Bibliometric Insights into Crisis Management:
A Review of Key Literature

Tareq Almazyad
Faculty of Management, Universiti Teknologi Malaysia, Malaysia
Email: tsmazyad@gmail.com

Norhayati Zakuan
Faculty of Management, Universiti Teknologi Malaysia, Malaysia
Email: norhayatimz@utm.my

Laith Alrubaiee
Professor of Marketing, Department of Business Administration
Al-Farahidi University
Email: alrubaiee_laith@yahoo.com

Shamaila Butt
Guangzhou Nansha Information Technology Park,
Director of Research and Innovation, Guangdong CAS Cogniser Information Technology, China
*** Corresponding Author** Email: shamaila@cogniser.cn; shamaila.butt87@gmail.com
ORCID: https://orcid.org/0000-0003-1411-9590

Azmirul Ashaari
Faculty of Management, Universiti Teknologi Malaysia, Malaysia
Email: azmirul@utm.my

Raghed IBRAHIM ESMAEEL
Department of Industrial Management, College of Administration and Economics,
University of Mosul, Mosul, Iraq
Email: ragheed.ibrahim@uomosul.edu.iq

Abstract

Purpose: The study explores the current situation of crisis management research and future directions through a comprehensive visual analysis by using VOSviewer.

Methodology: To achieve our study's objective, we retrieved published papers from the Scopus Database covering 1995 to 2022, resulting in 1853 publications. The study used bibliometric indicators to analyze the publications and conducted co-authorship and co-occurrence analyses to identify the main research strengths and topics in crisis management.

Findings: The findings provide insight into the seven crucial facets of the crisis management environment, including methodology, developed, emerging, and developing countries, governance and SMEs, public policy and relations, crisis response, COVID-19 response, and risk communication and knowledge management. The findings also identify current research trends such as urban resilience, crisis communication, sustainability, climate change, mental health, and future hotspot areas such as family business, organizational resilience, lockdown, COVID-19 crisis, and digitalization in crisis management.

Novelty: This research introduces insights into the crisis management literature by identifying research gaps and submitting new arrangements for emerging hotspots' future keywords. It employs a rigorous methodology that offers a robust analysis of the crisis management literature.

Crisis management research explores key areas, research trends, and future perspectives, revealing the application of decision-making principles. Rigorously using decision science, the study provides valuable insights and improves understanding of crisis management literature.

Keywords: Crisis management, Bibliometric Analysis, Scopus, Content Analysis

JEL Classification: H12, C89, C00

1. Introduction

The importance of crisis management in today's corporate environment is highlighted by the globalized and constantly changing nature of markets. De Cuyper, et al. (2019) view crises as permanent features of our environment, necessitating ongoing observation and prediction to maintain organizational balance and stability. The crisis management process involves an organization taking proactive steps to recognize and evaluate warning indicators that could indicate future crises (Buhagiar & Anand, 2023; Herrera, et al., 2023; Thakur & Hale, 2022).

Within the modern crisis management paradigm framework, a compelling argument exists for applying a strategic management strategy. Managers' daily duty is identifying potential crisis warning signs and creating strategies to fortify the organization against upcoming crises. This strategic approach is crucial because of the ongoing evaluation of possible disasters and the knowledge exchange that leads to organizational learning (Evenseth, et al., 2022; AlMaian & Bu Qammaz, 2023). Crisis managers are essential for helping people through various changes while continuing to solve problems effectively. Prior studies in this field have focused on finding methods, approaches, and strategies to maximize crisis management effectiveness, with the primary objective being to manage crises with the least amount of damage possible (Ivaldi, et al., 2022). Crisis readiness has become a significant issue in management and has progressed to be outside the purview of strategic management. This admission emphasizes how important it is for businesses to prioritize crisis preparedness as a part of their overall management strategy.

The extensive crisis literature highlights the importance of implementing efficient crisis management strategies. Wan and Wong (2001) claim that the 1997 crisis explores the idea of contagion, while Foo, et al. (2008) investigate how Asian stock markets are becoming more interconnected after the financial crisis. Kung and Wong (2009) examine the applicability of technical analysis to the Singaporean stock market before and during the Asian financial crisis of 2009, while Fung, et al. (2011) provide a pseudo-Bayesian model for action results during financial crises. Lean, et al. (2015) investigate the investors' risk preferences in gold-related activities and futures during different phases of the global financial crisis. McAleer, et al. (2016) examine profit-sharing plans during different ranges of financial crises, including the subprime crisis, the Asian financial crisis, and the economic boom. A Bayesian approach is used by Guo, et al. (2017) to study investor behaviour during a financial crisis and extreme volatility. Likewise, Allen, et al. (2018) explain the GFC and subsequent European debt crisis using non-parametric multiple change point analysis. Zhu, et al. (2019) also explore how the global financial crisis affects the effectiveness and performance of the financial markets in Latin America. According to Thanh, et al. (2021), investment diversification is considered a proactive strategy as they analyze the economic crisis caused by failure risk. Adebayo, et al. (2022) investigate how South Korean decision-makers manage economic and geopolitical risks. Khan, et al. (2023) investigate problems related to financial well-being and create risk-reduction plans. Hassan, et al. (2023) analyze whether Islamic practices shield them from financial difficulties. Considering market volatility, these studies underscore the complexity of financial crises and the importance of creating effective crisis management plans. Le, et al. (2024) investigate the risks associated with banks based in Vietnam by concentrating on the crisis response mechanism, which aims to lower financial risks and maintain the stability of the Vietnamese financial system.

The growing significance of crisis management in today's fast-paced corporate environment, which impacts globalization and complex markets, motivates this study. Organizations must actively negotiate and limit potential disruptions to maintain stability and balance when crises occur frequently. Although there is extensive literature on crisis management, thorough empirical research on its issues is conspicuously lacking. Therefore, this work aims to use bibliometric analysis to conduct a thorough scientific mapping of crisis management, emphasizing recurring themes in the literature and providing an overview of the body of knowledge already in existence. The study also advances the field by addressing information gaps, offering a comprehensive review, and highlighting new hotspots. Because this research is the first to do a scientific mapping utilizing the Scopus database, the approach guarantees a thorough review of the crisis management literature. Reputable for its extensive worldwide coverage of peer-reviewed literature, Scopus offers a comprehensive dataset that makes trustworthy analysis easier. Performance analysis, including total citation counts and bibliometric indexes like the h-index, will be carried out to meet our goals. The scientific mapping facilitates comprehension of the conceptual framework underlying critical crisis management challenges using co-occurrence analysis. To meet our goal, the study will conduct performance analyses, including total citation count and bibliometric indexes like the h-index. Using co-occurrence analysis, scientific mapping makes understanding the conceptual framework behind important crisis management problems easier. The main objectives of our study are to monitor the pattern in published research articles about crisis management, to find the most-cited journals, to identify essential nations and organizations, to identify influential authors, and to investigate the connection between keywords and possible research directions.

Using bibliometric analysis, research on crisis management becomes more comprehensive and rigorous. It provides a data-driven study of today's crisis management literature, identifies field gaps, and suggests future investigation directions. This integrated approach supports evidence-based decision-making in crisis management by giving a thorough picture of the academic landscape and enabling researchers, policymakers, and practitioners to make well-informed decisions based on quantitative insights (Shukor, et al., 2023; Zhang, et al., 2022). To summarize, integrating crisis management and bibliometric analysis offers a powerful approach to understanding, evaluating, and expanding the body of knowledge in crisis management. This combination aids in the ongoing study and advancement of crisis navigation and management strategies.

This study substantially extends the body of literature on crisis management. Firstly, the study used the Scopus database as one of the most comprehensive peer-reviewed literature sources. In addition, the study applied a thorough scientific mapping and bibliometric study of the crisis management field. Secondly, the results meticulously record the evolution of crisis management research from 1995 to 2022, offering valuable insights into the field's direction. Thirdly, it highlights essential components of crisis management research, such as the most fruitful publications, organizations, writers, widely referenced papers, popular topics, and nations. Finally, the study uses information visualization software to illustrate authors and keywords commonly used in the subject, providing a concise and understandable summary. The practical implications of the study's findings are noteworthy for scholars, decision-makers, and professionals working in the crisis management domain. This study provides the basics of decision science by discovering crisis management for financing and management models. Decision sciences suggest enhancing ways for healthy decision-making in the long term. Furthermore,

this study seeks to develop ways in the context of risk management decisions in a high-risk environment.

The rest of the article is structured as follows: Section 2 discusses the data collection process and methodology used in this research study. Section 3 provides a detailed and exhaustive descriptive analysis of the data collected. Section 4 presents the bibliometric analysis, which includes co-authorship analysis of countries and authors and co-occurrence of keywords. Section 5 discusses the content analysis. Section 5 concludes the research study.

2. Methods

Pritchard (1969) first applied the study's methodology, bibliometric analysis, which academics appreciate for aiding quantitative analysis in understanding the crisis management literature (Oh & Lee, 2020). According to Garfield (1955) and Pritchard (1969), bibliometrics is the statistical examination of scholarly communication through publications. The most prevalent technique is citation analysis variation (Vogel & Güttel, 2013). In contrast to a typical review paper that focuses on recent advancements, challenges, and future directions for a particular topic, bibliometric analysis is typically a machine-like mechanism to understand the global research trends in an area of interest based on the output of academic database literature (Khudzari, et al., 2018). Liu, et al. (2020) describe bibliometrics as an effective information management tool that yields insightful analytical results in a variety of professions, while Gomez-Jauregui, et al. (2014) praise it as an excellent source of knowledge for a wide range of other fields, and Zaby (2019) notes that the finance industry has only recently applied it.

