



## THE EVOLUTION OF LEADERSHIP AND DECISION MAKING: A SYSTEMATIC LITERATURE REVIEW USING BIBLIOMETRIC ANALYSIS

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### ABSTRACT

Leadership and decision-making in the VUCA era are crucial. Leadership effectiveness in organizing and quality decision-making is demanded so that organizations can survive uncertain conditions. The purpose of writing this article is to find out the development of leadership trends and decision-making models in the last two decades. The method used is a systematic literature review using bibliometric analysis. The conclusion obtained that leadership began to trend and attracted the attention of researchers in the period 2008-2013, which was associated with organizational culture and the development of human resource competencies. Research is massive in 2014-2018, which discusses transformational and adaptive leadership models. Meanwhile, in the last five years, the topic of leadership and decision-making has been dominated by the COVID-19 pandemic and equality.

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## INTRODUCTION

Making a decision requires a long process (Sanders, 1999), according to Dartmouth (2018) Decision-making must go through seven stages, starting from decision identification to decision evaluation and its impact. The same thing was expressed by Robbins et al., (2019) An effective decision-making process goes through eight stages. While according to Colquitt et al., (2021) That decisions are of two kinds, namely programmed decisions and non-programmed decisions. Programmatic decisions are decisions on problems that are routinely faced, while non-programmed decisions are decisions on issues that are complex, sudden, have never been experienced, and are difficult to predict.

The world is now experiencing the VUCA Phenomenon (Staves, 2022), This phenomenon arises due to many factors, such as the Covid-19 pandemic (Saputra et al., 2022), Advances in Information Technology (Eilers et al., 2022) and cultural shifts in society (Sanphillippo, 2022). The situation changes quickly from one problem to another, so the crisis ahead is difficult to predict and uncertain (Athariq, 2022). This situation results in organizations often facing complex problems (Li et al., 2022) Which raises doubts in decision-making (Vermeulen, 2004). In situations like this, an accurate and effective information management system is needed to produce a quality decision-making process (Supriadi et al., 2021) So when facing complex problems, skills in making decisions are needed (Blacksmith et al., 2019). In this VUCA era, adaptive leadership is needed (Rajiah & Bhargava, 2020).

The organization must be adaptive to the current situation so that the organization can survive in difficult conditions (Imbernon et al., 2022). Leadership and decision-making models are organizational behaviors that are very important to support the organization's sustainability according to the times (Brewer & Devnew, 2022), Because of the importance of leadership patterns and decision-making methods, this article will discuss the development of leadership and decision-making models in the last two decades, from 2003 to 2022.

This research is essential to determine the development of leadership and the way of decision-making in these two decades. A literature review was carried out by analyzing the topic of leadership and decision-making based on bibliometric analysis. The step is to collect relevant metadata on leadership and decision-making topics in journals published in a *ScienceDirect* database built on keywords. Then, the topic's development is based on the keyword network density formed using *vosviewer*. The thickness of a case depicted and the magnitude of an issue reflect trends about that topic. The density of a matter reflects an intense closeness and correlational relationship between points.

Bibliometric analysis is a research method by analyzing bibliographic data in articles (Franceschini et al., 2015; Tsay & Shu, 2011). This analysis is used to group scientific articles according to the field of research (Fisipol, 2018). The

approach used in bibliometric analysis is the citation relationship approach (Kostoff, 1998), Co-OccuranceRelationship Approach(Cainelli et al., 2015; Ravikumar et al., 2015)and also an inter-network analysis approach(Payumo & Sutton, 2015; Hassan & Haddawy, 2015). According toHuang et al., (2020)The advantage of bibliometric analysis is that the collection of data obtained is more and more objective because it is technology-based.

## METHODOLOGY

The data collection method can be explained in Figure 1 below, where stages like this can comprehensively examine the research topic. Then, the article data obtained is used to analyze the development of leadership trends and decision-making models in the last 20 years.

