://news.un.org/es/story/2020/05/1474312>
- Wahid, R., Ahmi, A., & Ferdous Alam, A. S. A. (2020). Growth and collaboration in massive open online courses: A bibliometric analysis. *International Review of Research in Open and Distributed Learning*, 21(4), 292-322.
- Walby, S. (2015). *Crisis*. John Wiley & Sons.
- World Health Organisation. (2020). Coronavirus disease 2019 (COVID-19) situation report: 44.
- Zakaria, R., Ahmi, A., Ahmad, A. H., & Othman, Z. (2020). Worldwide melatonin research: A bibliometric analysis of the published literature between 2015 and 2019. *Chronobiology International*, 38(1), 27-37. <https://doi.org/10.1080/07420528.2020.1838534>
- Zheng, T., Wang, J., Wang, Q., Nie, C., Shi, Z., Wang, X., & Gao, Z. (2016). A bibliometric analysis of micro/nano-bubble related research: Current trends, present application, and future prospects. *Scientometrics*, 109, 53-71.