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Business economics research in the context of COVID-19 pandemic: a crisis management perspective

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Abstract: The economic downturn that followed the COVID-19 pandemic is widely considered the worst since the Second World War. This study builds on past research by aiming to give an up-to-date research environment over a more extended period for business economics in the context of the COVID-19 pandemic. The application of bibliometric and content analysis is linked to the concept of crisis management. The COVID-19 pandemic has gone through several phases, including pre-crisis, events, crisis response management, investigation, organisational learning, and implementation. From this analysis, it is found that the focus of research on the publication of business economics research so far has been in the event phase, which investigates the impacts of the pandemic on individual perceptions, inequality in work, impact on the stock market and risk, unemployment and public health, and consumption changes and consumer behaviour. The crisis response management provided by the business in dealing with the pandemic, among others, is through increasing awareness about well-being and technology adoption, locking and social distancing, and optimising information and communication management. There is still little attention given after the crisis response management phase, namely the investigation, organisational learning, and implementation phases which are essential to building resilience when facing similar crises in the future.

Keywords: business economics; management; pandemic; bibliometric; content analysis.

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1 Introduction

Globally, the COVID-19 epidemic has had a considerable impact. Recent estimates by the World Health Organisation (WHO) show over 110 million confirmed cases and over 2.4 million fatalities globally (WHO, 2021). Although it started as a health problem, this pandemic eventually touched many parts of life, most notably business and economic activities. Apart from the millions of deaths, this pandemic has stifled economic activity and pushed millions into poverty (The World Bank, 2021b). The economic recession 2020 that followed the pandemic is the worst since World War II and has made the 2010–2020 period a ‘lost decade’ economically, particularly in terms of income and poverty reduction for many economies worldwide (The World Bank, 2021a).

In light of the pandemic’s substantial impact on business economics, it is critical to evaluate the impact of the epidemic on this subject by reviewing publications in this field pertaining to the pandemic to date. This study updates a prior study that attempted to assess the evolution of the research landscape on this subject, as earlier studies’ coverage was relatively limited during the early stages of the pandemic, such as Verma and Gustafsson’s work (2020). There are further studies that are important, but their scope is either too broad (Harsanto, 2020) or too narrow in certain aspects, such as innovation or supply chain (Brem et al., 2020; Ivanov, 2020). Thus, this study builds on past research by attempting to give an up-to-date research environment for business economics in the context of the COVID-19 epidemic over an extended period. This study can help understand the business economics research landscape in the context of the COVID-19 pandemic, explicitly viewed from the crisis management perspective.

This study analyses more than 900 articles retrieved from the Web of Science database, mainly focusing on the Web of Science categories ‘business’, ‘management’, and ‘economics’. This research provides an in-depth examination of major topics in business economics, as well as the formulation of possible future directions. This paper extends previous studies in two ways. First, this paper provides an update on business economics research with a longer time span, so it is expected to provide a more complete picture. Second, this paper uses a specific point of view in the analysis, namely, the crisis management perspective discussed in the study of Buchanan and Denyer (2013). Our study differs from other COVID-related studies employing a crisis management perspective because more emphasis is placed on the research field in order to capture this model in the literature, not on the practical side (see, for instance, Abbas et al., 2021; Liu et al., 2020b; Lai and Wong, 2020).

This paper is structured as follows. The following section details the methodology used in this paper. The third section summarises the findings. A discussion of the findings is included in the fourth section. The concluding part includes recommendations for future research.

2 Methods

2.1 *Research design*

In this review, we used bibliometric analysis, which is the application of mathematical and statistics of various scientific communication means to analyse the landscape of a field of knowledge (Garfield, 1955; Pritchard, 1969; Repanovici, 2010). Bibliometric

analysis has been used in many fields of knowledge with the main benefit of being objective in reducing the bias that usually accompanies qualitative reviews (van Eck and Waltman, 2010; Vogel and Güttel, 2013). In the field of management and business, the bibliometric approach has long been used, for example, in strategic management (Ramos-Rodríguez and Ruíz-Navarro, 2004; Acedo et al., 2006), innovation management (van Oorschot et al., 2018), or project management (Arto et al., 2009).

In a more specific setting, a bibliometric technique has now been conducted on various topics, such as employee silence and employee voice (Casey and McMillan, 2019), the top management team (McMillan and Casey, 2018), co-authorship in management and organisation studies (Akdeve, 2018), organisational ambidexterity (Lillo et al., 2017), and open innovation (OI) in higher institutions, expanding the use of this technique (de las Heras-Rosas and Herrera, 2021). This study presents a bibliometric analysis of business economics research in the context of the COVID-19 pandemic. As shown in Figure 1, a bibliometric procedure was applied to this study, including search query development, refinement, analysis, and interpretation (Kovács et al., 2015; Mishra et al., 2018; van Oorschot et al., 2018; Harsanto and Firmansyah, 2021).

