



Visualization of Global Research Trends and Future Research Directions of Crisis Management in Education Using Bibliometric Analysis

Fouad Merzouk¹, Mustafa Bin Che Omar²

¹Faculty of Contemporary Islamic Studies, University Sultan Zainal Abidin - Unisize

²Faculty of Contemporary Islamic Studies, University Sultan Zainal Abidin – Unisize

(Received: 27 October 2023

Revised: 22 November

Accepted: 26 December)

KEYWORDS

crisis management, education, Bibliometric analysis, Co-citation analysis, Bibliographic coupling.

ABSTRACT:

Purpose – This study aims to conduct a bibliometric analysis of crisis management research in the field of education. The research analyses academic articles over the last forty years and does performance analysis, co-citation analysis, bibliographic coupling, and scientific mapping.

Design/methodology/approach – The research analyses 259 papers obtained from the Scopus database via bibliometric analysis, performance analysis, and topic grouping. The research examined the scientific output of publications, highly productive authors, influential articles, institutions and countries, keyword co-occurrence, thematic mapping, co-citations, authorship, and country partnerships. The study used a VOS viewer as a tool to undertake performance analysis and thematic clustering.

Findings – The most fruitful year was 2023, with 39 publications, and the University of Beijing, China, and China, respectively, are the most influential institutes and countries. In a similar vein, "The Journal of Academic Medicine" is the most influential, while "Disaster Prevention and Management: An International Journal" is the most productive. Moreover, "Learning from the Piper Alpha Accident: A Postmortem Analysis of Technical and Organisational Factors" is the most cited article. Additionally, the authors identified four thematic clusters of crisis management research in education.

Research limitations/implications – This resource provides scholars with up-to-date information and guidance on the existing body of literature on the topic of crisis management in education. Additionally, it delineates prospective avenues for further investigation in this domain.

Originality/value – Originality/value: This is the study that provides a performance analysis and scientific mapping of the crisis management literature in education.

1. Introduction

Continuous education is essential around the globe as it meets the need for continuous learning and growth amid global transformation (Richard, 2022). In addition, it allows people to get information and skills that are crucial for personal and professional development throughout their lifetimes (Greggory, 2022). Meanwhile, continuous education is seen as a method to address global issues and guarantee the survival of humanity (Nychkalo, 2019). Likewise, it facilitates social growth by improving social comprehension, engagement, and collaboration while also diminishing social strife (Dolicnin, 2012). Furthermore, ongoing education has a crucial role in fostering innovation, enhancing labour

efficiency and productivity, and promoting the use of cutting-edge equipment and innovative technologies (Luis et al., 2021). It is worth mentioning that it is also acknowledged as a crucial element in enhancing people's knowledge and quality, promoting equitable opportunities, social inclusion, and achieving sustainable development. Moreover, the integration of information and communication technologies into the university curriculum serves as a cutting-edge approach to effectively executing continuous education.

Ongoing education has several advantages. It enhances the efficacy of educating highly skilled instructors in technical education (Haiyang, 2023). The integrating axis of skills in the university curriculum enables the use of Information and communication technologies in



teaching and learning activities (Luis, 2021). According to Gregory (2022), it plays a role in developing an individual who is creative, socially engaged, and well-educated. Lifelong learning enables people to enhance their abilities and knowledge in both academic and professional domains, offering opportunities for skills development and growth (Richard, 2022). The production and development of human capital are essential in the creative economy, especially in the digitization of the economy (Oleksandr, 2022). Ongoing education is crucial for maintaining one's present level of professional knowledge and abilities, enhancing personal competencies, and adapting to the digital economy.

2. Background of Crisis Management Strategies Research in Education

A crisis is an occurrence that can bring about a significant negative transformation in the social system, characterized by a lack of proportionality between the source and the resulting consequences (Walby, 2015). According to Doern et al. (2019), a situation may be classified as a crisis if it is both severe and comes as a surprise, without any prior anticipation. Crises may be classified into five categories based on the nature of the dangers they entail: economic, environmental, geopolitical, social, and technological (Asgary et al., 2020).

Effective crisis management solutions in education are essential for addressing and minimizing the consequences of different crises on educational institutions. These techniques aim to guarantee that school leaders and administrators are well-prepared to handle crises and preserve a culture of inclusivity and unrestricted entry (Crisis Management, 2023). Meanwhile, the COVID-19 pandemic and other economic crises have emphasized the need to implement efficient crisis management solutions in educational institutions (Management Strategy, 2023). In addition, these techniques include several elements, such as devising a structure for managing crises, maintaining productivity during crises, proficiently communicating, and ensuring the availability of essential resources and training for uninterrupted operations (Rana et al., 2023).