2.1 Descriptive and Bibliometric Maps

This study's analysis differs from previous research because those earlier studies primarily used systematic literature reviews for content analysis. A few studies have used bibliometric analysis, albeit for large-scale data visualization or scientific mapping. The study used the VOSviewer software for bibliometric map analyses. On the other hand, this work employs VOSviewer and the R (Biblioshiny) package for bibliometric analysis and content analysis. In the corpus of literature on crisis management, not a single study has employed these tools to integrate content analysis and bibliometric approaches.

The quantitative tools employed in this investigation include descriptive and bibliometric analyses. While the bibliometric analysis uses co-authorship and cooccurrence analysis, the descriptive analysis displays the arrangement of numerous articles across time in the Scopus Database. This study submits the final 1853 papers' CSV file, complete with bibliographical data, keywords, and citations, to the VOSviewer software (Van Eck & Waltman, 2020). Because our primary goal is to concentrate on a study topic's overall level and gradual evolution, the authors employed VOSviewer (Gutiérrez-Nieto & Serrano-Cinca, 2019). VOSviewer is a tool for creating and presenting bibliometric maps with objects. The items in this study are objects of interest, such as author keywords and countries. Every pair of elements may have a relationship, link, or connection. A positive numerical number denotes the strength of each connection or link; the higher the value, the stronger the bond between the two linked entities.

Regarding co-authorship analysis, two related countries have co-authored, as indicated by their link strength. In the meantime, co-authorship compares a country's overall strength to that of other nations. Regarding cooccurrence analysis, the strength of the connection between author keywords shows the frequency of publications in which two keywords occur together. For additional information on the features of the VOSviewer programme, see Van Eck and Waltman (2020).

2.1.1 Co-authorship analysis

The authors have included all the nations connected to numerous authors in this co-authorship analysis, as the unit of analysis is a country. The primary methodology in bibliometric research analysis, co-authorship analysis, significantly influences international research collaboration (Chen, et al., 2019). The World Bank (2022) divided the linked countries or territories into seven regions: North America, Africa, East Asia and the Pacific, the Middle East, North Africa, and Europe and Central Asia.

2.1.2 Co-occurrence analysis

Before importing the author keyword list into VOSviewer, we searched 1853 articles for synonyms or variants of the keywords used in the co-occurrence analysis. We set the minimum number of occurrences for a keyword analysis at five to ensure a comprehensive view of VOSviewer. We recorded five thousand two hundred ninety-one keywords for mapping in VOSviewer; however, after re-labeling them as various synonymic single words and phrases, 142 keywords met the minimum occurrence criteria. The authors chose the overlay visualization style to generate, visualize, and explore the map because they were also interested in other parameters like the number of occurrences, the average publication years, and the strength of the keyword links (Van Eck & Waltman, 2020).

### *2.2 Research Strategy and Sources of Data*

Scopus is a commonly used database for academic literature and citation indexes (Harzing & Alakangas, 2016). However, this study chose Scopus as the primary database because it covers a wide range of subjects, including those that may not be available on other databases like Web of Science. Google Scholar was not considered due to its lack of solid quality control processes. The initial search was conducted on November 27, 2022, with the central theme being "crisis management" in the title, abstract, and keywords, resulting in 14,253 documents.

Subsequent searches were conducted between November 27, 2022, and February 14, 2023, using the same central theme and various other variants. The authors obtained different results, with the number of documents ranging from 14,003 to 14,253. Finally, the authors used the search string TITLE-ABS-KEY ("Crisis Management"). They restricted the search to journal articles, open access, and the final publication stage only, limited to 2022 and excluding 2023, resulting in 1,961 documents. The database contained the oldest publication, dating back to 1995. As a result, the final string was then TITLE-ABS-KEY ("Crisis Management") AND (EXCLUDE (PUBYEAR, 2023)) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (OA, "all")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (SRCTYPE, "j")), which resulted in 500 articles. The authors used the 'preferred reporting items for systematic reviews and meta-analyses' (PRISMA) guidelines for systematic research reviews to select and screen the articles.

The authors also used several different phrases, such as "bibliometric review," "scientometric review," "systematic literature review," "systematic review," "meta-analysis," and "science mapping," to ensure the analysis did not include any review or irrelevant articles. The authors excluded 100 review articles or documents unrelated to crisis management after thoroughly reviewing the title and abstract of each article. The authors found one article with missing author names and IDs and seven duplicated articles. Therefore, the final analysis included 1,853 documents. The authors excluded irrelevant documents by using the Scopus unique document article identifier 'EID' and adding it to the following search string to ensure they would not appear in the subsequent search result.

After inserting the next search keyword, we eliminated the irrelevant articles using the unique document-article identifiers (EIDs) from Scopus. Therefore, articles with these EIDs would not appear in the search results. These articles' EIDs were removed, and a distinct Scopus search string free of pointless articles was constructed. After removing 108 EIDs, there were 1853 articles. Figure 1 provides a summary of the record gathering and study elimination procedures.

Figure 1. Search and selection process of articles.
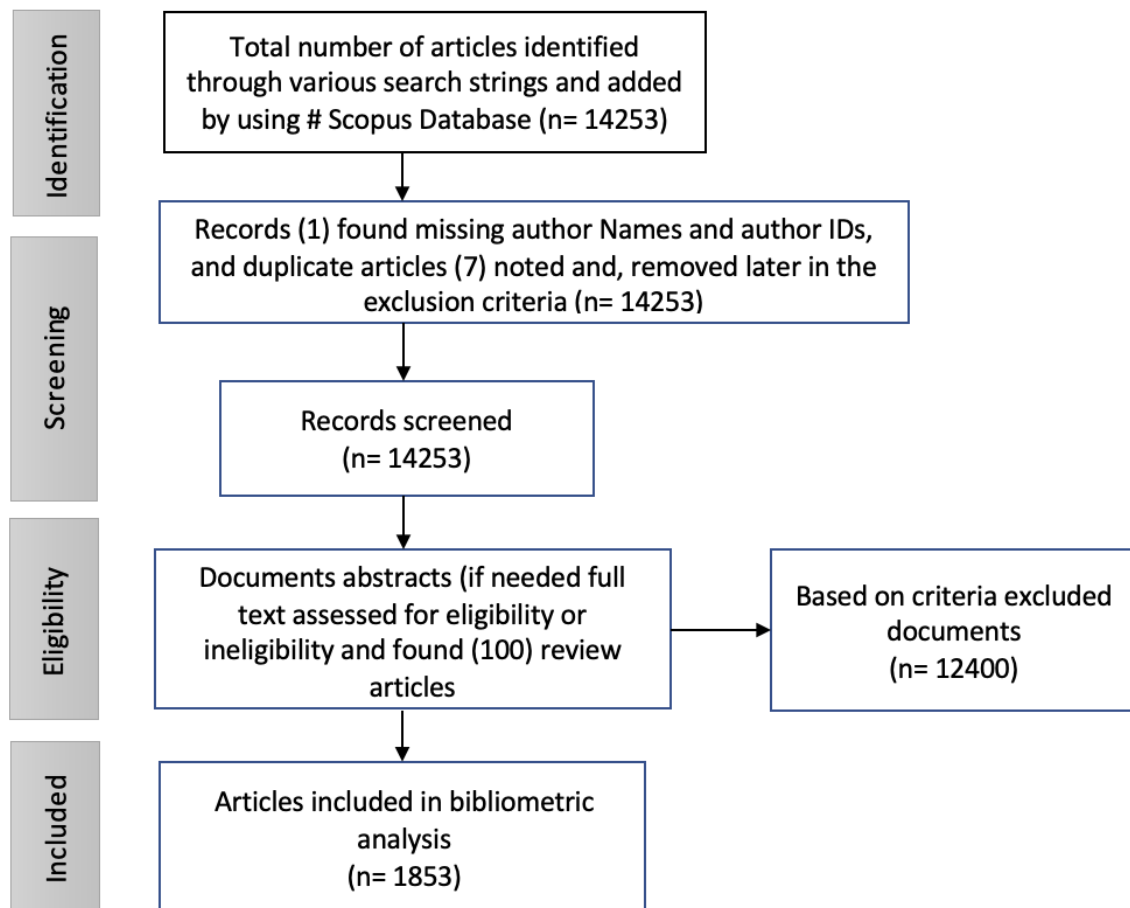
Note: The figure shows the methodological procedures used in the article search and selection process

3. Descriptive Analysis

In addition to analyzing the subject areas, the authors also examined the chronological distribution of crisis management articles over the past 27 years. By applying a filter in the Scopus Database to select only articles, the authors obtained a total of 1853 publications. The subject-area analysis also showed that social sciences (1183) are the main area of study for crisis management and its different aspects. These are followed by environmental science (542), business, management, and accounting (540), economics, econometrics, and finance (279), energy (164), and medicine (160). By examining the chronological and subject area distribution of crisis management articles, the authors gained valuable insights into the development and trends of research in this field.

3.1 Research Growth and Publication Output

Figure 2 shows a gradual increase of publications from 1995 to 2007. Following then, there was a sharp annual increase until 2018 and then a slight decline in 2019. However, since 2019, there has been a notable and steady increase, primarily as a result of the COVID-19 pandemic's effects. The global crisis has not only brought about change in the field of crisis management, but it has also given researchers new avenues for investigation, leading to a notable increase in publications upto 2022.