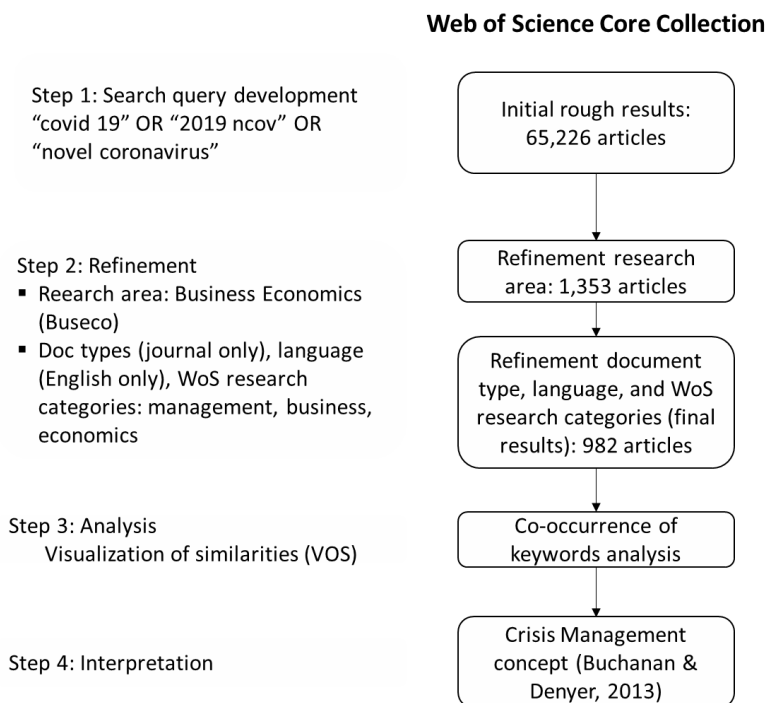
2.2 Data collection procedures

In this study, we first use the following keywords in searching for the documents: ‘covid 19 OR 2019 nCoV OR novel coronavirus’. This search was conducted in February 2021, which was approximately one year of COVID-19 pandemic period. This one-year period is expected to primarily portray the business and economics literature, reflecting the crisis caused by the COVID-19 virus. The document search after that period (more than one year) will certainly produce different results, which can be conducted or elaborated by further studies. We use the Web of Science Core Collection as the source in this study. This database consists of, among others, the Expanded Science Citation Index (SCI-EXPANDED), the Social Sciences Citations Index (SSCI), and various other collections. Web of Science was selected due to its comprehensive coverage and the quality of the articles indexed (Firmansyah and Harsanto, 2022). We had the option of adding quality criteria such as impact factor or journal presence in certain lists such as FT50, ABS, and ABDC. However, we decided not to add additional quality filtering, considering that Web of Science is the database with the highest standard, especially in terms of the impact factor and citations of journals indexed in it (Marzi et al., 2017; van Oorschot et al., 2018; Usman et al., 2021). Furthermore, the use of a single database of Web of Science is a good practice in bibliometric studies (for instance, see Kovács et al., 2015; Kalantari et al., 2017). The initial search results returned 65,226 articles.

Second, the initial results were narrowed down based on research area limited to business economics, resulting in 1,353 articles. Then, further refinement is carried out by filtering document types, languages, and Web of Science research categories. The document type is limited to articles (conference proceedings, books, and other documents were excluded), the language is limited to English (other languages are excluded), and the Web of Science research categories are limited to management, business, and economics. The results of this refinement generate the final result of 982 articles.

Third, to analyse the thematic clusters based on the connection between articles' keywords included in bibliometrics, visualisation of similarities (VOS) is used (van Eck and Waltman, 2010). VOSviewer software is a package that uses an algorithm using the visualisation of similarities approach and is used for this purpose (van Eck and Waltman, 2010). VOSviewer software has been well used in bibliometric research of various themes (Rodríguez-Fernández et al., 2021; Sánchez-Teba et al., 2021). More specifically, we analyse the co-occurrence of keywords built upon the relationship between keywords based on the number of documents in which the keywords are used (van Eck and Waltman, 2010; Harsanto, 2021). The co-occurrence analysis is appropriate for testing recent phenomena (Verma and Gustafsson, 2020). All default settings on VOSviewer are used where the minimum number of keyword occurrences is five, indicating 182 keywords falling within that threshold.

