

How do Organizations and Employees Perceive and Respond to a Crisis: A Co-citation and Co-word Analysis

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ABSTRACT

This study aims to provide an overview of the state-of-the-art research at the intersection of how organizations and employees perceive and respond to a crisis. By using scientific mapping, the study also seeks to ascertain the intellectual structure of the knowledge base and highlight trends on the topic. Using the Web of Science (WoS) database, 546 publications were chosen for further examination. The research employed bibliometric indicators such as authors, documents, journals, field publications, and countries. In addition, VOSviewer was used to perform science mapping analyses such as co-word and co-citation. This study finds that scholars are increasingly interested in this topic, as evidenced by a growing trend in the academic literature. The six clusters in co-citation networks are identified as the pillars of the theoretical foundation of research on this topic. Moreover, by classifying keywords into seven themes, the research explores thematic trends on this topic. The results find that "Remote work, work-family conflict, and work-life balance" emerged as an emerging trend within 2020–2022. Furthermore, the findings reveal several new keywords have appeared in the research fields since the COVID-19 outbreak. This study indicates the most important emerging themes, research topics, and critical debates and then outlines potential avenues for future research.

Keywords: Organizations perception, Employees perception, Organizational response, Employees response, Crisis, Bibliometric.

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Received: 23-09-2022;

Revised: 19-05-2023;

Accepted: 28-06-2023.

INTRODUCTION

Organizations and employees may face crises caused by external events such as epidemics, natural and man-made disasters, and terrorism. The term "crisis" has been widely used in the management literature to suggest some uncertainty of causes, consequences, and means of settlement, as well as a notion that measures are required to be carried out immediately.^[1,2] James and Wooten (2010, p. 17) defined a crisis as "a rare, significant, and public situation that creates highly undesirable outcomes for the firm and its stakeholders... and requires immediate corrective action by firm leaders."^[3] When analyzing crises, perceptions and responses are crucial factors to explore, as a crisis can only exist when people and organizations perceive a situation to be a crisis and respond to it.^[4-6]

Humans have endured a variety of crises in the past. During 2000 and 2022, significant disruptions included the September 11 terrorist attacks (2001), the Severe Acute Respiratory Syndrome (SARS) epidemic (2003), the global economic crisis that unfolded

between 2007 and 2009, the Middle East Respiratory Syndrome (MERS) outbreak in 2015, and the COVID-19 pandemic.^[7,8] Since the onset of the global financial crisis between 2007 and 2009, more scholarly attention has been devoted to this topic,^[9] and since the outbreak of the COVID-19 crisis at the end of 2019 and early 2020, the number of publications has skyrocketed.

During such unpredictable external events, the organization would operate in a time of ambiguity and uncertainty and strive to recover control.^[10,11] Due to a lack of planning and coping ability, many organizations are more susceptible to the negative outcomes of a crisis. Consequently, as a primary result of the global crisis, organizations are forced to make adjustments in order to deal with the uncertainties, rapid unanticipated changes, and insecurity they face.^[12] The theoretical paradigm of organizational response to a crisis proposed by Sarkar and Osিয়েvskyy (2018) consists of three sequentially interrelated components: organizational cognition, decision-making, and implementation.^[2] According to Naudé *et al.* (2012), during a crisis, organizations could utilize a variety of strategies.^[12] One solution would be to concentrate on survivability by reducing expenses through workforce layoffs while simultaneously expecting increased flexibility and inventiveness from the surviving workforce.^[13] Some businesses also have ceased training and development, instituted hiring freezes, and urged workers to accept severance packages.^[14]



DOI: 10.5530/jscires.12.2.028

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When a crisis occurs, workers are put to the test as their employment may be crucial or even harmful. The first questions management asks when faced with a terrible crisis, according to Wu *et al.* (2012, p. 2698), are “Are the employees more or less willing to contribute? What factors affect the employees’ willingness to accept assigned jobs?”^[15] According to event system theory, individual ideas, emotions, and behaviors are influenced by events; when a crisis is more serious, thoughts and feelings, and attitudes are more likely to change.^[16] Therefore, during a crisis, employees are more scared of external threats to their jobs and their health and demand more assistance from their organization.^[17-19] When a pandemic strikes, for instance, a workplace can become a high-risk environment for virus infection, leaving employees feeling vulnerable, afraid, panicked, and even burned out.^[20,21] Proactive responses to a crisis by a company enable employees to come back to work and concentrate on the objectives of the organization, as well as to assure them that they can rely on the corporation during the crisis.^[22] According to Watkins *et al.* (2015), employees are able to observe their managers’ behavior and responses in the aftermath of a crisis as insiders, and they are likely to create subjective opinions about the extent to which the organization has performed responsibly and effectively in aiding employees.^[22] Employees’ views of organizational support, or the amount to which the company values members’ efforts and concerns about their well-being, are regarded as results of the organization’s supportive activities during a crisis. Consequently, employees’ perception of risks related to a crisis and of their organizational response to a crisis would shape their responses, psychology, attitudes, and behaviors.^[4,23-25]

According to Wu *et al.* (2012), given that system research considers individuals as part of the system, the majority of crisis research has focused on organizational and managerial levels rather than individual levels.^[15] Individuals’ willingness and reaction, however, are heavily influenced by characteristics in their working environment. Researchers have claimed that research into the dynamic interactions between contextual factors, individual intentions, behavior, and decisions was restricted and lacked coherent explanations and prediction hypotheses.^[26] Therefore, it’s critical to study organizations’ and employees’ perceptions and responses during a crisis.

Although researchers have discussed the relevant literature on how organizations and employees perceive and respond to a crisis, no comprehensive review has been conducted to report the growth of scholarly publications in this field. Furthermore, the majority of preceding literature reviews pertaining to the subject of crises have primarily concentrated on crisis management from a macroscopic vantage point or have examined the responses of academia, industry, and governments to multinational epidemics. However, there has been a limited examination of crisis management from a microscopic perspective, specifically,

the intersectionality involving how organizations and employees perceive and respond to crises.

Hence, it is essential to conduct a bibliometric study to present state-of-the-art emerging research at the intersection of how organizations and employees perceive and respond to a crisis. Indeed, the bibliometric method has been used in many other disciplines for literature mapping and analysis.^[27,28] In addition to facilitating literature retrospectives, bibliometrics can aid in the goal and quantitative evaluation of study areas, which contribute to numerous approaches to the evolution and advancement of a particular research field.^[29] Given the lack of systematic prior analysis on how organizations and employees perceive and respond to a crisis, this paper aims to contribute to the expansion of this research field and enhance understanding in this area. This study aims to (1) determine the growth of publications on how organizations and employees perceive and respond to a crisis; (2) pinpoint the key contributors (journals, authors, institutions, countries, etc.) that should be taken into account when developing future management approaches; (3) mapping the literature on how organizations and employees perceive and respond to a crisis on the basis of the cohesiveness metrics; and (4) identify the most important emerging thematic clusters, research topics, and key debates, and then outline potential avenues for future research. An analysis of research contributions on this topic based on bibliometrics is deemed appropriate for this study. The rest of this article is organized as follows: The following section of the paper discusses an overall literature review regarding how organizations and employees perceive and respond to a crisis. Section 3 goes into great detail about the research methodology. The findings are presented and discussed in sections 4 and 5. The conclusion, limitations, and future research of this study are presented in the final section of this paper.

