

Publication Mapping regarding E-Government Implementation using VosViewer and Biblioshiny

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ARTICLE INFORMATION	ABSTRACT
<p>Received: 12 Agustus 2023 Revised: 21 Agustus 2023 Accepted: 3 November 2023</p> <p><i>Keywords:</i> Bibliometric analysis, Implementation, E-Government.</p>	<p>This study aims to analyse the development of research regarding the implementation of e-Government in 2019-2023 and can be used as a literature review for further research on how to implement e-Government. The method used in this study is a bibliometric analysis conducted in the Scopus global literature journal by including the keyword "E-Government Implementation". The results of the bibliometric analysis show that This study aims to analyse the development of research regarding the implementation of e-Government in 2019-2023. The method used in this study is a bibliometric analysis conducted in the Scopus global literature journal by including the keyword "E-Government Implementation". The results of the bibliometric analysis show that 2019 was the year with the most publications regarding e-government, reaching 209 publications, with the most research subjects in the fields of social and computer science, and the country that published the most research was Indonesia. E-government keywords are the most used keywords in several studies related to the implementation of e-Government.</p>

INTRODUCTION

The Internet of Things (IoT) is a new model that allows electronic devices such as computers, mobile phones, and sensors to communicate via the Internet so that it can make our lives easier. Overall, IoT is an invention that successfully brings together a wide variety of intelligent systems, frameworks, and intelligent devices and sensors. This IoT utilizes electronic devices and the internet to provide innovative solutions in solving various challenges and problems in various sectors such as companies, and industries, both public and private. As crucial as IoT, the rapid development of information and

communication technology (ICT) in Indonesia greatly affects people's lives, especially by changing the characteristics of relationships with the community, the business world, and even the government (Walid, 2003).

Over time, Information and Communication Technology (ICT) has developed rapidly in the field of governance processes. Utilization of ICT in government processes is considered as a way to improve the performance of a slow bureaucracy. E-Government has emerged as a critical technology, which developing countries have

implemented better to serve their people through effective, efficient, accountable, and transparent programs. E-government is a multidisciplinary research field that is studied from a variety of different approaches. E-Government is still a relatively new phenomenon and is currently still developing.

One example of the application of IoT and ICT in the world of government is e-Government. E-Government is a concept of all public administration activities that utilize ICT to enhance and improve public service processes to make them more effective, transparent, efficient, and accountable. This e-government refers to the ability to use information and communication technology in improving the relationship between government and society, government and business, and government agencies.

Based on the World Bank (2009), e-government is defined as the use of information technology in government agencies such as WAN, internet, and mobile information technology, which can change relations with communities, businesses, and other government agencies (AlShehri, et al., 2010). The implementation of e-Government in Indonesia has been widely implemented by local governments, so there is a lot of research on the implementation of e-Government. With this bibliometric analysis, it can help researchers who want to research e-Government implementation find a research gap.

According to Purwanto (2018), the implementation of the e-Government concept in Indonesia aims to improve bureaucratic performance and government efforts in global competition. Arrangements regarding the implementation of e-Government in Indonesia were first contained in Presidential Instruction Number 3 of 2003 concerning National Policy and Strategy for E-Government Development. Based on these instructions, public institutions at all levels, both central and regional, develop e-Government in stages. The Indonesian government issued Presidential Regulation Number 95 of 2018 concerning Electronic-Based Government Systems to strengthen e-Government practices in Indonesia. The optimum utilization of

e-Government will strengthen good governance in the public sector.

RESEARCH METHODS

RESEARCH METHODS

The method used in this research is a bibliometric analysis which is generated from the Scopus literature journal by writing the keyword "E-Government Implementation" in the search. These keywords are based on research themes. Researchers also identify journals by providing a range of research years to get the latest data. After getting a journal that fits the theme and title, the researcher exports the journal findings into two file formats, namely CSV and Bibtext. Files in CSV form are used by researchers to analyze using VosViewer software, while Bibtext files are for RStudio software. The following is a schematic or flowchart of the bibliometric analysis method of this study.

