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Knowledge hiding: a bibliometric analysis research trends between 1982-2023

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INFO ARTIKEL

Abstract

Keywords:

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mapping

This research analyzes the trends of knowledge hiding in business organizations. To conduct a comprehensive review of the topic, 386 English language research articles from the Scopus database produced between 1982 and 2023 were analyzed. The data was analyzed using Bibliometrix and Vosviewer software, and presented in descriptive and content analysis. The study aims to provide a better understanding of publication performance, thematic evolution, and the most influential topics in knowledge hiding research through science mapping. The paper offers a general review of past and present knowledge hiding research, and proposes future research agendas on the topic. The study found that knowledge hiding research trends have increased rapidly in the last two years. Most articles focus on knowledge hiding, knowledge sharing, and knowledge management behavior. However, there is a growing interest in exploring three dimensions of knowledge hiding, namely, playing dumb, evasive hiding, and rationalized hiding. Future research may investigate the positive impacts of knowledge hiding on individuals, work teams, or companies at large

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Introduction

Knowledge as a resource has become the core resource of organizations in the knowledge economy era (Sulistiawan *et al.*, 2022), which affects the effectiveness and sustainability of organizations (Caputo *et al.*, 2019). Well-managed knowledge will increase the organization's strategic adaptation ability and become a competitive advantage (Q Xia *et al.*, 2022). In addition, knowledge management practices facilitate innovation, support creativity, and encourage all members of the organization to use their thinking power optimally (Lanke, 2018).

Knowledge can be categorized into two types; explicit and tacit. Explicit knowledge is information that can be easily written down, codified and transferred from one person to another. The second means the information is inherent to the individual and difficult to express in words or code (Lanke, 2018). The current sources of competitive advantage are innovation and creativity (Safrizal, 2023). Nguyen *et al.* (2022) estimates that up to ninety percent of knowledge in any organization is tacit, often existing in people's heads. Human resources are by far the most important asset for an organization (Safrizal *et al.* 2020). Indonesia is a country that is rich in natural resources, human resources, and has land and seas that stretch geographically (Wildan *et al.*, 2021). To maximize the knowledge potential of employees and be more competitive, companies should encourage knowledge sharing among employees and eliminate knowledge hiding.

Knowledge hiding as a new construct was introduced and defined as an intentional attempt by an individual to withhold or conceal knowledge that another person has requested (Connelly *et al.*, 2012). Since then, knowledge hiding has attracted much attention from practitioners and researchers, as shown by a growing number of studies on this behavior. Connelly *et al.* (2012) linked knowledge hiding to perceptions of distrust, knowledge complexity, knowledge-task relationship, and knowledge-sharing climate. Human Activity Recognition has been researched for the past few years (Victoria, *et al.*, 2022). People may engage in knowledge hiding when they feel that the knowledge they use in the workplace is their personal property (Chiaburu *et al.*, 2013). Role conflict, job insecurity, and cynicism lead employees to withhold knowledge (Nguyen *et al.*, 2022). Meanwhile, (El-Kassar *et al.*, 2022) points out that organizational factors such as HR practices and organizational support for creativity can be precursors to knowledge hiding. Such behavior tends to occur in environments of mistrust and high competition or perceptions of organizational politics (El-Kassar *et al.*, 2022).

Besides the antecedents, researchers also further explored the consequences of knowledge hiding. This type of behavior tends to have negative consequences, whether it's for the individual, team, or the organization as a whole. At the individual level, Butt (2020) explains knowledge hiding will cause a loss of the knowledge seeker's personal reputation, lack of creativity, and lack of productivity. Competence is the ability to apply knowledge, skills, behavior and personality to carry out tasks both individually and organizationally in order to achieve superior work performance (Hidayat *et al.*, 2022). One of the elements that plays an important role in development is the social capital owned by the community (Rasyid *et al.*, 2023). According to other studies, the negative impact of knowledge hiding relates to employee well-being Agarwal as well as creativity, innovative work behavior, and performance (El-Kassar *et al.*, 2022). Human resources are by far the most important asset for an organization (Faidal, 2020). Most recently, inter-organizational knowledge hiding mediates the relationship between artificial intelligence (AI) capabilities and open innovation.