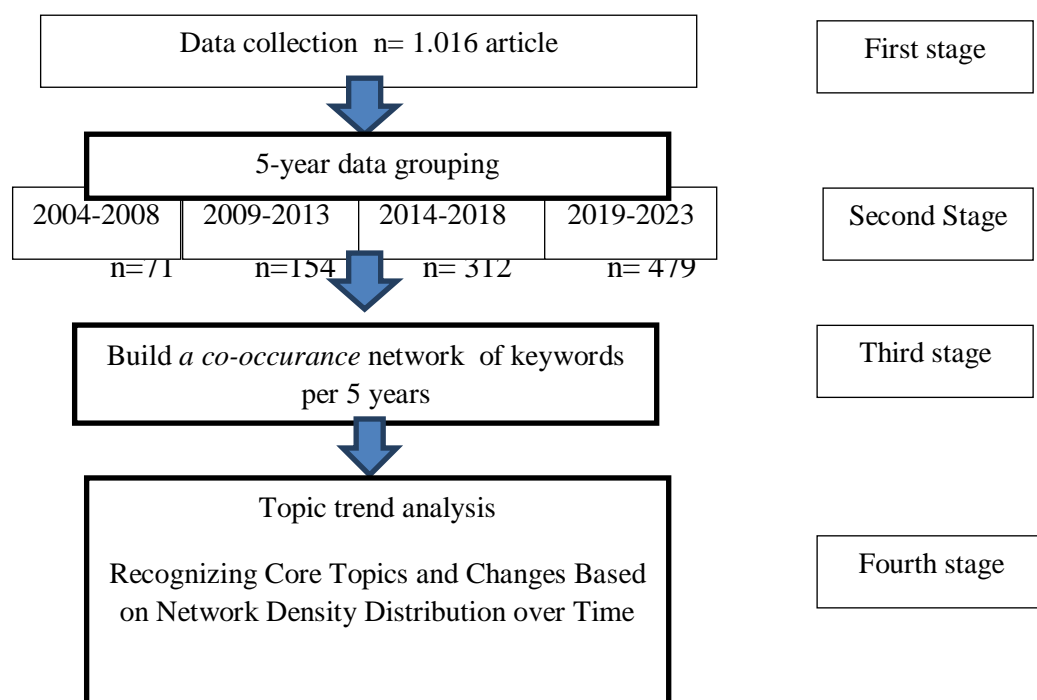


Figure 1. Methodological framework

### Stages of data collection

The first stage is to collect data on journal articles in the Scindirect database published from 2004 to 2023, using the keyword "Leadership AND Decision-making" with filters from 2004 to 2023. These keywords are words written in the article's title, keywords, and abstracts of papers in the ScienceDirect database. The second stage is to sort the data collected into data per five years according to the period, namely the first period of 2004-2008, the second period of 2009-2013, the third period of 2014-2018, and the fourth period of 2019-2023. At this stage, the downloading of articles from the ScienceDirect database per period in the form of RIS and then used for the bibliometric analysis process.

The third stage is building a network of keywords for each article obtained. In bibliometric analysis, keywords are often used to identify a topic, research content, or methods applied in research. To identify and analyze the distribution of leadership and decision-making topics regarding specific statistical correlations built from different keywords that appear on the same document (*co-occurrence*) in the form of networks. The network built from keywords shows that the closer the distance between keywords, the more relevant these keywords are. The more converging keywords will form a meaningful cluster of trends in a research topic. The fourth stage analyzes the development trends of leadership and decision-making topics based on the density of shared networks formed from keywords, effectively reflecting the trends and neglect of research topics over a while. This bibliometric analysis uses *VosViewer* to generate a network density map of keyword co-occurrences. *Each node* in the co-occurrence network will have a different color depending on the item density. Red color nodes signify high density, low-density blue color. According to Van Eck & Waltman (2010) The density of a node on the network map depends on the number of nodes nearby and the weight of those nodes. The color shift between red and blue will reflect changes in tissue density *co-occurrence*. Higher node densities can also result from shorter distances between nodes. The greater the thickness of a node, the higher the node's importance, which is the more popular research topic. The development of research topics on leadership and decision-making can be examined yearly based on changes in the distribution of topic density.

**RESULTS**

Data sourced from *the ScienceDirect database* with filters from 2004 to 2023 using the keyword "*Leadership AND Decision-making*" contained in the title, abstract and keyword articles obtained a total of 1,016 articles with details of journal names according to table 1.