It is worth mentioning that crisis management strategies should prioritize virtualization, HR policy, and branding to mitigate the detrimental impacts of economic crises and effectively respond to the demands of the information society (Faustyna, 2023). Therefore, training in crisis management is crucial for students, professors, and administrators to mitigate damage and efficiently address crises inside institutions (Salman, 2021). As a result, incorporating crisis communication tactics such as transparency, crisis teams, social media

integration, psychological support, and assessment is crucial in developing competent individuals in line with the crisis communication plan.

3. Bibliometric Research Method

3.1 Defining the appropriate search terms

In this study, the terminology used consisted of combinations of two cross-disciplinary components: crisis management strategies and education. To ensure that all components of crisis management strategies and education were covered in this research, it was necessary to include the keywords associated with each area. Table 1 shows the two strings and keyword sets used for Scopus data extraction and document selections upon conducting a preliminary. The author devised these terms in search of important, relevant papers. Crisis management strategies include emergency response tactics, contingency plans, crisis mitigation strategies, risk management measures, and business continuity plans. Similarly, education-related terms are education, teaching, learning, and schooling.

	Selection criteria	Exclude	Include
	Database: "Scopus"		
	Date of Search: "28 September 2023"		
	Period of Publications: 1973-2023		
	(TITLE-ABS-KEY ("crisis management strategies" OR "Emergency response tactics" OR "Contingency plans" OR "Crisis mitigation strategies" OR "Risk management measures" OR "Business continuity plans") AND TITLE-ABS KEY "education" OR "Teaching" OR "Learning" OR "Schooling")		419
	Subject Area: "Social science, medicine, engineering, computer science, nursing, energy".	55	364
Table 1 Article inclusion and exclusion criteria	Publication Type: "Articles, Conference Paper, Book Chapter and Review"		
		84	280
	Language Screening: "Include documents"	21	259



published in Englishonly"

3.2 Data collection

The information was obtained using Scopus, which contains a substantial number of double-blind peer-reviewed papers published in high-impact factor journals (Groff et al., 2020). We used a systematic approach to get the ultimate count of 259 items in Table 1. The terms "crisis management strategies," "emergency response tactics," "contingency plans," "crisis mitigation strategies," "risk management measures," and "business continuity plans" were utilized to encompass articles exclusively published in the English language from a diverse range of disciplines listed in Table 1. Data obtained from Scopus or other online databases may have been mistaken due to erroneous bibliographical and bibliometric information resulting from the incorporation of the original publication into later pieces (Donthu et al., 2021). Consequently, using this collected data without further purification poses the possibility of producing a perilous and inaccurate diagnostic. Consequently, this study took many steps to cleanse and store the data. In response to this, we searched bibliographic and bibliometric data, as well as the visualization and interpretation of the results, as suggested by Zupic and Cater (2015) and Donthu et al. (2021).

3.3 Selecting the techniques for analysis

Bibliometric analysis is a collection of tools that quantitatively assess and quantify text and information (Mishra et al., 2018; Goyal and Kumar, 2021). This method enables the retrieval of fresh insights from literature reviews, which may be used as an additional resource for research purposes (Suominen et al., 2016; Groff et al., 2020). To do this, it is necessary to create and publish biographies on a certain topic, identify trends within a particular study field, and assess research works that serve as a reference for understanding the current state of research (Gao et al., 2021; Hossain et al., 2022). Researchers use bibliometric analysis techniques, such as authorship, citation, bibliographic coupling, co-citation, and co-word analysis, to examine the biographic data provided by Donthu et al. (2021).

4. Findings

4.1 Performance analysis

The publication trends in the field of crisis management strategies in education are depicted in Figure 1. Even though 2023 was the most fruitful year in terms of research output, this field's explorations began in 1973. Preliminary research trends suggest that crisis management strategies have garnered greater attention. Additionally, a pioneering study titled "Learning from the Piper Alpha Accident: A Postmortem Analysis of Technical and Organisational Factors" was undertaken by Cornell et al. in 1993. The inception of crisis management research in education commenced in 1993, and its annual production rate has increased substantially since 1988. Based on the current-year trend, it can be anticipated that there will be a steady rise in the number of studies conducted in this field in the years to come.

