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Information Literacy in the Era of Misinformation: A Bibliometric Mapping of Educational Strategies and Interventions 2018 - 2024

Zukhrufa Aura Madani
Department Library and Information Science, Faculty of Communication Science, Universitas Padjadjaran, Indonesia
Email: zukhrufa22001@mail.unpad.ac.id

Rully Khairul Anwar
Department Library and Information Science, Faculty of Communication Science, Universitas Padjadjaran, Indonesia
Email: rully.khairul@unpad.ac.id

Yunus Winoto
Department Library and Information Science, Faculty of Communication Science, Universitas Padjadjaran, Indonesia
Email: yunus.winoto@unpad.ac.id

ABSTRACT
In the midst of the rapid development of information technology, particularly with the dominance of social media and digital platforms, a significant challenge emerges for the global community: misinformation. Information literacy refers to an individual's ability to access, evaluate, and use information effectively and ethically. Misinformation pertains to inaccurate or misleading information that is disseminated by someone who believes it to be true. This research employs a quantitative method with a bibliometric analysis approach. Bibliometric analysis uses evaluative and descriptive approaches to represent research trends and characteristics of a set of publications. The bibliometric analysis reveals a significant increase in publications related to information literacy from 2018 to 2024, reflecting a growing awareness of the importance of these skills in the digital age. This study also identifies leading authors and journals that contribute to the development of this topic, demonstrating strong collaboration among academics and practitioners. Overall, the bibliometric analysis indicates that information literacy is key to empowering individuals in facing the challenges of misinformation in the digital era, while emphasizing the need for more innovative and inclusive educational strategies.

Keywords: *Information literacy, misinformation, bibliometrix.*

INTRODUCTION

In the midst of the rapid development of information technology, particularly with the dominance of social media and digital platforms, a significant challenge arises for the global community: misinformation. This phenomenon refers to the dissemination of incorrect or inaccurate information, whether intentional or unintentional, which can undermine public understanding and exacerbate the crisis of trust in existing information sources (López-González et al., 2023). Misinformation often manifests in the form of fake news, conspiracy theories, or manipulated claims intended to influence public opinion. With social media facilitating the rapid spread of information, false information can easily circulate. Therefore, information literacy has become an essential skill for individuals to discern between true and false information.

Information literacy refers to an individual's ability to access, evaluate, and use information effectively and ethically. This skill encompasses understanding when information is needed, how to find it, and how to assess the credibility and accuracy of that information. Strong information literacy is crucial for helping individuals

identify misinformation, which is increasingly difficult to distinguish in the digital world. As internet and social media usage rises, information literacy has become a vital skill in modern life. Without these skills, individuals are more vulnerable to the spread of false information (Ali & Qazi, 2023).

Social media platforms such as Facebook, Twitter, Instagram, and others enable information to spread rapidly but also provide a space for unchecked misinformation. Social media users often receive information without first verifying its accuracy, creating opportunities for the spread of fake news or hoaxes. This situation is exacerbated by social media algorithms that tend to reinforce informational biases by promoting content that captures users' attention without regard for its truthfulness. Studies show that over 60% of adults worldwide access news through social media, and nearly 40% of them cannot distinguish between valid and false information (Akram et al., 2022).

To address the issue of misinformation, education in information literacy emerges as a highly effective solution. This education aims to equip individuals with skills to seek credible information, assess sources, and critically evaluate the quality of information. Information literacy involves not only technical skills in data retrieval but also critical thinking abilities to assess the context of that information. This is crucial since much of the information circulating on the internet is often distorted or inaccurate. Therefore, critical thinking skills are key in this process.

Moreover, technology can also be leveraged in information literacy education. Integrating digital platforms and fact-checking tools into education can provide a more flexible and adaptive approach as technology continues to evolve. This opens up opportunities for individuals to utilize technology to quickly and easily verify the truthfulness of information.

Research on information literacy in the era of misinformation is highly relevant as it can provide insights into how educational strategies can help address this issue. The primary objective of this research is to map existing literature on strategies and interventions for teaching information literacy conducted from 2018 to 2024. Through this mapping, we can evaluate the approaches that have been utilized and identify gaps and opportunities for further development. By employing a bibliometric approach, this study aims to identify recent trends, leading authors, and journals contributing to this topic's development.

Misinformation is not a new phenomenon; however, its impact has grown significantly with the rapid advancement of information technology. Misinformation has become a major concern in many countries, especially with the rise of digital platforms that allow information to spread without adequate filtering. In many developing countries, an increasing number of people access information through smartphones and mobile internet. This trend increases new users online, including those with limited digital literacy—the ability to effectively access, understand, and use information on the internet (Pandey & Ghosh, 2023). Without these skills, these individuals are highly vulnerable to becoming victims of circulating misinformation.

Misinformation can worsen crises of trust within society, causing confusion and even influencing important decisions at both individual and public levels. Therefore, the ability to filter incoming information and check the credibility of its sources is crucial in preventing the adverse effects of misinformation (Chen et al., 2015). Education in information literacy can equip individuals with the necessary skills to combat misinformation and ensure that the received information is accurate and credible.

Information literacy is an increasingly important skill in this digital age where misinformation can spread rapidly. Education in information literacy—which includes the ability to evaluate and use information wisely—is essential for combating misinformation's spread. This education helps individuals identify credible sources of information while developing critical thinking skills to assess the truthfulness of that information. With appropriate educational strategies in place, information literacy can be a highly effective tool for creating a more informed and critical society capable of facing informational challenges in a digital world.

The importance of information literacy in addressing misinformation has been widely recognized by various studies. For instance, research conducted by Soni (2023) explains that information literacy empowers individuals to understand when they need information as well as how to access, evaluate, and effectively utilize that information. In the context of misinformation, this capability becomes crucial as it enables someone to distinguish between trustworthy sources and those that are not—especially when false or misleading information spreads rapidly on social media and other online platforms. This research also indicates that enhancing information literacy through various educational programs and training can help communities become more vigilant regarding misinformation issues. By providing training focused on skills for evaluating sources and effective search techniques, individuals will be better prepared to face increasingly complex challenges in the digital world. Thus, information literacy is not merely an academic skill but also an essential element in building a more critical society capable of filtering information—especially amid rising misinformation concerns.

In education, information literacy is regarded as a 21st-century skill that needs to be taught at all

educational levels. According to the American Library Association (2018), information literacy is a crucial component of modern education that encompasses not only technical aspects such as how to search for information but also how to critically assess that information. This means that teaching information literacy must prepare individuals to face challenges arising from complex and continuously evolving informational landscapes—particularly in situations where misinformation becomes increasingly widespread. Therefore, education in information literacy plays a vital role in shaping a society capable of intelligently filtering information and making more informed decisions in a world filled with sources that are not always reliable.

Overall, information literacy goes beyond merely being able to search for data on the internet; it teaches individuals to think critically about the found information. Given how quickly misinformation can spread, the ability to differentiate between legitimate and illegitimate data becomes paramount. In this digital age, everyone needs these skills—whether through formal education or other training—to act wisely and critically when consuming information.

LITERATURE REVIEW

a. Fundamental Concepts of Information Literacy

Information literacy refers to an individual's ability to locate necessary information, understand how library organizations operate, and utilize available

information resources, including various formats for presenting information and automated search tools. This skill encompasses the ability to evaluate information and use it effectively, as well as an understanding of the technological infrastructure that supports the transfer of information to others, including its impact within social, political, and cultural contexts.

In general, information literacy can be defined as an individual's capacity to recognize when they need information and possess a set of skills for searching, finding, analyzing, evaluating, and communicating information to meet needs that can solve various problems. Libraries play a crucial role in introducing the concept of information literacy and assisting individuals in developing these skills. Additionally, proficiency in information technology greatly facilitates one's achievement of information literacy. Therefore, information literacy is regarded as a lifelong learning process that equips individuals with the ability to seek information, not only in educational contexts (Septiyantono, 2017).