Those negative impacts then encourage researchers to study how to mitigate knowledge hiding. Peng (2012) argues that companies should prioritize management practices that reduce individuals' self-perception of knowledge ownership. Digitalization gives more power to customers and makes businesses think about how to win the market (Jannah, 2021). The role of the leader also has a moderating effect on this behavior, for example by implementing transformational leadership (Nguyen *et al.*, 2022) or servant leadership (Tian, 2022). Regarding knowledge hiding among managers, Butt (2021) advises companies to implement

strategies by shortening hierarchy, developing informal interactions between managers, and implementing better incentive policies.

The number of academic publications related to knowledge hiding has increased rapidly, so it can be difficult to keep up with the latest developments. This requires a systematic review for a better understanding of concepts, theories, research findings, and future trends. Literature reviews are increasingly taking on an important role in synthesizing past research findings to effectively apply existing knowledge, advance research, and provide evidence-based insights for exercising professional judgment and expertise (Rousseau *et al.*, 2018).

Several attempts (Xiao and Cooke, 2019; Connelly *et al.*, 2019) have been made to review the literature on knowledge hiding. Most of the review papers that currently exist are qualitative in nature, and can be subjective, making them difficult to replicate. Bibliometric analysis can help overcome some of these limitations by quantifying scientific output and then drawing qualitative conclusions on numbers and values (Ball, 2018). In this way, the analysis process will be more objective and reliable (Aria and Cuccurullo, 2017). Bibliometrics is very useful for analyzing large volumes of information and data as well as dynamic conceptual developments (Crane, 1972). Bibliometric results reveal trends and themes over time, detect disciplinary shifts, identify productive researchers and institutions, and provide a comprehensive view of existing research (Crane, 1972).

In this paper, bibliometric analysis will be carried out by exploring relevant articles using the Scopus database in the period 1992-2023. This review makes several valuable contributions to research on knowledge hiding. This study will conduct a descriptive analysis of knowledge hiding research trends. It will also evaluate publication performance using various indices such as h-index, number of publications, and citations. Second, through content analysis, this study seeks to summarize research findings on knowledge hiding for more effective future research. Third, compared with previous reviews this study has the most recent time span. This kind of analysis has indeed been carried out in (Di Vaio *et al.*, 2021) but only for articles published up to 2020. In fact, in the last two or three years, the Scopus database shows that the number of knowledge hiding articles has increased exponentially. In 2020 the number of related articles was 57 titles, while in 2021 there were 80 titles and in 2022 there were 172 titles. The current data contributes to a better understanding of knowledge hiding research overview and future directions.

RESEARCH METHODS

This research is based on a quantitative research system collected from the Scopus database. Scopus is the world's largest citation database covering various fields including science, engineering, medicine and social sciences (Andrés, 2009). Documents extraction and review are performed by looking at the title, abstract, and keywords. The formula used for extraction and review based on Xiao and Cooke (2019) is "knowledge hiding" or "knowledge withholding" or "knowledge hoarding" or "information hiding" or "information withholding" or "data withholding" or "partial knowledge sharing" or "knowledge sharing hostile" or "knowledge-sharing hostile".

Extraction yielded an initial list of 6,178 publications. Our analysis will be limited to documents related to the subject area of business, management, and accounting, this leaves 488 documents. After that, conference papers, editorials,

review papers, book chapters, notes, and revisions were removed from the list, and reduced the number of documents to 396 research articles. Due to the possibility of multidisciplinary research data, this research does not limit the scope of the publisher or journal (Guler *et al.*, 2016). Of these, only 389 English language articles were included in the final list between the earliest available date (1982) and October 2023. Article data was then downloaded in BibTex and CSV formats for analysis.

Bibliometric analysis was performed using the R-package bibliometrix and VosViewer software. Publication metadata is analyzed to build a structural picture of a particular scientific field called a scientific map (Zupic and Čater, 2015). This analysis applies quantitative methods to a collection of literature to explore communication patterns, trends, and networks in that literature (Haddow, 2018). Two main bibliometric techniques were employed in this paper, descriptive analysis and content analysis (Vergara *et al.*, 2018). Descriptive analysis to evaluate the publications and sources performance (Xia *et al.*, 2022). Content analysis includes keywords and citations to detect topics, thematic evolution, and research focus (Xia *et al.*, 2022).