METHODOLOGY

Bibliometrics is a fundamental area of information science that applies mathematical and statistical methods to determine the conceptual structures, features, linkage, and patterns of literature.^[30,31] This method is very helpful in providing a general picture of any research field or specific discipline and illustrating summations of the trends.^[32,33] It allows academics to investigate the conceptual structure and evolution of study topics by examining the literature on those topics.^[34] This method provides a more objective overview of a field’s academic landscape and latest developments based on a larger sample of publications than qualitative and interpretative reviews.^[35,36] In this method, a variety of techniques, such as co-citation analysis, bibliographic coupling, co-authorship analysis, and co-word analysis, are used.^[37] Moreover, science maps are employed in the bibliometric approach to illustrate the structure of the conceptual findings of the study based on themes.^[38] Thus, to present a broad overview of current research trends and identify research gaps

on the topic of how organizations and employees perceive and respond to a crisis, this study first conducts bibliographic analysis based on all publications from the Web of Science database. The VOSviewer program is used in this study to create a graphical representation of the bibliometric data. This software gathers information for constructing maps based on bibliometric metrics such as bibliographic coupling, co-citation, and keyword co-occurrence.^[37,39]

According to Chang *et al.* (2015) and Donthu *et al.* (2021), combining different techniques in the bibliometrics method gives a more in-depth insight into the research themes.^[40,41] For example, the combination of co-citation analysis and co-word analysis is popular in the social research and management field, which provides an overall review of the research topic and suggests the future direction of the research theme.^[34,42,43] Co-citation analysis is a technique to examine the linkage between two documents through citations.^[44,45] This technique calculates how often two publications are cited by a third one and groups them into certain groups of specialties. It supposes that highly co-cited authors are in a similar category of research topics.^[34,46] Co-word analysis is employed to calculate and analyze the occurrence of keywords in publications on research topics.^[47,48] This technique can reveal the interaction between keywords in the research topic, the patterns, the evolutions, and the trends of research themes by measuring the connection strengths of terms representative of relevant research documents published in the field.^[49,50] Additionally,

this study employs performance analysis to describe the overall characteristics of the literature.^[41]

In this study, the data were extracted from Thomson Reuters' Web of Science (WoS) database, which includes SCI-EXPANDED, A&HCI, SSCI, CPCI-S, CPCI-SSH, and ESCI.^[51] This collection covers over 12,000 highly regarded and renowned publications from 1900 to the present throughout the world, which is possibly the most popularly used bibliometric analysis database.^[52]

The advanced search strategy of retrieving the topic of how organizations and employees perceive and respond to a crisis on WOS was as follows: TOPIC: (organization* or firm* or compan*) AND TOPIC: (employee* or worker*) AND TOPIC: (perspective or perception or perceive* or aware*) AND TOPIC: (response* or respond* or react*) AND TOPIC: (crisis or crises or pandemic* or disaster*).

An initial 563 documents were retrieved from the search strategy. Next, following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) recommendations of (2009),^[53] this research only considered the publications that met the criteria for eligibility and excluded any documents that did not meet those criteria (see Figure 1). The following qualified as eligible criteria: (i) the language used was English; (ii) publication types included academic journal article, conference paper, and book or book chapter; and (iii) the time period covered was from 1997 to the present (30 June 2022). The database search yielded 552 documents. Afterward, titles and abstracts of all

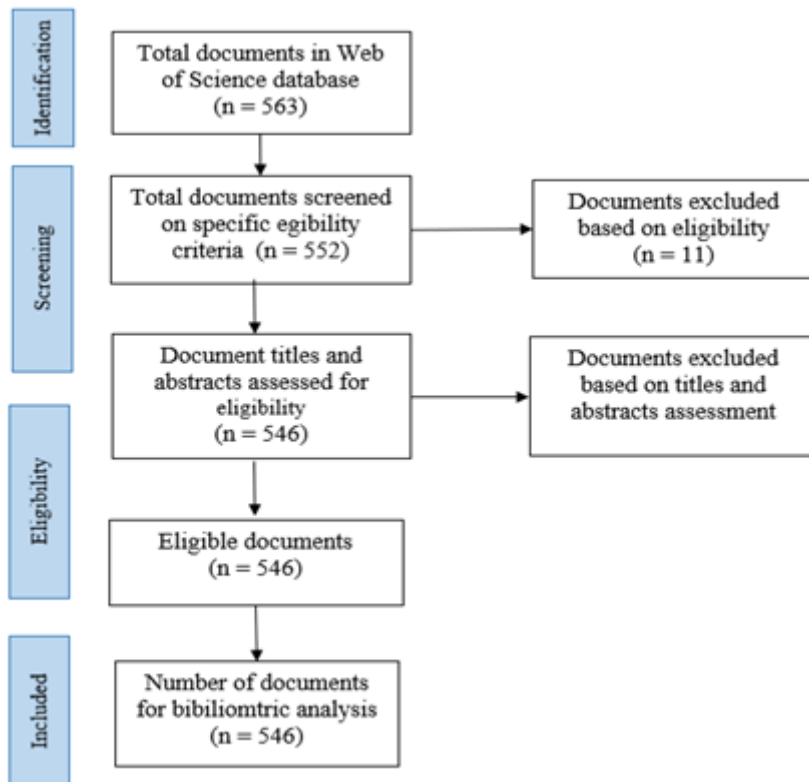


Figure 1: PRISMA flow diagram.

publications were carefully considered for the relevant topic of how organizations and employees perceive and respond to a crisis. Eventually, all 546 publications were retained for the analysis.

RESULTS AND DISCUSSION

Characteristics of the literature

A total of 546 articles have been discovered to be relevant to study, as mentioned in the methodology section above. Figure 2 shows a line graph illustrating the development of publications from 1997 to June 2022. Research on how organizations and employees perceive and respond to a crisis was published in relatively few years, from 1997 to 2010. When the overall number of publications nearly doubled from the prior years in 2011, the number of research articles began to rise. This trend can likely be attributed to the outbreak of the Great Recession between 2007 and 2009. After this global crisis, more and more researchers have been interested in topics related to crisis.^[9] Since the outbreak of the COVID-19 crisis at the end of 2019 and early 2020, the number of publications has increased dramatically. The number of articles published each year has been rising, and in recent years, the number of publications has increased substantially, indicating that the study of how organizations and employees perceive and respond to a crisis has become an exciting subject for scholars.

Country of publication

The geographic area statistics of the publications illustrate that the USA is leading in the number of studies on the topic of how organizations and employees perceive and respond to a crisis, with 156 research documents and 2045 citations, followed by England with 49 publications and 746 citations (Table 1).

The People's Republic of China stands in the third position on the list with 46 research documents and 691 citations. Australia and Canada have the same number of publications, with 37 documents. The remaining countries in the top ten list include Italy (30 publications), India (27 publications), Netherlands (25 publications), Germany (25 publications), and South Korea (18 publications).

Field of publication

Table 2 depicts the different subject areas of the publications on how organizations and employees perceive and respond to a crisis. It can be seen that diverse subject areas have been explored on this topic. The Management field is ranked at the first position with 108 publications (19.8%), followed by Public Environmental Occupational Health, which has 103 publications (18.9%). The Business field stands at the fourth position in the list with 59 publications (10.8%). The fifth and sixth positions are shared by the field of Environmental Sciences (9.2%) and Environmental Study (5.3%). Green Sustainable and Psychology Disciplinary together stand in the last position with 21 publications each (3.8%). This implies that knowledge of how organizations and employees perceive and respond to a crisis is generated across disciplines and is not limited to the management or business research communities.