Figure 1 Bibliometric procedure



Fourth, interpretation is carried out by giving a label to each cluster formed and connecting it to the concept of crisis management (Buchanan and Denyer, 2013). The cluster labelling is not a straightforward process because the keyword cluster output from VOSviewer is sorted alphabetically and because almost all clusters consist of many keywords (more than five keywords), so further refining is inevitable. Therefore, as Polley suggested in a study (Polley, 2016), we identified the five most occurring keywords for labelling in each cluster. Subsequently, the clustering and labelling results are linked to the concept of crisis management proposed by Buchanan and Denyer

because COVID-19 is considered a global crisis affecting various aspects of life (Kurgan, 2021; Leask and Younie, 2021). Thus, relating the COVID-19 pandemic and crisis management studies is relevant to understanding academic responses to the ongoing crisis. This framework proposed by Buchanan and Denyer consists of pre-crisis or incubation, event, crisis response management, investigation, organisational learning, and implementation. This concept is structured into six-phase sequences (Buchanan and Denyer, 2013).

3 Results

3.1 Outlets, affiliations and countries

Of the 982 journal articles in the obtained database, we found 240 outlets publishing journal articles related to COVID-19. It can be seen that the number of journals discussing COVID-19 is quite large. Most journals publishing articles (more than ten articles) related to the management field are *World Development*, *Gender Work and Organization*, *Tijdschrift Voor Economische En Sociale Geografie*, *Journal of Asian Finance Economics and Business*, *Oxford Review of Economic Policy*, *Journal of Nursing Management*, *Journal of Business Research*, *Journal of Australian Political Economy*, *Journal of Public Economics* and *International Journal of Contemporary Hospitality Management*. The outlet is extensive in terms of field of study and quality because this topic is indeed the interest of various researchers from the sub-field of business economics. The results obtained in VOSviewer software show that many institutions had publications on COVID-19 in the business context. Table 1 reveals the top ten institutions, ranked by total link strength from the highest to the lowest.

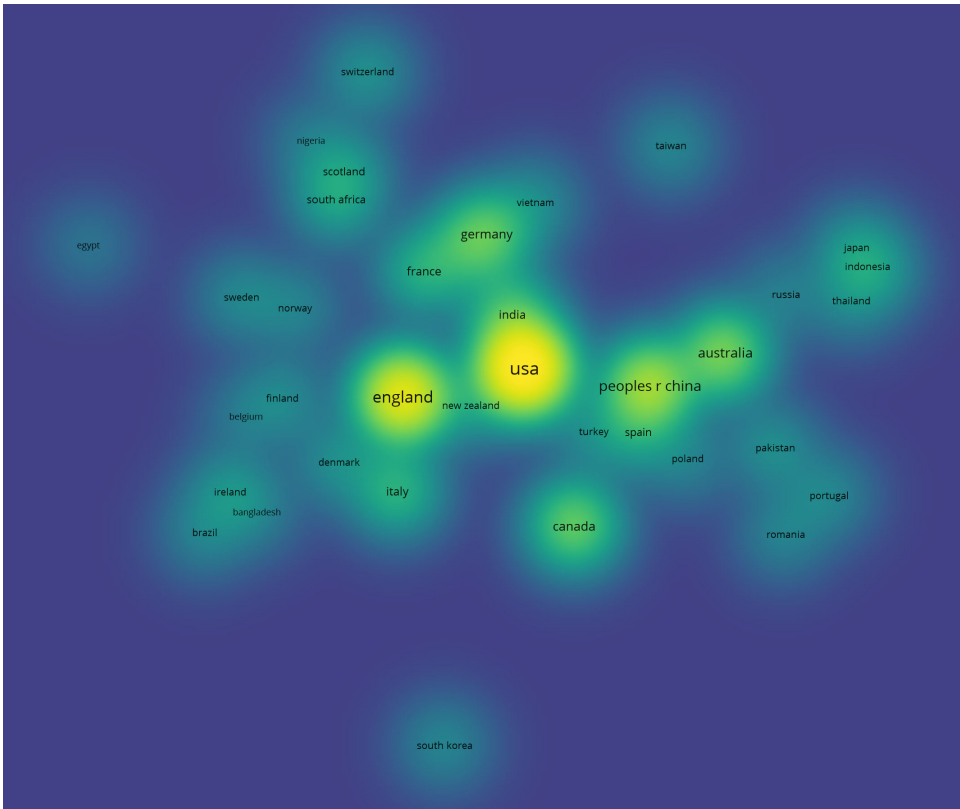
Table 1 Top 10 Institutions of Authors Publishing Business economics research in the Context of the COVID-19 Pandemic

No	Institution	Number of documents	Number of citations	Total link strength
1	National Bureau of Economic Research (NBER) – USA	15	33	11.00
2	University of Oxford – UK	22	59	11.00
3	Institute for Fiscal Studies – UK	9	41	9.00
4	University College London – UK	14	38	9.00
5	Centre for Economic Policy Research (CEPR) – USA	9	14	7.00
6	Institute of Labor Economics – Germany	12	14	7.00
7	Arizona State University – USA	9	21	4.00
8	Columbia University – USA	5	27	4.00
9	King’s College London – UK	7	7	4.00
10	London School of Economics and Political Science – UK	7	45	4.00

