Mapping Research Trends on Archives: A Bibliometric Study

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Abstract

The development of archival research in Indonesia can be determined by carrying out bibliometric analysis. This research was conducted to provide a reference to researchers in the archival field regarding current trends in archival research. This research aims to explore the development of research in the field of archives from 2019 to 2024. Data obtained and processed from Google Scholar using Harzing's Publish and Perish (PoP) software amounted to 930 articles. Data analysis using VOSviewer visualization. The research results show that the most researched research theme is "archives management information systems". The research location most often used as a place for research is "government institutions/agencies". The most rapidly growing research trends are clusters related to "archival digitization", "website-based archives", and "archival electronic applications". Meanwhile, the themes of "static archives" and "archivists" are research themes that may be approaching saturation.

Keywords: Archival research, bibliometrics, VOSViewer

INTRODUCTION

This research aims to determine research trends regarding the management of various types of archives and their depreciation. Archives have a very broad meaning, in Law No. 43 of 2009 concerning Archives, archives are records of activities or events in various forms and media in accordance with developments in information and communication technology created and accepted by state institutions, regional governments, educational institutions, companies, political organizations, community organizations and individuals in the implementation of social, national and state life [1].

Archives also consist of several types, including dynamic archives, vital archives, active archives, inactive archives, static archives, maintained archives and general archives (Law of the Republic of Indonesia Number 43 of 2009 concerning Archives). We can find archives in every activity whether large or small in scope. Currently, there are still many people who are not optimal in managing archives and there are still many who underestimate the importance of archives. In its administration, archives are organized by state institutions, regional governments, educational institutions, companies, political organizations, community organizations and individuals, as well as ANRI as the organizer of national archives (Law of the Republic of Indonesia Number 43 of 2009 concerning Archives).

Archives are one of the important sources of information that can support the administrative process in every activity. As a record of information from all organizational activities, archives function as a memory center, decision-making tool, proof of the organization's existence and for other organizational purposes [2]. The

importance of archives in supporting various activities means there must be good management starting from creating archives, managing archives, to depreciating archives.

In several studies research has been carried out on several topics ranging from archive creation to archive depreciation, conventional archives to digital archives and from various institutions, including state, government and individual archives. There are many topics that can be studied in the field of archives considering the importance of archives for sustainability activities.

Several bibliometric studies on archives have been published, including the work of Edi Wibowo and Tamara Adriani Salim entitled Bibliometric Analysis of Research with the Theme "Digital Archive" in 2022. This study focuses on research with the keyword "Digital Archive" obtained from the Scopus database over a period of time. 1982-2022. The results of this research indicate that since that year there has been a lot of research that has raised the theme of digital archives. And authors from Indonesia, also contributed to research in this field by publishing 5 documents with a total link strength of 3 [3].

In addition, another bibliometric research related to digital archives is Analysis of Trends in Library Archive Digital Management from 2019 to 2023 by Widha Rosyana and Imam Yuadi. This research analyzed 500 documents from the Web of Science published between 2019 and 2023 [4]. The research results show that there was a significant amount of research in that time period.

These studies show that research on archives has been going on for decades and continues to develop. Different from previous research, this research takes data from Google Scholar, which is one of the reference sources used by academics in searching for scientific articles. Easy and free access and the large number of articles contained in Google Scholar make Google Scholar one of the most popular platforms for students to help them complete their theses [5].

Its broad coverage includes various types of publications, including journal articles, books, technical reports, theses and theses. So, this research can map research that has been carried out by students, lecturers and other researchers. This research can be a basis for future researchers, especially novice researchers, to further explore the world of archives and not get trapped in saturated research themes.

Bibliometric analysis is used in this research to be able to analyze archival topics and explore research trends and updates in the future. The aim of bibliometrics is basically to assess scientific literature in a particular field, therefore bibliometrics can be widely applied to various scientific disciplines [6].

The formulation of the problem in this research is as follows: (1) What is the trend in articles with archival topics in 2019-2024; (2) What is the recency of research based on year of publication; (3) How is the 'saturation' of a topic/keyword based on archival topics 2019-2024.