Figure 2. Annual and cumulative publications indexed in Scopus from 1995-2022
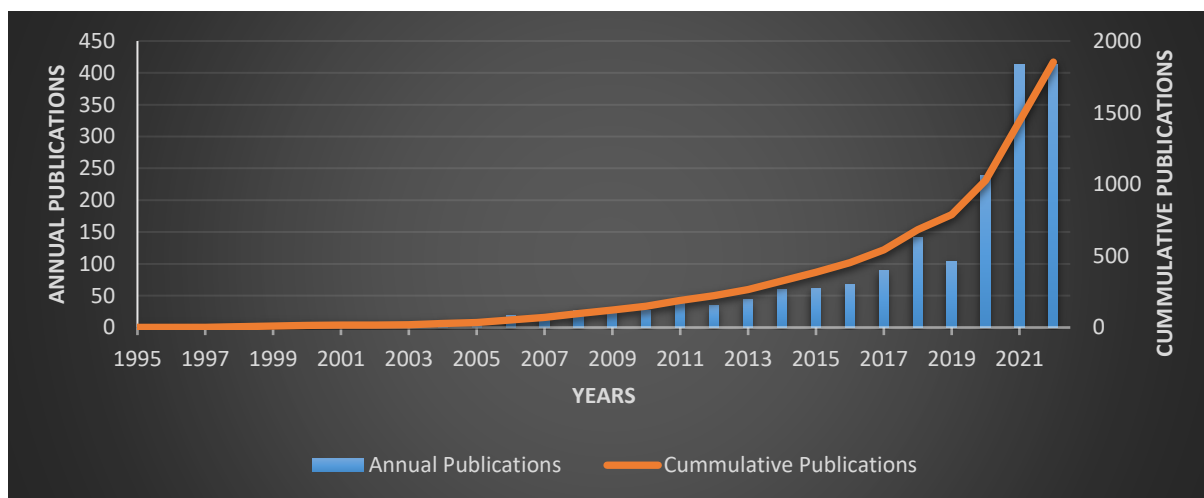
Note: This figure exhibits the annual and cumulative publications indexed in Scopus during the period 1995-2022
Data visualization highlights trends in research findings and the development of the scientific literature over time.

3.2 Subjects by Area

The present study has exclusively focused on articles that delve deeper into crisis management. Figure 2 presents the subject areas covered by the articles, along with their respective percentages. Social sciences emerged as the highest subject area, with 1183 articles (33.4%), followed by environmental sciences with 542 articles (15.3%), and business, management, and accounting with 540 articles (15.2%). The fourth and fifth highest subject areas were economics, econometrics and finance, and energy, with 279 (7.9%) and 164 (4.6%) articles, respectively. We excluded all other documents from this analysis, including books, book chapters, conference proceedings, review articles, and trade publications, focusing solely on high-quality research articles relevant to crisis management.

Figure 3. Documents by subject area
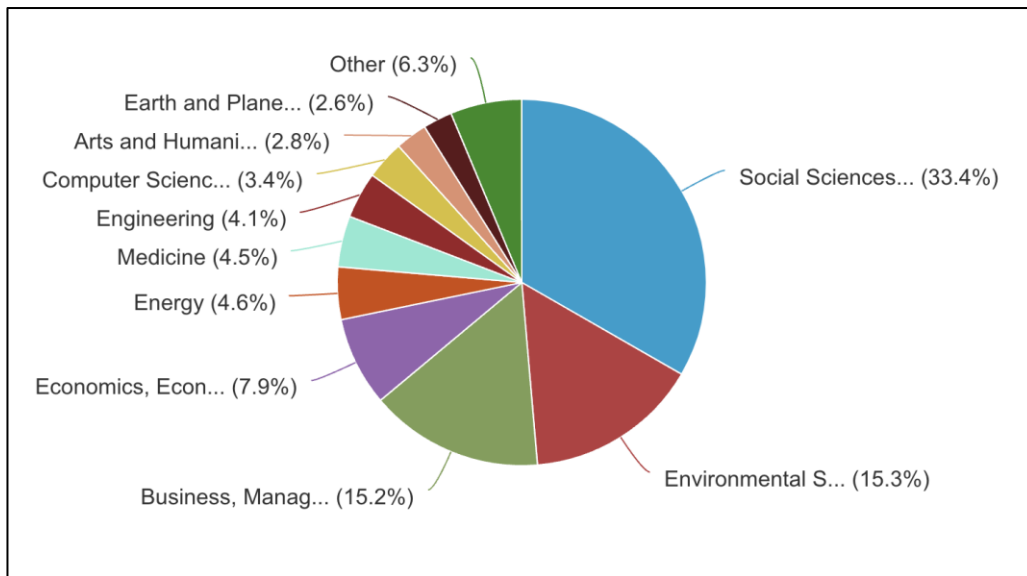
Note: This figure illustrates the distribution of documents in different thematic areas organized into domains. The concept provides information on research focus and results within different academic disciplines. (Source: Scopus Database)

3.3 Most Productive Journals

The article highlights the most successful journals' contributions to crisis management. Table 1 reveals that the Multidisciplinary Digital Publishing Institute publishes two journals, but separate publishers (MDPI) publish the most prolific journal in crisis management and its variants. Sustainability is the top-ranking journal, with 128 publications, or 6.91% of all publications, and 1177 citations. MDPI owns Sustainability, which has Scopus coverage from 2009 to 2022. The International Journal of Environmental Research and Public Health is the second-most productive journal, with 85 articles (4.59%) and 643 citations. Since 2004, Scopus has covered it, sharing ownership with Sustainability and MDPI. The two most productive journals are the International Journal of Disaster Risk Reduction (25, 1.35%) and the Journal of Contingencies and Crisis Management (75, 4.05%).

As an alternative to Clarivate Analytics' impact factor, CiteScore, the measure is a well-liked metric for assessing journal influence. Data on citations from the Scopus Database is used to calculate the average number of citations received in a calendar year by all articles published in a journal during the preceding three years. The CiteScore evaluation shows that seven out of ten crisis management journals score five or higher. WIT Transactions on Ecology and the Environment has the lowest CiteScore (0.8), while Tourism Management has the highest CiteScore (19.8). However, it is essential to remember that researchers should not rely on CiteScore just when selecting publications. The study's authors looked at additional metrics besides CiteScore that can provide important information about a publication.

In addition to CiteScore, the authors have emphasized the importance of other metrics provided by the Scopus Database, such as SJR and SNIP. The SJR is a useful tool for evaluating the scientific status of sources because it is based on weighted citations per document. It demonstrates the relative significance of a journal within its field and facilitates the comparison of journals' standing. Citations from journals with higher SJR scores are considered more valuable than those with lower scores. High

SJR scores suggest more vital journal prestige when comparing journals on the same subject. SJR also serves as the foundation for subject ranking categories, with Q1 journals serving as the top category journals, typically mentioned by prestigious journals more frequently than journals in the other quartiles (Q2, Q3, and Q4).

The Journal of Tourist Management is listed in Table 2 as fifth, but according to its SJR score (3.383), it is the most prestigious journal in the first quartile or Q1. The SJR score of this journal, 2.512, places it in the first quartile, similar to the International Journal of Hotel Management, rated eighth based on the number of articles. Except for the International Journal of Social Economics, ranked in social sciences, economics, and econometrics as Q2 and Q3, all the journals in Table 2 are grouped under the development heading. So, choosing the appropriate journals for publishing research work requires considering a variety of criteria, including SJR.

On the other hand, SNIP contrasts the impact of citations from sources across various subject areas. It is the proportion between a source's typical number of citations in a publication and the "citation potential" of its topic area. Researchers consider a journal highly referenced if it has an SNIP of more than 1.5, while a journal with an SNIP of 1.0 indicates that its articles receive citations at a rate typical for all journals in the same field. Eight journals, including Tourist Management and the Journal of European Public Policy, have SNIP values higher than 1, indicating more citations than the industry average.

The authors argue that, based on the three criteria described above, Tourist Management, the Journal of European Public Policy, and the International Journal of Hotel Management are the most esteemed journals about crisis management. We encourage readers to consult the Scopus Database for further details on CiteScore, SJR, and SNIP.