From Table 1, we can see that most of the reputable research papers regarding business studies in the context of the COVID-19 pandemic are dominated by organisations in developed countries, such as the USA, the UK and Germany. All the top 10 institutions from the USA, the UK and Germany could be related to the research resources and

research networks of these countries. We further analysed the dataset using VOSviewer software to gain insight into the authors' countries publishing papers related to COVID-19. In this stage, we found 94 countries of authors, and by using the density feature as shown in Figure 2, we found that most of the authors come from the USA (269 documents, 722 citations, and 169 total link strength score), followed by England (181 documents, 486 citations, and 165 total link strength score) and Germany (61 documents, 223 citations, and 63 total link strength score). These findings are illustrated in Figure 2.

Figure 2 Countries of the authors (see online version for colours)



3.2 *Keywords cluster*

The management studies in the context of COVID-19 deal with enormous keywords used by researchers. In total, there were 3,644 keywords used by the authors, and after being limited to a minimum number of occurrences of five times as default on VOSviewer, the result was 182 keywords. The results of the network visualisation analysis showed that there were ten clusters. These clusters were formed based on the closeness of the relationship and represented based on similar colours, as shown in Figure 3.

Table 2 Themes identification based on the most occurring keywords (continued)

<i>Cluster</i>	<i>Keywords</i>	<i>Occurrences</i>	<i>Themes</i>
4	Gender	39	Inequality in work
	Inequality	20	
	Work	18	
	Employment	17	
	Care	13	
5	Covid-19	602	Lockdown and social distancing
	Health	46	
	Lockdown	29	
	Social distancing	19	
	Mortality	16	
6	Impact	49	Impact on the stock market and risk
	Risk	31	
	Sars	18	
	Policy	15	
	Returns	11	
7	Coronavirus	97	Unemployment and public health
	China	29	
	Unemployment	17	
	Public health	13	
	Sars-cov-2	9	
8	Performance	36	Consumption changes and consumer behaviour
	Behaviour	23	
	Consumption	11	
	Growth	10	
	Consequences	9	
9	Pandemic	87	Information and communication
	Model	27	
	Information	14	
	Communication	13	
	Trust	10	
10	Sport	5	Sport

To determine themes based on these ten clusters, we used the technique suggested by Polley (2016) by identifying the five most occurring keywords, as shown in Table 2. After identifying the five-most occurrence keywords, the process of determining the theme is carried out by re-checking the data from the Web of Science to obtain an idea of the publication topics that use these keywords.

- *Cluster 1: organisation resilience* – the first cluster (in red) shows several keywords, with the five-most occurrence is ‘management’, ‘resilience’, ‘social media’, ‘crisis management’ and ‘uncertainty’. These keywords imply that the studies relating to the COVID-19 pandemic and business deal first with the firms’ internal capability to manage the crisis and develop their resilience in the long term (Chowdhury et al., 2022a; Păunescu and Mátyus, 2020; Sharma et al., 2022a). Păunescu and Mátyus (2020), for example, found that, “...to better cope with the disruption caused by the COVID-19 pandemic they should demonstrate, on the first place, openness to production innovation and adaptation and ensure a strong support for customers and communities”. Notably, COVID-19 has put pressure on the economy and firms. Thus, we see there have been several studies focusing on the companies’ efforts in solving the problem due to the pandemic. This cluster also discusses the increasing level of importance of social media and its usage in business activities (Mason et al., 2021; Naeem, 2021).
- *Cluster 2: well-being and technology adoption* – the most-occurrence keywords in the second cluster (in green) include ‘crisis’, ‘determinants’, ‘well-being’, ‘India’, and ‘adoption’. As in the first cluster, this cluster also discusses the COVID-19 pandemic as a shocking crisis that affects individual well-being, such as employees (Carnevale and Hatak, 2020; Yu et al., 2021) and parents (Huebener et al., 2021). Apart from well-being, the prominent topic discussed in this cluster is technology adoption by companies and individuals. Adoption by companies, for example, relates to the involvement of social media marketing in SMEs activities (Effendi et al., 2020; Patma et al., 2020). SMEs with lean organisations have a great potential for innovation (Azis et al., 2017). Another examples are the use of teleconsultation in the medical context (Baudier et al., 2021) where “performance expectancy is key for the intention to use teleconsultation”, and efficiency improvement of the public distribution system using blockchain technology (Kumar, 2020).
- *Cluster 3: individual perceptions* – in the third cluster, prominent keywords are related to individual perceptions of pandemics, including ‘travel fear’ in the tourism sector and related services such as restaurants (Li et al., 2020; Mehrolia et al., 2020; Sigala, 2020; Zheng et al., 2021) as well as psychological reactions in the form of anxiety experienced by individuals such as students (Xie et al., 2020) or medical staff (Mo and Shi, 2020). Other perspectives discussed are regarding individual perceptions of new habits such as wearing masks or maintaining social distancing (Shah et al., 2021a; Khoa et al., 2021), as well as changes in perceptions and behaviour of consumers towards various products (Laato et al., 2020), to perceptions of climate change risk (Botzen et al., 2021).
- *Cluster 4: inequality in work* – the fourth cluster consists of high-occurrence keywords associated with ‘inequality’ in work. One of the main topics of inequality discussed is ‘gender’ (Clark et al., 2020; Dy and Jayawarna, 2020; Nash and Churchill, 2020; Petts et al., 2021). Furthermore, other inequality topics of interest to researchers are in respect of income inequality (Piyapromdee and Spittal, 2020; Bonacini et al., 2021; Gutiérrez-Romero and Ahamed, 2021), labour market (Botha et al., 2021), or minority unemployment (Couch et al., 2020). The profession that is much discussed in this topic of inequality is care workers (MacLeavy, 2020; Mo and Shi, 2020; Shahrour and Dardas, 2020), especially in health and social care.