Nama Jurnal	
<i>The Leadership Quarterly</i>	<i>Journal of Business Research</i>
<i>Procedia – Social and Behavioral Sciences</i>	<i>Marine Policy</i>
<i>Journal of Cleaner Production</i>	<i>The Lancet</i>
<i>Nurse Leader</i>	<i>Health Policy</i>
<i>Journal of Surgical Education</i>	<i>Children and Youth Services Review</i>
<i>Animal Behaviour</i>	<i>Behavioural Processes</i>
<i>Environmental Science &amp; Policy</i>	<i>International Journal of Medical</i>
<i>World Development</i>	<i>Informatics</i>
<i>Ocean &amp; Coastal Management</i>	<i>Safety Science</i>
<i>International Journal of Nursing Studies</i>	<i>Heliyon</i>
<i>Social Science &amp; Medicine</i>	<i>Energy Policy</i>
<i>Global Environmental Change</i>	<i>OBHDP</i>
<i>Procedia Computer Science</i>	<i>Journal of Environmental Management</i>

Table 1. List of journals

From these data, the development of research topics on leadership and decision-making from 2004 to 2023 has experienced a significant upward trend, which is explained in Figure 2 below.

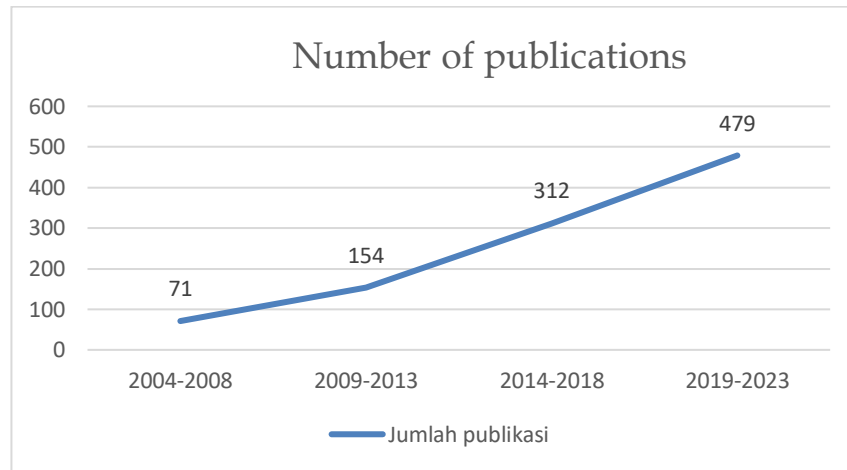


Figure 2. Number of publications in four time periods

Based on the table above, the trend of research topics covering leadership and decision-making from 2004 until now continues to experience an increasing trend, and this indeed can illustrate that leadership and decision-making is something interesting to research. Then, when viewed from the type or type of article dominated by research articles. The visualization of the article type is in Figure 3.

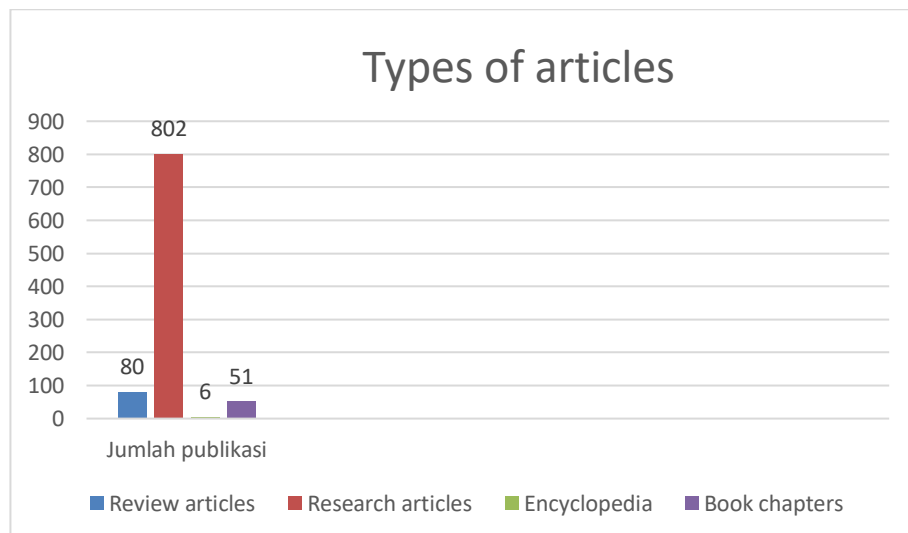


Figure 3. Types of articles published by ScienceDirect in 2004-2023

From the data obtained, keywords that authors often use, are described in table 2 which details the 10 highest ranking keywords that have relevance to leadership and decision-making.