Table 1. Top 10 most productive journals on Crisis Management with their most cited articles

Rank	Journal Name	No. of Publications	No. of Publications %	No. of Citations	Cite Score 2021	SJR 2021	SNIP 2021	Most cited article	Times Cited	Publisher	Scopus Coverage Years
1	Sustainability	128	6.91%	1177	5	0.664	1.31	Pulighe & Lupia (2020)	98	MDPI	from 2009 to 2022
2	IJERPH	85	4.59%	643	4.5	0.814	1.440	Lwin, et al. (2018)	55	MDPI	from 2004 to Present
3	JCCM	75	4.05%	1542	7.7	1.138	1.975	Reuter & Kaufhold (2018)	213	Wiley-Blackwell	from 1993 to Present
4	IJDRR	25	1.35%	280	6.5	1.096	1.828	Scherzer, et al. (2019)	58	Elsevier	from 2012 to Present
5	Tourism Management	20	1.08%	848	19.8	3.383	3.986	Kuo, et al. (2008)	280	Elsevier	from 1982 to Present
6	West European Politics	18	0.97%	310	7.2	2.055	2.598	Kritzinger, et al. (2021)	46	Taylor & Francis	from 1978 to Present
7	IDS Bulletin	16	0.86%	56	1.1	0.288	0.552	Balcha Gebremariam (2017)	11	IDS	from 1976 to 2022
8	Int. J. Hosp. Manag."	13	0.70%	814	12.9	2.512	2.621	Hao, et al. (2020)	259	Elsevier	from 1982 to Present
9	J. Eur. Public Policy	13	0.70%	671	10.2	2.360	3.210	Boin, et al. (2009)	410	Taylor & Francis	from 1994 to Present
10	WIT Trans. Ecol. Environ.	13	0.70%	63	0.8	0.173	0.210	Robbe & Hengstermann (2006)	18	WIT Press	from 2006 to 2015, from 2017 to 2022

Note: 'MDPI' represents the Multidisciplinary Digital Publishing Institute, 'IDS' represents the Institute of Development Studies, 'IJERPH' represents the International Journal of Environmental Research and Public Health, 'JCCM' represents the Journal of Contingencies and Crisis Management, 'IJDRR' represents The International Journal of Disaster Risk Reduction, 'Int. J. Hosp. Manag.' represent International Journal of Hospitality Management, 'J. Eur. Public Policy' represents the Journal of European Public Policy, 'WIT Trans. Ecol. Environ.' represent WIT Transactions on Ecology and the Environment. (Source: Scopus Database)

3.4 Most Prolific Authors

The article presents a list of the top 15 most productive authors in the field of crisis management, along with their country affiliations and h-index. The authors' first publications range from 1995 to 2022. Table 2 includes authors from six different countries, namely the Netherlands (three authors), Singapore (one author), Italy (one author), the United Kingdom (three authors), Sweden (five authors), and Norway (two authors). The table's "total publication" column displays each author's total number of documents in the Scopus database and their h-index. However, only the pertinent papers specified in the "analysis" column (DLA) and their Scopus-calculated h-index were considered for this study. The top author in the list is Boin, Arjen, with 97 documents, an h-index of 37, and a total citation of 1391, affiliated with the Netherlands. Pang, Augustine follows him, with 65 documents, an h-index of 19, and 224 citations affiliated with Singapore. When considering the total citations, Jessop, Bob, is at the top with 542 citations, followed by Coccia, Mario, with 427 citations, while the others in the list fall below their citation counts. Notably, the top author, Boin, Arjen, and the fifth author, Wolbers, Jeroen, are affiliated with the Universiteit Leiden, Leiden, Netherlands.

3.5 Listing and Global Mapping of Top Productive Countries, Institutions and Collaboration

The authors have also focused on the second objective of their study, which is to analyze the geographic spread of researchers and their academic institutions working on crisis management. For this purpose, the study used Google Maps from 2022 and mapped the top 15 most productive countries and their institutions on a global map, as shown in Figure 4. The map illustrates the central cluster of top researchers and their academic institutions in the European and South Asian regions. However, some institutions in the United States, Canada, and China are also on the list. This analysis provides a comprehensive understanding of the global distribution of researchers and their academic institutions working on crisis management and related topics.

Table 3 lists the academic institutions and nations that contribute the most to instruments for reducing poverty globally. The authors did not include non-academic organizations like the World Bank in their analysis. The United Kingdom is at the top of the list with 328 documents, followed by the United States with 281 documents, the Netherlands (125), Germany (123), and China (112). The Total Publication of Academic Institutions (TP) metric shows that Universiteit Leiden, Leiden, Netherlands, has the highest number of publications with 34, followed by the London School of Economics and Political Science, United Kingdom (21), Swedish Defence University, Sweden (17), CNRS Centre National de la Recherche (16), The Australian National University, Australia, and Universitetet i Oslo, Norway (14). Interestingly, while analyzing the Single Country Publications (SCP) figures, Poland is leading the list with 73.585% publications, followed by the Czech Republic (68.889%), Spain (58.140%), the United States (55.516%), and the United Kingdom (54.878%). These figures suggest that these countries have solid intra-country collaborations.

Table 2. List of the 15 most prolific authors in Crisis Management

Rank	Author	Scopus author ID	Year of 1st publication*	TP	Total h-index	Scopus Analysis h index	TC	Country	Current affiliation
1	Boin, Arjen	6507734758	2006 a	97	37	14	1391	Netherlands	Universiteit Leiden, Leiden
2	Pang, Augustine	26642701400	2010 c	65	19	8	224	Singapore	Singapore Management University, Singapore
3	Coccia, Mario	8726888200	2021 a	134	40	7	427	Italy	Consiglio Nazionale delle Ricerche, Rome
4	Boersma, Kees F.K.	36828193200	2013 b	89	18	4	173	Netherlands	Vrije Universiteit Amsterdam, Amsterdam
5	Wolbers, Jeroen	55747022100	2013 a	25	12	5	188	Netherlands	Universiteit Leiden, Leiden
6	Jessop, Bob	7004230904	1995 a	172	46	5	542	UK	Lancaster University, Lancaster
7	Paraskevas, Alexandros J.	56298690700	2012 a	28	13	5	272	UK	University of West London, London
8	Petridou, Evangelia	55764346500	2017 a	32	11	4	60	Sweden	Mid Sweden University, Östersund, Ostersund
9	Christensen, Tom	57203212606	2019 b	167	37	3	203	Norway	Universitetet i Oslo, Oslo
10	Deverell, Edward	33467472700	2014 b	17	7	2	9	Sweden	Swedish Defence University, Stockholm
11	Fischbacher-Smith,Denis	35408901500	2014 a	34	10	3	37	UK	Adam Smith Business School, Glasgow
12	Nohrstedt, Daniel	8988775200	2002 c	42	21	4	130	Sweden	Uppsala Universitet, Uppsala
13	Olsson, Eva Karin	13807396200	2014 a	32	15	4	115	Sweden	Swedish Defence University, Stockholm
14	Rhinard, Mark	16029703000	2006 c	43	17	4	190	Sweden	Stockholms universitet, Stockholm
15	Sørensen, Jarle Løwe	57200109175	2018 c	21	6	2	32	Norway	University of South-Eastern Norway, Kongsberg

Note: *'a' shows the first author in the list of authors, 'b' shows the second author, and 'c' shows the third author. TP stands for Total Publications, TC stands for Total Citation, UK stands for United Kingdom (Source: Scopus Database)

Collaboration across borders offers numerous advantages in the academic world. Firstly, it helps to extend the author and country network, thereby providing opportunities for sharing knowledge and experiences. Working with subject matter experts can also decrease risk and improve the quality of research. Because researchers may pool their resources and expertise, it also facilitates the acquisition of trustworthy data with less effort, expense, and time. Collaboration also fosters the sharing of knowledge and skills, which sparks the creation of fresh approaches and concepts for study. International cooperation also aids in the ranking of nations, universities, writers, and researchers, all of which can benefit from funding opportunities, job prospects, and career advancement.

Cooperation can help overcome the challenges, even if the country is small, under high demographic pressure, and has underdeveloped infrastructure and resources. Collaboration with academics and institutions abroad opens new technological and resource opportunities and allows one to learn from the experiences of others. Working together can also assist lesser-known organizations and scholars to become more visible by presenting them with chances for funding, networking, and professional advancement. In conclusion, international cooperation is a crucial part of contemporary research and has much to offer nations, organizations, and researchers.

Table 3. Top 15 most productive countries and academic institutions in Crisis Management's publications

Rank	Country	SCP %	TPC	Most Productive Academic Institutions	TPI
1	UK	54.878	328	LSE	21
2	US	55.516	281	University of Kentucky	8
3	Netherlands	46.400	125	Universiteit Leiden	34
4	Germany	52.033	123	Freie Universitat Berlin	8
5	China	50.000	112	Sun Yat-Sen University	7
6	Australia	34.862	109	The Australian National University	14
7	Sweden	47.573	103	Swedish Defence University	17
8	Italy	42.553	94	CNR	8
9	France	44.444	90	CNRS	16
10	Spain	58.140	86	Universitat Autonoma de Barcelona	10
11	Canada	33.333	60	University of Waterloo	5
12	Norway	46.429	56	Universitetet i Oslo	14
13	Poland	73.585	53	Politechnika Warszawska	7
14	Finland	47.917	48	Tampere University	9
15	CZ	68.889	45	Univerzita Tomase Bati ve Zline	7

Note: SCP% represents Single country publications, TPC stands for Total Publications of a given country, TPI stands for Total publications of a given academic institution, UK stands for United Kingdom, US stands for United States, CNRS represents Centre National de la Recherche Scientifique, CNR stands for Consiglio Nazionale delle Ricerche, CZ stands for Czech Republic, LSE stands for London School of Economics and Political Science (Source: Scopus Database)