RESULT AND DISCUSSION

Descriptive Analysis

In this stage, important information about temporal evolution, such as year, study frequency, percentages, and cumulative percentages, are typically presented in a table, accompanied by a graphical representation illustrating output trends (Andrés, 2009).

1. Bibliography Main Information

Table 1 presents the main information related to data analysis which includes main information related to data, document content, author, author collaboration, and document type. This analysis shows that the 386 articles related to knowledge hiding analyzed in this research were produced between 1982 and October 2023. The data came from 132 different sources, and this study only used journals as the type of reference source. Most of the articles are the result of collaboration between 912 authors. Only 45 articles were written by a single author.

The annual growth of knowledge hiding articles reached 11.48 percent. This shows that interest in this topic has been high recently. Furthermore, the average age of documents is 3.24 years. In other words, this field is still in the development stage (Anand *et al.*, 2020).

Table 1. Bibliographic Main Information

Description	Results	Description	Results
MAIN INFORMATION ABOUT DATA		AUTHORS	
Timespan	1982:2023	Authors	912
Sources (Journals, Books, etc)	132	Authors of single-authored docs	35
Documents	386	AUTHORS COLLABORATION	
Annual Growth Rate %	11,48	Single-authored docs	45
Document Average Age	3,24	Co-Authors per Doc	3,18

Average citations per doc	33,89	International co-authorships %	44,82
References	1	DOCUMENT TYPES	
DOCUMENT CONTENTS		Article	383
Keywords Plus (ID)	579	article article	3
Author's Keywords (DE)	1111		

Source: secondary data processed, 2023

2. Annual Number Distribution and Citations

The number and distribution of publications are analyzed to determine the productivity of a person, organization, region, nation, or group of nations. However, no qualitative aspect is considered in this productivity analysis. The number of citations is a fundamental metric that indicates the impact of research on the academic community (Ball, 2018). Citations indicate that a publication used information from other sources, thus the number of citations serves as a measure of research influence (Andrés, 2009).

Trends in study numbers and average yearly citations are shown in Figure 1. From year to year, the number of studies on knowledge hiding continues to increase with an average growth of 11.48 percent. Although some articles on knowledge hiding were published in 1982, interest in the topic did not emerge until the work of Connely *et al.* (2012). Connely *et al.* (2012). Knowledge hiding publications per year then gradually increased to 15 articles in 2018. In 2019 the number of publications doubled and reached 47 publications in 2021. After that, the growth in the number of articles accelerated and reached a peak in 2022 with 93 articles. As of October 31, 2023, 83 articles have been identified. Figure 1 also shows that the highest average total citations per article were in 2013 (270 citations), 2010 (116 citations) and 2016 (110 citations).

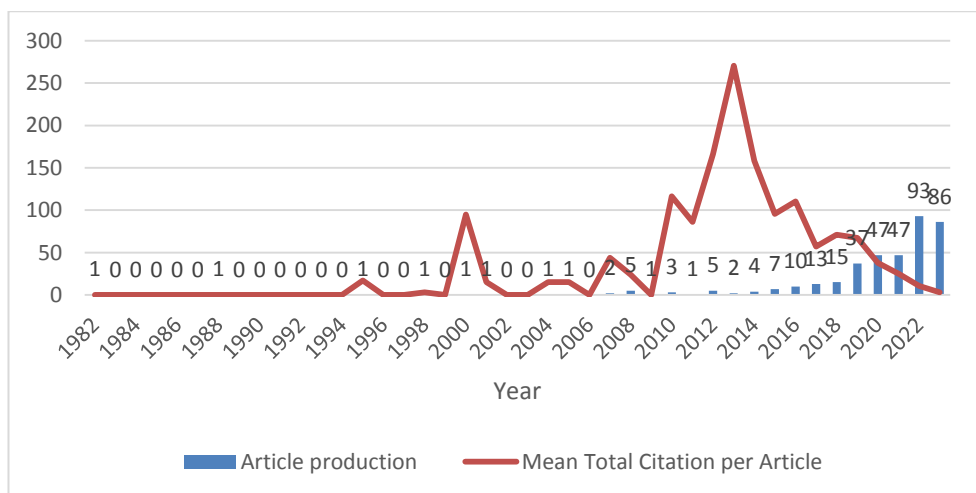


Figure 1. Annual Number Distribution and Citations

3. Source Analysis

Source analysis was performed to identify the most relevant journals used as references for knowledge hiding research. Table 2 presents the top 10 most