Journal publications

Table 3 shows the seven most popular journals that have published documents on the topic of how organizations and employees perceive and respond to a crisis, along with the number of publications and citations. It presents that the *International Journal of Environmental Research and Public Health* has published 30 papers on the topic with 150 citations and has published more

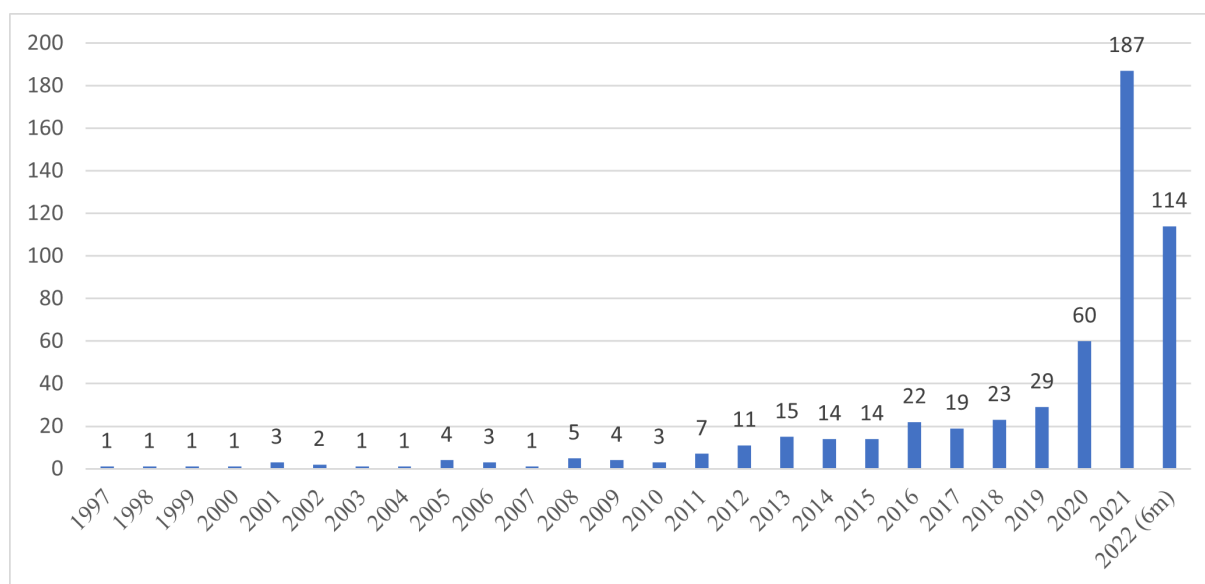


Figure 2: Number of publications over years.

Note: the data for the year 2022 are for the first six months.

research than any other journal. *Sustainability* has published 18 papers with 38 citations and stands at the second position in the list of the number of publications. Regarding the number of citations, *MBC* has the highest number (319), followed by the *Journal of Applied Psychology* (306) and *Frontiers in Psychology* (195).

The most cited publications

This study compiles a list of the most cited papers on the topic of how organizations and employees perceive and respond to a crisis to determine which are the most influential. Typically, the number of citations acquired in published research is used to evaluate its quality and reliability.^[54] Table 4 presents the top seven publications. It can be seen that the study by Fernandez *et al.* (2020),^[55] which has received 200 citations, stands at the first position in the list, followed by Balicer *et al.*^[56] with 154 citations. The paper by Chor *et al.*^[57] has 143 citations and is ranked third. All of these top three publications studied healthcare employees in an epidemic. The study of Muller *et al.* (2014)^[58] on “collective empathy in corporate philanthropy decisions” stood at the fourth position, followed by the study by Mao *et al.*^[4] on “effects of tourism CSR on employee psychological capital in the COVID-19 crisis.”

Co-citation Analysis

In this study, co-citation is used to examine the interactions among cited publications in order to comprehend the evolution of a research discipline’s foundational themes on how organizations and employees perceive and respond to a crisis. In order to choose the most influential papers in the research field, a cutoff point can be established when building the co-citation network.^[61] In this study, from 26506 cited references, the author set a minimum number of citations for a referenced source of at least five as a criterion. A total of 196 publications were included in the final dataset. Moreover, in order to reveal the structure and theoretical foundations of how organizations and employees perceive and respond to a crisis, the selected citations are clustered using the

Smart Local Moving (SLM) algorithm as the method of cluster analysis.^[62]

Figure 3 presents the visualization of the co-citation networks of the references in research on how organizations and employees perceive and respond to a crisis. It can be seen that the publications on the co-citation network of this topic formed six clusters. The author carefully read the representative papers, which have been cited most, in each of these clusters to identify their main ideas. These six clusters were given names based on the generality of references participating in them (Table 5).

The first cluster consists of 54 studies, the majority of which were published in the business, management, public environmental and occupational health, and psychology field. This cluster is defined as *Employees’ risk perception and mental health during an epidemic* (in red color). In this theme, there have been two highly cited documents (i.e.,^[63,64]) that indicated that during a pandemic like COVID-19, healthcare workers have a high risk of developing mental health problems. The other studies on this theme also revealed the health risk perception and fear of an epidemic like influenza, SARS, EBOLA, MERS, or COVID-19 and its impact on mental health.^[65-69]

The second cluster, which contains 51 papers mainly published in business, management, and industrial relations and labor journals, is identified as *Remote working or Teleworking during a pandemic* (in blue color). Most research in this cluster has studied the model of teleworking, remote working, and work from home, especially during the pandemic of COVID-19.^[23,24,70,71] The other dominant studies in this cluster presented the conservation of resources theory^[72] and the model of job demands-resources,^[73] which were the theoretical background for other studies on this theme.

The third cluster accounts for 45 studies, mainly published in business, management, environmental sciences and studies, and green sustainable journals. This cluster refers to *Crisis management and CSR during a crisis* (in green color), focusing on

Table 1: Top countries in publications.

| Rank | Country | Number of documents | Number of citations |
|------|----------------------------|---------------------|---------------------|
| 1. | USA | 156 | 2045 |
| 2. | England | 49 | 746 |
| 3. | People’s Republic of China | 46 | 691 |
| 4. | Australia | 37 | 662 |
| 5. | Canada | 37 | 411 |
| 6. | Italy | 30 | 363 |
| 7. | India | 27 | 115 |
| 8. | Netherland | 25 | 497 |
| 9. | Germany | 25 | 462 |
| 10. | South Korea | 18 | 276 |

the process of crisis management of an organization, the way how the organization protects its reputational assets during a crisis, and its CSR. For instance, Coombs (2007) demonstrated that management benefits from knowing how crisis communication may be utilized to defend reputational values during a crisis.^[75] presented an integrated framework of crisis management based on multidisciplinary research of the organization, public relations, and corporate communication.^[76] presented a multilevel conceptual framework to explain why organizations have increasingly engaged in CSR programs, with the potential to affect good societal change.^[77]

The fourth cluster, which includes 18 studies mainly published in business, management journals, and green sustainable journals, is defined as the *Effects of a crisis on the hospitality and tourism industry* (in gold color). Most studies in this cluster focus on the impact of the COVID-19 pandemic on organizations and employees in the hospitality and tourism industry.^[7,80-82]

The fifth cluster contains 16 papers mainly published in applied psychology, disciplinary business psychology, and management journals. This cluster is identified as *Job insecurity and mental*

health (in purple color), discussing employees' job insecurity, stress, strain, burnout, and other forms of mental health.^[83-87]