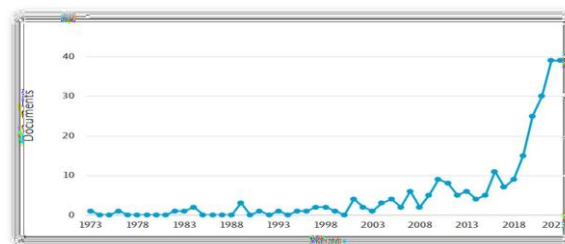


Figure 1 Crisis management in education publication trends

4.2 Prominent nations, organizations, and authors in the field of education crisis management strategy research. The most influential authors, institutions, and nations in education crisis management strategy research are listed in Table 2. Cornell is the most influential author, having published one research paper and receiving 248 citations. One document authored by Cornell has received 248 citations. In addition, the most influential institution is, "The University of Beijing, which received 1205 citations." Furthermore, the University of California, Los Angeles, United States, each received 248 citations, while the University of UCLA Department of Paediatrics, Los Angeles, garnered 203 citations and published one document. Similarly, China emerges as the most influential nation, garnering 1,391 citations across 20 documents. The United States, on the other hand, accumulated 468 citations across 77 documents. In addition, the United States is the most productive nation in this regard.

Table 2: Most influential author, institutions and countries

TC	Authors	TP	TC	Institutions	TP	TC	Countries	TP
248	Cornell, M	1	1205	Uni of Beijing, China	1	1391	China	20



203	Mangione,S	1	248	Uni of California united states	1	468	United States	77
203	AlQashouti,N	1	203	UCLA department of pediatrics, Los Angeles, ca leconte ave, United States	1	291	United Kingdom	24
203	Kravitz, R	1	192	Uni Stanford California of medicine, united states	1	271	Canada	19
203	Belongia,E	1	192	Harvard medical school, Boston, united states	1	206	Australia	16
203	Mcdonald, L	1	192	American college of physicians, united states	1	190	India	13
203	Mcglynn, E	1	130	National university of Singapore	1	189	Singapore	8
192	Goldman, L	1	130	National university of Singapore	1	180	Netherlands	7
192	Lee, T	1	130	National university health system, Singapore	1	166	France	8
192	Rudd, P	1	130	National university health system, Singapore	1	139	Sweden	10
130	Liang, Z	1	106	Uni, of Leiden, Netherlands		128	Germany	7
130	Ooi, S	1	106	Political science, universities Leiden, Netherlands	1	103	Hong Kong	7
130	Wang, W	1	106	London school of economics and political science, London, United Kingdom		100	Norway	7
106	Boin, A	1	81	Computer science and engineering, thapar university, Patiala, India	1	99	Italy	5
106	Lodge, M	1	74	Business administration, middle east1 university, Amman, Jordan		98	Thailand	3
106	Luesink, M		74	electronic business and commerce, al-Aliya Amman university, Amman,1 Jordan	1	95	Israel	5
84	Kotalik, J		67	department of critical care medicine, division of anesthesiology, unitedstates1	1	80	South Africa	6
81	Bhatia, T	1	67	Uni of Texas, Houston, United States	1	79	Switzerland	4
81	Sachdeva, S	1	66	Uni of polytechnic, Kowloon, Hong1 Kong	1	78	Iran	7



4.3 *The most influential journals for crisis management strategy research in education.* Table 3 below represents the most impactful sources of crisis management strategy research in education. The most influential source for crisis management strategy research in education is "The Journal of Academic Medicine," with 189 citations and two publications, followed by "Disaster Prevention and Management: An International Journal," with 104 citations and four publications. Furthermore, the most productive journals are "Emerald Emerging Markets Case Studies" and "Disaster Prevention and Management: An International

Journal," with four publications, followed by "International Journal of Disaster Risk Reduction," with three publications. Similarly, the most productive year is from 2020 to 2023 in the most influential journals. Likewise, the most popular crisis management strategy journal is "Disaster Prevention and Management: An International Journal," and the most productive non-crisis management journal is "Emerald Emerging Markets." However, though research on crisis management strategy in education began in 1997, there were no publications in the most influential journals between 1973 and 2002.

Table 3: Most influential Journal for crisis management in education

Journal	TC	TC	1976 1995	1996 2002	2003 2010	2011 2019	2020 2023
Journal of Academic Medicine	189	2			1		1
Disaster Prevention and Management: An International Journal	104	4			2	2	
International Journal of Disaster Risk Reduction	90	3					3
International Journal of Disaster Resilience in The Built Environment	59	2					2
Plos Computational Biology	52	2				1	1
Journal of Frontiers in Public Health	46	2				1	1
Disaster Medicine and Public Health Preparedness	30	3				2	1
Ieee Access	29	2					2
International Journal of Environmental Research and Public Health	19	2					2
Bmc Emergency Medicine	16	2					2
International Journal of Management in Education	11	2			1	1	
Science of the Total Environment	9	2				1	1
Journal of Medical Teacher	6	2					2
Journal of Education Sciences	2	3					2
Sustainability (Switzerland)	2	2					2
Healthcare Financial Management	1	2	2				
Prehospital and Disaster Medicine	1	2					2
World Sustainability Series	1	2				1	1
Ciencia E Saude Coletiva	0	2					2
Emerald Emerging Markets Case Studies	0	4				1	3

4.4 *The most influential articles on crisis management strategy research in education.* Table 4

indicates the most cited and impactful articles in the area of crisis management strategy research in



education. With 248 citations, the article “Learning from the Piper Alpha Accident: A Postmortem Analysis of Technical and Organisational Factors” by Cornell et al. (1993) is the most influential. Furthermore, they focused their research on education crisis management strategy research, potential uses, and perceived barriers. The most major impediment, on the other hand, is a dearth of apparent relevancy for a specific industry.