Figure 4. Global mapping of the top 15 most productive countries and institutions regarding Crisis Management
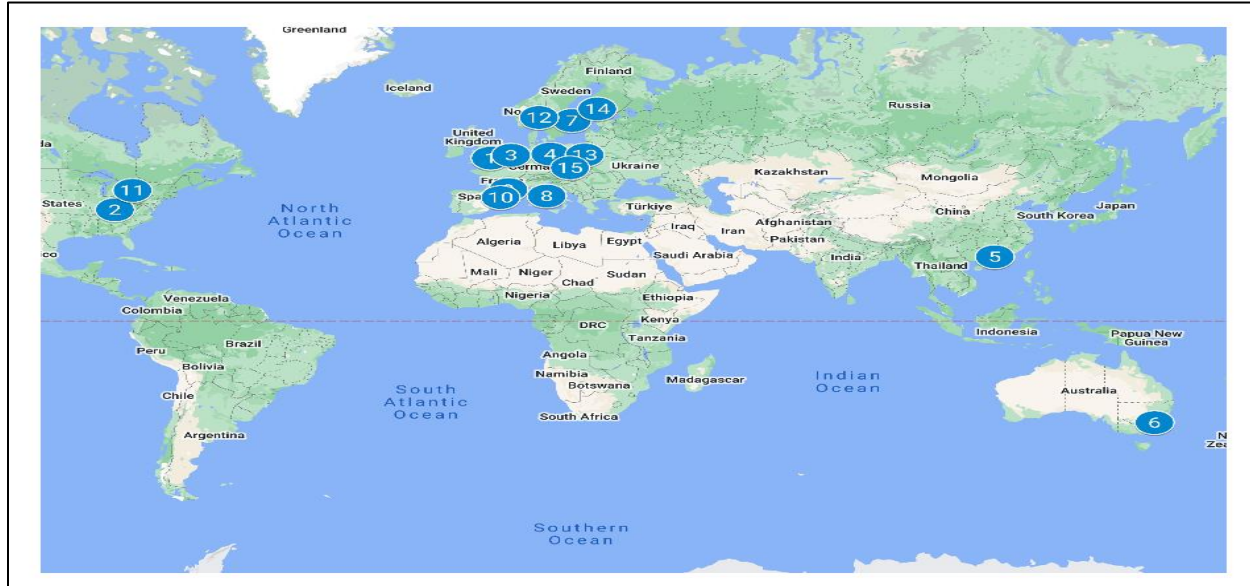
Note : The figure shows the global mapping underlining the top 15 countries and institutions based on productivity in crisis management research firld. Source: Google Map

4. Bibliometric Analysis

4.1 Co-authorship Network Visualization

Figure 5 shows the thickness of the lines, indicating how tightly the two countries are connected despite their near geographic proximity. As an illustration, a thin line denotes a weaker association, whereas a thicker line denotes a stronger one. There are additional countries in Europe and Central Asia (38), the Middle East and North Africa (16 each), East Asia and the Pacific (16 each), the Middle East and North Africa (38), Africa (08), South Asia (04), and North America (11). (03). With 53 linkages and 226 link strength, or 53 territories or nations related to the United Kingdom with 226 times co-authorship, our co-authorship statistics show that the United Kingdom is the most affiliated country. After the United States are Australia (39 links, 130 links), China (34 links, 86 links), France (31 links, 85 links), Sweden (30 links, 104 links, 100 links), Germany (30 links, 100 links), and countries with fewer than 30 links.

Figure 5. Screenshot of bibliometric map based on co-authorship with network visualization.

Note: This figure can be opened through the URL in VOSviewer: https://bit.ly/3EQbHU4
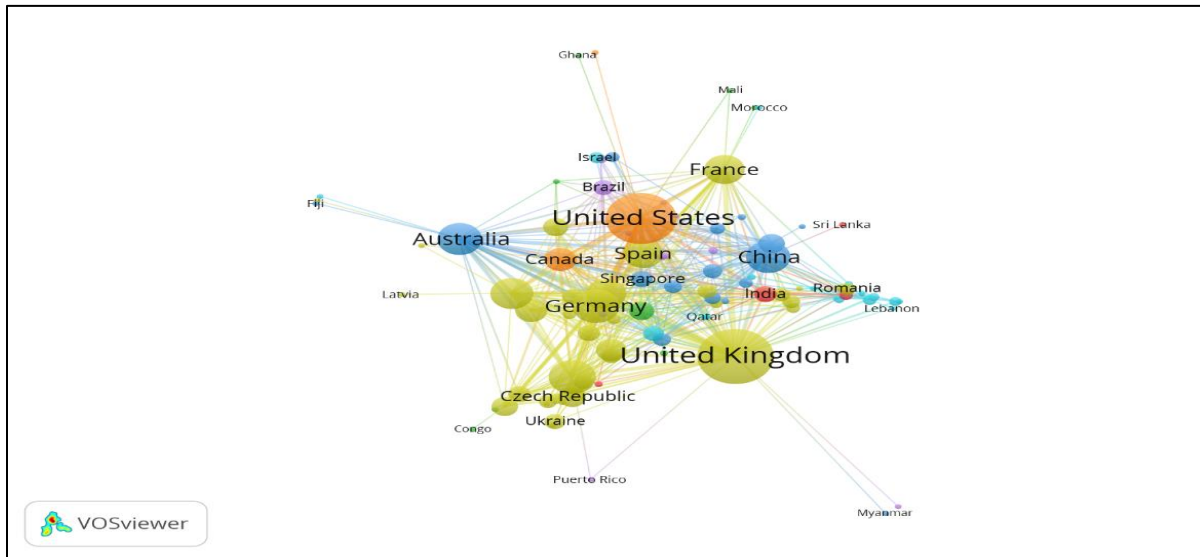
International cooperation occurs for a variety of reasons. Initially, it depends on the topic of interest, the nature of the problem, and the person chosen to work on it. Second, as shown in Figure 5, the ease of access to primary data, such as crisis management, by one author in an underdeveloped country to another in a developed country may account for the importance of the area to the funders who support the research, research partners, diversity, and collaboration. A significant proportion of postgraduate students from developing nations studying in wealthy countries, visiting scholars, and, most importantly, a practical and fair policy addressing research for international collaboration could all be contributing factors.

This section analyses the content of the countries per cluster. Figure 6 visualizes the conceptual structure, which divides countries into seven clusters. The first cluster (in red) is related to 'South Asia.' The second cluster (in green) embraces 'Africa.' Meanwhile, the third cluster (in blue) covers 'East Asia and the Pacific,' and the fourth (in yellow) includes 'Europe and Central Asia.' While the fifth cluster (in purple) is related to 'Latin America and the Caribbean,' the sixth cluster (in sky blue) includes countries from 'The Middle East and North Africa,' and the last cluster (in orange) is related to 'North America.'

The seven clusters comprise 96 countries, with the fourth cluster containing the highest number of countries (38), and the second-largest clusters are third and sixth, with 16 countries in each. Cluster Fifth is in the third position, consisting of 11 countries. Cluster 2 has eight countries in the fourth position, while Cluster 1 is in the fifth, with four countries. The smallest cluster is the seventh cluster, with only three countries. Figure 6 presents the size of each cluster.

Figure 7 provides insight into potential avenues for future research in crisis management. It indicates a spike in activity in some countries, indicating interesting prospects for more research. South Korea indicates a significant focus on crisis management research with 38 documents, 43 link strengths, and an average publication year of 2020.84. Pakistan, on the other hand, shows promise with 12 documents, 28

link strengths, and an average publication year of 2021.17, all of which point to recent scholarly activity in the area. These results highlight the present emphasis on crisis management field and indicate directions that deserve further investigation.

In Gulf region, Saudi Arabia appears to be a promising field for research in crisis management area, with 18 total link strength and an average publication year of 2021.29. The United Arab Emirates follow closely, demonstrating a growing interest in crisis management with 11 documents, 16 link strength, and an average publication of 2021.27. Bahrain, though with only 2 documents and 8 link strength, shows promise, especially considering its average publication year of 2021. Oman, with 5 documents, 6 link strength, and an average publication year of 2020.21, and Kuwait, with 1 document, 3 link strength, and an average publication year of 2021, also offer potential for further investigation. Overall, Figure 7 indicates that given their recent engagement and interest in the topic, these nations may benefit from more research on crisis management.

Figure 6. Cluster size of countries
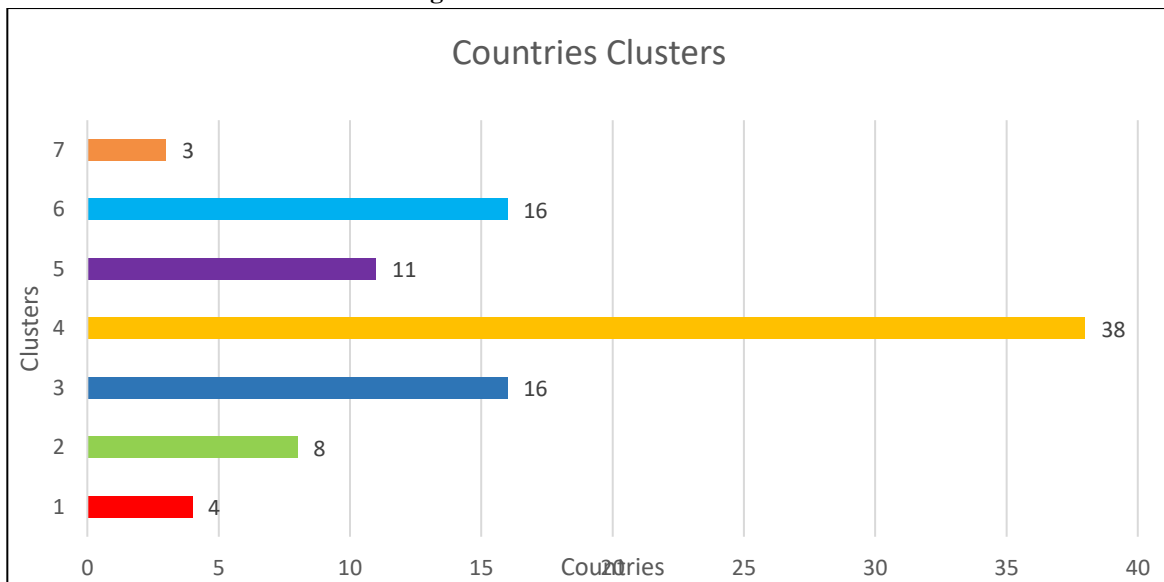
Note: The conceptual structure of the countries is shown in Figure 6, which is divided into six groups based on regions. The largest countries (38) are found in Europe and Central Asia, whereas the smallest countries (3) are found in North America. Furthermore, the figure illustrates the size of each cluster, which displays the distribution of 96 nations

Figure 7. Screenshot of bibliometric map based on co-authorship with overlay visualization.