According to International Labor Organization (ILO), care work is activities and relations to provide physical, psychological, and emotional needs, which can be in the form of direct activities such as nursing or indirect activities such as household work (ILO, 2018).

- *Cluster 5: lockdown and social distancing* – the fifth cluster discusses topics related to ‘lockdown’ and ‘social distancing’ as the control measures implemented by the government worldwide to minimise the impact of COVID-19. Lockdown is a form of intervention that can be in the form of geographic containment (such as travel restrictions), home confinement (such as stay at home), and closures and prohibitions (such as closures of premises and prohibitions of gatherings) (Haider et al., 2020). Haider et al. (2020) highlighted “the need for intersectoral and transdisciplinary research capable of providing a rigorous and holistic assessment of the harms and benefits of lockdown”. The implementation of lockdowns dramatically affects the economy, primarily through supply chain disruption (Gupta et al., 2021; Obayelu et al., 2021; Nikolopoulos et al., 2021). Lockdown, along with social distancing, had psychological consequences by affecting social connectedness (Le and Nguyen, 2021; Amoah and Amoah, 2021; Brodeur et al., 2021). This effort was undertaken to reduce the mortality rate and, at the same time to flatten the curve of COVID-19 (Thunström et al., 2020).
- *Cluster 6: impact on stock market and risk* – the sixth cluster deals primarily with the impact of COVID-19 on the financial sector, such as the stock market. It was evident that the stock markets in various countries, with their interconnectedness, quickly responded to the negative catalyst of COVID-19 from Wuhan, China (Singh et al., 2020a; Qian et al., 2020; Chowdhury et al., 2022b; Kartal et al., 2021). Furthermore, the effect of perceived ‘risk’, which is one of the variables of the unified theory of acceptance and use of technology (UTAUT) model on the adoption of particular services during COVID-19, has been studied by some researchers (Chayomchai, 2020; Yang et al., 2020; Baudier et al., 2021), thus providing a novel insight regarding the prevalence of a well-known concept in a rare setting such as a pandemic.
- *Cluster 7: unemployment and public health* – COVID-19 has affected various aspects of life, including the occupation of people in many parts of the world. The social distancing, lockdowns, and stay-at-home campaigns have put pressure on many professions. Several studies, as shown in cluster 7 of this study, have explored the effect of COVID-19 on the causes of ‘unemployment’ (Couch et al., 2020; Lemieux et al., 2020; Moen et al., 2020). Furthermore, emerging nations such as Ethiopia encountered more severe circumstances as they had to obtain loans to tackle the pandemic with the expectation of bouncing back their economy (Abasimel and Fufa, 2021). Emerging economies have unique characteristics compared to advanced economies (Gumbira and Harsanto, 2019; Harsanto and Permana, 2021). Since the pandemic itself is still an ongoing issue, we found that several scholars have attempted to measure the impact of COVID-19 on the labour market in the short-term horizon (Achou et al., 2020; Couch et al., 2020; Lemieux et al., 2020; Milani, 2021).