With 203 citations, Mangione et al. (2001) conducted the second influential study on “Parent expectations for antibiotics, physician-parent communication, and satisfaction.” As a result, substantial training and education are required to prepare them to seize the worldwide crisis management strategy available on the internet and improve their competencies.

Table: 4 Most influential articles on crisis management in education

Authors	Title	TC
Cornell et al., (1993).	“Learning from the Piper Alpha Accident: A Postmortem Analysis of Technical and Organizational Factors”	248
Mangione et al., (2001)	“Parent expectations for antibiotics, physician-parent communication, and satisfaction”	203
AlQashouti ET AL., (2023)	“Educational System Resilience during the COVID-19 Pandemic Review and Perspective”	203
Belongia, et al., (2010)	“Promoting appropriate antimicrobial drug use in the outpatient setting: What works”	203
McDonald, (2013)	“Using Student-Constructed Cases to Investigate Crises”	203
McGlynn, et al., (2001)	“Parent expectations for antibiotics, physician-parent communication, and satisfaction”	203
Goldman et al., (1983)	“Ten Commandments for Effective Consultations”	192
Lee et al., (2017)	“A qualitative study of sign-out processes between primary and on-call residents: Relationships in information exchange, responsibility and accountability”	192
Liang et al., (2020)	“Pandemics and Their Impact on Medical Training: Lessons from Singapore”	130
Wang et al., (2008)	“Simulation analysis of environmental risk accident and management of high-sulfur gas field development in complex terrain”	130
Boin et al., (2020)	“Learning from the COVID-19 crisis: an initial analysis of national responses”	106
Kotaik, J (2005)	“Preparing for an influenza pandemic: Ethical issue”	84
Sachdeva al., (2018)	“GIS-based evolutionary optimized Gradient Boosted Decision Trees for forest fire susceptibility mapping”	81

4.5 Thematic and influence structure analysis through bibliographic coupling:

Table 4 shows the theme clusters of crisis management strategy research in education. Organisational Factors, Parent Expectation, Appropriate Antimicrobial Drug Use, Study of Signs, and Complex Terrain Learning are the four topic groupings. In Table 6, the most influential articles from each cluster are also included. The four groups cover every aspect of crisis management strategy research in education.

Cluster 1 is concerned with organisational factors and parent expectations. Cornell et al. (1993) investigated

the influence of Learning from the Piper Alpha Accident: A Postmortem Analysis of Technical and Organisational Factors. Their findings revealed unique insights into the circumstances leading to the Piper Alpha disaster, highlighting the significance of addressing both technological and organisational issues to avoid such events in the future. Similarly, Mangione et al. (2001) investigated parent expectations for antibiotics, physician-parent communication, and satisfaction. They also discovered that the study emphasizes the importance of effective doctor-parent communication in managing parental expectations and satisfaction,



particularly in the context of antibiotic prescriptions. They also discovered that, as a result, effective and transparent communication is essential in determining parental satisfaction, irrespective of the result of the

antibiotic prescription. Furthermore, Al Qashouti et al. (2023) investigated educational system resilience during the COVID-19 pandemic review.

Table 5 : Thematic clusters of crisis management in education through bibliographic coupling

Themes	Authors	Title	TC
Organisational Factors, Parent Expectation	Cornell et al., (1993)	“Learning from the Piper Alpha Accident: A Postmortem Analysis of Technical and Organizational Factors”	248
	Mangione et al., (2001)	“Parent expectations for antibiotics, physician-parent communication, and satisfaction”	203
	Al Qashouti et al., (2023)	“Educational System Resilience during the COVID-19 Pandemic: Review and Perspective”	203
Appropriate Antimicrobial Drug Use	Belongia, et al., (2010)	“Promoting appropriate antimicrobial drug use in the outpatient setting: What works”	203
	McDonald, (2013)	Using Student-Constructed Cases to “Investigate Crises	203
	Mcglynn, et al., (2001)	Using Student-Constructed Cases to “Investigate Crises	203
	Mcglynn, et al., (2001)	“Parent expectations for antibiotics, physician-parent communication, and satisfaction”	203
Study of Sign	Goldman et al., (1983)	“Ten Commandments for Effective Consultations”	192
	Lee et al., (2017)	“A qualitative study of sign-out processes between primary and on-call residents: Relationships in information exchange, responsibility and accountability”	192
	Liang et al., (2020)	“Pandemics and Their Impact on Medical Training: Lessons from Singapore”	130
Complex Terrain Learning	Wang et al., (2008)	“Simulation analysis of environmental risk accident and management of high-sulfur gas field development in complex terrain”	130
	Boin et al., (2020)	“Learning from the COVID-19 crisis: an initial analysis of national responses”	106
	Kotaik, (2005)	“Preparing for an influenza pandemic: Ethical issue”	84
Note(s): TC total citations	Sachdeva et al., (2018)	“GIS-based evolutionary optimized Gradient Boosted Decision Trees for forest fire susceptibility mapping”	81