According to Juditha (2019), information literacy is the ability to recognize the need for information, as well as the ability to access, evaluate, and use that information effectively and ethically. This concept is particularly relevant in today's digital era, where information spreads rapidly and is often inaccurate. Catts and Lau (2008) in Juditha (2019) state that information literacy includes an awareness of the need for information, the ability to obtain it, and an evaluation of the quality of the acquired information. On the other hand, the American Library Association (ALA) defines information literacy as the ability to identify, access, find, evaluate, and use information effectively and ethically.

The SCONUL 7 Pillars model outlines seven key aspects of information literacy:

1. Understanding Information Needs: Knowing what is required.
2. Recognizing Types of Information: Understanding the characteristics of various types of information.
3. Search Strategies: Determining appropriate keywords and search methods.
4. Accessing Information: The ability to search for and obtain information.
5. Evaluating Information: Assessing the relevance and accuracy of found information.
6. Managing Information: Properly managing citations and compiling bibliographies.
7. Presenting Information: Presenting results in a format suitable for the audience.

The goal of information literacy is to achieve lifelong skills that enable individuals to become independent learners in various aspects of life (Septiyantono, 2017).

Information literacy plays a crucial role in supporting lifelong learning and is a core competency in the information age. With strong literacy skills, individuals can distinguish between true information and hoaxes, thereby reducing the risk of spreading false news. Therefore, enhancing information literacy is key to empowering communities in facing informational challenges in today's digital world.

b. Importance of Information Literacy

Information literacy is an essential skill in today's information age, where the flow of information is rapid and abundant. With advancements in information and communication technology, individuals face

the challenge of filtering and managing the information available to them. In this context, information literacy encompasses not only the ability to access and use information but also to evaluate and organize it effectively.

Information literacy skills support individuals in various aspects of life, including education, work, and daily living. In education, information literacy enables students to learn independently and think critically, which aids them in decision-making and problem-solving. In the workplace, these skills are invaluable for enhancing productivity and efficiency, as individuals with information literacy can find appropriate solutions based on accurate data.

Furthermore, information literacy plays a crucial role in creating a society that is more aware of information quality. In a world where fake news and misleading information are often circulated, the ability to evaluate information sources becomes essential. Individuals skilled in information literacy can distinguish between valid and invalid information, allowing them to make better and more responsible decisions.

Libraries, as centers of information resources, also play an important role in supporting information literacy. By providing access to various resources and training on the use of information technology, libraries help communities enhance their literacy skills. This is vital for enabling individuals to optimally utilize technology to meet their informational needs.

The importance of information literacy in addressing the challenges posed by the spread of false information, such as hoaxes, is increasingly urgent in today's digital era. In this context, information literacy includes an individual's ability to access, evaluate, understand, and use information critically. With easy access to information through social media and the internet, significant challenges arise from the spread of hoaxes that can lead to public confusion, poor decision-making, and potential harm to society.

Information literacy enables individuals to differentiate between accurate and trustworthy information and false or biased content. With these skills, individuals can recognize the characteristics of hoaxes, such as unreliable sources or the use of emotional language. Additionally, information literacy aids in verifying the truthfulness of information through fact-checking and utilizing credible sources. This is important for developing a skeptical attitude toward received information so that individuals do not accept it uncritically.

Education and training in information literacy should be integrated into educational curricula as well as conducted outside school environments. With a better understanding of information literacy, individuals can develop higher digital intelligence and contribute to a more informed and democratic society. Collaboration among educational institutions, government bodies, media industries, and the broader community is also necessary to build a society that is critical of false information. These joint efforts will help combat the spread of hoaxes and maintain the integrity of information in this challenging digital era.

c. Challenges of Misinformatio in the Digital Era

Misinformation is a form of misleading information, similar to fake news. Fake news is defined as "false information that is deliberately created and can be verified," aimed at manipulating people's perceptions of facts, events, and real statements. Although the terms misinformation and fake news often overlap because both involve incorrect information, misinformation is spread without the intent to deceive, whereas fake news is intentionally created for that purpose (Pandey & Ghosh, 2023).

Misinformation refers to inaccurate or erroneous information that is disseminated by someone who believes it to be true. According to The Debunking Handbook (2020), this misinformation arises from errors without any intent to mislead. This phenomenon can occur due to technological advancements that outpace human readiness, leading to the acceptance of disseminated information as accurate without further verification (Nur'afra et al., 2024).

Misinformation is misleading information that is created or disseminated without manipulative intent. Two main differences between misinformation and disinformation are: 1) fake news mimics the format of mainstream news, while disinformation does not; and 2) although disinformation is deliberately created to mislead, individuals involved in misinformation do not realize that the information they share is false (Dame, 2022).

Misinformation has always been a threat, and its spread increased significantly during the pandemic. This increase has been exponential and widespread across all media platforms. As the spread of misinformation has grown, researchers have sought various ways to address this issue. Several models have been developed to detect rumors and fake news.

Social media has become the primary channel for spreading false news or hoaxes, and the tendency of Indonesian society to quickly share information in both real and virtual worlds without verifying news sources exacerbates this situation. This habit leads many people to believe information immediately without considering its truthfulness and hastily share it with other social media users.

Here are three tips for identifying fake news: (i) unreliable or nonexistent sources, such as unknown authors, unverified accounts, or a lack of authentic links supporting the news; (ii) poor quality of news, which can be visually recognizable, such as manipulated images or videos, informal or incorrect language use, and excessive use of hashtags and emojis; and (iii) content or language that shows bias and seeks to provoke extreme reactions and emotions (Ali & Qazi, 2023).

To prevent the spread of hoaxes, several effective steps can be taken (Muarifillah et al., 2024):

1. Enhance Source Credibility: Ensure that information comes from trusted sources, such as official news sites or recognized research institutions. Verify the credibility of the authors and check whether the information is supported by valid data or research.
2. Verify Information: Do not rely on a single source. Check information from various trusted sources to ensure its accuracy, including seeking confirmation from other reviews or studies.
3. Recognize Signs of Misinformation: Be cautious of information that triggers strong emotions or lacks clear evidence. If something seems too good to be true, conduct further checks to verify its accuracy.
4. Engage the Community: Educate the public about the importance of verifying truth before disseminating information. Encourage them to report hoax news to authorities.
   By implementing these steps, we can strengthen information literacy and reduce the negative impact of fake news in society

d. Strategies for Enhancing Information Literacy

Strategies to enhance information literacy in the digital age are crucial for helping communities understand and manage the abundant information available. Below are explanations of these strategies:

1. Community Education: This strategy involves educational programs designed to raise public awareness about the importance of data and information. Through workshops, seminars, and training sessions, communities are taught how to access, evaluate, and use information wisely. The materials presented include the dangers of misinformation and how to recognize it.
2. Interactive Approaches: Community service activities are conducted using interactive methods, such as case studies and simulations, to teach critical skills in distinguishing credible information from unreliable sources. This aims to enhance practical understanding of digital risks and how to address them.
3. Relevant and Up-to-Date Materials: Information literacy programs need to be continuously updated to remain relevant with technological advancements and the latest information trends. This ensures that communities are prepared to face evolving informational challenges.
4. Ongoing Evaluation: After program implementation, evaluations are conducted to measure the community's understanding of digital risks. Pre- and post-activity surveys help analyze the effectiveness of the programs and provide recommendations for future improvements.

   By implementing these strategies, it is hoped that communities will become more critical in evaluating the information they receive, thereby reducing the spread of hoaxes and improving overall information literacy.

METHODS

This study employs a quantitative method with a bibliometric analysis approach. Bibliometric analysis uses evaluative and descriptive approaches to represent research trends and characteristics of a set of publications (Muhammad et al., 2022). As a quantitative method, this analysis aims to illustrate research trends and the characteristics of existing publications. Bibliometric visualization methods are utilized to provide a structural overview of specific research areas (Sanusi et al., 2023). Bibliometric studies can also depict collaboration among authors researching particular topics. Through mapping using this method, keywords that are common across each identified article will emerge (Putra Perkasa, 2022). Complex bibliometric methods have been applied in big data analysis to uncover relationships among bibliometric units, such as documents, authors, institutions, and keywords. Additionally, this method can assist in identifying patterns, monitoring topic dynamics, recognizing research trends, and predicting future developments (Steinerová & Ondrišová, 2024).