Note: This figure can be opened through the URL in VOSviewer: https://bit.ly/3EQbHU4
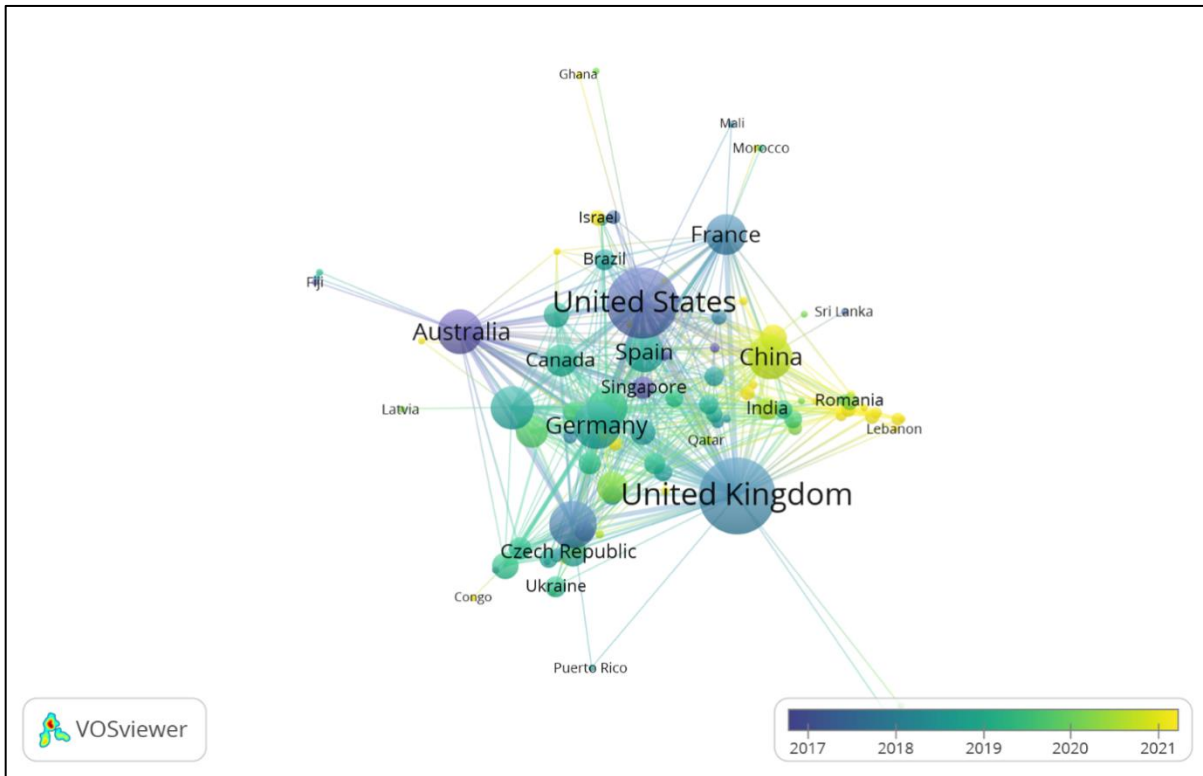
4.2 Co-occurrences Overlay Visualization

This section summarizes the overall goal and identifies areas for additional study and potential collaboration utilizing VOSviewer software. VOSviewer recorded a total of 5291 keywords for mapping. After re-labeling different variations of synonymic single words and phrases, 142 keywords satisfied the requirement of at least five occurrences. As illustrated in Figure 8, our findings demonstrate that crisis management is the keyword most reflected, with 648 occurrences, 133 linkages to other keywords, and an overall link strength 829. Figure 8 also shows noticeable results regarding the critical search terms that were ignored by the previous bibliometric studies in their search strings, such as COVID-19 crisis (458 occurrences, 115 links, 638 link strength), crisis learning (17 occurrences, 20 links, 35 link strength), and crisis communication (65 occurrences, 38 links, 112 link strength). Some other general terms include social media (47 occurrences, 29 links, 87 link strength), urban resilience (77 occurrences, 48 links, 143 link strength), sustainability (26 occurrences, 16 links, 41 link strength), emergency management (13 occurrences, 13 links, 23 link strength), and higher education (18 occurrences, 16 links, 37 link strength). Moreover, the results regarding topics related to crisis management, such as crisis preparedness (16 occurrences, 18 links, 31 link strength), disaster management (41 occurrences, 33 links, 76 link strength), and disaster recovery (23 occurrences, 18 links, 39 link strength), also show the importance of crisis management as a crisis recovery tool and the use of these crisis management tools is to achieve the objective of recovering from crises around the globe.

This section analyses the content of the authors' keywords per cluster. Figure 8 presents a visualization of the conceptual structure, according to which keywords are divided into seven clusters. The first cluster (in red) is related to 'crisis management'. The second cluster (in green) embraces 'COVID-19'. While the third cluster (in blue) covers 'methodologies', the fourth cluster (in yellow) includes 'similar keywords'. While the fifth cluster (in purple) is related to 'countries', the sixth cluster (in sky blue) contains keywords related to 'linked keywords', and the last cluster (in orange) is related to 'Miscellaneous'.

Figure 8. Screenshot of bibliometric map based on author keywords co-occurrence with overlay visualization.

Note: This figure can be opened through the URL in VOSviewer: https://bit.ly/3LpqOIh

Figure 9 presents the size of each cluster. The seven clusters comprise 142 keywords, with the fourth cluster containing the highest number of keywords (44), and the second-largest cluster is one, with 29 keywords. Cluster fifth is in the third position, consisting of 28 keywords. Cluster 6 is in the fourth position, including 26 keywords, while Cluster 7 is in the fifth position with nine keywords. The most minor clusters are the third and second, with only 4 and 2 keywords.

Figure 10 illustrates the number of keywords extracted from the analyzed data. Cluster 4, highlighted in yellow, stands out with the highest number of keywords, including risk communication and knowledge management. Closely followed by Cluster 1 in red, which focuses on crisis management and crisis response, as well as related words. Cluster 5, shown in purple, revolves around the categorization of countries into developed, emerging and developing countries. Cluster 6, in light blue, focuses on governance and SMEs (small and medium-sized enterprises). Cluster 7, orange, includes keywords related to public policy and public relations. Cluster 3, shown in blue, focuses on methodologies and methods used in crisis management research papers. Finally, Cluster 2, the smallest cluster, highlights keywords related to the COVID-19 pandemic, such as covid-19 crisis and covid-19 response.

Figure 9. Cluster size of keywords

Note: Figure 9 shows the the size of each of the seven keyword clusters. The first cluster (29) and the fifth cluster (28), in order of most keywords, are followed by the fourth cluster (44). The second and third clusters are the smallest, containing four and two terms, respectively.

Figure 10. Screenshot of bibliometric map based on author keywords co-occurrence with network visualization.

Note: This figure can be opened through the URL in VOSviewer: https://bit.ly/3LpqOIh

Figure 11 depicts the relationship between the COVID-19 crisis, healthcare, and lockdown measures. While the COVID-19 crisis has been researched extensively, with 458 occurrences and 115 links, the average publication year of 2021.15 indicates that it is a relatively niche area of research. In comparison, healthcare has only five occurrences, six links, and a 2021.20 average publication year, while lockdown measures have eight occurrences, ten links, and a 2021.25 average publication year, indicating that these areas are also niche topics in research. Despite the ongoing nature of the COVID-19 crisis, it has become clear that even the best hospital systems have been unable to keep up with the demand. Primary,

community, and home care have emerged as critical strategies for mitigating the pandemic (AlMaian & Bu Qammaz, 2023; Duong, et al., 2021; Farsalinos, et al., 2021; Magklara, et al., 2023; Tuan, et al., 2022). Other studies, like Safi, et al. (2022), forecast nine months ahead of time for policymakers and financial players, clearly demonstrating a decline in Chinese exports during the COVID-19 pandemic. To improve the accuracy of the predictions, Tajmouati, et al. (2022) propose a hybrid model that simultaneously incorporates linear and non-linear elements from COVID-19 data. Recently, Tang (2024) exposed the adverse effects of COVID-19 on the real estate market in Hong Kong by highlighting the recent burst of the bubble, addressing the adverse equity situations that contributed to it, and suggesting crisis management strategies to stabilize the market.

Figure 11. Screenshot of COVID-19 crisis, healthcare, and lockdown mapping overlay visualization

Note: Figure 11 illustrates how the COVID-19 pandemic is related to healthcare, with 458 cases and 115 crossovers. Conversely, lockdown and health measures are more specific parameters with fewer events and interactions, reflecting the most recent research in these areas.