relevant sources based on the Hirsch Index (h-index) out of 132 journals. H index evaluates a researcher's scientific output by taking into account the productivity and impact of their publications (Andrés, 2009). In the same table, total citations (TC), number of publications (NP), and the year of first publication (PY-start) are presented.

According to the table, the Journal of Knowledge Management has the highest H index score of 27 points and has been cited 3,088 times, making it the most relevant source. This journal has published 68 articles related to knowledge hiding since 2010. The second most relevant source is the Journal of Business Research with an H index of 18 points and has been cited 1,041 times in 33 articles since 2019.

Table 2. Top 20 Most Relevant Journals

Element	h_index	TC	NP	PY_start
Journal of Knowledge Management	27	3088	68	2010
Journal of Business Research	18	1041	33	2019
Vine Journal of Information and Knowledge Management Systems	10	290	22	2017
Journal of Organizational Behavior	9	1809	9	2012
Knowledge and Process Management	9	228	10	2015
Knowledge Management Research and Practice	8	238	17	2008
Management Decision	7	411	7	2017
Leadership and Organization Development Journal	6	273	8	2014
Journal of Business Ethics	5	359	7	2019
European Journal of Work and Organizational	4	582	5	2015

Source: secondary data processed, 2023

4. Author Analysis

The author analysis results are presented in Table 3, which displays the names of the 20 most influential authors based on the H index. The most influential author in knowledge hiding research is Butt AS with an H index of 9 points. Since 2019, 12 articles have been published and cited 292 times. The next most influential authors are Luo J and Cerne M who both have an H index of 7. Luo J has 7 articles with a total of 649 citations since 2016. Cerne M has 8 articles with 988 citations since 2014.

Table 3. Top 20 Most Influential Authors

Author	h_in dex	TC	NP	PY_start	Author	h_in dex	TC	NP	PY_start
Butt AS	9	292	12	2019	Min M	5	117	7	2019
Luo J	7	649	7	2016	Zhang X	5	247	6	2020
Černe M	7	988	8	2014	Zhang Z	5	119	9	2019
Škerlavaj M	6	1308	6	2014	Zhao H	5	486	8	2016
Ahmad AB	5	152	5	2019	Arain GA	4	220	6	2020
Ali M	5	183	6	2020	Bednall TC	4	58	4	2020
Baral R	5	91	5	2020	De Clercq	4	77	5	2021

Connelly	5	1496	5	2012	Dysvik A	4	941	4	2014
Fatima T	5	191	8	2019	Hameed I	4	105	5	2020
Issac AC	5	95	6	2020	Jahanzeb	4	178	4	2019

Source: secondary data processed, 2023

The analysis also included a productivity analysis over time, which is shown in Figure 2. The image contains a circle that shows the author's publication in a particular year. The size of the circle represents the number of articles published in the same year. So, the bigger the circle, the higher the number of articles produced. The thickness of the circle's color corresponds to the total number of citations.

Butt, Zhang, Fatima, and Zhao are writers who are currently productive in terms of both number of articles and total citations, as shown in Figure 2. Initially, Butt explored knowledge hiding at individual, interpersonal, and organizational levels. Research has been conducted to investigate ways to reduce knowledge hiding behavior in organizations. This includes reducing the chain of command, developing informal interactions between managers, and introducing and implementing incentive policies. Over the years, Butt has conducted several studies on the consequences of knowledge hiding, which have revealed that it can lead to a lack of trust in colleagues, reduced loyalty, high turnover, and a decrease in business volume. To gather data for this research, Butt mostly relied on semi-structured interviews with purchasing and supplier company managers.