Data collection for this research was conducted by extracting information from the Scopus database regarding information literacy in the era of misinformation, covering the period from 2018 to 2024 and focusing solely on scholarly articles. Through the bibliometric approach, this study can produce visualizations and tables that display data based on authors, publication years, citations, countries of origin, information sources, and research trends. This analysis encompasses all relevant document data related to the researched topic.

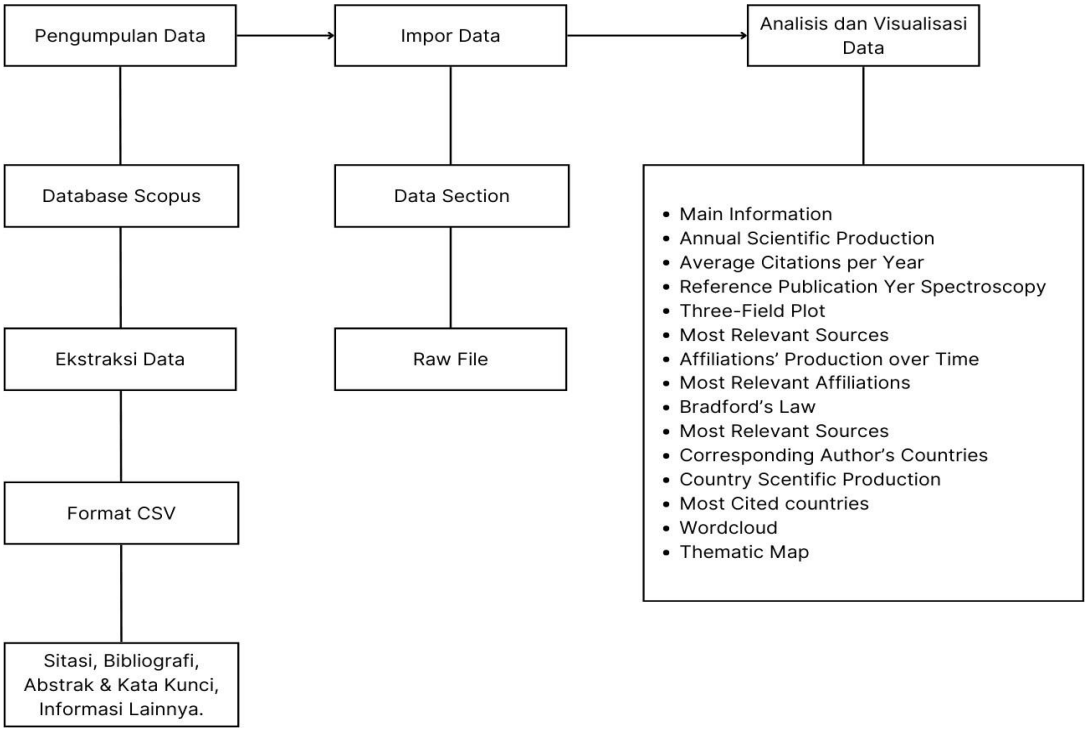

Figure 1. Research Flow Using Biblioshiny Source: Research Processing Results, 2024

Advanced searching in the Scopus database was used in this study to obtain a dataset representing the specified topic. Documents from the database were filtered to extract important information, which was then imported into Biblioshiny, a web interface developed by bibliometrix (Zupic & Čater, 2015). Data from 104 scholarly articles published in Scopus with the keywords 'Information AND Literacy AND Misinformation AND Educational' were extracted through advanced searching in CSV (Comma Separated Values) format for easier data processing. From a total of 130 articles, the remaining 104 scholarly articles were cleaned to ensure that only academic articles were used. This research employed Boolean search techniques to find relevant literature. After data extraction from the Scopus database, bibliometric analysis and visualization were conducted.

In the data analysis of this research, the Biblioshiny software application from bibliometrix was used for visualizing bibliometric data. Biblioshiny is an open-source tool that operates on the R bibliometrix package and can be used to conduct comprehensive science mapping analyses. R is a free programming language and environment for statistical computing, supported by the R Core Team and the R Foundation for Statistical Computing (Nurhayati & Lawanda, 2023). By utilizing Biblioshiny, this study analyzes scholarly publications, particularly in terms of impact, productivity, and collaboration among countries, institutions, journals, and research areas. The results of the data collected from the Scopus database are presented as follows.

Category	**Information**
Research Database	Scopus
Time Range	2018-2024
Language	English, Spain, and Portugues

Keyword Search	Information AND Literacy AND Misinformation AND Educational
Document type	Article
Data Extraction	Exported with complete records (citation information, bibliographical information, abstract & keywords, and other information with specifics on the aspect of including references) in CSV format.
Sample Quantity	104

Table 1. Data Source Set and Selection Source: Research Processing Results, 2024

The collection of data sources and subjects was obtained from the bibliographic mapping of literature available on the Scopus website. To visualize information from this bibliographic research data, the researcher used the Bibliometrix Biblioshiny software, which aims to provide better and diverse visualizations and represent the results obtained from the topic of information literacy in the era of misinformation between 2018 and 2024. Biblioshiny was utilized in this study for visualizing co-occurrence networks, countries with the highest citations, WordClouds, and thematic maps.

RESULTS AND DISCUSSION

The researcher searched the Scopus database using the keywords 'Information AND Literacy AND Misinformation AND Educational' with a publication date range of 2018 to 2024 for the preparation of this article. Below is the information that has been extracted and summarized.

Overview

Description	Information
Time Range	2018-2024
Source (Journal, Book, etc.)	86
Document	104
Annual Growth Rate %	79,1
Average Document Age	1,81
Average Citations per Document	14,06
Reference	4597
Author	490
Documents With One Author	13
Multi-author Document Author	4,8
International Co-Authoring	20,19
Document Type (Article)	104

Table 2. Key Information of the Dataset Source: Research Processing Results, 2024

By using the search keywords 'Information AND Literacy AND Misinformation AND Educational' within the time frame of 2018 to 2024, this study enables a long-term trend analysis of scholarly article publications. A total of 104 documents identified as scholarly articles have been analyzed through this

bibliometric study. The dataset was obtained by extracting information from the Scopus database. The data acquired from this extraction serves as a crucial foundation for the bibliometric analysis related to the topic of Information Literacy in the Era of Misinformation. The dataset used has been carefully compiled, and the results are presented neatly in the attached table.

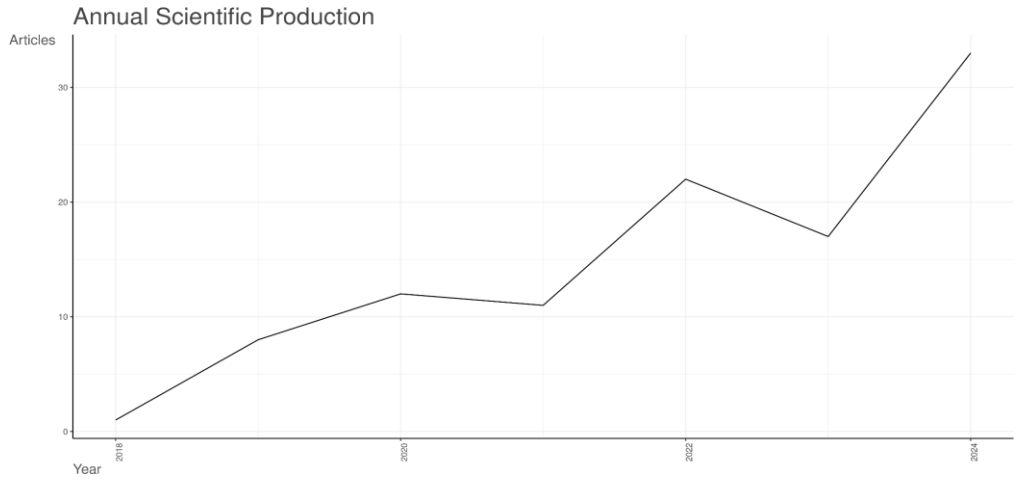

Figure 2. Annual Production of Scholarly Articles Source: Research Processing Results, 2024

In Figure 2, it can be seen that within the range of years studied on the theme of information literacy in the era of misinformation, there is a significant upward trend in the annual production of scholarly articles, peaking in 2024 with a total of 33 articles. This figure illustrates the number of scholarly articles published each year on this topic. There is variation from year to year, with significant increases almost every year. The intensity of this rise indicates an increase in research activity or a deeper focus during this period. Despite fluctuations in some years, overall, scholarly production shows an upward trend over time, increasing from just 1 article published in 2018 to 33 articles in 2024.