The last cluster contains 12 papers mainly published in business, management, and psychology journals. This cluster is identified as *Organizational support and employee outcomes*, discussing the role of organizational support^[88] and the application of the principle of social exchange theory in explaining the effect of organizational support on employees.^[25,89-91] For instance, based on hypotheses involving social exchange theory, demonstrated that perceived organizational support was related to employee-favorable outcomes (positive orientation toward the organization, behavior, and subjective well-being).^[90]

Co-Word Analysis

According to the co-word analysis is a method that analyzes the document's original text.^[41] This technique analysis implies that words which commonly appear alongside other words have a thematic connection. Co-word analysis is frequently employed as a supplement to bibliographic coupling analysis or co-citation analysis in order to discover more about thematic categories. Since the topics that arise from the similarities between publications

Table 2: Field of publications.

| No. | Field | Number of documents | % |
|-----|--|---------------------|------|
| 1. | Management | 108 | 19.8 |
| 2. | Public Environmental Occupational Health | 103 | 18.9 |
| 3. | Business | 59 | 10.8 |
| 4. | Environmental Sciences | 50 | 9.2 |
| 5. | Environmental Study | 29 | 5.3 |
| 6. | Psychological Applied | 29 | 5.3 |
| 7. | Industrial Relations and Labor | 24 | 4.4 |
| 8. | Health Policy | 22 | 4.0 |
| 9. | Green Sustainable | 21 | 3.8 |
| 10. | Psychology Disciplinary | 21 | 3.8 |
| 11. | Others | 80 | 14.7 |

Table 3: Top journals publications.

| Rank | Journal title | Number of papers | Number of citations |
|------|--|------------------|---------------------|
| 1. | International Journal of Environmental and Public Health | 30 | 150 |
| 2. | Sustainability | 18 | 38 |
| 3. | Frontiers in Psychology | 14 | 195 |
| 4. | BMC Public Health | 11 | 319 |
| 5. | PLOS One | 11 | 118 |
| 6. | Disaster Medicine and Public Health Preparedness | 10 | 81 |
| 7. | Journal of Applied Psychology | 9 | 306 |

tend to be fairly broad, so co-word analysis can help academics discover more about the content of each thematic cluster. In addition, a co-word analysis might be utilized for forecasting future studies in the field by utilizing “words” from the study’s implications and future orientations.^[49,50] Hence, this study uses the co-word analysis to visualize co-word networks and identify the thematic patterns on how organizations and employees perceive and respond to a crisis.

In order to explore the changes in research themes on how organizations and employees perceive and respond to a crisis from 1997 to 2022, the study period was broken into two sub-periods: 1997–2019 and 2020–2022. This study chose the year 2019 as a point to divide into two periods as, at the end of 2019 and early 2020, the COVID-19 pandemic, which is the largest worldwide crisis since the Second World War, occurred.^[92] Unlike earlier pandemics, the COVID-19 outbreak has a high death rate and will have significant long-term effects on human beliefs and actions, along with lasting adjustments to individuals’ core values, when compared to acute instances (e.g., terrorist incidents).^[8,93]

Between 1997 and 2019, 185 papers were published on the topic of how organizations and employees perceive and respond to a crisis, generating 1190 different keywords. Between 2020 and 2022, 361 papers were identified on this topic, resulting in 1928 different keywords. This study set “All Keywords” for both periods with a threshold of at least three co-occurrences. Additionally, keywords that refer to research methods were omitted as it is not valuable to include them in the analysis. The final sample for co-word analysis during the period from 1997 to 2019 consists

of 124 keywords, and the final sample for co-word analysis of the latter period consists of 239 keywords.

Figures 4 and 5 show the two visualized co-word networks in the two sub-periods. Interpretation of the co-word network follows the same approach as the co-citation map. Each bubble in the map represents a word or phrase. The bubble size illustrates the number of publications containing each term, and the thickness of the line shows the magnitude of the keyword co-occurrence. The categorization of keywords in the topic of how organizations and employees perceive and respond to a crisis is also shown in Table 6. The research keywords in this topic were grouped into seven themes, including (1) Crisis and employees’ mental health (in red color); (2) Organizational responses and corporate social responsibility (in blue color); (3) Employee outcomes (Job satisfaction, organizational commitment, and work engagement) (in green color); (4) Human resource management, leadership, and performance (in purple color); (5) Epidemic/Disaster/Crisis and health risk perception (in gold color); (6) Crisis management and organizational support (in light grey color); (7) Remote working, work-family conflict, and work-life balance (in aqua color).

The theme of *Crisis and employees’ mental health* includes different forms of mental health during a crisis, such as anxiety, burnout, compassion fatigue, disorder, insomnia, loneliness, moral distress, posttraumatic-stress-disorder, and psychological distress. While the most frequently co-occurring keywords in this theme in the period of 1997-2019 include disaster, mental health, posttraumatic-stress-disorder, stress, satisfaction, preparedness,

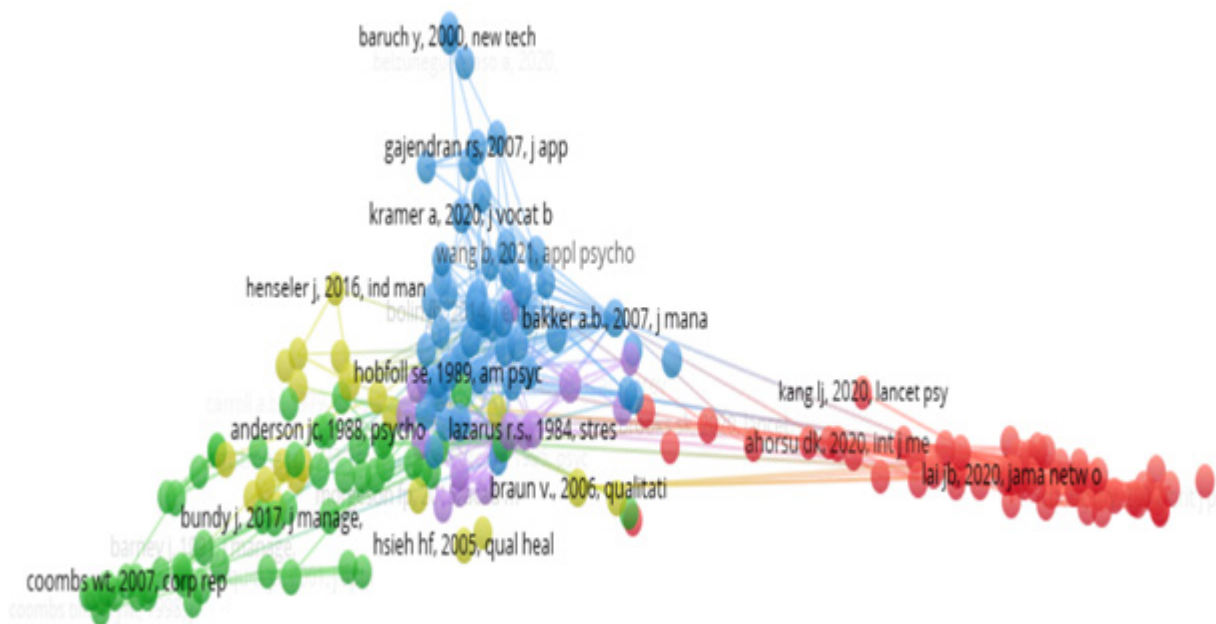


Figure 3: The Co-citation networks of the references in the topic of how organizations and employees perceive and respond to a crisis.