4.8 Thematic trends of crisis management strategy research in education

When using co-occurrence analysis to look at thematic trends in crisis management strategy research in education, you can build on what you've learned from co-citation analysis and bibliographic coupling. Authors' keywords are used for co-occurrence analysis. Those keywords are subjected to a chronological filter to identify the topical development of crisis management strategies in education issues that feature in at least three

articles in our review corpus. Figures 3–6 depict this theme progression.

The study was conducted on the theme of crisis management strategy research in education between 1973 and 1990 and was more focused on learning, knowledge representation, process control systems, expert systems, planning, artificial intelligence, and fault tolerance (red nodes).

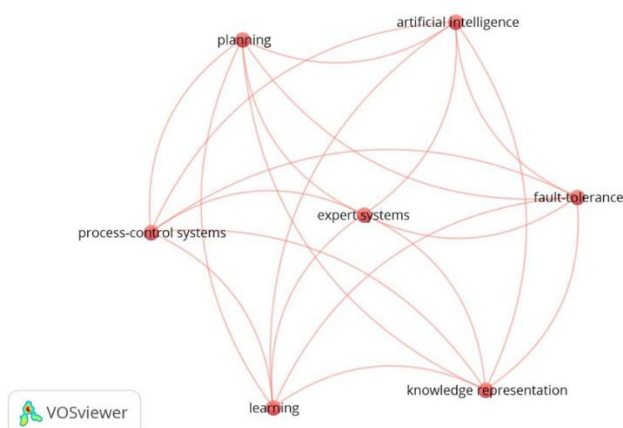


Figure 3. Influential topics in the “period of 1973-1990

Note (s): Red nodes=Learning, Knowledge Representation, Process Control Systems, Export Systems, Planning, Artificial Intelligence, and Fault Tolerance.

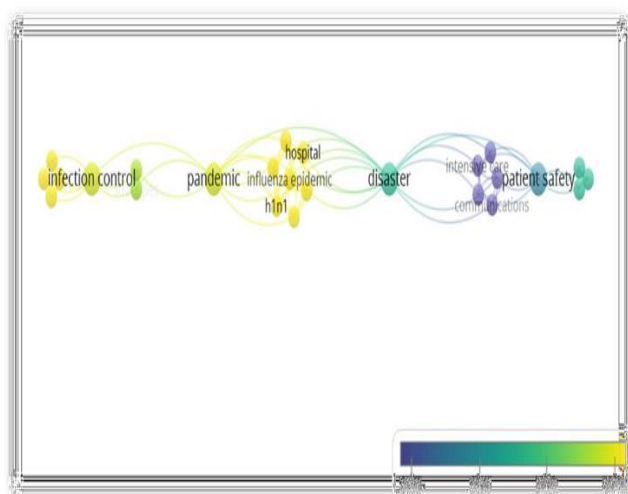


Figure 4. Influential topics in the “period of 2001-2010

Note (s): green nodes= patient safety and disaster, blue nodes= intensive care, yellow nodes= influenza pandemic, hospital, and infection control.

The study done from 2011 to 2019 focused on crisis management research in education, specifically examining topics such as evaluation optimization, machine learning, disaster response, organizational learning, and data mining (shown by green nodes). Furthermore, the presence of training and case studies (blue nodes) as well as education, concurrent learning, and a apiculture (yellow nodes) suggests that crisis management research in education has expanded and evolved into a broader research issue.