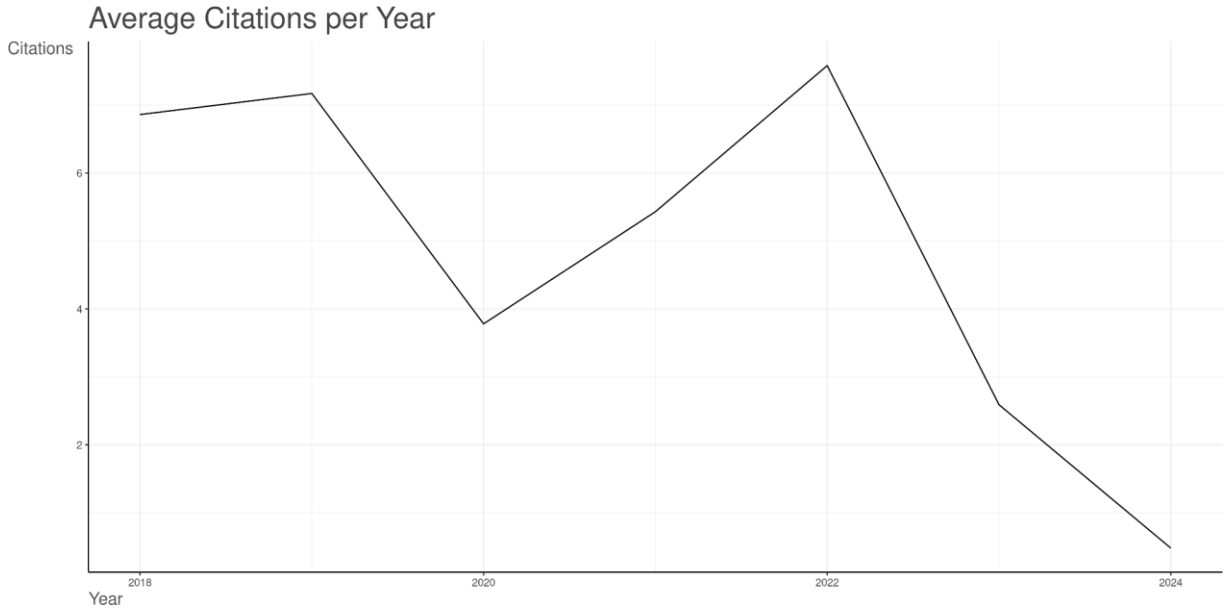

Figure 3. Average Citations per Year Source: Research Processing Results, 2024

Figure 3 displays the average number of citations for scholarly articles per year. Over time, there is noticeable variation in the annual average citations, with some years showing higher values than others. The number of citations for scholarly articles increased in 2022, reaching an average of 7.58 citations per year; however, it declined in 2024 to an average of only 0.48 citations per year. Fluctuations in the average citations per year occurred in certain years within this research topic. There was a significant increase in 2019, where the average reached 7.17 citations per year. The variation in the average number of annual citations for scholarly articles indicates that periods of intensified research or greater focus occurred during those years.

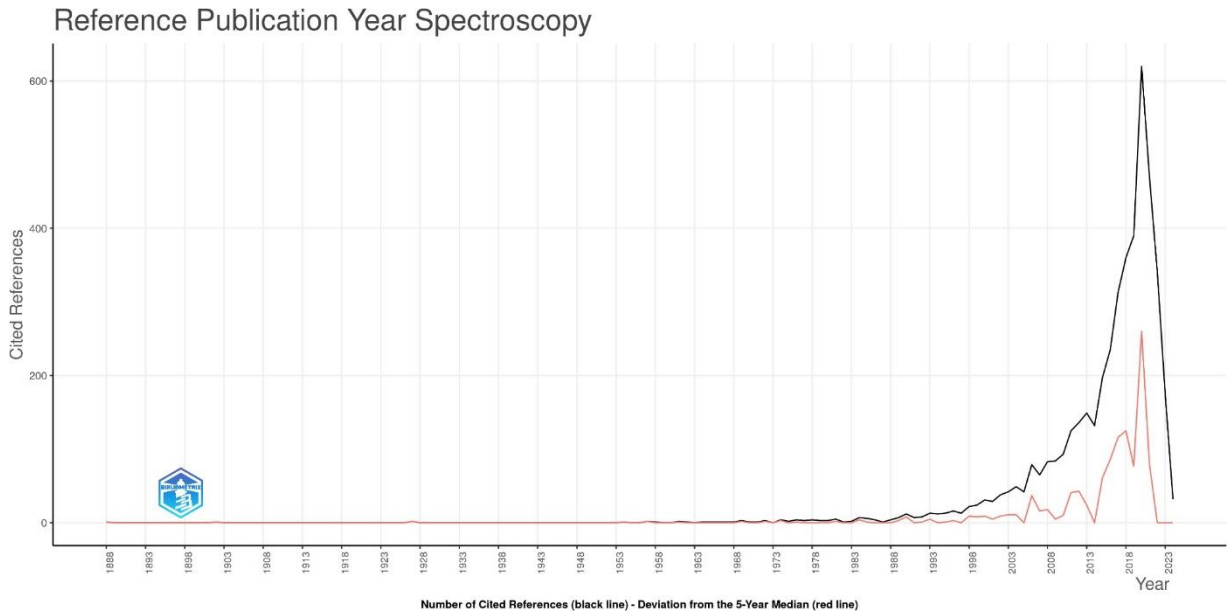

Figure 4. Year of Publication of References (RPYS) Source: Research Processing Results, 2024

Next, an analysis of the references used in the publication of scholarly articles was conducted based on the year in the field of spectroscopy. RPYS (Reference Publication Year Spectroscopy) is a quantitative method used to identify the historical origins of a field and research topic. RPYS constructs a temporal profile of the references cited in a series of articles, emphasizing the publication years that contain relatively significant findings (Baek & Doleck, 2020). The most frequently cited references in scholarly articles on this topic originate from the year 2020, with a total of 620 references.