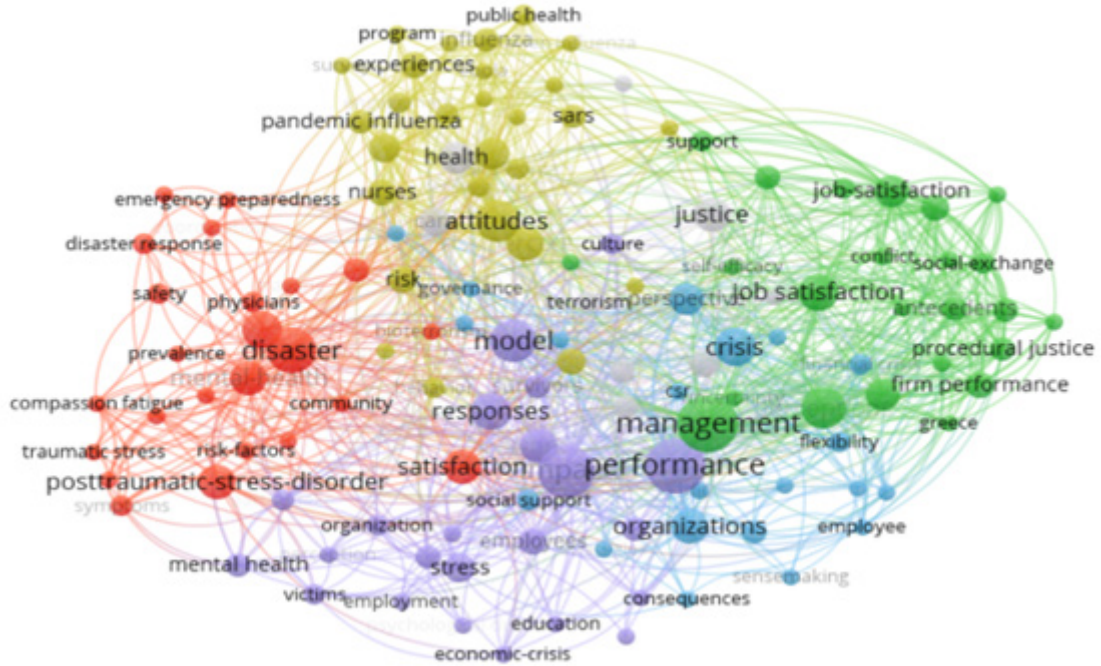


Figure 4: Co-word map of the topic of how organizations and employees perceive and respond to a crisis between 1997 and 2019.

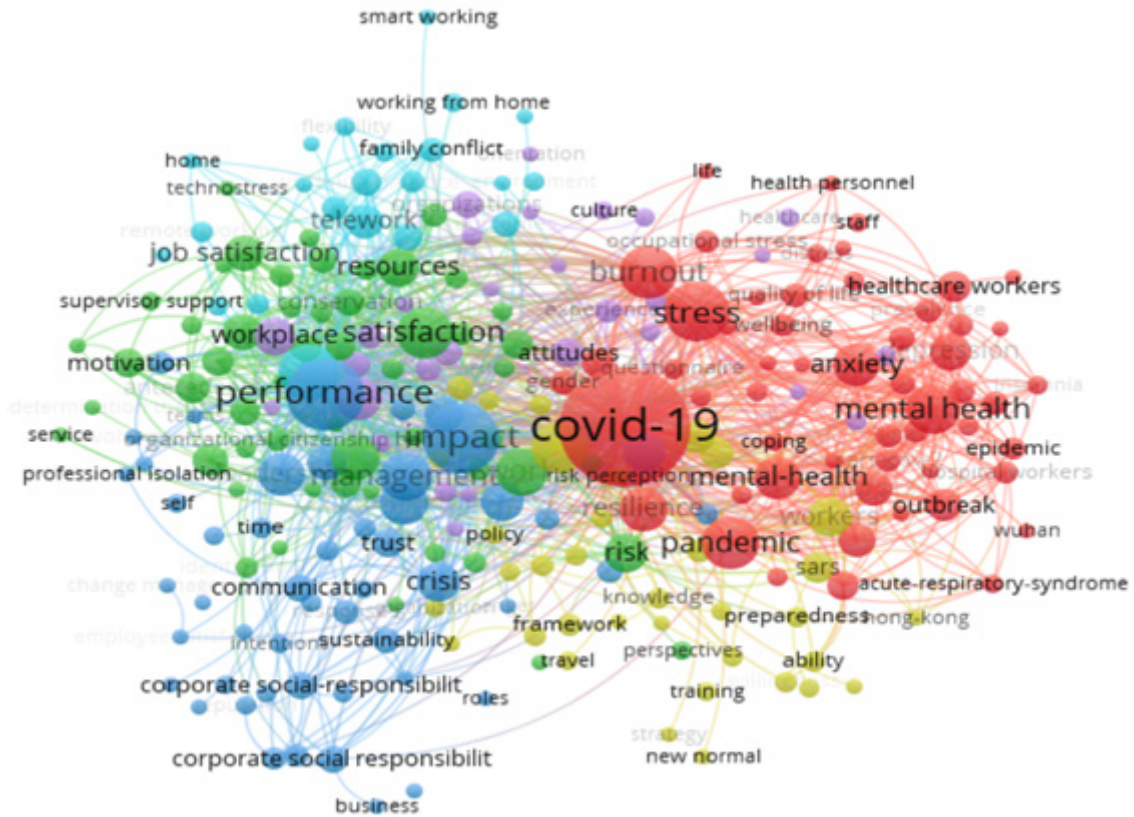


Figure 5: Co-word map of the topic of how organizations and employees perceive and respond to a crisis between 2020 and 2022.

Table 4: The most cited publications.

| Rank | Author (year) | Title of documents | No. of citations |
|------|--|---|------------------|
| 1. | Fernandez <i>et al.</i> (2020) ^[55] | “Implications for COVID-19: A systematic review of nurses’ experiences of working in acute care hospital settings during a respiratory pandemic.” | 200 |
| 2. | Balicer <i>et al.</i> , (2006) ^[56] | “Local public health workers’ perceptions toward responding to an influenza pandemic” | 154 |
| 3. | Chor <i>et al.</i> (2009) ^[57] | “Willingness of Hong Kong healthcare workers to accept pre-pandemic influenza vaccination at different WHO alert levels: two questionnaire surveys.” | 143 |
| 4. | Muller <i>et al.</i> (2014) ^[58] | “A theory of collective empathy in corporate philanthropy decisions.” | 84 |
| 5. | Mao <i>et al.</i> (2021) ^[4] | “Effects of tourism CSR on employee psychological capital in the COVID-19 crisis: from the perspective of conservation of resources theory.” | 75 |
| 6. | Byron and Peterson (2002) ^[59] | “The impact of a large-scale traumatic event on individual and organizational outcomes: Exploring employee and company reactions to September 11, 2001” | 67 |
| 7. | Markovits <i>et al.</i> (2014) ^[60] | “Effects of tourism CSR on employee psychological capital in the COVID-19 crisis: from the perspective of conservation of resources theory.” “The impact of a large-scale traumatic event on individual and organizational outcomes: Exploring employee and company reactions to September 11, 2001” | 66 |