Figure 12 shows that digitalization is an emerging area of research, with the average publication year of 2021 having very few occurrences (5), six links, and nine link strengths. With the ongoing situation in the world where everything is going digital, 38% of the organizations did not think that digitization would make any difference, but 42% of organizations consider going digital as beneficial and take benefit from it, but 20% of organizations believe that going digital is affecting businesses negatively (Gurbanov, et al., 2022). In addition, Figure 13 shows that grounded theory in crisis management is an emerging term with an average publication year of 2021 with very few occurrences (5), three links, and seven link strengths. A heuristic procedure called "grounded theory" creates abstract theories from actual data. Grounded theory aims to generate theory by methodically gathering and evaluating facts instead of supporting an existing idea. Although a qualitative approach, it mixes quantitative research's systematic, logical analysis with qualitative research's insightful, in-depth explanations (Yu & Yu, 2023). Moreover, Figure 14 shows that South Korea and Slovenia are niche areas where South Korea has an average publication year of 2021.33 with very few occurrences (6), eight links, and 14 link strength, and Slovenia has five occurrences, five links, and 13 link strength with a 2021.20 average publication year.

**Figure 12.** Screenshot Digitalization mapping overlay visualization.

Note: Figure 12 illustrates digitalization as an emerging study subject with five occurrences, nine link strengths, and an average publication year of 2021. Opinions range despite the global trend towards digitalization: 42% of organisations see advantages, 38% see no change, and 20% see negative effects.

Figure 13. Screenshot of Grounded theory mapping overlay visualization

Note: Figure 13 illustrates the emerging field of grounded theory in crisis management, with an average publication year of 2021, five occurrences, three links, and seven link strengths, highlighting the field's growing role in developing abstract ideas based on real data.

Figure 14. Screenshot of South Korea and Slovenia mapping overlay visualization
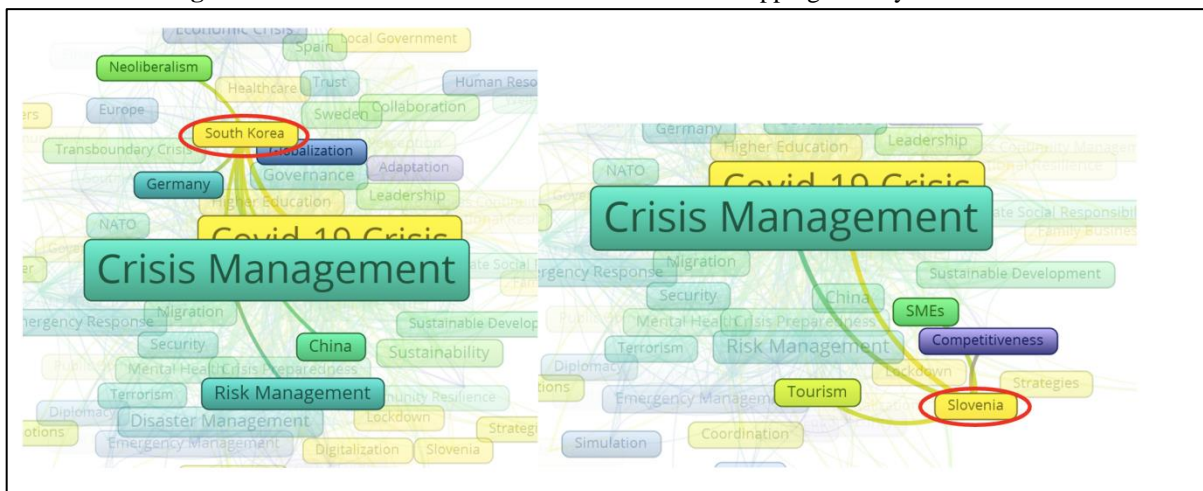
Note: Figure 14 illustrates that the two countries such as, Slovenia and South Korea have average publishing years of 2021.20 and 2021.33, respectively, with few but significant connections and alliances.

4.3 Current Trends Based on Literature

Table 4 shows the current trends based on crisis management literature. The recent average year of publishing shows areas that could be future hotspots, and the smaller number of occurrences shows a niche market. As a result, Table 5 presents a list of prospective emerging themes in crisis management and its subfields. Our findings differ from those of earlier bibliometric research in that they highlight the most recent and upcoming trends in crisis management and related domains. Table 4 shows some current trends such as crisis management with average publication year (2018.9) and number of occurrences (648), urban resilience (2019.84-77), crisis communication (2018.4-65), sustainability (2020.04-26), climate change (2019.47-15), mental health (2019.57-14) and Germany (2018.5-12). The average publication years and the number of occurrences show these are popular current research trends. The crisis management literature focuses extensively on these trends, indicating their importance.

Table 4 shows the study's limited observations in the following domains: healthcare, social policy, situational crisis communication, digitization, local government, stakeholders, and COVID-19 response. The scarcity of these events points to a chance for crisis management to contribute to and integrate with these fields, suggesting possible directions for future research projects. A sizable body of research has already been conducted in this field, even if the COVID-19 crisis was only recently explained in Table 4, which shows potential hotspots and existing patterns, which is also helpful. It offers perceptions into new fields of study, with a focus on the continuing developments in the realm of the COVID-19 issue. This thorough review indicates areas that warrant further research and contributions, providing recommendations for future investigators. Essentially, the Keywords table directs future scholars toward essential elements and developing themes in the ever-changing field of crisis management.

Table 4. Future Hotspot and Current Trends Based on Literature.

Keywords	No. of Occurrences	Total Link Strength	Average Publication Year
Future hotspots based on average publication year			
Family Business	6	13	2021.33
Organizational Resilience	11	21	2021.27
Lockdown	8	18	2021.25
Covid-19 Crisis	458	638	2021.15
Situational Crisis Communication	5	11	2021.6
Healthcare	5	9	2021.2
Social Policy	5	12	2021.2
Stakeholders	5	6	2021.2
Local Government	5	7	2021
Digitalization	5	9	2021
Covid-19 Response	7	21	2020.71
Current Trends based on occurrences			
Crisis Management	648	829	2018.9
Urban Resilience	77	143	2019.84
Crisis Communication	65	112	2018.4

Sustainability	26	41	2020.04
Climate Change	15	28	2019.47
Mental Health	14	23	2019.57
Germany	12	27	2018.5

Note: Table 4 presents the most recent themes and trends in the field of crisis management and highlights future research areas (Source: VOSviewer)

5. Content Analysis

5.1 Cluster 1: Crisis Management and Crisis Response

Cluster 1, focused on crisis management and crisis response, is substantial, encompassing 29 keywords. Among these, "Crisis Management" stands out with its 648 occurrences, 133 links, 829 link strength, and average publication year of 2018.90. The average publication year confirms the significance of this area as a potential hotspot for future research. Crisis management is a crucial topic in contemporary literature. The word crisis originates in Greek and is represented as Krisis in Latin (Hazaa, et al., 2021). According to Fink and Association (1986), a crisis is an unstable situation with the potential for significant change and a strong likelihood of unfavorable outcomes. It is worth noting that organizations must choose their crisis response strategy based on the degree of crisis responsibility assigned to them, as proposed by the Situational Crisis Communication Theory (SCCT) (Coombs, 2007). By comprehending crisis management and response strategies, organizations can effectively reduce the negative impact of crises and improve their resilience in the face of uncertainty.

5.2 Cluster 2: Covid-19 Crisis and Covid-19 Response

Despite being the smallest cluster, Cluster 2 is crucial for the study as it has the most occurrences among all the clusters. It primarily focuses on governance methods that can assist businesses in navigating the COVID-19 crisis. The study identifies various governance traits, including risk management committees, a diverse board, independent directors, foreign investors, institutional ownership, ownership concentration, the CEO's dual functions, block ownership, and family ownership. The results imply that these governance characteristics may help companies deal with the COVID-19 challenge. The most successful governance mechanisms during the COVID-19 crisis were independent risk management committees, institutional ownership, board independence, block holders, and family ownership (Jebran & Chen, 2023). Comprehending the influence of these governance procedures on business performance throughout the pandemic might furnish firms with invaluable perspectives for augmenting their crisis resilience.

5.3 Cluster 3: Methodology

Cluster 3 emphasizes critical techniques like sentiment analysis, machine learning, simulation, and cluster analysis. The goal of simulation, which has ten occurrences and an average publication year of 2017.60, is to understand how a real-world system or process behaves or performs under various circumstances by modeling it. The result indicates that companies are making wise decisions and preparing for future emergencies. The following techniques are part of this cluster.

1. Simulation (10 instances, five connections, eight strong connections, average publishing year of 2017.60)
2. Sentiment analysis (average publishing year of 2018, 40 occurrences, seven linkages, and ten link strengths)
3. Cluster analysis (7 instances, one link, one strength of link, average publication year of 2019: 14)
4. Machine learning (6 instances, two connections, three strength connections, average publication of 2021.50)

Sentiment analysis is extracting subjective information, such as opinions or feelings, from text using machine learning and natural language processing techniques. It has five occurrences, with an average publication year of 2018.40. The findings help firms modify their text and strategy by providing insight into how stakeholders view a crisis or a company's response to it. Furthermore, cluster analysis organizes related objects or data points into clusters according to their shared traits or characteristics. It has seven occurrences with an average publication year of 2019.14. The results can assist businesses in making data-driven decisions by helping them find patterns or trends in massive datasets, such as customer comments on social media platforms.

Machine learning teaches computers to learn from data and make predictions or judgments based on that learning. It has six occurrences, with an average publication year of 2021.50. Generally, Cluster 3 emphasizes significant approaches that can assist businesses in learning about complex systems or data and making well-informed decisions. Organizations can improve their resilience and better prepare for crises by including these tactics in their crisis management plans.