Keywords	Sum
<i>Communication</i>	22
<i>Governance</i>	20
<i>Covid-19</i>	20
<i>Simulation</i>	19
<i>Gender</i>	19
<i>Non-technical skill</i>	18
<i>Team work</i>	17
<i>Education</i>	16
<i>Patient safety</i>	16
<i>Management</i>	15

Table 2. Keywords that rank in the top 10

## DISCUSSION

To facilitate the analysis of leadership development and decision-making models in the last two decades, the analysis is divided into four periods, namely the period 2004-2008, 2009-2013, 2014-2018 and 2019-2023.

### First period 2004-2008

In this period has begun to appear research on leadership such as research Winston (2007) which examines ethical leadership and ethical decision making, then (Scott & Brown, 2006) Linking gender-based leadership and decision-making. In addition, decision-making models also began to emerge in this period, such as research Keefe & Pesut (2004) on measuring the situation to create a decision-making framework, research Shiparski (2005) About involving staff in decision making. The topic of leadership is the most significant node and is connected to other keywords. The closest distance to "leadership" is the keyword "organization change."

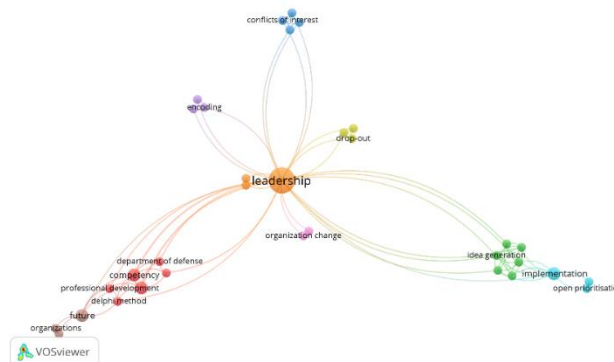


Figure 4. Visualization of network keyword co-occurrence-rance period 2004-2008

Then, from Figure 4, leadership is connected with the keywords "department of defense, competency, professional development, delph method and organization." So, in this period, the majority of leadership topics are associated with human resource development, such as competence and professional development and organizational matters such as organizational change, conflicts of interest, organizational future and open priorities in the organization.

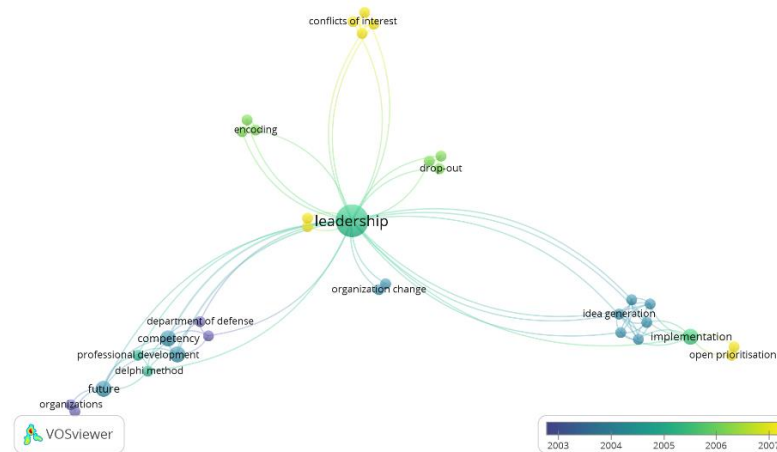


Figure 5. Visualization overlay co-occurrence of keywords in 2004-2008

Figure 5 about *overlay* visualization illustrates the history of research that at the beginning of the period, namely 2004 to 2006, the keyword that often appears is *leadership*, which is associated with HR development and organizational behavior. At the end of the period, namely in 2007, research began to emerge on conflicts of interest in organizations associated with leadership