Based on the background above, researchers are interested in studying research trends regarding Archives in Indonesia in 2019-2024.

LITERATURE REVIEW

Archives are records of activities or events in various forms and media in accordance with developments in information and communication technology created and accepted by state institutions, regional governments, educational institutions, companies, political organizations, community organizations and individuals in the

implementation of social, national and social life. state. Meanwhile, archives are matters relating to archives [1].

Every document produced by various activities is called an archive. A lot of research has been carried out on various types of archives, including regarding archive management, types of archives, archive management and also archive depreciation, from conventional archives to digital archives. Currently, archives are no longer managed manually but archives are managed digitally or electronically. The importance of archives and the many types of archives makes the public continue to carry out research on the development of archives, the dissemination of archive research topics and archive maintenance so that they can maintain archives for the following ongoing activities.

This analysis uses bibliometric studies. Bibliometrics comes from the words "biblio" or book, and "metrics" or measurement. The term bibliometrics was first introduced by Alan Pritchard in 1969 in his work entitled "Statistical Bibliography or Bibliometrics". The term bibliometric is used to replace the term statistical bibliography which was used previously. Pritchard defines bibliometrics as "a statistical method used to describe books and other communication media to explain the process of communication writing and the nature and direction of development of a scientific discipline" [7].

In one article it is said that bibliometric analysis is a quantitative method for studying and analyzing the characteristics and trends of scientific publications in a particular field or scientific discipline. This method uses bibliographic data, such as information about journals, articles, authors, and citations, to produce statistics and information that can be used to evaluate research and publication performance, as well as trends and patterns in certain scientific fields [8]. The articles or writings used can be through various references on the Internet. The keywords used in this bibliometric study are archives and archives.

When searching for articles, researchers use Harzing's Publish or Perish. This Harzing Publish or Perish software is a desktop application designed to assist researchers in evaluating the performance and impact of their publications based on entered keywords. This application uses data from various publishers to produce comprehensive bibliometric analysis, including calculation of the number of citations, citation index, impact factor, and other qualitative analysis.

Then, for analysis in this research, researchers used VOSviewer software. This software is a desktop application used to perform bibliometric analysis and data visualization [9]. In VOSviewer, users can import bibliometric data from various data sources, such as Google Scholar, Scopus, and Web of Science. The results will pull up all articles related to the keywords entered when searching. The keywords that researchers enter are archives and archives, of course this will cover everything.

This bibliometric study is a process that includes identification, evaluation and synthesis of previous research results on a particular topic. The goal of this analysis is to provide an overview of trends, problems, and advances in related fields and understand how previous research influences future research developments and directions. In this research it is related to archives. VOSviewer software can help researchers and analysts carry out citation network analysis, find relationships between scientific fields, and understand trends and problems in scientific literature [10].

METHODOLOGY

This research uses descriptive research methods with a bibliometric approach and document content analysis to analyze scientific literature. Bibliometric analysis is a statistical method that can quantitatively analyze relevant research papers on a specific topic through mathematical means. According to Pritchard (1969), bibliometrics is a study activity to analyze and measure literature using quantitative methods and using mathematical and statistical approaches [11].

Initially, this concept began as statistical bibliography and later developed into a major field now known as bibliometric studies [3]. This method can help to obtain data and findings that are in accordance with the research objectives. Data obtained through searching all articles is then analyzed using bibliometric analysis which consists of four steps, namely the search stage, filtering stage, bibliometric attribute examination, and bibliometric analysis [12].

The first step in bibliometric analysis is the search stage. In the information search stage related to research data, researchers used data from the last five years related to archives. The data used as a research source was taken from Google Scholar on September 6 2024.

Google Scholar is a free bibliometric database that offers extensive search capacity and is the most effective platform for accessing little-known publications, such as articles published in local journals that are not indexed in reputable databases. Google Scholar includes quotes from books, online sources, and conference proceedings. Google Scholar calculates the H-index and i10-index for those authors and summarizes the citations for the last five years. Its conference coverage is the best of all databases because it has more journals, but like Scopus, its publication coverage is limited before 1990.