- *Cluster 8: changes in consumption pattern and consumer behaviour* – concerning economic stability, COVID-19 resulted in panic buying and declined the consumption level of individuals, households, and corporations (for instance, see Hall et al., 2021; Ning and Wang, 2020; Dong et al., 2021). The manufacturing sector was hit disproportionately hard by COVID-19, as seen from the electricity consumption of this sector. Due to the increasing demands, construction, computer, and telecommunication industries were positively affected by the pandemic (Gu et al., 2020). Low electricity use, however, has positively affected the environment since fossil fuel consumption also reduced (Shah et al., 2021b). Some studies in this eighth cluster documented that many governments have implemented several programs for recovering consumption and the economy, for example, Economic Impact Payment program in the USA (Piyapromdee and Spittal, 2020), the Korean Economic Impact Payment program in Korea (Kim et al., 2021), and a tax deduction program in Italy (D’Adamo et al., 2020).
- *Cluster 9: information and communication* – in the ninth cluster, the terms ‘pandemic’ and ‘model’ are the most discussed, which is not surprising because the search is about the pandemic, and many papers from diverse perspectives have proposed specific models to help understand this phenomenon. The particular topic discussed in this cluster is related to ‘information’ and ‘communication’ in the pandemic era. For example, the topics discussed were the use of health information technology (HIT) during the pandemic (Singh et al., 2020b), data analytics (Pietz et al., 2020), misinformation and social media fatigue (Islam et al., 2020; Laato et al., 2020; Bogomoletc and Lee, 2021), the use of ICT for knowledge acquisition and management, and ambidexterity (exploitation and exploration) of IT (Wang and Wu, 2021; Xie et al., 2020). Also discussed in this cluster is the importance of ‘trust’ in information flow and collective action during a pandemic (Bargain and Aminjonov, 2020; Harring et al., 2021).
- *Cluster 10: sport* – in contrast to previous clusters consisting of many keywords, the tenth cluster consists of only one keyword, namely ‘sport’, which indicates the high uniqueness of this keyword. Various aspects were studied, especially regarding the impact of the COVID-19 pandemic on sports (Begović, 2020), including disability sports (Fitzgerald et al., 2022) or specific sports segments such as the youth sports program (Kelly et al., 2020). Pandemics are known to provide uncertainty and impact the mental health of football players (Clarkson et al., 2022; Souter et al., 2022). Strategies to deal with the impact of a pandemic on sports, among others, are by virtualisation of sports events such as cyclist competitions (Westmattelmann et al., 2021), utilising media’s power (Manoli, 2020), and efforts such as sports entrepreneurship (Ratten, 2020).

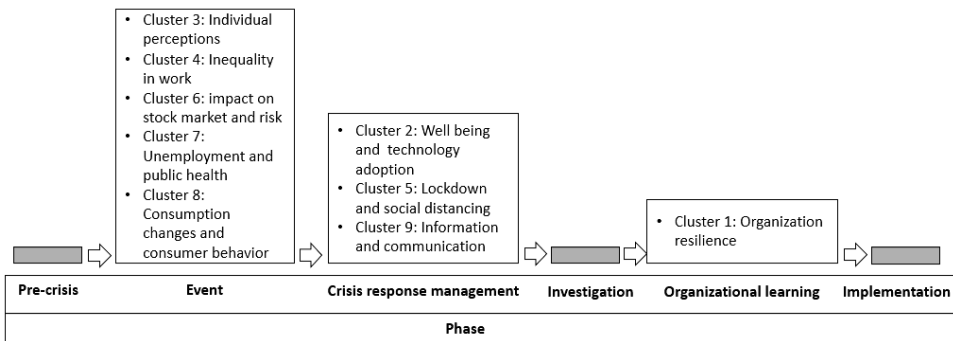
4 Discussion

In the concept of crisis management from a management perspective, there are six-phase of ‘ideal type’ of extreme event sequences consisting of pre-crisis, event, crisis response management, investigation, organisational learning, and implementation (Buchanan and Denyer, 2013). As shown in Figure 4, the crisis management concept can help provide a

clearer understanding of the research landscape of management of the COVID-19 pandemic based on ten clusters formed from the bibliometric analysis. The arrangement of each cluster to the crisis management concept phases is carried out by considering the tendency of the content in each cluster.

The COVID-19 pandemic has gone through several phases, including pre-crisis, events, crisis response management, investigation, organisational learning, and implementation. From this analysis, it was found that the focus of research on the publication of business economics research so far has been in the event phase, which investigates the impacts of the pandemic on individual perceptions, inequality in work, impact on the stock market and risk, unemployment and public health, and consumption changes and consumer behaviour. The crisis response management provided by the business in dealing with the pandemic, among others, is through increasing awareness about well-being and technology adoption, locking and social distancing, and optimising information and communication management. There is still little attention given after the crisis management phase, namely investigation, organisational learning, and implementation phases which are essential to building resilience when facing similar crises in the future.

Figure 4 Crisis management



The pre-crisis phase, also known as the incubation phase, is when a combination of various causes moves slowly to contribute to causing an extreme event (Pierson, 2003; Buchanan and Denyer, 2013). Buchanan and Denyer (2013) suggested that typical pre-crisis research is concerned with planning to anticipate future events. The research topic covered, for example, is antecedents, risk and emergency management, or safety culture. From the bibliometric analysis, no publications specifically examined this phase. In the past – before pandemic, business economics research was mainly discussing the topic of risk and emergency management or safety culture concerning extreme events in the form of disasters, both natural or manmade, such as fires (Foley, 2003), earthquakes and tsunamis (Hosseini and Izadkhah, 2010; Li et al., 2017), and other extreme events that have occurred relatively frequently. Meanwhile, the COVID-19 pandemic is shocking with a very significant impact.