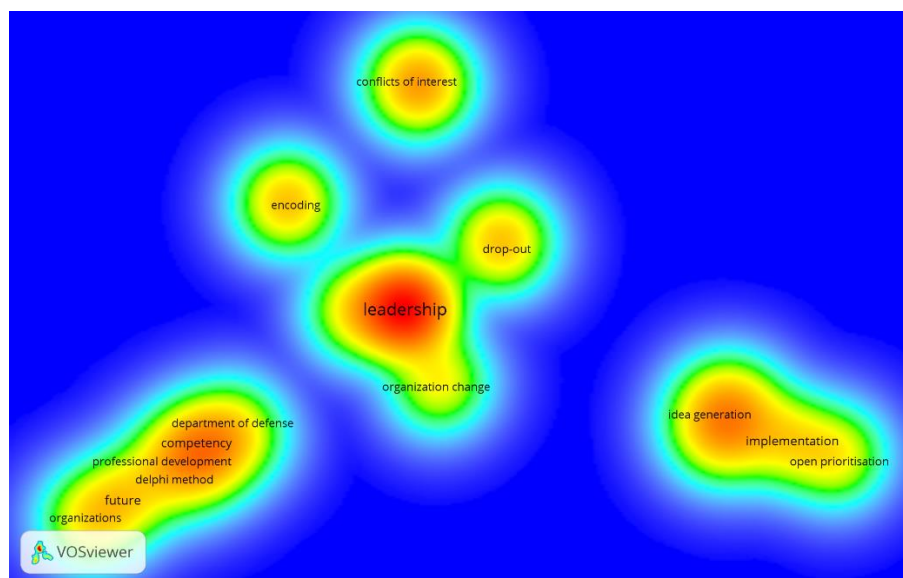


Figure 6. Visualization of keyword *co-occurrence* density for the period 2004-2008

In Figure 6, about visualization of the density of research topics, two clusters are formed, namely *leadership* and competence clusters. The topic of competence is very close to other topics, namely organization, professional development, the future, and the Department of Defense. While the *leadership* cluster is only adjacent to the topic of organizational change.

### Second period 2009-2013

In this period, the keywords *leadership* and decision-making have begun to be widely researched and have become increasingly complex and associated with other research topics (Langvardt, 2012; Rowland & Parry, 2009; Spencer et al., 2012; Stenmark & Mumford, 2011; van Ginkel & van Knippenberg, 2012). Figure 7 visualizes the network formed from the *co-occurrence* of the keywords "leadership" and "decision making" in the period 2009 to 2013.

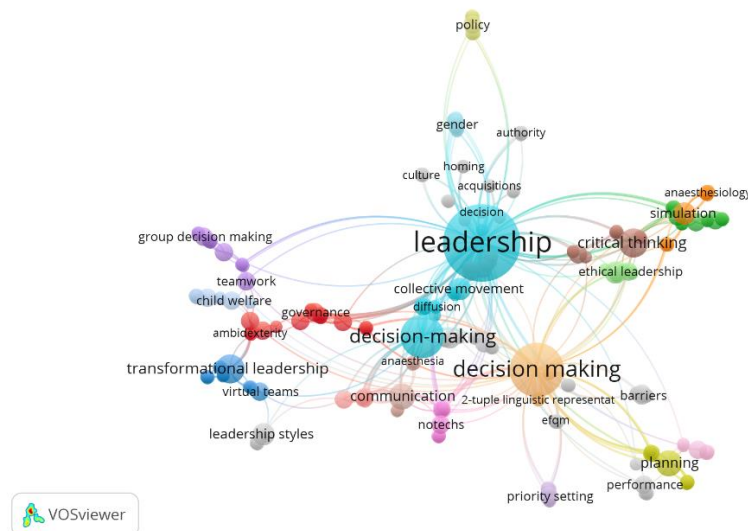


Figure 7. Visualization of *network co-occurrence* of keywords for the period 2009-2013

Based on Figure 7 above, there are two clusters that are formed quite large, namely the *leadership cluster* and the *decision-making cluster*. Cluster *leadership* is connected to several keywords, namely *decision*, *collective movement*, *critical thinking*, *decision-making*, and *acquisitions* and *simulation*. So, it can be interpreted that in this period, the topic of leadership is very interesting to researchers who are associated with the topic of decision-making, critical thinking skills, and other organizational behavior. In this period, the term *ethical leadership*, better known as ethical leadership, which in the previous period had never existed. In addition, there is also a discussion of *leadership* associated with decision-making in groups or teams..