Figure 1. Number of archival articles indexed by Google Scholar in 2019 – 2024
(source: Author, 2024)

The total number of articles captured on the Harzing's Publish and Perish application was 953, using the keywords "Archive", "Archive" and using the time period 2019 - 2024. The number of articles indexed by Google Scholar in 2019 was 142, experiencing a slight decrease in 2020 However, it continued to increase in the following year, namely 2021 with 161 articles, 2022 with 173 articles, and experienced a rapid increase in 2023. Unfortunately, it experienced a significant decline again until September 2024, namely only 82 articles.

The second step is the filtering stage. In this stage, researchers carry out data selection, irrelevant data will be deleted from the research data. The data taken is only data that is appropriate to the research topic, namely archives. Of the 953 data obtained from the application search results, there were 930 data that matched the topic.

The third step is the bibliometric attribute checking stage. In this stage, researchers check bibliometric data on each article that will be used as research data. Researchers check the completeness of bibliographic data for each article, such as keywords, year, author, research object, etc. This is done to make it easier for researchers to map data later.

The fourth step is the bibliometric analysis stage. Researchers used VOSviewer version 1.6.17 as a tool to analyze the bibliometric data of the articles that had been obtained. VOSViewer is software that is used to construct and visually project a bibliometric network of journals, researchers, and also text mining important terms in a study.

This research will analyze 3 aspects:

1. Network visualization shows colors showing clusters of words that were successfully processed by the program. The network shows connections between keywords, and the bigger the circle shows the greater the number of keywords.

2. Overlay visualization shows the latest research based on year of publication. The brighter the color that appears, the more recent the research on a particular theme means.

3. Density visualization shows the density of certain topics or keywords. The clearer/brighter the word is, it means that many people have researched it. This can be used to see the 'saturation' of a topic/keyword [13].

RESULTS AND DISCUSSION
1. Analysis Network visualization

The theme of this research was analyzed based on keywords contained in the bibliographic data for each article about archives for 2019 - 2024 indexed by Google Scholar. In this analysis, researchers used co-occurrence analysis in VOSviewer software. The total number of keywords found was 930 keywords, with 246 keywords appearing a minimum of 2 times. The results obtained can be seen in the image below:
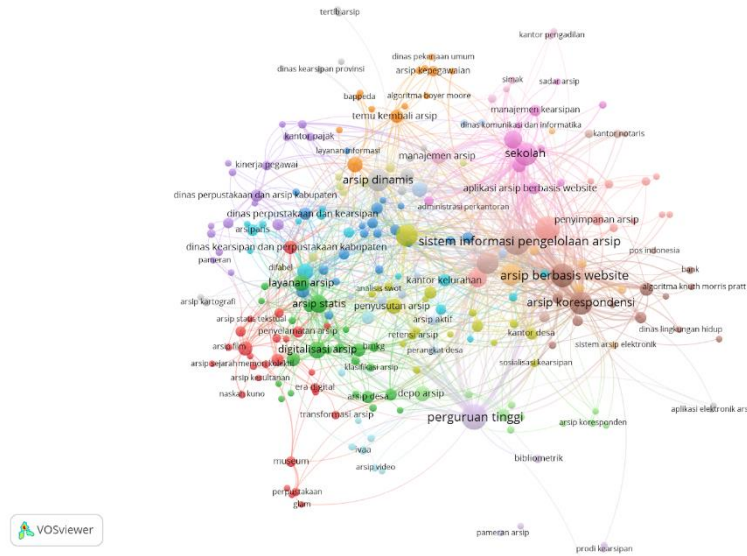
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Figure 2. Network visualization of archival research
(source: Author, 2024)

From this visualization, it can be seen that during these 5 years (2019-2024), we can see the research themes related to archives that are most frequently discussed and indexed by Google Scholar from the size of the circle in the VOSviewer visualization. The larger the circle, the more the theme is examined. The top 10 frequently researched research themes are as follows:

Table 1. Research themes based on keywords

No	Keyword	Occurrences	total link strength
1	Archives Management Information System	103	225
2	Electronic Archives	84	169
3	Website-based archive	75	174
4	Correspondence archive	69	168
5	Dynamic Archives	61	121
6	Digital Archives	58	98
7	Archives Training	40	72
8	Static Archive	36	76
9	Archive Digitization	31	51
10	Archive Services	25	47

(Source: Keyword analysis in VOSviewer software, 2024)

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With these keywords we can see the network clusters that are formed.

1. Archives management. This cluster is the largest and most central cluster. shows that archives management is the main focus in archival research. Related concepts such as records management information systems, records storage, records retrieval, and retention are closely related.
2. Digital archives. This cluster reflects the trend of digitalization of archives. Concepts such as archive digitization, electronic archives, website-based archive applications, and archive transformation indicate efforts to manage and access archives in digital format.
3. Types of archives. Some clusters show a focus on certain types of archives, such as dynamic archives, static archives, and vital archives. This shows that there is specific research on the management of various types of archives.
4. Institutions. This cluster involves archives services, libraries, universities and schools, showing the important role of various institutions in management and archives.

Specifically, researchers studied institutions that are often the objects of archival research. Mapping locations allows us to visually see where archival research is most active, and we can also identify locations that may be underrepresented in archival research. This could serve as a basis for advocating for increased research in the area. Below is a visualization of various research institutes:
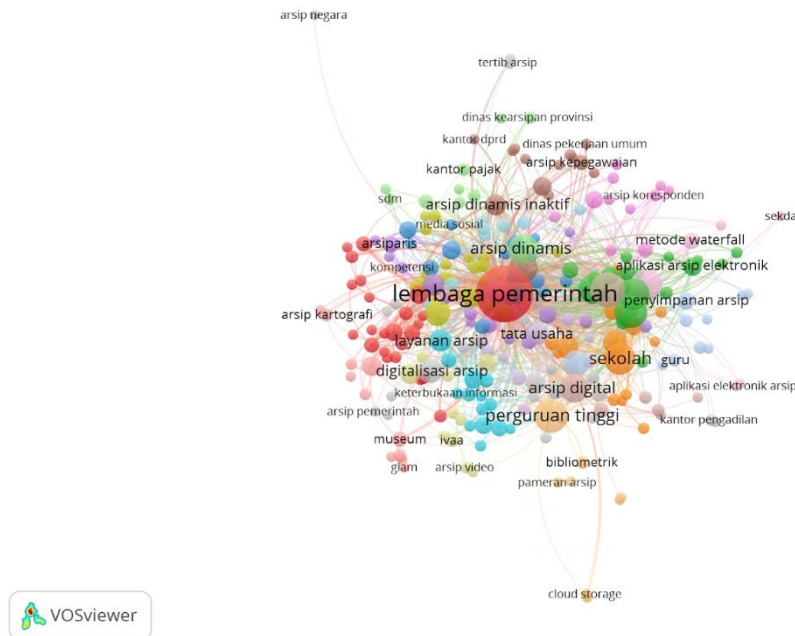

Figure 3. Network visualization of archival research locations
(source: Author, 2024)

The picture above shows that "government institutions" dominate archival research locations, namely 496 occurrences and a total link strength of 797 links. This

visualization highlights an archival research landscape influenced by the central role of government agencies and increasing attention to archival education. The five government institutions most researched are the Archives and Library Service, Village Office, Education Service, Climatology and Geophysics Agency (BMKG), DPRD Secretariat, and Land Office.

Then other research locations besides government institutions are "universities" with 95 occurrences and 102 link strengths. This shows their contribution to archival research and development. Next there is the "school" with 69 occurrences and 127 link strengths. "Company" (private) archive 56 occurrences and 81 link strengths.