Table 5: Co-citation clusters on the topic of how organizations and employees perceive and respond to a crisis.

| Theme of cluster | Author (year) | Representative publications |
|--|---|---|
| | | Title |
| Cluster 1: Employees’ risk perception and mental health during an epidemic (54 studies) | Lai <i>et al.</i> (2020) ^[63] | “Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019.” |
| | Pappa <i>et al.</i> (2020) ^[64] | “Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis.” |
| | Ahorsu <i>et al.</i> (2020) ^[65] | “The fear of COVID-19 scale: development and initial validation.” |
| | Wu <i>et al.</i> (2009) ^[69] | “The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk.” |
| | Brooks <i>et al.</i> (2020) ^[66] | “The psychological impact of quarantine and how to reduce it: rapid review of the evidence.” |
| Cluster 2: Remote working or Teleworking during a pandemic (51 studies) | Hobfoll (1989) ^[72] | “Adopting conservation of resources theory to explain the tension.” |
| | Kramer and Kramer (2020) ^[24] | “The potential impact of the Covid-19 pandemic on occupational status, work from home, and occupational mobility.” |
| | Bakker and Demerouti (2007) ^[73] | “The model of job demands-resources.” |
| | Wang <i>et al.</i> (2021) ^[71] | “Achieving effective remote working during the COVID-19 pandemic: A work design perspective.” |
| | Baruch (2000) ^[70] | “Teleworking: benefits and pitfalls as perceived by professionals and managers.” |
| | Belzunegui-Eraso and Erro-Garcés (2020) ^[74] | “Teleworking in the Context of the Covid-19 Crisis.” |

| Theme of cluster | Author (year) | Representative publications |
|--|--|---|
| | | Title |
| Cluster 3: Crisis management and CSR during a crisis (45 studies) | Coombs (2007) ^[75] | “Protecting organization reputations during a crisis: The development and application of situational crisis communication theory.” |
| | Bundy <i>et al.</i> (2017) ^[76] | “Crises and crisis management: Integration, interpretation, and research development.” |
| | Colquitt <i>et al.</i> (2001) ^[78] | “A meta-analysis evaluating of organizational justice.” |
| | Aguilera <i>et al.</i> (2007) ^[77] | “Putting the S back in corporate social responsibility: A multilevel theory of social change in organizations.” |
| | Sanchez <i>et al.</i> (1995) ^[79] | “Corporate support in the aftermath of a natural disaster: Effects on employee strains.” |
| Cluster 4: Effects of a crisis on the hospitality and tourism industry (18 studies) | Alonso <i>et al.</i> (2020) ^[81] | “COVID-19, aftermath, impacts, and hospitality firms: An international perspective.” |
| | Gössling <i>et al.</i> (2020) ^[7] | “Pandemics, tourism and global change: a rapid assessment of COVID-19.” |
| | Watkins <i>et al.</i> (2015) ^[83] | “Compassion organizing: Employees’ satisfaction with corporate philanthropic disaster response and reduced job strain.” |
| | Aguiar-Quintana <i>et al.</i> (2021) ^[80] | “Do job insecurity, anxiety and depression caused by the COVID-19 pandemic influence hotel employees’ self-rated task performance? The moderating role of employee resilience.” |
| | Ioannides and Gyimóthy (2020) ^[82] | “The COVID-19 crisis as an opportunity for escaping the unsustainable global tourism path.” |
| Cluster 5: Job insecurity and mental health (16 studies) | Lazarus and Folkman (1984) ^[83] | “Stress, appraisal, and coping.” |
| | Maslach and Jackson (1981) ^[84] | “The measurement of experienced burnout.” |
| | Nicola <i>et al.</i> (2020) ^[85] | “The socio-economic implications of the coronavirus pandemic (COVID-19): A review.” |
| | Ashford <i>et al.</i> (1989) ^[86] | “Content, causes, and consequences of job insecurity: A theory-based measure and substantive test.” |
| | Shoss (2017) ^[87] | “Job insecurity: An integrative review and agenda for future research.” |
| Cluster 6: Organizational support and employee outcomes (12 studies) | Eisenberger <i>et al.</i> (2002) ^[88] | “Perceived supervisor support: Contributions to perceived organizational support and employee retention.” |
| | Tuzovic and Kabadayi (2021) ^[25] | “The influence of social distancing on employee well-being: a conceptual framework and research agenda.” |
| | Kurtessis <i>et al.</i> (2017) ^[90] | “Perceived organizational support: A meta-analytic evaluation of organizational support theory.” |
| | Kahn (1990) ^[91] | “Psychological conditions of personal engagement and disengagement at work.” |
| | Cropanzano and Mitchell (2005) ^[89] | “Social exchange theory: An interdisciplinary review.” |

etc., the most frequently co-occurring keywords in the period of 2020–2022 include COVID-19, disaster, mental-health, stress, depression, loneliness, resilience, quality of life, psychological impact, anxiety, etc. There have appeared several new keywords in the latter sub-periods, such as moral distress, loneliness, insomnia, suicide, social isolation, and lockdown.

The theme of *Organizational responses and corporate social responsibility* refers to different ways of organizational responses to a crisis and CSR activities during a crisis. While the most frequently co-occurring keywords in this theme in the period of 1997-2019 include corporate social responsibility, governance, organizations, perspective, reputation, and social support,

Table 6: Co-word clusters on the topic of how organizations and employees perceive and respond to a crisis.

| Themes | 1997-2019 | 2020-2022 |
|--|--|--|
| Crisis and employees' mental health (in red color) | Bioterrorism (3), burnout (3), community (3), compassion fatigue (3), coordination (3), disaster (14), disaster response (4), emergency preparedness (3), mental health (5), mental-health (9), physicians (4), posttraumatic-stress (3), posttraumatic-stress-disorder (9), preparedness (5), prevalence (3), rescue workers (3), risk-factors (3), safety (4), satisfaction (6), stress (7), symptoms (4), training (3), traumatic (3), traumatic stress (3), willingness (3), workers (10). | Acute respiratory syndrome (11), adolescents (3), anxiety (21), burnout (31), care workers (7), compassion fatigue (4), coping (4), coping strategies (3), coronavirus (13), COVID-19 (160), COVID-19 pandemic (14), depression (16), disaster (11), disorder (3), distress (4), epidemic (6), generalized anxiety disorder (3), health personnel (3), health-care workers (15), health care workers (5), hospital workers (6), insomnia (4), interventions (6), life (3), lockdown (4), loneliness (6), mental health (47), moral distress (3), nurses (13), occupational stress (6), outbreak (12), pandemic (32), perception (7), posttraumatic-stress-disorder (3), prevalence (7), professionals (3), psychological distress (4), psychological impact (7), quality of life (10), quality (10), resilience (23), sars-cov-2 (6), social isolation (3), staff (4), stress (41), suicide (4), symptoms (6), wellbeing (6), women (4) wuhan (3). |
| Organizational responses and corporate social responsibility (in blue color) | Capabilities (3), communication (3), consequences (3), corporate social responsibility (3), crisis (3), CSR (3), emotions (3), employee (3), employee involvement (3), financial crisis (4), fit (3), flexibility (3), governance (3), networks (3), organizations (9), perspective (8), reputation (5), resilience (3), sensemaking (3), social-responsibility (3), social support (4), strategies (3). | Anger (3), behavior (18), business (3), challenges (7), change management (3), citizenship behavior (5), communication (9), consumers (4), corporate social responsibility (18), crisis (17), CSR (6), customer satisfaction (3), emotion (12), employee satisfaction (3), face-to-face (3), fear (5), financial crisis (3), financial performance (6), gender (7), governance (3), identity (3), impact (55), industry (4), intentions (4), involvement (3), justice (4), management (26), organizational-change (4), professional isolation (3), reputation (4), responses (7), roles (3), sector (3), self (4), self-efficacy (5), success (4), sustainability (8), teams (3), time (5), trust (10), turnover (5), uncertainty (4). |
| Employee outcomes (in green color) | Antecedents (5), commitment (6), conflict (3), determinants (3), employee attitudes (3), employee relations (3), fairness (3), firm performance (6), job satisfaction (18), management (20), organizational commitment (5), organizational justice (5), outcomes (3), perceptions (12), procedural justice (5), self-efficacy (3), social-exchange (4), uncertainty (3). | Antecedents (11), attitudes (10), autonomy (3), commitment (23), conservation (9), demands-resources model (4), emotional exhaustion (5), employee engagement (5), employee resilience (3), engagement (14), exhaustion (5), generational differences (3), identification (5), intention (4), job demands (7), job insecurity (9), job performance (6), job-satisfaction (33), meaningful work (3), motivation (10), organizational citizenship behavior (6), organizational commitment (12), predictors (3), psychological empowerment (3), resources (16), satisfaction (30), self-determination theory (3), service (3), social identity (3), social support (9), strategies (10), supervisor support (4), technostress (3), turnover intention (4), well-being (6), work engagement (10). |