In the *decision-making cluster*, two networks are connected to the keywords *leadership, diffusion, communication, governance, and teamwork*. This indicates that decision-making is attractive to research and closely related to leadership because these two things cannot be separated in an organization. In this period emerged *transformational leadership and leadership style*. This theme has begun to be researched, although it is still rare and still far away from leadership and decision-making.

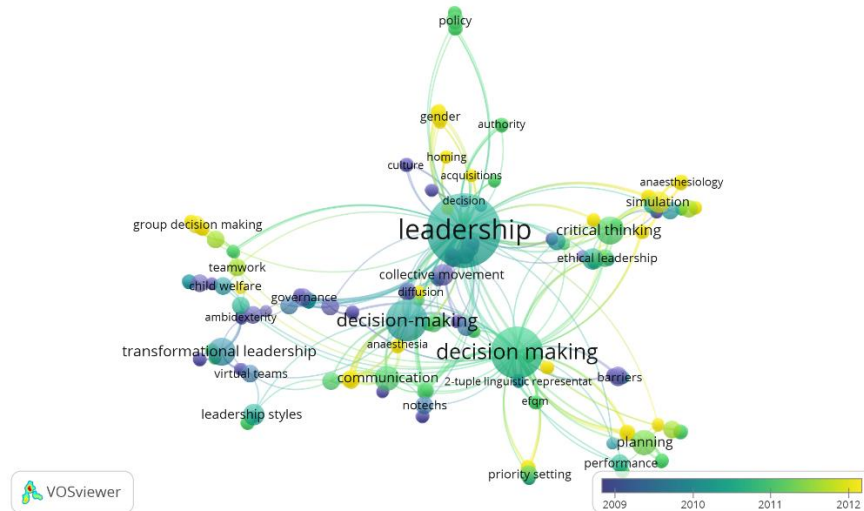


Figure 8. Visualization *overlay co-occurrence* of keywords in 2009-2013

Figure 8 above depicts the history of research from 2009 to 2013. Blue indicates that there has been a lot of research conducted at the beginning of that period, and yellow indicates that new research appeared at the end of the period. At the end of the period, namely the end of 2012 to 2013, the topics studied were *leadership* topics associated with *gender, critical thinking, simulation, homing, anesthesiology, and group decision-making and planning*, while the topics of *decision-making* at the end of the period were studied with topics related to *group decision making, planning, priority setting, communication, and Teamwork*.



Figure 9. Visualization of keyword *co-occurrence* density for the period 2009-2013

In Figure 9, about the density of keyword *co-occurrence*, the brighter an area indicates that more researchers are studying the area and vice versa. Based on Figure 9 above, leadership and decision-making have been widely researched and become a trend, but in this period, the topic is *about leadership styles, priority setting, authority, and virtual teams*. It is still dark, so this topic in the period from 2009 to 2013 has not been widely studied.

### Third period 2014-2018

In this period, with the keywords *leadership and decision making*, 312 articles were obtained according to figure 2. So the discussion about leadership became a research trend.

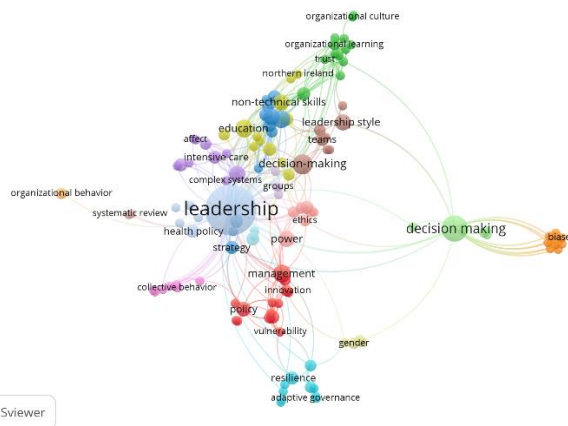


Figure 10. Visualization of *network co-occurrence* of keywords for the period 2014-2018