The event phase is the phase where most bibliometric clusters are formed. This could be due to two reasons. First, the relatively long pandemic period caused highly accumulated studies on the pandemic’s impact on business economics. When this article is written, the COVID-19 pandemic has been going on for more than one year. Second, the significant attention the pandemic has drawn is owing to the significant impact of this

pandemic on various aspects of life, thus attracting the attention of researchers from various sub-disciplines of business economics to investigate its impact. Typical research topics discussed in this phase relate to the impact of a pandemic on the individual, organisational, or business and economics at a macro level. The observed impact on the individual's life is mainly related to individual perception, which is related to the psychological impact, for example, fear (Mehroliya et al., 2020; Sigala, 2020) or anxiety (Mo and Shi, 2020; Xie et al., 2020). This psychological impact occurs either due to the pandemic or new habits formed during a pandemic, such as social distancing or wearing a mask (Shah et al., 2021a; Khoa et al., 2021). The impact on organisational life is reflected in the bibliometric cluster that discusses inequality in work which reflects the significant impact of the pandemic on organisational life, such as gender or income (Clark et al., 2020; Petts et al., 2020; Bonacini et al., 2021; Gutiérrez-Romero and Ahamed, 2021).

The broader and vivid impact of the COVID-19 pandemic is on business or economic sectors, including consumer behaviour, unemployment, public health, and stock markets in almost all parts of the world. The COVID-19 outbreak has facilitated the shift in consumer activities where online shopping is preferred for convenience and safety (Chang and Meyerhoefer, 2020; Pham et al., 2020). In addition, the adverse effect of the pandemic can be seen on the employment side, where many people have lost their jobs due to the limited mobility, lockdowns, and declining demands for several products (Kong and Prinz, 2020; Nguyen et al., 2020). Furthermore, COVID-19 has caused a significant impact on the global stock market, thus declining stock returns and amplifying portfolio risks for investors (Aslam et al., 2020; Liu et al., 2020a; Chakrabarti et al., 2021).

The phase that received the most attention after the event phase is the crisis response management phase. The bibliometric clusters relevant to this phase are well-being and technology adoption (cluster 2), lockdown and social distancing (cluster 5), and information and communication (cluster 9). Buchanan and Denyer suggested that typical research in this area is related to 4Cs in emergency management, which include cognitive, communication, coordination, and control (Comfort, 2007); besides also measuring the effectiveness of response management (Pearson and Mitroff, 1993). The concept of well-being and technology adoption discussed in cluster 2 is closely related to the cognitive process of risk interpretation and how technology adoption can help organisations provide an adaptive response to a pandemic. An example is the use of social media, teleconsultation, or blockchain technology to improve services to the community (Kumar, 2020; Patma et al., 2020; Baudier et al., 2021). In this circumstance, transformational leadership is essential (Widianto and Harsanto, 2017).

The lockdown and social distancing (cluster 5) are interventions implemented worldwide to prevent the spread of COVID-19 as a form of crisis response management. There are diverse types of lockdowns implemented, such as total or partial lockdown and hard or soft lockdown (Haider et al., 2020). Lockdown and social distancing as a measure to control COVID-19 were known to have a significant impact, especially on psychological and socio-economic aspects (Gupta et al., 2021; Le and Nguyen, 2021; Obayelu et al., 2021; Amoah and Amoah, 2021). The implementation of lockdown and social distancing accelerated information and communication technology (cluster 9). Information and communication are among the primary pillars of emergency management (Comfort, 2007). An example of such acceleration is health information technology, data analytics, or data visualisation to understand how the virus spreads

(Pietz et al., 2020; Singh et al., 2020b). Several studies on data analytics in the context of COVID-19 were connected to the history when John Snow, in 1854, conducted a careful tracing of the cholera outbreak in London (Pietz et al., 2020).

During the investigation phase, no single cluster was formed in this area. Unlike the previous crises, which were relatively short-term, the COVID-19 pandemic lasted for a relatively long period. When this article was written, the pandemic had been going on for more than two years. Global efforts to investigate the causes of COVID-19 just started in 2021 (Maxmen, 2021). Therefore, it is not surprising that the 'ideal phase' of the crisis management phase of Buchanan and Denyer (2013) does not fully apply to the COVID-19 pandemic. It is indicated that no studies yet exist in the investigation phase, while there have been studies on the next phase of the organisational learning phase.