This visualization depicts a dynamic archival research landscape, with a primary focus on archives management and digital transformation. Various institutions play an important role in this field, and there is a close relationship between various archival concepts. Further research could delve deeper into specific themes, emerging trends, and potential for collaboration between institutions.
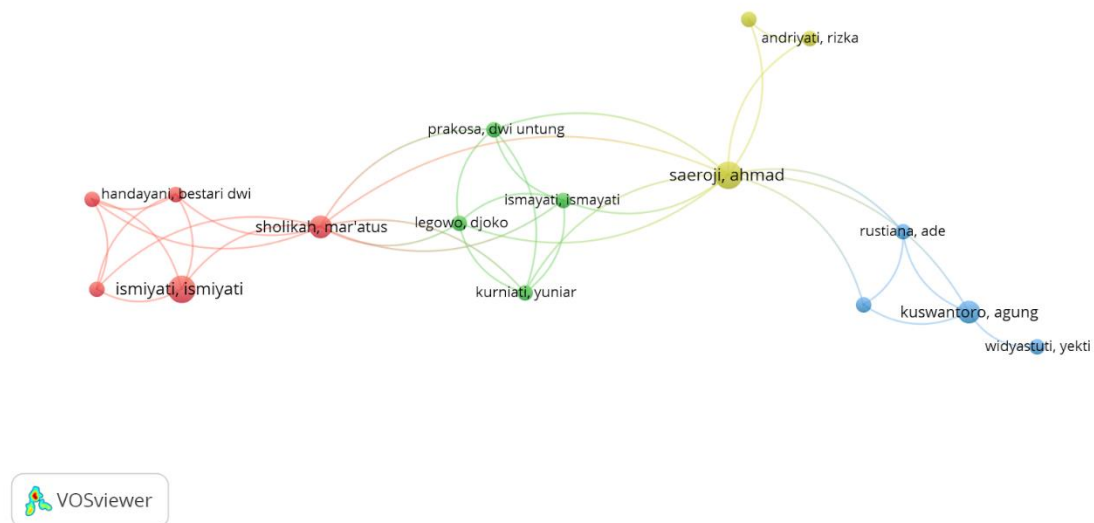
Network of archival writers

Figure 4. Network of archival article writers
(source: Author, 2024)

This network visualization shows the collaboration pattern between several authors in the field of archival research in the period 2019 - 2024. There are several color clusters, Red, Yellow, Green and Blue. Red and blue color clusters are strong collaborative groups.

From this image it can be seen that the red cluster consists of the writers Bestari Dwi Handayani, Ismiyati, and Mar'atus Sholikah, which shows the strong collaboration between these writers. This may happen because they have similar interests or conduct research together. Mar'atus Sholikah is the liaison between two different research groups,

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namely the green cluster.

In the green cluster, it consists of writers Dwi Untung Prakosa, Ismayati, Djoko Legowo, Yuniar Kurniati., Green Cluster and Red Cluster. Ismayati is the link between the green cluster and the blue cluster. It seems that he collaborated with one of the researchers from the blue cluster, namely Ahmad Saeroji.

Apart from Ahmad Saeroji, the blue cluster consists of Ade Rustiana, Agung Kuswantoro, and Yekti Widyastuti. Ahmad Saeroji also has research relationships with the yellow cluster, namely Rizka Andriyani and Muhsin. Thus, Ahmad Saeroji has an important role in connecting research networks from one research community to another.

Knowing an author's collaboration network provides valuable insight into the research landscape that helps us understand the structure of research communities, identify active research groups, and see how knowledge develops through collaboration. We can also identify authors who have multiple collaborations or who are important links between different research groups. These authors can be considered experts or influencers in the field. In addition, discovering potential new collaborations, and supporting better decision making in the research field.

Bibliometric Analysis of Citations

The top five most cited articles published in 2019 - 2024 are indexed by Google Scholar. The number of citations an article receives is often considered an indicator of the research's impact or influence. Highly cited articles indicate that the research has been read, acknowledged, and considered important by the scientific community.

The following are the 5 articles with the highest number of citations (data taken on September 6, 2024).