| Themes | 1997-2019 | 2020-2022 |
|---|--|---|
| Human resource management, leadership, and performance (in purple color) | Culture (4), earthquake (4), economic-crisis (3), education (3), employees (6), employment (3), human resources (3), human-resource management (8), human resource management (3), impact (18), leadership (5), managers (3), natural disaster (5), organization (4), organizational performance (3), perception (3), performance (19), psychological distress (3), responses (10), strategy (5), survivors (5), victims (4), work (9). | Awareness (4), creativity (4), culture (4), determinants (5), employees (20), empowering leadership (4), experiences (7), firm performance (5), fit (3), health-care (4), health care (4), human-resource management (4), infection (3), infection prevention and control (4), innovation (8), innovative work behavior (3), innovative behavior (3), leadership (20), organizational performance (4), organizations (9), orientation (3), perceptions (18), perspective (8), perspectives (4), policies (3), productivity (7), self-esteem (3), servant leadership (3), terror management theory (3), transformational leadership (7), workplace (16). |
| Epidemic/ Disaster/ Crisis and Health risk perception (in gold color) | Attitudes (12), avian influenza (3), behaviors (7), care workers (4), disaster preparedness (3), ebola (3), emergency response (3), engagement (4), experiences (6), health-care workers (7), influenza (6), information (6), knowledge (8), nurses (6), pandemic influenza (5), pandemic preparedness (3), prevention (4), program (3), public health (4), recommendations (3), risk (6), risk perception (9), sar (5), transmission (3). | Ability (7), climate (4), consequences (9), covid-19 crisis (4), disasters (11), education (3), framework (3), health (30), influenza (4), knowledge (5), life satisfaction (4), new normal (3), nursing (3), occupational health (4), policy (4), positive emotions (3), preparedness (5), primary care (3), psychological capital (4), risk (17), risk perception (4), sars (11), services (4), strategy (3), technology (7), training (4), travel (4), willingness (5), workers (17). |
| Crisis management and organizational support Crisis management and organizational support | Care (7), crisis management (5), health (8), justice (9), solidarity (3), support (4), terrorism (4). | Crisis management (5), economic-crisis (3), hospitality industry (3), information (4), organization (4), safety (4), social media (5), perceived organizational support (10), support (14), tourism (5), work (25). |
| Remote working, work-family conflict, and work-life balance (in aqua color) | N/A | Benefits (3), care (12), conflict (8), employee performance (4), environment (4), family conflict (7), flexibility(4), home (3), hybrid work (3), job-satisfaction (33), level (3), organizational culture (6), outcomes (8), performance (57), remote work (6), remote working (5), smart working (3), telework (13), teleworking (7), turnover intentions (5), work from home (4), work stress (3), work-family conflict (5), work-life balance (9), work (25), working from home (4). |

Note: The numbers in parentheses are the frequency counts of keywords.

the most frequently co-occurring keywords in the period of 2020–2022 include corporate social responsibility, impact, management, communication, sustainability, challenges, organizational-change, trust, and citizenship behavior. Several new keywords have appeared in the latter sub-periods, such as sustainability, organizational-change, change management, face-to-face, and identity.

The theme of *Employee outcomes* consists of different forms of employees' attitudes and behaviors during a crisis, such as job satisfaction, organizational commitment, work engagement, motivation, organizational citizenship behavior, and turnover intention. While the most frequently co-occurring keywords in this theme in the period of 1997-2019 include management, job

satisfaction, employee attitudes, organizational commitment, procedural justice, social exchange, and outcomes, the most frequently co-occurring keywords in the period of 2020–2022 include job satisfaction, organizational citizenship behavior, job insecurity, organizational commitment, employee work engagement, motivation, exhaustion, resources, job performance, social support, and turnover intention. There have appeared several new keywords in the latter sub-periods, such as psychological empowerment, identification, generational differences, and technostress.

The theme of *Human resource management, leadership, and performance* reveals human resource management practices, leadership styles, and their impacts on organizational

performance and employees' perception at work. While the most frequently co-occurring keywords in this theme in the period of 1997-2019 include responses, impact, strategy, leadership, performance, strategy, culture, and organizational performance, the most frequently co-occurring keywords in the period of 2020–2022 include perceptions, organizations, employees, workplace, experiences, leadership, empowering leadership, transformational leadership, innovation, organizational (firm) performance, human-resource management. There have appeared several new keywords in the latter sub-periods, such as creativity, innovation, innovative work behavior, and innovative behavior.

The theme of *Epidemic/Disaster/Crisis and health risk perception* focuses on the different types of epidemics, disasters, crises, and employees' perception of health risk. While the most frequently co-occurring keywords in this theme in the period of 1997-2019 include risk perception, attitudes, behaviors, risk, influenza, pandemic influenza, sar, ebola, knowledge, and information, the most frequently co-occurring keywords in the period of 2020–2022 include health, risk, risk perception, disasters, sars, Covid-19 pandemic, occupational health, technology, preparedness, influenza, worker, etc. There have appeared several new keywords in the latter sub-periods, such as Covid-19 pandemic, new normal, and technology.

The theme of *Crisis management and organizational support* refers to the measures of organizations in supporting and caring for employees during a crisis. While the most frequently co-occurring keywords in this theme in the period of 1997-2019 include care, crisis management, health, justice, solidarity, support, and terrorism, the most frequently co-occurring keywords in the period of 2020–2022 include work, perceived organizational support, support, crisis management, safety, and social media.

The theme of *Remote working, work-family conflict, and work-life balance* reveals the most recent trends of research interests, such as teleworking, remote working, hybrid work, work from home, work-family conflict, and work-life balance which only showed up in the latter period, 2020–2022. The most frequently co-occurring keywords in this period include performance, remote work, conflict, telework, teleworking, work from home, working from home, hybrid work, work-life balance, family conflict, work-family conflict, job satisfaction, flexibility, smart working, and organizational culture.