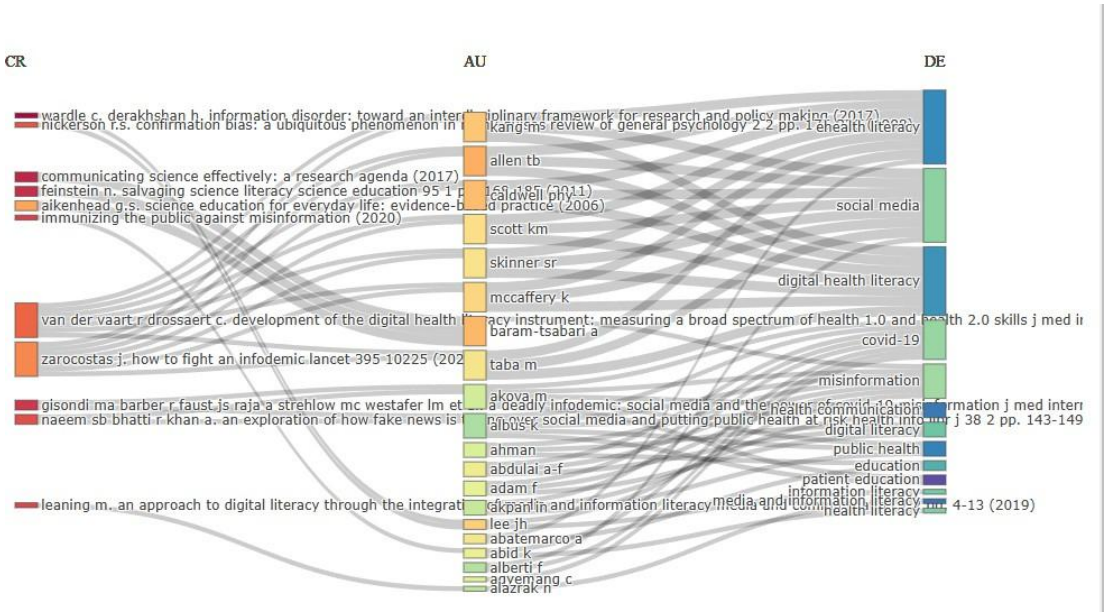

Figure 5. Three-Field Plot
Source: Research Processing Results, 2024

In this figure, the Three-Field analysis is used to illustrate the relationships among three key elements in research on information literacy in the era of misinformation: journals (left), authors (center), and keywords (right). These three fields are interconnected through gray lines, which indicate the relationships between the elements. The size of the boxes in each field represents the number of publications associated with each element, providing insight into their contributions or influence in this research area.

In the journal field, several indexed journals are identified that publish scholarly articles on the topic of

information literacy in the era of misinformation. The journal that publishes the most articles on this topic is the Journal of Information Science (orange box), which is connected to several leading authors. Other journals involved in this topic include Information Processing & Management and Library & Information Science Research. The size of the boxes for these journals reflects the number of articles published, indicating that these journals are quite active in publishing research related to information literacy and misinformation.

In the center section representing authors, there are 15 top authors who frequently publish articles on information literacy in the era of misinformation. The size of the boxes in this author field indicates the number of articles they have produced. Some prominent authors in this field include Penny A. Williams, Linda C. Lowry, and David T. Schall. These authors have numerous connections with the aforementioned journals and are key references in research on information literacy in the era of misinformation. For example, Penny A. Williams is notably productive in publishing on information literacy, as reflected by her larger box size compared to other authors.

In the keyword field, we can see several main topics that frequently appear in research on information literacy in the era of misinformation. The most commonly used keywords include "information literacy," "digital literacy," "media literacy," "fake news," and "misinformation." These terms represent key issues that are central to this research, with "information literacy" and "fake news" being the two most dominant keywords. Each keyword is connected to authors who produce many related scholarly articles, such as Penny

A. Williams, who often examines information literacy and ways to address misinformation in digital media.

Overall, this figure provides a clear depiction of the network among researchers, journals, and keywords in research on information literacy in the era of misinformation. The Journal of Information Science serves as a hub for scholarly publications on this topic, while authors like Penny A. Williams and Linda C. Lowry dominate scientific contributions. The main keywords that emerge, such as "information literacy" and "fake news," reflect the primary focus of research in this era of misinformation. This figure offers comprehensive insights into trends and contributions within this research area while identifying important areas that require further investigation.

Author Analysis

No	Author	Article	Articles Fractionalized
1	Allen, Tiffany B.	2	0.23
2	Baram-Tsabari, Ayelet	2	1.00
3	Caldwell, Patrina H.Y.	2	0.23
4	Kang, Melissa	2	0.23
5	Lee, Jin Ha	2	0.70
6	Mccaffery, Kirsten	2	0.23
7	Scott, Karen M.	2	0.23
8	Skinner, S. Rachel	2	0.23
9	Taba, Melody	2	0.23
10	Abatemarco, Atiera	1	0.20

Table 3. Top 10 Authors
Source: Research Processing Results, 2024

Table 3 presents the results of the dataset analysis, showing the top ten authors in the field of information literacy in the era of misinformation from 2018 to 2024. Based on the table, authors such as Allen, Baram, and

Caldwell, along with several others, emerge as key contributors, each having published two articles. However, when examining the Articles Fractionalized data, their contributions vary in terms of relative proportions.

No	Author	Year	Title	Number of Citations	Journal
1	Baram-Tsabari, A.	2020	Can Science Literacy Help Individuals Identify Misinformation In Everyday Life?	100	Science Education
2	Taba, M., Allen, T. B., Caldwell, P.H.Y., Skinner, S. R., Kang, M., Mccaffery, K., Scott, K.M.	2022	Adolescents' Self-Efficacy And Digital Health Literacy: A Cross-Sectional Mixed Methods Study	30	Bmc Public Health
3	Baram-Tsabari, Ayelet	2024	Epistemic Networks And The Social Nature Of Public Engagement With Science	5	Journal Of Research In Science Teaching
4	Taba, M., Allen, Tiffany B., Caldwell, P.H.Y.., Skinner, S. R., Kang, M., Mccaffery, Kirsten., Scott, Karen M.	2024	Developing An Educational Resource Aimed At Improving Adolescent Digital Health Literacy: Using Co-Design As Research Methodology	2	Journal Of Medical Internet Research
5	Lee, J.H.	2023	The Use Of An Escape Room As An Immersive Learning Environment For Building Resilience To Misinformation	2	Journal Of Librarianship And Information Science
6	Lee, Jin Ha	2024	The Role Of Narrative In Misinformation Games	0	Harvard Kennedy School Misinformation Review

7	Abatemarco, Atiera	2024	Piloting An Educational Approach To Assess Ehealth Literacy And Evidence-Based Medicine In Integrative Health: A Feasibility And Validation Study	0	Journal Of Integrative And Complement ary Medicine

Table 4. Top 7 Most Cited Scholarly Articles Source: Research Processing Results, 2024

The scholarly article titled "Can Science Literacy Help Individuals Identify Misinformation In Everyday Life?" authored by Ayelet Baram-Tsabari in 2020 is the most cited article in the field of information literacy in the era of misinformation, with a total of 100 citations. This indicates that Baram-Tsabari's work has become a relevant piece of literature in research on information literacy within the context of misinformation, given the number of scholarly articles referencing this publication published in the journal Science Education. This article ranks highest in searches related to the topic of information literacy in the era of misinformation in the Scopus database.

Affiliation Analysis

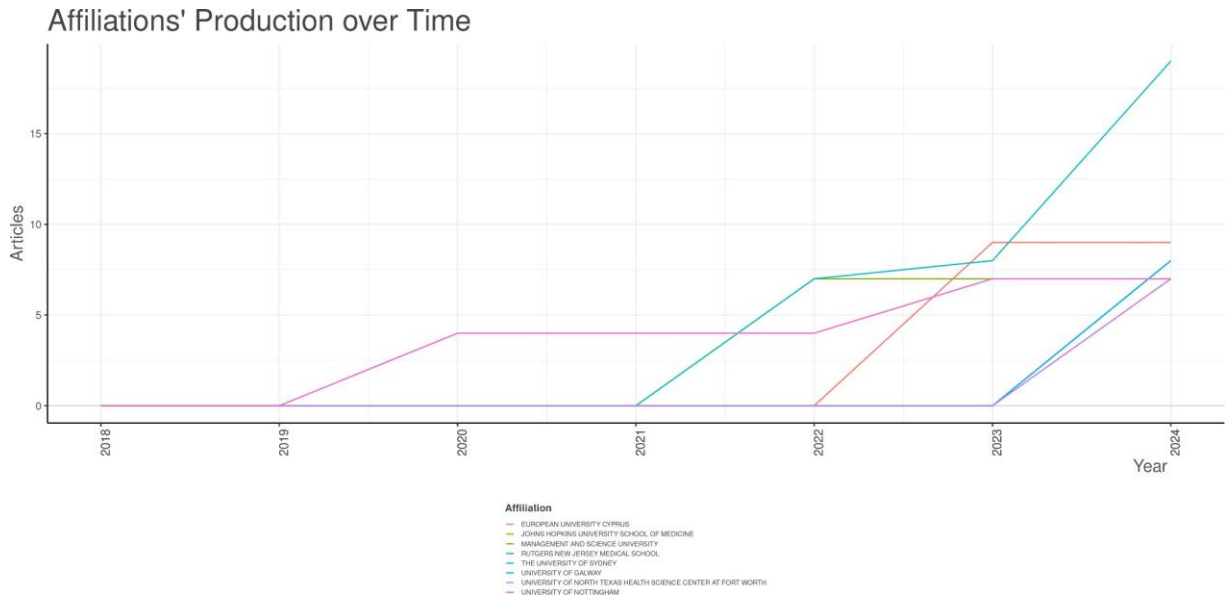

Figure 6. University Production Over Time Source: Research Processing Results, 2024