Table 2. Most cited articles

No	Research Title	Year	Citation
1	Engineering Application Management for E-Filling Letter Documents at Pt Alp (Atosim Lampung Pelayaran)	2021	1268
2	Design and Development of a Web-Based Mail Archive Management System Using the Waterfall Method	2019	353
3	Analysis and Design of a Web-Based Letter Filing Information System at the Dayah Tuha Village Head Office	2020	94
4	Archives Management in Support of Information Services in the Administration Section of the Ponorogo Regency Social Service	2021	83
5	Development of Electronic Records Management in Indonesia: Systematic Literature Review	2019	80

(source: PoP analysis of articles with the keywords Archives and Archives for 2019-2024)

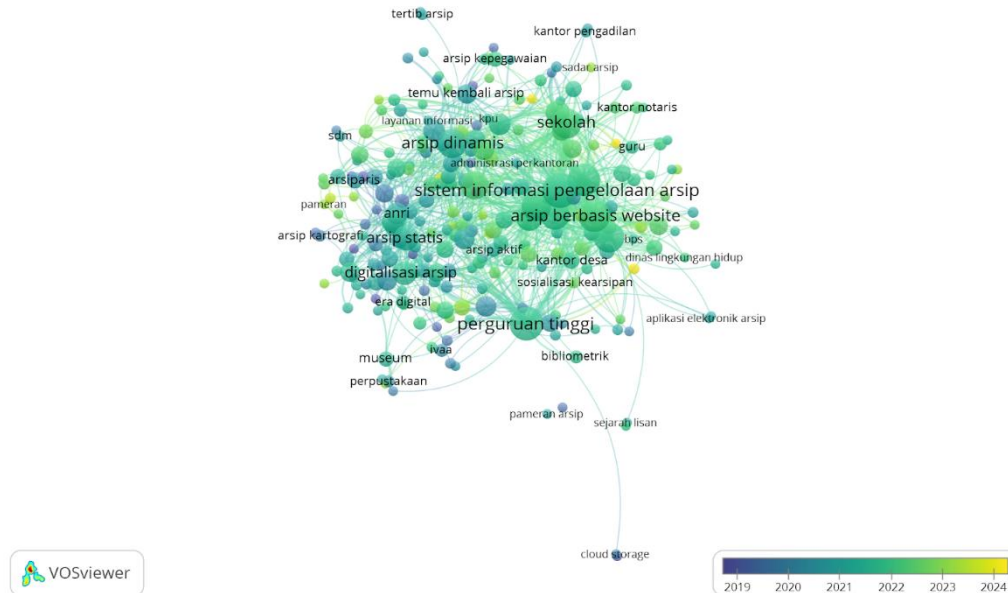## 2. Analysis *Overlay visualization*

Figure 5. Overlay visualization of archival research
(source Author, 2024)

The image above can give us an idea of the development of research based on time by using color to represent the year of publication.

The dark blue color represents the earliest years in the analyzed time range, namely 2019. The yellow color shows the newest years in the 2023 - 2024 time period. The color gradient shows the years between this time period. The more yellow, the newer the year of publication.

Concepts related to archive digitization, website-based archives, and electronic archive applications are dominated by bright yellow. This shows that research in this area is relatively new and has developed rapidly in recent times. This confirms the trend of using technology in archives.

The concept of dynamic archives and archive management information systems also tends to have a color that is more towards yellow, indicating that research on this theme is a relatively new trend.

Meanwhile, older concepts such as static archives, archivists, and archives offices tend to have a bluer color. This shows that this research has been going on for longer and is more established.