The results of the co-occurrence analysis reveal several key changes in research themes on how organizations and employees perceived and responded to a crisis from 1997 to 2022. First, there were more keywords, research areas, and the number of single words in the latter sub-period than in the former sub-period, indicating that the topic of research on how organizations and employees perceive and respond has been growing over time. Second, many new keywords appeared in 2020–2022, suggesting

that many new issues or ideas have been embraced by research since the COVID-19 outbreak. Third, “*Remote working, work-family conflict, and work-life balance*” came into being in the period 2020–2022 as an emerging trend in the research on how organizations and employees perceive and respond to a crisis.

CONCLUSION

This research seeks to offer an overview of the existing knowledge on how organizations and their employees perceive and respond to a crisis. In this study, several bibliometric indicators were utilized. It found that scholars are increasingly interested in how organizations and their employees perceive and respond to a crisis, as evidenced by a growing trend in the academic literature since 2011 and consistent growth over the past seven years, especially since the outbreak of the COVID-19 crisis at the end of 2019 and early 2020. Furthermore, despite Western dominance, the Asian region's contribution to publications on the subject of how organizations and their employees perceive and respond to a crisis is appealing. Regarding the field of publication, the finding indicated that diverse subject areas had been explored on this topic. It observed that those from the management, public environmental and occupational health, and business domains were at the top of the list. Citation analysis results showed that the most cited journals were the *International Journal of Environmental Research and Public Health* and *Sustainability*, but MBC and the *Journal of Applied Psychology* had the highest number of citations. Regarding the most cited publications, the findings showed that the paper of Fernandez *et al.* (2020)^[55] stands at the first position in the list, followed by the study of Balicer *et al.* (2006)^[56] and Chor *et al.* (2009).^[57] All of these top three publications studied healthcare employees during a health crisis.

The six clusters in co-citation networks were identified as the pillars of theoretical foundation of research on how organizations and their employees perceive and respond to a crisis. The six clusters were identified as (i) Employees' risk perception and mental health during an epidemic; (ii) Remote working or Teleworking during a pandemic; (iii) Crisis management and CSR during a crisis; (iv) Effects of a crisis on the hospitality and tourism industry; (v) Job insecurity and mental health; (vi) Organizational support and employee outcomes. It can be noticed that the first and second themes of this topic have gotten more attention from scholars than others.

Examining the topic progression of the research topic of how organizations and their employees perceive and respond to a crisis through time is a further distinctive contribution of this study. Visualized networks of co-words highlighted the research foci for each sub-period, which was divided into two sub-periods. By classifying keywords into seven themes, the study also studied thematic trends in how organizations and their employees perceive and respond to a crisis. These

themes included (ii) Organizational responses and corporate social responsibility; (iii) Employee outcomes (Job satisfaction, organizational commitment, and work engagement); (iv) Human resource management, leadership, and performance; (v) Epidemic/Disaster/Crisis and health risk perception; (vi) Crisis management and organizational support; (vii) Remote working, work-family conflict, and work-life balance. Moreover, the findings revealed that there were more keywords, research areas, and single words in the latter sub-period than in the earlier sub-period, demonstrating that this topic has expanded over time. It also suggested that numerous new keywords developed throughout the timeframe 2020–2022, indicating that many new concerns or concepts have been the focus of research after the outbreak of COVID-19. Fascinatingly, the results found that “*Remote working, work-family conflict, and work-life balance*” emerged as an emerging trend within the timeframe 2020–2022. Finally, recently, there have appeared many new keywords, including moral distress, loneliness, insomnia, suicide, social isolation, lockdown, sustainability, organizational change, change management, face-to-face, identity, psychological empowerment, technostress, generational differences, identification, creativity, innovation, innovative work behavior, innovative behavior, new normal, technology, remote work, conflict, telework, teleworking, work from home, working from home, work-life balance, family conflict, work-family conflict, flexibility, hybrid work, and smart working.

Implications for Future Research

The results of this study have several implications for future research. These are mostly recommendations for future scholars who may pursue this topic. Firstly, more effort should be made to study “*Remote working, work-family conflict, and work-life balance*” in a “new normal” context. According to the study results, this theme has become an emerging trend and attracted scholars in many fields.^[24,71,74,94,95] Future research could focus on most frequently co-occurring keywords of this theme, include remote work, conflict, telework, teleworking, work from home, working from home, hybrid work, work-life balance, family conflict, work-family conflict, flexibility, and smart working. This research trend is particularly relevant, according to Atkinson (2022) and Reimann (2023), given the possibility of utilizing telework protocols and work-life balance in response to potential further crises.^[95,96]

Secondly, the scholars could explore new subjects related to new keywords that have appeared recently. For example, they could conduct studies on recent popular forms of employees’ mental health like moral distress, technostress, loneliness, insomnia, and suicide, together with social isolation or lockdown situations during a crisis and post-crisis. Despite the numerous scholars who have studied the topic of employees’ risk perception and mental health during an epidemic, there is still a need for further research into the emerging mental health issues during a crisis. According

to Tuzovic and Kabadayi (2021), although personal aspects may alter, the need for a systems-based framework to comprehend the effects of crises on employee well-being would stay constant.^[25] Luu (2022) also indicated that there is a research gap between the fundamental beliefs of employees that are challenged during a crisis and their preemptive responses for technostress.^[97]

Thirdly, based on recent research, there is a need for additional studies examining creativity, innovation, innovative work behavior, and innovative behavior in uncertain contexts or new normal situations.^[98,99] According to Ciasullo et al. (2022), new practices are required to manage creativity and innovation, and both timelessness and openness emerge as essential factors for absorbing the unpredictable environment.^[100] Furthermore, scholars could contribute to the field by conducting further research on sustainability, organizational change, change management, social identity, and psychological empowerment.^[4,18,101] These areas hold the potential for expanding our understanding of the complexities and dynamics within organizations in the face of evolving challenges and changing environments.

Additionally, although what appears to be a global contribution to the knowledge base on how organizations and their employees perceive and respond to a crisis, the West clearly dominates in terms of publishing production.^[24,74,76,100] Thus, it is essential to have more studies in other countries in order to develop a worldwide perspective on this topic.

Finally, literature on the topic of how organizations and employees perceive and respond to a crisis is closely associated with management and business, public environmental and occupational health, and psychology.^[22,80,85,99] However, recent literature has been concentrated on other areas, including industrial relations and labor and green sustainability in the context of a crisis or uncertain environment.^[18,54,102] Therefore, future researchers in the discipline may investigate these trending features.

Limitations

Although this study provided a comprehensive knowledge map of research on how organizations and their employees perceive and respond to a crisis, it is important to note that it has some limitations. First, our findings and conclusion are restricted to papers retrieved from a single database, WOS, and published in English. In order to complement our findings, additional studies, including data from other sources and in different languages, are required. Additionally, it should be mentioned that author co-citation studies are conducted using only the co-cited indices of the papers’ first authors. Moreover, the categorization of themes and the naming of these topics may be skewed due to the subjective judgment of the authors. Due to the limited number of keywords in a publication, keywords might not effectively convey the publication’s subject matter. Consequently, a number of terms may not be mentioned. In order to perform a theoretical overview

of how organizations and their employees perceive and respond to a crisis, future studies may employ a range of methodologies.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Cite this article: Vu TV. How do Organizations and Employees Perceive and Respond to a Crisis: A Co-citation and Co-word Analysis. *J Scientometric Res*. 2023;12(2):305-20.