Zhang's research focuses on investigating knowledge hiding within teams during new product development projects. Zhang's productivity has increased consistently over the years. The impact of mediators such as team learning and leader-member guanxi, as well as moderators such as team stability, trust, and task interdependence, on the relationship between knowledge hiding and performance has been widely studied. Unfortunately, Connelly CE, who pioneered the concept of knowledge hiding, is no longer productive in conducting research.

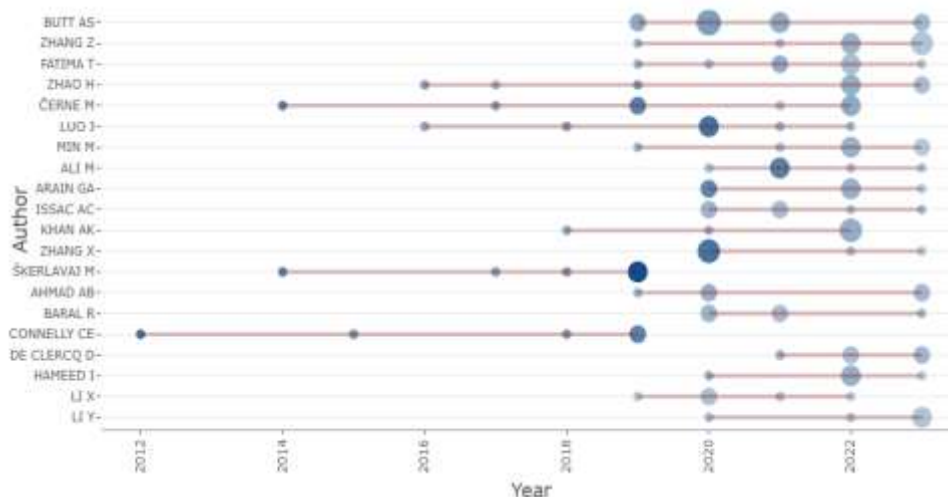


Figure 2. Authors' Production Over Time

Content Analysis

Keyword and citation analysis were used to identify research on knowledge hiding. Bibliometrix and VOSviewer were combined to visualize network maps of keyword occurrence and citation analysis (Ma *et al.*, 2022). By using this map, it will be possible to systematically identify the dynamics and structures of knowledge (Zamrudi, 2023).

1. Keyword Analysis

Keywords are usually used by authors to describe the general content of research. Therefore, keywords can serve as a foundation for identifying the thematic structure of a subject matter (Aria and Cuccurullo, 2017)

In Vosviewer-generated network visualizations, items are items are depicted as circles with corresponding labels. The size of the circle and the label of an item in a visualization are determined by the weight of the item. The weight represents how often the author's keywords appear in the articles. The bigger the label and circle, the greater the weight of the author's keywords. The color of an item is determined by the cluster to which it belongs. Lines between the items represent connections or relationships between two items. The distance between the items indicates the strength of their relationship. The closer two items are to each other, the stronger their relationship.

The author's Keywords Network Visualization (Figure 3) shows that there are 14 clusters formed as a result of the author's keywords-based analysis which are marked with 14 different colors. The largest cluster is red, including keywords such as knowledge management, knowledge hiding, knowledge sharing, supply chain management, and innovation. This means that the articles in the cluster mostly focus on developing the concept of knowledge hiding, linked to the concepts of knowledge sharing and knowledge management. The second cluster (dark green) is knowledge hiding research primarily based on social cognitive theory and social exchange theory. Unsurprisingly the research is related to co-worker support, relationship conflict, trait competitiveness, trust, and workplace bullying.