In the organisational learning phase, one cluster is formed, i.e., organisation resilience (cluster 1). Buchanan and Denyer (2013) suggested that typical research in this phase focuses on how organisations learn (or do not learn) from the crisis. In the context of the COVID-19 pandemic, studies in the cluster of organisational resilience discuss how the organisation can build resilience both in the short and long term. Building organisational resilience requires both internal capabilities and internal capacities (Sarkis, 2020). For example, Chowdhury et al. (2022a) proposed strategies to enhance the resilience of food and beverage companies, such as implementing the FEFO method (first expired first out), product rotation, or strengthening the online infrastructure. Another essential capability highlighted is the engagement with external stakeholders such as suppliers, customers, and the community during the pandemic (Păunescu and Mátyus, 2020; Sharma et al., 2020b). Stakeholder engagement is one of the sustainability innovation practices that can assist firms in remaining innovative in the face of a crisis (Harsanto et al., 2018; Harsanto and Permana, 2019).

Finally, in the implementation phase, no cluster has yet been formed. Implementing what was learned in the previous phase (organisational learning) is vital to active learning (Buchanan and Denyer, 2013). In the active learning concept, learning is not sufficient for change management but for how learning outcomes are implemented. Both organisational learning and implementation phases are interrelated, and in the context of the COVID-19 pandemic, there seems to be a strong demand for studies in these two phases in the future.

5 Conclusions

The purpose of this study was to give an updated research environment for business economics in light of the COVID-19 epidemic. This study discovered ten clusters of 982 publications using bibliometric analysis. Regarding the crisis management concept in management studies (Buchanan and Denyer, 2013), this study's findings indicate that the most studied phase is the 'event' phase, followed by the 'crisis response management phase'. The COVID-19 pandemic has lasted for a long time and continues to this day, so this finding is unsurprising. In a nutshell, research into the 'organisational learning' and 'implementation' phases will be in great demand.

This paper contributes to the literature in at least two ways. First, our study provides an update on business economics research with a longer time span so that it is expected to provide a more complete picture. Second, this paper uses a specific point of view in the analysis, namely the crisis management perspective referring to the study of Buchanan

and Denyer (2013), adding to the literature on crisis management and extending the implementation of the model. Furthermore, the results of our study imply that business entities need to be more prepared to face an unexpected crisis such as a pandemic. In addition, companies should improve their resilience and organisational learning skills by implementing various activities, such as risk management. The company's employees also need to be developed by providing them training and other job enrichment programs to have organisational learning skills, which are essential in facing a crisis.

This study has several limitations. First, this study focused exclusively on business economic research. As a result, the findings of this study are particularly relevant to this field of study only. Second, the keyword clustering process in the bibliometric analysis might not always generate results that do not entirely make sense. To make it more sensible, we make a manual analysis to identify the top five keywords in each cluster based on their occurrence, then return to the search results from WoS to read several publications from certain clusters to provide a better idea of the topic discussed in the particular cluster. We are aware that this process cannot give perfect results to make sense, but at least make it better for the interpretation process. Third, as typical in bibliometric analysis, this technique analyses the occurrence and link strength of keywords, authors, and affiliations. This technique has limitations in exploring the theories used in the reviewed publications, their constructs, their findings, and other details. Future studies may use a systematic literature review approach to analyse the article content in depth. Fourth, the research area in this research includes business economics as a unit because the two are closely related to each other. Furthermore, in the WoS database, business economics is a specific research area that becomes a single entity so that the two are technically inseparable from the search process. Future studies can focus on either business or economics to make the review more niche and sharper.

The following are some other suggestions for future studies to help establish a more comprehensive contribution of business economics research in the context of the COVID-19 pandemic. Studies are required in the 'pre-crisis' phase to help the organisation plan for global disasters such as pandemics in the future. More precisely, the research subject addresses pandemic risk management, emergency management, public understanding of risk, and enabling a safety and reliability culture when coping with large-scale emergencies like pandemics. Many research clusters have emerged during the 'event' and 'crisis response management' phases. The phase 'crisis response management' is still very likely to be worked on. In particular, a significant issue that has yet to appear is companies' leadership in the COVID-19 pandemic.

The 'investigation phase' can be separated into two components: investigations into pandemics beyond the company's control and investigations into the company's lack of preparedness to cope with a pandemic within the company's control. Due to a lack of study during the investigation phase, we cannot determine with certainty the fundamental causes of businesses being unprepared in the event of a pandemic. The critical opportunity for future research is mainly in the 'organisational learning' and 'implementation' phase. Clusters developed in organisational resilience can be deepened during the organisational learning phase by disclosing the specialised competencies that organisations require to deal with extraordinary crises such as pandemics, assuring long-term survivability and growth. It encompasses both active and passive learning about the company's previous activities. During that period, studies into the

implementation of organisational learning will assist in shedding light on how to rebuild business economics following a crisis.

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