5.4 Cluster 4: Risk Communication and Knowledge Management

With 44 keywords, Cluster 4 is the most significant size and is mainly associated with "knowledge management" and "risk communication." In recent years, professionals and academics have been paying more and more attention to these two sectors. Crisis and risk communication is crucial in many disciplines, such as the social sciences, medicine, business, environmental science, engineering, economics, econometrics, finance, computer science, medicine, management, and accounting. Therefore, risk and crisis communication research has expanded quickly (Che, et al., 2022).

Knowledge management is crucial in creating policies that can result in better crisis management (Tome, et al., 2022). By managing knowledge effectively, organizations can improve their decision-making processes and enhance their ability to respond to crises effectively. Wang and Belardo (2005) state that knowledge management can help organizations create policies that promote better crisis management practices. Therefore, knowledge management is essential to crisis and risk communication, and organizations should pay attention to it when developing their crisis management strategies.

Knowledge management is essential to developing policies that improve crisis management (Tome, et al., 2022). Organizations can strengthen their capacity for crisis response and streamline their decision-making processes by managing their knowledge well. According to Wang and Belardo (2005), knowledge

management can assist companies in developing policies that support improved crisis management procedures. Thus, firms should consider knowledge management when creating their crisis management plans, as it is a crucial component of crisis and risk communication.

5.5 Cluster 5: Developed, Emerging, and Developing Countries

The third-largest cluster, Cluster 5, comprises 28 nations where research on "crisis management" has been reviewed and is still an emerging area of interest among researchers. Each nation's size in this cluster reveals that the regions with the most significant number of countries engaged in crisis management are Europe and Central Asia, East Asia and the Pacific, the Middle East, and North Africa, each with sixteen countries. With 11 nations engaged in crisis management, Latin America and the Caribbean rank third in cluster size. Following Latin America and the Caribbean in number, Africa has eight countries, South Asia has four, and North America has three. Understanding the regional differences in crisis management research can help policymakers and practitioners develop more effective strategies for managing crises and improving resilience in different parts of the world.

5.6 Cluster 6: Governance and SME's

Cluster 6, with 26 keywords, is the fourth largest cluster and focuses on the relationship between "governance," "SMEs," and "crisis management." The study highlights that corporate governance plays a vital role in public sector management, and a functional judicial system, effective law enforcement, and the rule of law are crucial for post-conflict societies to succeed (Finell, 2002). However, small firms often face resource constraints, and managers frequently disregard crisis preparedness as a competitiveness factor (Mikušová & Horváthová, 2023). The COVID-19 pandemic exposed the unpreparedness of many SMEs, which sought help from trade associations to cope with the resulting challenges, such as lockdowns, revenue losses, and layoffs (Frandsen & Johansen, 2023). Therefore, understanding the governance and management strategies SMEs can use to cope with a crisis can help them improve their resilience and competitiveness.

5.7 Cluster 7: Public Policy and Public Relations

Cluster 7 is the fifth largest cluster, with only nine keywords that are highly related to "public policy" and "public relations" in "crisis management." The planners and practitioners of public policy play a significant role in crisis management by reviewing the existing structures and management of organizational networks affected by COVID-19 (Van den Oord, et al., 2020). In contrast, public relations practitioners view a crisis as an "opportunity," considering it a severe, unexpected situation threatening the organization and its stakeholders. Colleagues in the communication field have stated that crisis communication is increasingly centered on a discourse of renewal, with crises seen as an opportunity for the organization to rejuvenate itself through strategic communication initiatives (Fall, 2004). The study of public policy and public relations in the context of crisis management can provide valuable insights into how organizations can effectively communicate and manage crises, minimize adverse impacts, and enhance their reputation.

6. Uncovering Insights, Trends, and Inferences in Crisis Management Research

The bibliometric review of the crisis management literature reveals many insights regarding the worldwide research landscape in this area. In particular, the concentration of prominent authors and institutions led by the University of Leiden shows robust local research networks. The result highlights how critical academic institutions are to promoting cooperation and output in the subject. Furthermore, the worldwide representation of collaborative networks highlights how intertwined crisis management research is. In addition, the United States, China, and the United Kingdom stand out as essential nodes and collaboration patterns reveal the breadth and depth of international alliances. The resilient international linkages exemplify the robust co-authorship network, which confirms the collaborative nature of crisis management research beyond the country's broad boundaries.

Examining theme clusters and co-occurrences of keywords illuminates the changing patterns in the literature on crisis management. The importance of COVID-19-related terms highlights the field's response to contemporary global challenges. Interestingly, the focus on digitization and grounded theory and the discovery of specific markets like Slovenia and South Korea indicate the growing scope of crisis management research. The categorization of keywords into thematic groupings, such as crisis response, governance, and techniques, provides a more nuanced understanding of the complex nature of crisis management. The keywords also serve as a roadmap for future research endeavors.

Moreover, the research article emphasizes current trends and emerging hotspots. Key areas serve as a guide for scholars and decision-makers negotiating the vibrant field of crisis management. The hotspots identified, including family businesses, organizational resilience, and COVID-19 response, indicate areas likely to be the focus of future research. With the average publishing year and occurrence trends considered, this forward-looking method offers insightful information on how the literature on crisis management is likely to develop. While practitioners better understand current trends to strengthen organizational resilience, policymakers can use these results to guide initiatives for improving crisis preparedness. Overall, this study provides a roadmap for the future of crisis management research by highlighting cooperation, creativity, and adaptability in responding to global crises, as summarized in Table 5.

Table 5. Insights, Trends, and Inferences in Crisis Management Research

1. Global Research Landscape
- Concentration of Prolific Authors and Institutions
- University of Leiden's Leading Role
- Strong Local Research Networks
- Role of Academic Institutions in Collaboration

- Global Collaborative Networks Visualized

- Key Nodes: UK, US, China

- Robust Co-authorship Network

- Testimony to Collaborative Nature

- Transcending Geographical Boundaries

2. Thematic Clusters and Keywords

- Evolutionary Trends in Literature

- Prominence of COVID-19 Terms

- Identification of Niche Areas

- Emphasis on Digitalization and Grounded Theory

- Integration of Advanced Methodologies

- Shift Towards Data-driven Approaches

- Clustering of Keywords into Themes

- Nuanced Understanding of Crisis Management

3. Future Hotspots and Current Trends

- Focus on Family Business, Organizational Resilience, and COVID-19 Response

- Anticipating Future Research Efforts

- Forward-looking Perspective

- Valuable Insights for Policymakers and Practitioners

- Emphasis on Enhancing Crisis Preparedness

- Roadmap for Collaboration, Innovation, and Adaptability

Note: Table 5 highlights significant global research lansdscape, thematic clusters and keywords, and potential future developments. It provides a brief summary of how interdisciplinary research and real-world application can enhance crisis preparedness. (Source: Author Compilation)

7. Conclusion and Future Recommendation

The main goal of this study is to investigate the emerging trends and future hotspot areas of crisis management research through scientific mapping with bibliometric and content analysis methodologies. To achieve the objective of the research study, we retrieved published data from the Scopus database from 1995 to 2022, resulting in 1853 publications. The study used bibliometric indicators to analyze the publications and conducted co-authorship and co-occurrence analyses to identify the main research

strengths and topics in crisis management. The results shed light on the seven key perspectives in the crisis management landscape: crisis response, COVID-19 response, methodology, risk communication and knowledge management, developed, emerging, and developing countries, governance and SMEs, and public policy and relations. The findings also identify current research trends such as urban resilience, crisis communication, sustainability, climate change, mental health, and future hotspot areas such as family business, organizational resilience, lockdown, COVID-19 crisis, and digitalization in crisis management. In addition, we find that researchers from the United Kingdom made a more significant contribution, followed by the United States, the Netherlands, and Germany.

The novelty of this study that makes it unique from other studies is that it explores the emerging keywords and hotspot areas in the crisis management literature, which needs to be improved in the academic literature. The findings highlighted that the COVID-19 crisis has become a new dimension in crisis management. While there is a wealth of literature on crisis management in general, there needs to be more empirical studies that specifically address COVID-19 and its unique challenges. As a result, it is advised that future crisis management research concentrate on the COVID-19 issue, considering its unique attributes and consequences on numerous companies and sectors. By doing so, we would be better able to comprehend how the pandemic affected crisis management and create practical plans for handling crises of a similar nature in the future. Conducting cross-disciplinary research that integrates viewpoints from public health, economics, and other pertinent topics is also crucial. By doing this, we have created more efficient solutions and better comprehend the problems that COVID-19 presents. It is crucial to acknowledge that the COVID-19 problem is still unfolding and that it might take some time to understand its effects thoroughly.

Furthermore, the study's shortcomings include its inability to demonstrate how knowledge management could address the COVID-19 crisis effectively in crisis management. Knowing how knowledge is produced, disseminated, and applied during a crisis and how it might help efficient crisis management techniques and decision-making. Consequently, it is recommended that the next research endeavors concentrate on investigating the convergence of crisis management and knowledge management, particularly regarding the efficient amalgamation of these two domains to tackle the obstacles presented by COVID-19.

Empirical studies can be beneficial since they can highlight areas for improvement and offer insights into how crisis management techniques are currently being used in the context of the pandemic. Furthermore, bibliometric analysis can help spot significant patterns and gaps in the literature's knowledge on crisis and knowledge management.

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