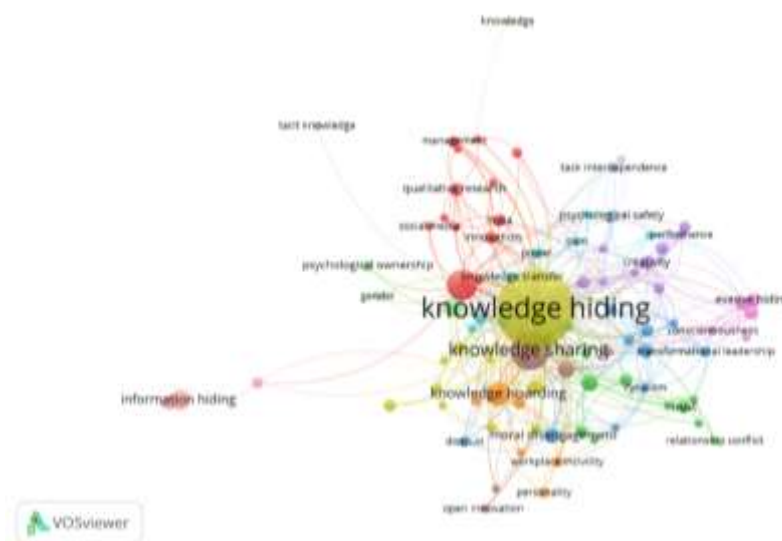


Figure 3. Author's Keywords Network Visualization

Meanwhile, cluster three in dark blue highlights individual characteristics as antecedents of knowledge hiding (for example: cynicism, distrust, employee well-being, job insecurity) and leadership styles (ethical leadership and transformational leadership) which are usually expected to be moderators of knowledge hiding. Yellow as the fourth cluster color describes a collection of knowledge hiding articles within the framework of the conservation of resources theory. This cluster has various keywords in the form of individual characteristics (emotional exhaustion, perceived overqualification, and psychological distress), interpersonal characteristics (interpersonal trust), and organizational characteristics (organizational justice). Meanwhile, the fifth cluster (purple) is mostly linked to outcomes or consequences of knowledge hiding, such as creativity, job performance, and turnover intention.

Furthermore, the author's keywords were analyzed to understand research trends related to knowledge hiding from year to year. Based on the analysis of the 20 most frequently appearing keywords, Figure 4 reveals that knowledge hiding is not only a common occurrence but also an area of growing research interest. The author's frequent use of terms like "playing dumb" and "rationalized hiding" in 2023 demonstrates an increasing focus on exploring the different dimensions of knowledge hiding. Since 2021, conservation of resource theory has been used as a foundation for research. Figure 4 also shows us that the study of knowledge hiding is commonly linked to two countries - China and India. This implies that knowledge hiding research is predominantly conducted in those countries.

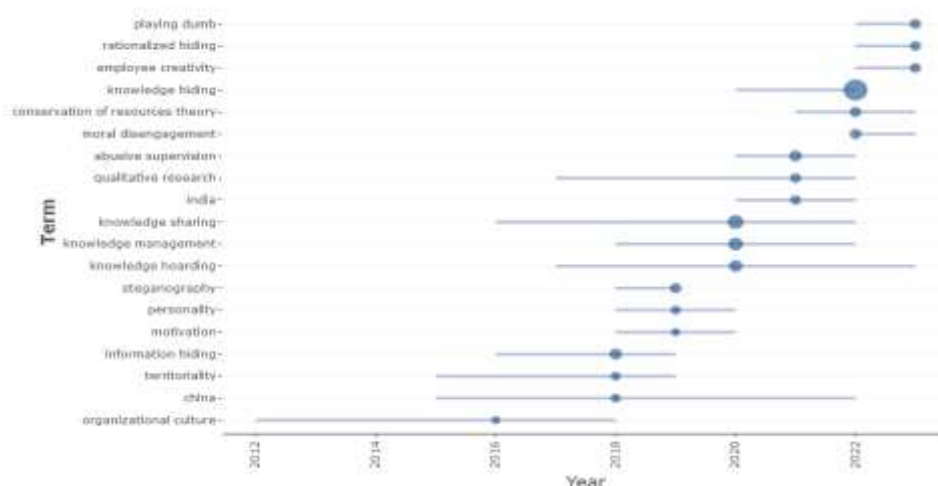


Figure 4. Trend Topics

This trend is in line with The Author's Keywords Overlay Visualization of VosViewer in Figure 5. The circles are depicted in a variety of blue to yellow colors. The brighter the color of the circle, the more contemporary the author's keywords are in the publication. Besides the knowledge hiding dimension, yellow author keywords dominate in transformational and ethical leadership.