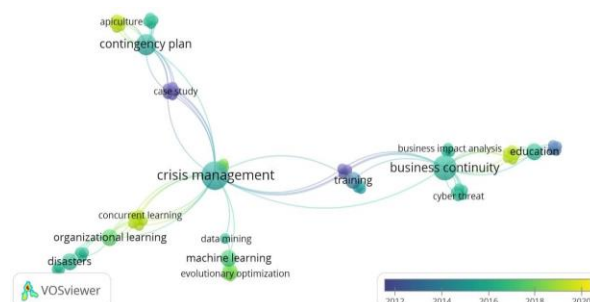


Figure 5. Influential topics in the “period of 2011-2019

Note (s): Green nodes = evaluation optimization, machine learning, disaster response, organizational learning, and data mining blue nodes = the presence of training and case studies as well as education, concurrent learning. yellow nodes = apiculture (yellow nodes).

This study, conducted from 2020 to 2023, focuses on crisis management research in the field of education. It specifically examines topics such as crisis management strategies, the effects of Covid- 19, dynamics within higher education, and the wider implications of the pandemic. These themes are represented by green nodes. In this time realm, the inquiry expands its scope to include subjects that are essential to the educational environment, as shown by blue nodes, such as the complexities of learning processes. Moreover, the research explores the areas of disaster medicine, resilience concerns, and forward-thinking viewpoints, represented by nodes highlighted in yellow. The research reveals a noticeable increase in the influence of labour unions in the medical area and associated issues. This phenomenon highlights the need for researchers and academics to carefully examine these trends, emphasizing the need of gaining a thorough grasp of these topics in the current academic debate.

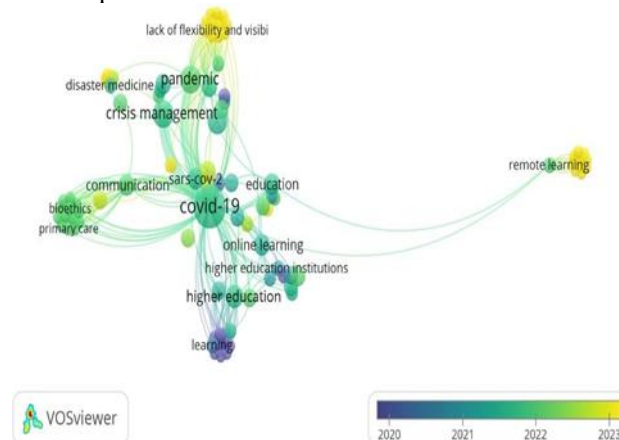


Figure 6. Influential topics in the “period of 2020-2023

Note (s): green nodes= crisis management, COVID-19, higher education, and the pandemic, blue



nodes= learning, yellow nodes, disaster medicine, and the issues of inflexibility and visibility.

5. Future research directions

Evaluating the study of crisis management strategy in education from a historical perspective is crucial for evaluating the current and future ramifications. Through a thorough analysis of pertinent literature, this study aims to develop a fundamental framework for the emerging field of crisis management strategy research in education. This will enable future academics to investigate the application and advantages of crisis management. A prospective investigation might examine the impact of cutting-edge technology on enhancing crisis management tactics in both local and global educational contexts. From 1973 to 1990, the research mostly concentrated on topics like learning, knowledge representation, process control systems, expert systems, planning, artificial intelligence, and fault tolerance. The research conducted between 2001 and 2010 focused on the areas of patient safety and catastrophe management. Moreover, throughout this time frame, subjects such as critical care, influenza outbreaks, medical facilities, and disease prevention were prominent. The research conducted between 2011 and 2019 focused on the detailed examination of certain subjects such as evaluation optimization, machine learning, disaster response, organisational learning, and data mining. Moreover, the inclusion of training, case studies, education, concurrent learning, and apiculture indicates that research on crisis management in education has grown and developed into a more comprehensive study topic. Moreover, the research conducted between 2020 and 2023 focuses on topics such as crisis management, COVID-19, higher education, and the pandemic. During this period of academic exploration, the subjects included are education and emergency medical care, as well as the challenges of rigidity and observability. The research conducted since 2020 has been mostly focused on COVID-19, higher education, and the pandemic.

Significant as a strategy for managing crises A quarantine and epidemic management platform is designed to address the current surge of interest around this issue, particularly in light of the ongoing COVID-19 pandemic. For future research, it is essential to use contemporary technology, such as artificial intelligence, as a crisis management technique to enhance the efficacy of crisis management. In addition, future studies will focus on customized crisis management and historical activity-based strategy, among other topics. In addition, the next study endeavors in crisis management strategy will include the use of contemporary technology.

Furthermore, when planning future research directions, it is crucial to prioritize the improvement of technology adoption and crisis management measures. The primary focus will be on improving the data-gathering process, comprehending the difficulties associated with technology adoption, and investigating the smooth incorporation of technology. These efforts seek to provide a deep understanding of the intricacies involved in properly addressing emergencies.