Concepts related to education such as schools, teachers and universities have varying colors, indicating that research on archival education has been carried out consistently over the past 5 years.
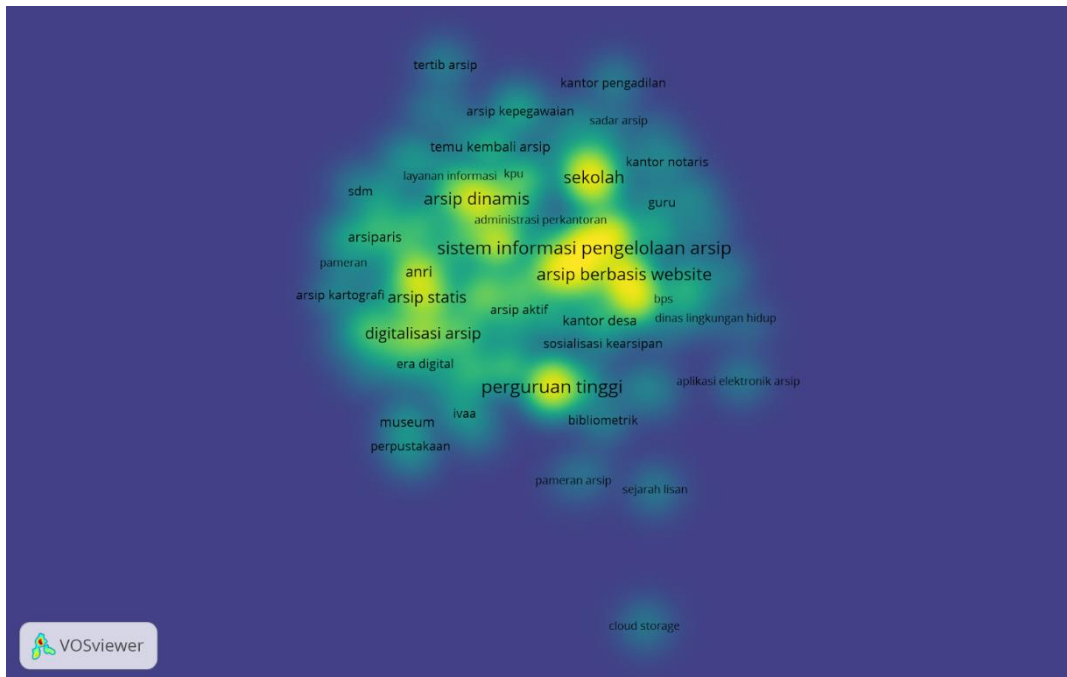
3. Analysis *Density visualization*

Figure 6. Density visualization of archival research
(source: Author, 2024)

From the image above, we can see the potential for saturation of archival research themes.

- **Static archive and archivist**: This theme has a relatively low density and is dominated by dark blue. This suggests that research on this theme may be approaching saturation. Although the role of archivists and the management of static records is important, there may not be many significant innovations or new developments in recent years.

- **Dynamic archives and information systems.** This theme has a high density and is dominated by yellow. Which shows that this research area is very active and growing rapidly. The application of information systems in dynamic archive management still offers many research and innovation opportunities.

- **Digitization and archive applications**. This theme is also high density with lots of yellow-colored nodes. This shows that these themes are still very active areas and far from being bored.

- **Education and archives**. Even though the density is not as high as other theme clusters, this theme also shows good development with the presence of yellow nodes. This indicates that research in this field is still developing and has not yet reached a saturation point.

CONCLUSION

Technological advances and changes in information needs have pushed archival research to undergo a significant transformation. Based on the visualization analysis that has been carried out, it can be concluded that digitalization of archives and the use of

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technology such as archive management information systems, electronic archive applications; and cloud storage demonstrate the need to adopt technological solutions to improve efficiency, accessibility and preservation of records.

Government institutions have a large role in archival research because of their central role in producing, storing and managing archives related to government activities. Government archives have an important role in accountability, transparency and decision making. Therefor research on government records management can contribute to improving the quality of public services and good governance.

In some research areas, such as static archives and archivists may be approaching saturation. While still important, research on this theme may not be as frequent as other rapidly developing themes.

It is hoped that future archival research will continue to focus on the integration of technology in archival management, especially dynamic archives. The development of website-based archive applications and the use of cloud storage will become increasingly important. Apart from that, research on archival education and curriculum development that is relevant to current needs also needs to be improved.

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