Based on Figure 10 above, *leadership* keywords form a network with diverse keywords and closest to the keywords *group, ethics, power, strategy, health policy, complex systems, and non-technical skills*. This means that leadership topics are more often associated with topics of groups, ethics, strengths, strategies, health

policies, complex organizational systems, and non-technical skills. In addition, *leadership* is also connected to new keywords, although there are still few that are marked by considerable distance, such as topics of education, collective behavior, organizational behavior, decision-making, and organizational culture. It is also connected with leadership style, trust, and impact. There are also keywords that are not directly connected to leadership, namely gender that must go through management, *gender* through power, bias *through* decision-making making, *and so on*.

The keyword decision making *or* decision-making is still quite a trend even though it is starting to shrink the node. The keyword is close to the keywords *biases*, *teams*, *groups*, and *complex systems*, even though it is pretty far connected, such as *trust*, *gender*, *leadership style*, and *management*.

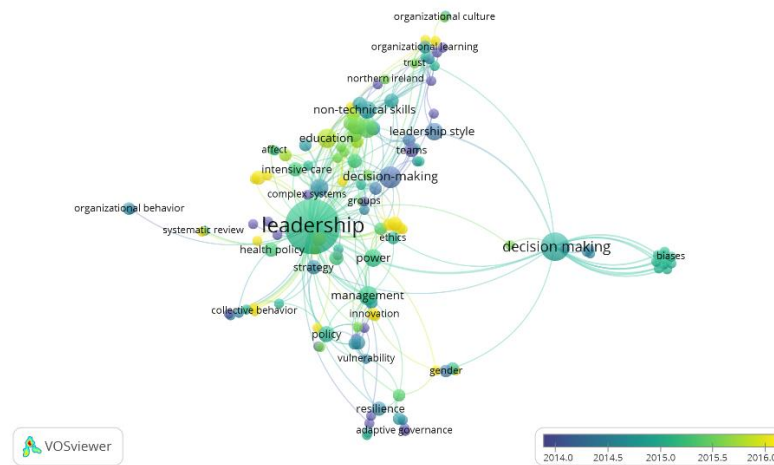


Figure 11. Visualization *overlay co-occurrence* of keywords for the period 2014-2018

Following Figure 11, at the end of this period, the research topics that are just starting to appear are the yellow keywords, namely *gender*, *innovation*, *collective behavior*, *health policy*, *ethics*, *education*, *intensive care*, and *organizational learning*, *all of these* topics began to trend at the end of the period and all connected to leadership. While the issue of decision making trends at the end of the period is related to *gender*, *ethics*, *non-technical skills*, and *education*.

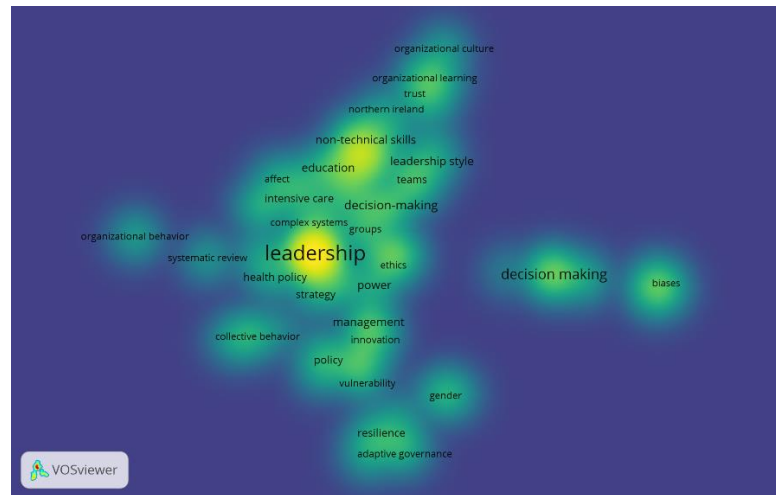


Figure 12. Visualization of keyword *co-occurrence* density for the period 2014-2018

Based on the visualization in the image, 12 keywords on the dark side are areas that have yet to be studied much, and the bright keyword areas have been studied a lot related to the topic of these keywords. Topics that have not been studied or researched are leadership associated with *systematic review*, *organizational behavior*, *adaptive governance*, *organizational culture*, and *organizational learning*.