6. Conclusion

Bibliometric analysis may be used to provide insights into collection growth, identify institutional areas of scholarly expertise and citation trends, and reveal interconnected networks of influential academic ideas. The current study has shown the research patterns, topic development, and significant research in crisis management strategy research in the field of education. Data extraction and analysis were conducted using the Scopus database, which is the most extensive biographical database available. The study has outlined the research development and focal points of crisis management strategy research in the field of education across various periods. This study has outlined the evolution of crisis management strategy research in the field of education and proposed future research avenues for researchers. Researchers have the opportunity to investigate the developing field of crisis management strategy research in education, which might provide more valuable knowledge to policymakers and practitioners. The current study has enhanced our comprehension of the research progress, emerging domains, and future research orientations in crisis management strategy research within the field of education. This research is restricted to doing a bibliometric analysis just on the biographical data obtained from the Scopus database. Hence, it would be advantageous to conduct future research by using the merged bibliographic data from Scopus and Web of Science, since several high-quality articles are only listed in either of these databases. In addition, future study might use bibliometric analysis only on publications included in SCI, SSCI, and ABDC to provide insights into the research landscape via high-quality publications.

7. Implications of the study

The current study has significant significance for academics and researchers. They should have a comprehensive understanding of the available research in this field. By familiarizing themselves with the influential and significant contributors in this study field



and understanding the reasons for their significance, anyone may use these papers to address the current academic and industrial difficulties. Moreover, it would also provide them with guidance to identify the deficiency in the current body of knowledge, as well as potential study avenues that would aid them in conducting subsequent investigations. Moreover, it will also help the scholar disseminate their research in prestigious publications with significant influence.

References

- [1] 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>
- [2] AlQashouti, N., Yaqot, M., Franzoi, R. E., & Menezes, B. C. (2023). Educational System Resilience during the COVID-19 Pandemic—Review and Perspective. *Education Sciences*, 13(9), Article 902. <https://doi.org/10.3390/educsci13090902>
- [3] Belongia, E. A., Mangione-Smith, R., & Knobloch, M. J. (2010). Promoting appropriate antimicrobial drug use in the outpatient setting: What works? *Issues in Infectious Diseases*, 6, 70–88.
- [4] Boin, A., Lodge, M., & Luesink, M. (2020). Learning from the COVID-19 crisis: an initial of national responses. *Policy Design and Practice*, 3(3), 189–204. <https://doi.org/10.1080/25741292.2020.1823670>
- [5] Carlos, Fernandez. (2023). Strategies for crisis organisations and management of torrential floods and important urban runoffs. doi: 10.5194/egusphere-egu23-17171
- [6] Kotalik, J. (2005). Preparing for an influenza pandemic: Ethical issues. *Bioethics*, 19(4), 422–431. <https://doi.org/10.1111/j.1467-8519.2005.00453.x>
- [7] Donthu, N., Kumar, S., Mukherjee, D., Pandey, N. and Lim, W.M. (2021), “How to conduct a bibliometric analysis: an overview and guidelines”, *Journal of Business Research*, Vol. 133, pp. 285-296.
- [8] 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
- [9] Dolicanin, Cemal, Bajram., Vujicic, Milica, Stojan. (2012). Continuous education as a source of sustainable development and competitiveness.
- [10] Hossain, M.R., Akhter, F. and Sultana, M.M. (2022), “SMEs in covid-19 crisis and combating strategies: a systematic literature review (SLR) and A case from emerging economy”, *Operations Research Perspectives*, Vol. 9, 100222, doi: 10.1016/j.orp.2022.100222.
- [11] Goyal, K. and Kumar, S. (2021), “Financial literacy: a systematic review and bibliometric analysis *International Journal of Consumer Studies*, Vol. 45 No. 1, pp. 80-105.
- [12] Gao, P., Meng, F., Mata, M.N., Martins, J.M., Iqbal, S., Correia, A.B., Dantas, R.M., Waheed, A., Rita, X. and Farrukh, M. (2021), “Trends and future research in electronic marketing: a bibliometric analysis of twenty years”, *Journal of Theoretical and Applied Electronic Commerce Research*, Vol. 16 No. 5, pp. 1667-1679.
- [13] Groff, M.L., Offringa, M., Emdin, A., Mahood, Q., Parkin, P.C. and Cohen, E. (2020), “Publication trends of pediatric and adult randomized controlled trials in general medical journals, 2005-2018: a citation analysis”, *Children*, Vol. 7 No. 12, p. 293.
- [14] Lee, S. H., Fisher, D. A., Mah, H., Goh, W. P., & Phan, P. H. (2017). A qualitative study of sign-out processes between primary and on-call residents: Relationships in information exchange, responsibility and accountability. *International Journal for Quality in Health Care*, 29(5), 646–653. <https://doi.org/10.1093/intqhc/mzx082>
- [15] Mangione-Smith, R., McGlynn, E. A., Elliott, M. N., McDonald, L., Franz, C. E., & Kravitz, R. L. (2001). Parent expectations for antibiotics, physician-parent communication, and satisfaction. *Archives of Pediatrics and Adolescent Medicine*, 155(7), 800–806. <https://doi.org/10.1001/archpedi.155.7.800>
- [16] Paté-Cornell, M. E. (1993). Learning from the Piper Alpha Accident: A Postmortem Analysis of Technical and Organizational Factors. *Risk Analysis*, 13(2), 215–232. <https://doi.org/10.1111/j.1539-6924.1993.tb01071.x>
- [17] McDonald, L. M. (2013). Using Student-Constructed Cases to Investigate Crises. *Journal of Management Education*, 37(1), 115–134. <https://doi.org/10.1177/1052562912455521>
- [18] Goldman, L., Lee, T., & Rudd, P. (1983). Ten Commandments for Effective Consultations. *Archives of Internal Medicine*, 143(9), 1753–1755.