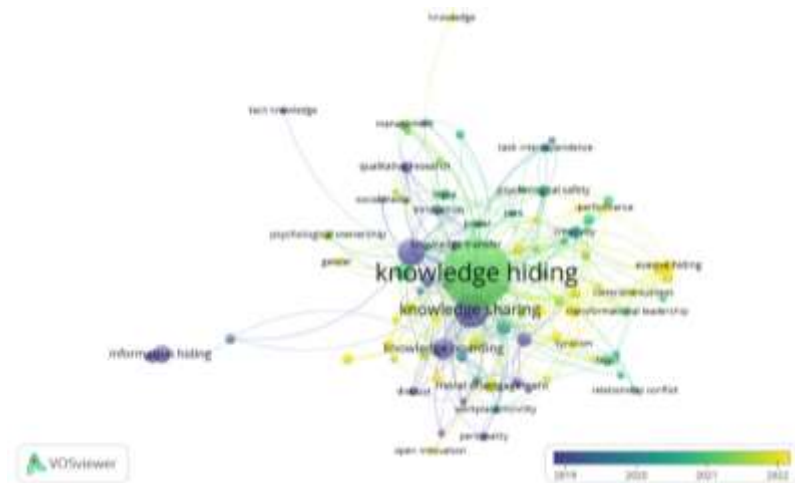


Figure 5. Author's Keywords Overlay Visualization

Figure 6 provides a clear illustration of the evolution of the research theme of knowledge hiding, which is divided into four time periods. The time distribution is based on trends in the number of knowledge hiding articles.

The first period, from 1982 to 2011, was characterized by unclear conceptualization of research on knowledge hiding. The dominant themes were information hiding and knowledge sharing. The second period, from 2011 to 2018, saw the first introduction of the concept of knowledge hiding, and research articles were still rare, with no more than 15 titles per year. The prominent themes during this period were related to knowledge hiding, information hiding, personality, social exchange theory, knowledge hoarding, and innovation. The third period, from 2019 to 2021, saw a sharp increase in the number of articles to 47 per year. The dominant themes during this period were knowledge hiding, knowledge sharing, territoriality, personality, psychological safety, ethical leadership, steganography, India, conservation of resource theory, and task complexity. Finally, during the last two years, the dominant articles were related to leadership, knowledge withholding, and evasive knowledge hiding, after knowledge hiding itself.

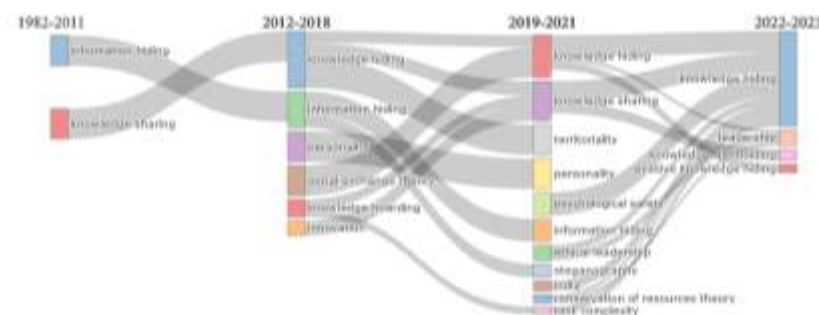


Figure 6. Thematic Evolution

2. Citation Analysis

Table 4 shows the 10 most cited documents related to knowledge hiding research which are also equipped with links to related articles. From this table,

Connelly's (2012) article is the most popular article with 747 citations. The concept of knowledge hiding was first introduced in this article. It defines and describes three dimensions of knowledge hiding. Out of all the articles, the second most cited one was written by Cerne et al. in 2014, with 501 citations. The author discusses the relationship between knowledge hiding and creativity. Meanwhile, Peng's article from 2013 was the third most cited with 336 citations. The author examines the factors that lead to knowledge hiding, such as a sense of psychological ownership over knowledge.

Proposed Future Research Agenda

We have discussed that there is a vast amount of literature available on the research of knowledge hiding, which has helped in gaining a better understanding of the subject. However, there is still a need for further research to add more depth to the existing literature. In this section, we highlight some specific research directions that have been identified.