#### Fourth period of 2019-2023

In the period from 2018 to 2022, the keywords leadership and decision-making are connected to more complex keywords. The image of the *co-occurrence* network visualization of the keywords leadership and decision-making is presented in Figure 13.

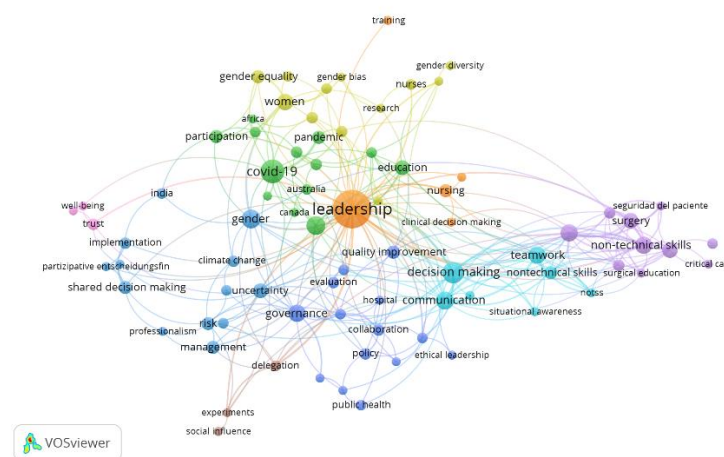


Figure 13. Visualization of *network co-occurrence* of keywords for the period 2019-2023

In the last five years, keyword *leadership* has been connected to various keywords, the largest of which is associated with COVID-19. *indeed, in this*



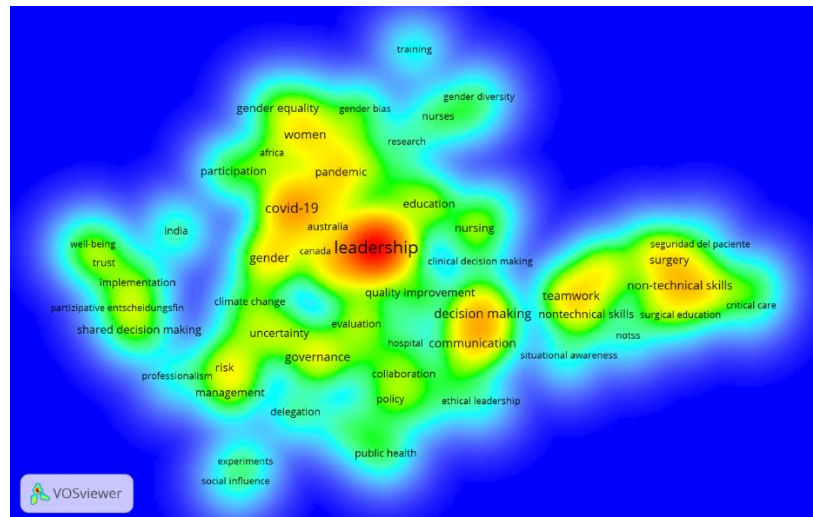


Figure 15. Visualization of keyword *co-occurrence* density for the period 2019-2023 Based on Figure 15 shows that the density of leadership and COVID-19 topics is very high, then research topics that are still not widely studied are public health issues, training and diversity and gender equality and ethical leadership.

## CONCLUSIONS AND RECOMMENDATIONS

Began to trend and attract the attention of researchers in the period 2008-2013, which was associated with organizational culture and human resource competency development, and very massive research in the period 2014-2018, which has discussed transformational leadership models, adaptive leadership, and associated with other organizational behaviors. Meanwhile, in the last five-year period of 2019-2023, the topic of leadership and decision-making was dominated by the topic of the COVID-19 pandemic and gender equality or diversity. The limitation of this paper review is that the data is sourced from the *ScienceDirect database*, so the literature review has not described the the overall trend in these periods.

## FURTHER STUDY

Future research is expected to comprehensively use data sourced from many databases, e.g., *Web of Science*, *Scopus*, *Emerald*, *Google Scholar* *ResearchGate*, and others.

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