- <https://doi.org/10.1001/archinte.1983.00350090131022>
- [22] Liang, Z. C., Ooi, S. B. S., & Wang, W. (2020). Pandemics and Their Impact on Medical Training: Lessons from Singapore. *Academic Medicine*, 95(9), 1359–1361. <https://doi.org/10.1097/ACM.0000000000003441>
- [23] Wang, X., Hao, F., Zhang, X., Sun, W., & Cheng, H. (2008). Simulation analysis of environmental risk accident and management of high-sulfur gas field development in complex terrain. *Frontiers of Environmental Science and Engineering in China*, 2(3), 318–325. <https://doi.org/10.1007/s11783-008-0033-9>
- [24] Walby, S. (2015). *Crisis*. John Wiley & Sons.
- [25] Sachdeva, S., Bhatia, T., & Verma, A. K. (2018). GIS-based evolutionary optimized Gradient Boosted Decision Trees for forest fire susceptibility mapping. *Natural Hazards*, 92(3), 1399–1418. <https://doi.org/10.1007/s11069-018-3256-5>
- [26] (2023). *Crisis Management Strategies for School Leaders Affecting Academic Administration in Private Schools Under Nakhonratchasima Province*. Education Office. doi: 10.31219/osf.io/vgu92
- [27] (2023). The management strategy in the educational institution during the crisis caused by COVID-19 pandemic. doi: 10.55056/cte.551
- [28] Rana, Gholamzadeh, Nikjoo., Yeganeh, Partovi., Akbar, Javan, Biparva. (2022). Crisis management programs in top universities worldwide to maintain educational activities in situational crises: A scoping review. *Research and Development in Medical Education*, doi: 10.34172/rdme.2022.021
- [29] Faustyna, Faustyna. (2023). OBE-Based Education Crisis Communication Strategy After the Covid-19 Pandemic. *Randwick International of Social Science Journal*, doi: 10.47175/rissj.v4i2.674
- [30] Salman, Elbedour., Futiem, N., Alsubie., Shareefah, N., Al'Uqdah., Joseph, A., Bawalsah. (2021).
- [31] School Crisis Management Planning.. *Children & Schools*, doi: 10.1093/CS/CDAA021 Haiyang, Li. (2023). The importance of continuing education in training highly qualified
- [32] technological education teachers. *Frontline social sciences and history journal*, doi: 10.37547/social-fsshj-03-05-11
- [33] Luis, Danilo, Flores, Rivera., Carlos, Fernando, Meléndez, Tamayo., Manuel, Morochó, Amaguaya. (2021). Análisis documental relacionado con la educación continua como eje integrador de las competencias del currículo universitario. doi: 10.6018/EDUCATIO.414901
- [34] Gregory, A, Perry. (2022). The library is one of the main social areas of information services. *Infolib*, doi: 10.47267/2181-8207/2022/1-102
- [35] Richard, Barrios. (2022). The Role and Importance of Continuous Education. *International Journal of Multicultural and Multireligious Understanding*, doi: 10.18415/ijmmu.v9i2.3503
- [36] Oleksandr, Kirdan. (2022). Continuous education as a condition for the formation of human capital in the innovative economy. *Naukovij visnik L'otnoï akademii*, doi: 10.33251/2707-8620-2022-7-22-28
- [37] N., Nychkalo., L., Lukianova. (2019). Continuing education as a global trend and modern Ukrainian reality. [doi: 10.32405/2617-3107-2019-1-13](https://doi.org/10.32405/2617-3107-2019-1-13)
- [38] Zupic, I. and Cater, T. (2015), "Bibliometric methods in management and organization", *Organizational Research Methods*, Vol. 18 No. 3, pp. 429-472.