Figure 6 illustrates the analysis of university production over time in the publication of scholarly articles related to this topic. The University of Sydney is the leading university in producing scholarly articles on information literacy in the era of misinformation, showing a significant increase from 7 articles in 2022 to 19 articles in 2024. Additionally, European University Cyprus also demonstrated remarkable growth in the number of publications, rising from 9 articles in 2023 to 9 articles in 2024. This analysis indicates a continuity in the publication of scholarly articles, allowing for annual increases compared to other universities in this Scopus dataset.

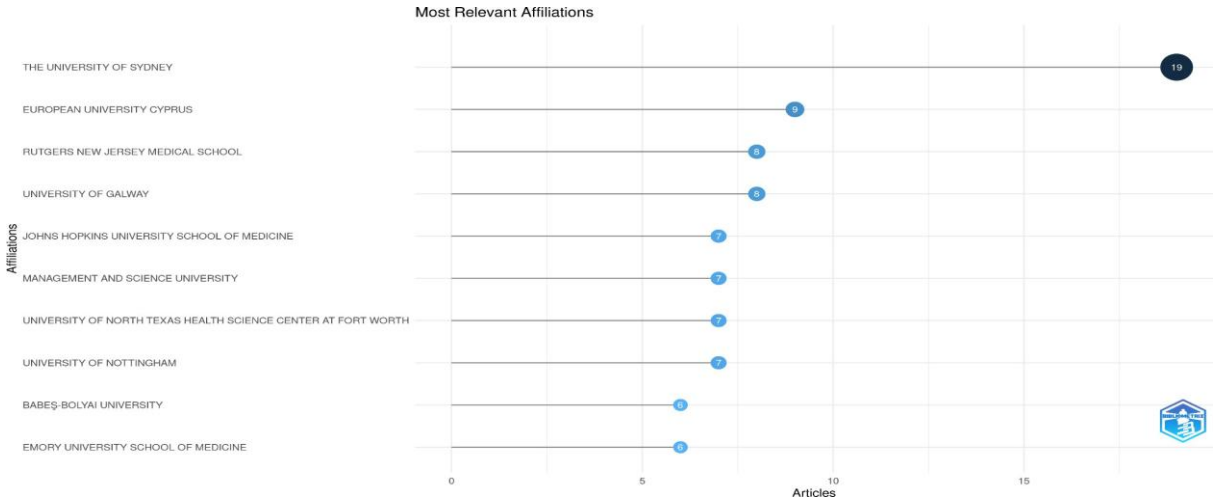

Figure 7. Most Relevant Affiliations

Source: Research Processing Results, 2024

Figure 7 presents a bibliometric analysis of affiliations that are most relevant, providing an illustration of the contributions made by universities in publishing articles on information literacy in the era of misinformation. It appears that The University of Sydney stands out as the most relevant institution, with a total of 19 articles reflecting its significant role in this research topic. European University Cyprus also demonstrates substantial growth, with an increase in the number of articles from nine in 2023 to nine in 2024. Other universities such as Rutgers New Jersey Medical School, University of Galway, and Johns Hopkins University School of Medicine consistently contribute to this topic, indicating continuous involvement in information literacy research. Furthermore, the diversity of institutions from various countries underscores that information literacy in the era of misinformation is a global focus, with contributions from entities like Management and Science University, University of North Texas Health Science Center at Fort Worth, and University of Nottingham adding dimensions to the diversity of this research. The enhanced participation from previously less-active universities signifies potential expansion in future research on information literacy as well as opportunities for cross-institutional collaborations.

Journal Analysis

The subsequent journal analysis focuses on journals with the aim of providing segmentation of journal publications related to information literacy in the era of misinformation. This analysis employs Bradford's Law to determine the productivity levels of journals, allowing for the identification of which journals publish the most scholarly articles and which have the highest scientific relevance. The results of this journal analysis based on Bradford's Law provide deep insights into the structure of scientific literature by identifying key journals and understanding the level of focus across various categories.

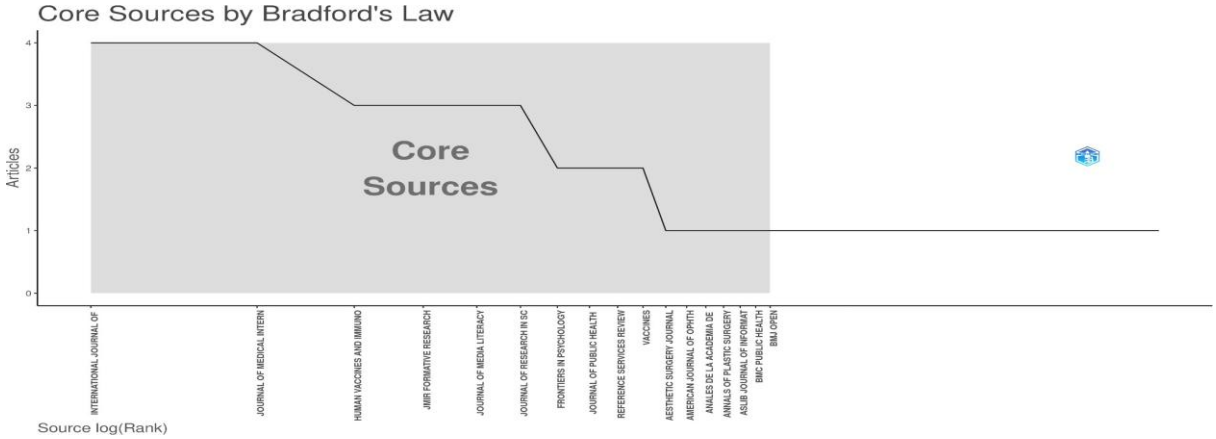

Figure 8. Journal Clustering with Bradford's Law Source: Research Processing Results, 2024

Zone	Rank	Number of Journals	Number of Publications
Zone 1	1-17	17	35
Zone 2	18-52	35	35
Zone 3	53-86	34	34

Table 5. Journal Clustering with Bradford's Law Source: Research Processing Results, 2024

In Table 5, the research on information literacy in the era of misinformation classifies journals into three zones based on analysis using Bradford's Law. This segmentation represents the classification of journals in the Scopus database. Zone 1 consists of 17 journals ranked first, which publish 35 scholarly articles. The interpretation of this zone suggests that the journals included here exhibit a deep and specific focus on the topic of information literacy in the era of misinformation. Zone 2 comprises 35 journals ranked between 18 and 52, which also publish 35 scholarly articles. Placement in this category indicates a wider scope of research topics and lesser specificity towards the targeted subject matter. Meanwhile, Zone 3 covers 34 journals ranked between positions 53 and 86, which similarly publish 34 scholarly articles. Further analysis continues with the identification of the most relevant journals concerning digital literacy in the era of misinformation.