Table 4. Most Global Cited Documents

Paper	Authors	DOI	Total Citations
Knowledge hiding in organizations	Connelly et al. (2012)	10.1002/job.737	747
What goes around comes around: Knowledge hiding, perceived motivational climate, and creativity	Cerne et al. (2014)	10.5465/amj.2012.0122	501
Why and when do people hide knowledge?	Peng (2013)	10.1108/JKM-12-2012-0380	336
Understanding counterproductive knowledge behavior: antecedents and consequences of intra-organizational knowledge hiding	Serenko & Bontis (2016)	10.1108/JKM-05-2016-0203	314
How perpetrators and targets construe knowledge hiding in organizations	Connelly & Zweig (2015)	10.1080/1359432X.2014.931325	309
How Blockchain can impact financial services—The overview, challenges and recommendations from expert interviewees	Chang et al. (2020)	10.1016/j.techfore.2020.120166	232
Workplace ostracism and knowledge hiding in service organizations	Zhao et al. (2016)	10.1016/j.ijhm.2016.09.009	231
Territoriality, task performance, and workplace deviance: Empirical evidence on role of knowledge hiding	Singh (2019)	10.1016/j.jbusres.2018.12.034	208
Antecedents of organizational knowledge sharing: a meta-analysis and critique	Witherspoon et al. (2013)	10.1108/13673271311315204	205
Understanding knowledge hiding in organizations	Connelly et al. (2019)	10.1002/job.2407	200

Source: secondary data processed, 2023

First, (Connelly *et al.*, 2012) Connelly et al. (2012) introduced a scale to measure knowledge hiding which has been used in numerous studies. Additionally, (Peng, 2012) Peng's (2012) three-item scale and (Serenko and Bontis, 2016) Serenko and Bontis's (2016) 6-item scale are also commonly used. However, these scales were developed from a knowledge hider's perspective, and adjustments have been made by researchers to measure knowledge seekers'

perceptions. Therefore, it is important to carry out further verifications to accurately portray, compare, and test possible differences in the perceptions of knowledge hiders and knowledge seekers.

Second, knowledge hiding research are mainly based on theories such as social exchange, social cognition, social capital, social learning, conservation of resources, territoriality, and psychological ownership. However, additional research is necessary from other theoretical perspectives, such as Theory X to understand why individuals engage in knowledge hiding tend to avoid work. Third, most research on knowledge hiding treats it as a single construct. However, researchers should investigate the three dimensions of knowledge hiding (playing dumb, evasive hiding, and rationalized hiding) both together and separately. The strategy that individuals choose for knowledge hiding may depend on either the nature of the knowledge itself or the nature of the organization they work for.

Finally, researchers are expected to focus more on the consequences of knowledge hiding in the future. Discussion surrounding the effects of knowledge hiding is often considered inadequate (Singh, 2019) (Singh, 2019) and undertheorized (Burmeister *et al.*, 2019). Previous studies have mainly focused on the impact of knowledge hiding on performance, creativity, innovation, and turnover intention, neglecting the exploration of other consequences. Additionally, knowledge hiding is often associated with negative outcomes, but it would be interesting to investigate its potential positive impact, particularly concerning confidential information.

CONCLUSION

To conclude, knowledge hiding is a research topic that is currently experiencing rapid development. However, further investigation is still needed. Based on data analysis of 386 articles from 1988 to 2023 using the Bibliometrix R package and VosViewer, it is evident that there has been significant growth in publication performance and intellectual structure of research. The average annual growth in publications was 11.48%. There has been a surge in the number of publications in the last two years. The Journal of Knowledge Management is the most relevant and influential source in knowledge hiding research. Butt AS, with an H index of 9 points, is the most influential and productive author who has explored topics related to knowledge hiding. Based on the author's keyword analysis, five main clusters of knowledge hiding research were identified. These clusters are concept development, social theory, individual characteristics and leadership styles, conservation of resource theory, and antecedents and consequences of knowledge hiding.

It is important to note that this research has some limitations. Firstly, the study only focused on journal articles from the Scopus database, meaning that it did not include all publications on knowledge hiding. Future research could be improved by using a combination of other databases. Additionally, combining bibliometric methods with other literature study methods such as systematic literature reviews and meta-analysis would provide a more detailed and comprehensive explanation of the topic of knowledge hiding. This would help to better understand the subject matter and provide more accurate and reliable results.

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