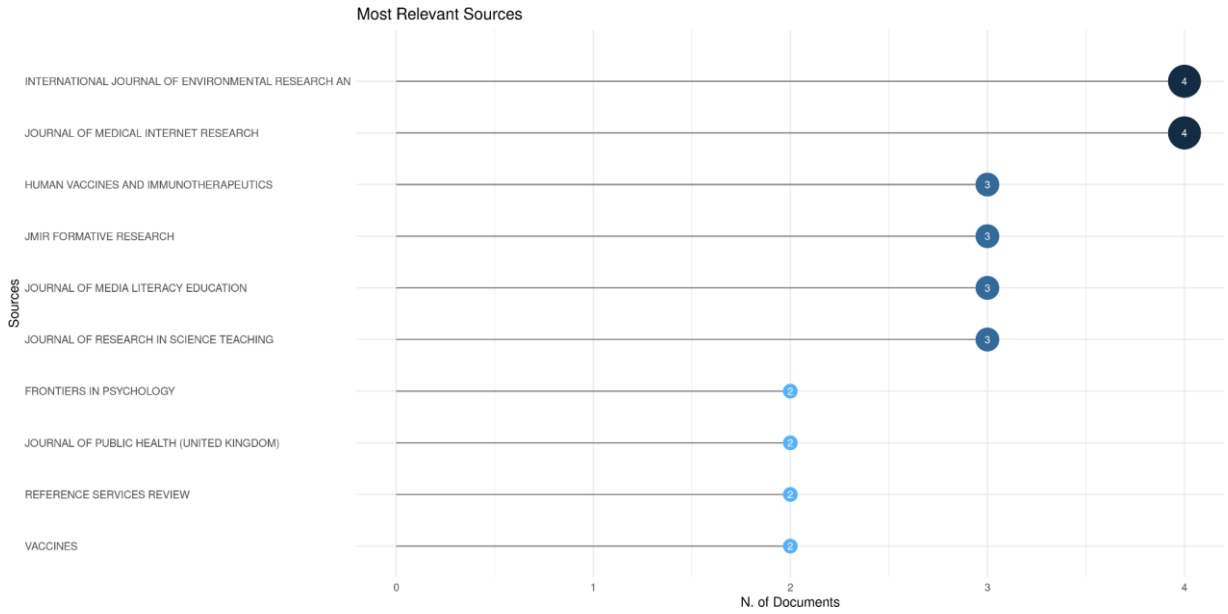

Figure 9. Most Relevant Sources Source: Research Processing Results, 2024

Figure 9 presents information about several of the most relevant journals based on the number of articles published on the topic of information literacy in the era of misinformation. The International Journal of Environmental Research and the Journal of Medical Internet Research each published 4 articles, making them the most relevant sources of information in this field. These journals have a significant impact, with a total of 4 articles published on this topic. Additionally, there are 4 other scholarly journals that also published

3 articles regarding information literacy in the era of misinformation, followed by 4 journals that published 2 articles. An analysis of these most relevant journals can help researchers understand which journals have influence in the field of information literacy in the era of misinformation and assess their relevance and impact within the scientific literature in Scopus.

Country Analysis

The analysis of the countries involved in this topic aims to provide a deeper understanding of the impact and significance of research originating from various demographic regions. By exploring contributions from different countries, we can identify patterns and trends that may vary based on the social, cultural, and economic contexts of each region. This not only enriches the existing literature but also aids in formulating

more effective and relevant research strategies to address the challenges of information literacy in the era of misinformation on a global scale.

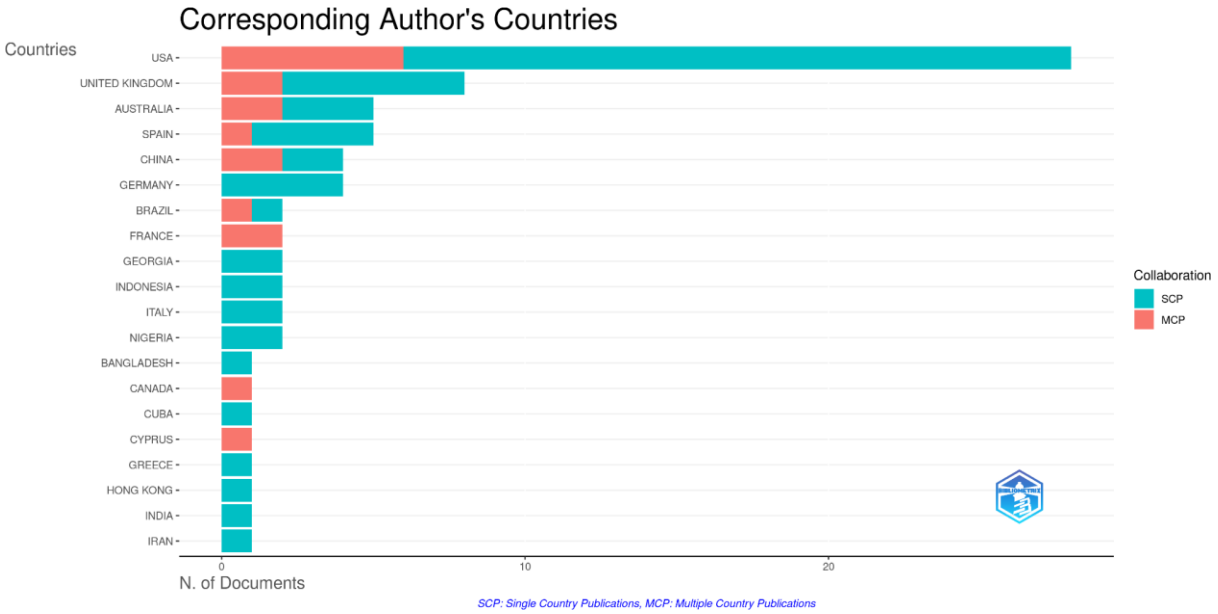

Figure 10. Corresponding Author Countries Source: Research Processing Results, 2024

Figure 10 presents an analysis of the countries of authors involved in this scholarly article topic, with calculations for Single Country Publications (SCP) and Multiple Country Publications (MCP). The analysis results indicate that the United States published 28 scholarly articles, with 22 of these being SCP and 6 MCP. This shows that authors from the United States collaborated in publishing 22 articles with co-authors from the same country, while the remaining 6 articles resulted from collaborations with authors from other countries. Furthermore, authors from the United Kingdom published articles resulting from collaboration with authors within the same country a total of 6 times, as well as collaborating with authors from other countries 2 times. The analysis of corresponding author countries is useful for understanding patterns of inter-country collaboration as well as collaboration among authors within the same country. Thus, this information can provide insights into the global collaboration network in research on information literacy in the era of misinformation.

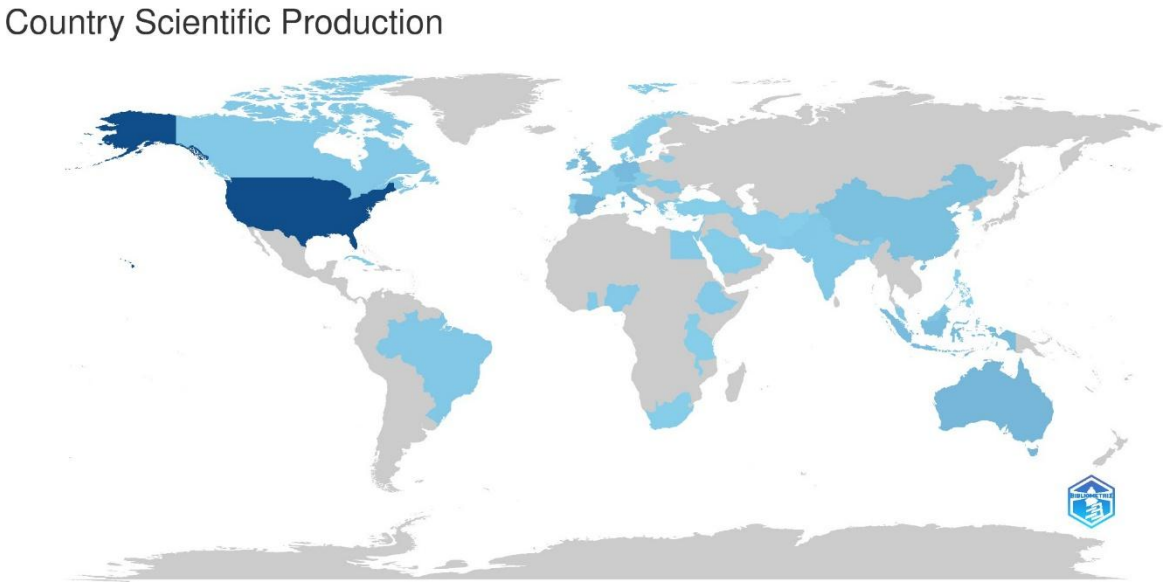

Figure 11. Scientific Production by Country Source: Research Processing Results, 2024

No	Country	Articles	Year Range	Number of Citations
1	USA	156	2018-2024	538
2	Spain	29	2018-2024	23
3	Australia	27	2018-2024	42
4	UK	24	2018-2024	104
5	Germany	22	2018-2024	3
6	Indonesia	20	2018-2024	37
7	Italian	18	2018-2024	22
8	China	16	2018-2024	29
9	Ireland	15	2018-2024	0
10	Netherland	13	2018-2024	10

Table 6. Scientific Production by Country Source: Research Processing Results, 2024

Table 6 and Figure 11 display the interpreted results regarding the quantity of scholarly articles related to information literacy in the era of misinformation, segmented by various countries. This analysis considers the number of articles published, the publication timeframe, and the citation count in the Scopus database. Researchers from the United States hold the top position with a total of 156 scholarly articles published between 2018 and 2024, garnering 538 citations. This indicates that the United States exhibits high rates of scholarly article production and contributes substantially to global research on information literacy in the era of misinformation. Conversely, Spain published 29 articles but achieved fewer citations. Other nations, such as Indonesia and Italy, also contributed meaningfully to global scientific production, each publishing 20 and 18 scholarly articles respectively. Although England had fewer scholarly articles compared to other countries, they managed to achieve a high citation count of 104. This suggests that research from England tends to have a greater impact.

Overall, this table depicts the diversity of national contributions to the global scientific literature on this topic, with the United States leading in terms of both article numbers and citations, while other nations offer unique contributions through focused research and impacts.

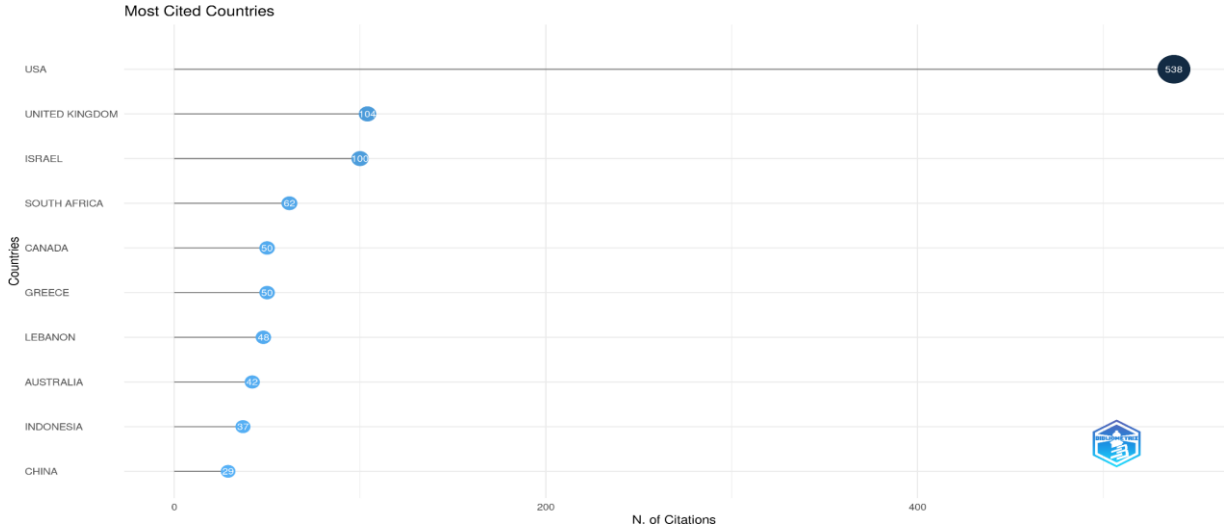

Figure 12. Countries with the Most Citations Source: Research Processing Results, 2024

The country with the highest number of cited scholarly articles is the United States, which recorded 538 citations. This figure indicates that publications from the United States are frequently referenced by researchers and scientists worldwide, particularly in the Scopus database. The United Kingdom follows with 104 citations. There is a significant difference between the citations of scholarly articles from the United States and Finland, while Israel has a citation count that is not far behind, at 100 citations. This reflects that, in the context of information literacy in the era of misinformation, scholarly articles from the United States and the United Kingdom have high global recognition and relevance regarding the scientific contributions from both countries.

Trend Analysis

Figure 13. WordCloud
Source: Research Processing Results, 2024

This word cloud visualization displays an analysis of trends related to the topic of information literacy in the era of misinformation within the Scopus database. The word "human" appears 41 times out of a total of 104 scholarly articles in the database, indicating that the topic of information literacy in the era of misinformation is closely related to human presence. The most frequently found words in the titles of scholarly articles on this topic are "human," "adult," "article," "female," and "health literacy," each appearing 41, 33, 33, 33, and 33 times respectively. The analysis of keywords in the titles of these articles reveals several dominant terms that reflect the primary focus of research in this field.

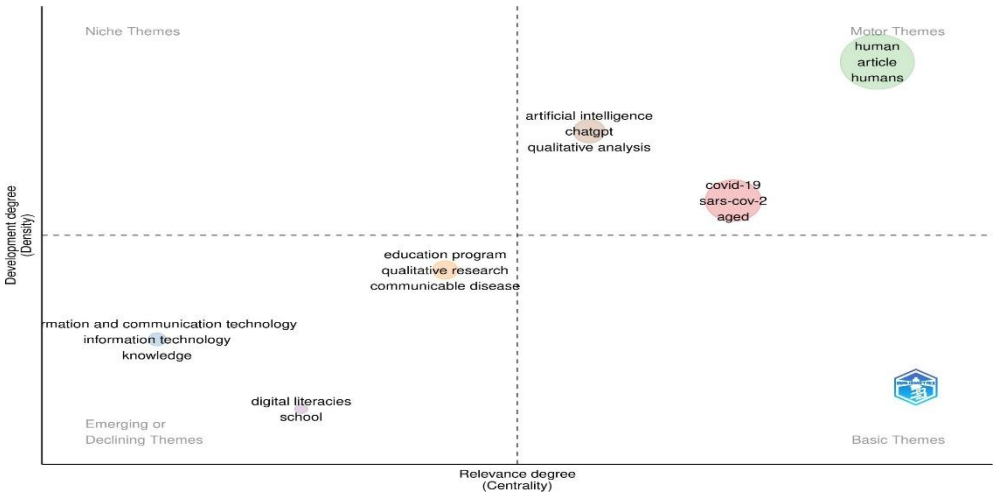

Figure 14. Thematic Map
Source: Research Processing Results, 2024

This thematic map consists of six clusters. The fundamental principle of the thematic map is that higher density indicates a more trending topic being discussed. Meanwhile, centrality moving to the right shows the relevance between the topics (Tantia et al., 2023). In the context of information literacy in the era of misinformation, no specific niche themes were identified; however, emerging themes include "education program qualitative research communicable disease," "information and communication technology knowledge," and "digital literacies school." Basic themes were not identified in this research. On the other hand, the motor themes that emerged are "article intelligence chatgpt qualitative analysis," "human article humans," and "covid-19 sars-cov-2 aged." These four important themes reflect developments in research in this field.

CONCLUSION

Bibliometric analysis reveals a significant increase in publications related to information literacy from 2018 to 2024, reflecting a growing awareness of the importance of these skills in the digital era. This research also identifies leading authors and journals contributing to the development of this topic, demonstrating strong collaboration among academics and practitioners.

Despite the abundance of research, there are still gaps in the approaches used, particularly regarding the practical implementation of information literacy education in various contexts. Further research is needed to explore more effective strategies for teaching these skills to the broader community, including groups that are less exposed to technology.

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