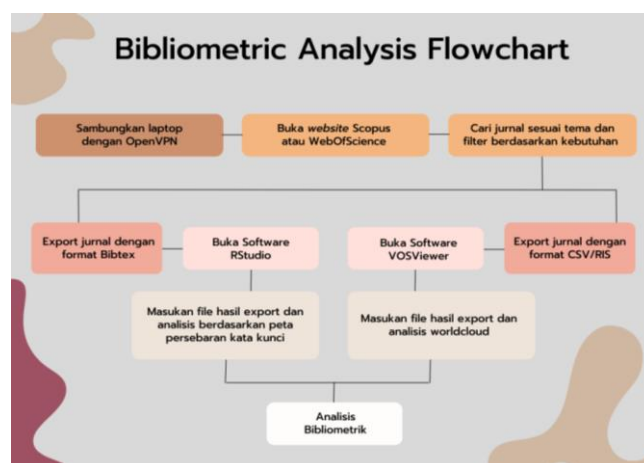


Figure 1. Bibliometric analysis *flowchart*

RESULT AND DISCUSSION

By Year of Publication (2019-2023)

Based on the year of publication in the 2019-2023 range, research on the implementation of e-government totaled 741 documents, where the largest percentage was in 2019 with a total of 209 documents and followed by 2020 with only one difference in the number of documents, namely 208 documents.

Table 1. Publication trends related to e-Government in 2019-2023

Year	Document	Percentage
2019	209	28.2%
2020	208	28%
2021	171	23.1%
2022	133	18%
2023	20	2.7%
Amount	741	100%

By Document Type

Based on the type of document regarding the development of e-government implementation research on Scopus, there are 3 top document types, the first is *Conference Paper* with a percentage of 46.8%, then *Article* with a percentage of 42.1%, followed by *a Book Chapter* with 5.9%. Overall there are 7 types of documents, as shown in the image below.

Documents by type

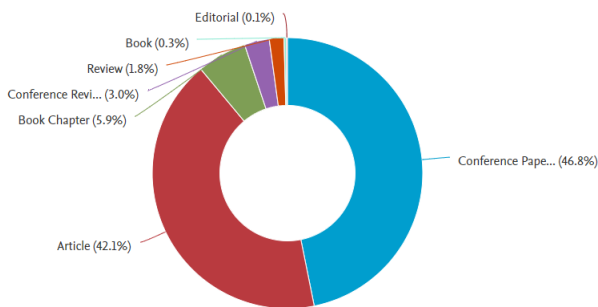


Figure 2. Growth of publications about e-Government by document type

By Country

By country, the most publications regarding the implementation of e-government came from Indonesia with 120 articles, followed by India and Russia with the same number of articles, namely 50, then China, Malaysia, United States, United Kingdom, Saudi Arabia, South Africa, and the last German with a total of 20 articles.

Documents by country or territory
Compare the document counts for up to 15 countries/territories.

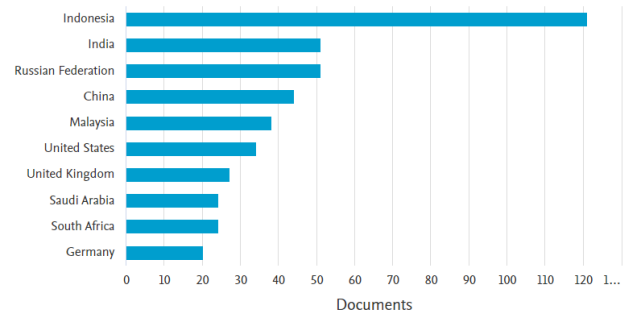


Figure 3. Growth of e-Government publications by country

By Subject Field

Based on research subjects, publications on the implementation of e-government mostly included computer science subjects with a percentage of 33.5%, then social sciences with 16.6%, and the least were in medical subjects, namely 2.1%. The following is a picture of the distribution of publications by subject.

Documents by subject area

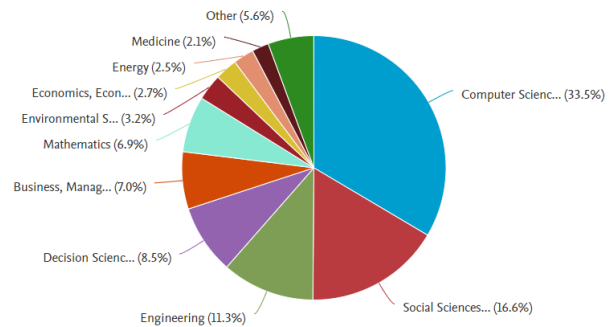


Figure 4. Growth of publications about e-Government by subject

Publication Visualization in the VosViewer Application

a) Keyword Distribution Map Using Network Visualization

Visualization of data from literature journals through VosViewer produced 65 items which were declared according to keywords related to e-Government implementation. This data visualization using VosViewer found 8 clusters of 65 keyword items. The first cluster consists of 12 items. The second cluster consists of 11 items.

The third cluster consists of 10 items, the fourth 9 items, the fifth 8 items, the sixth 6 items, the seventh

6 items, and the last cluster is 8 with 3 items. This VosViewer software can visualize data into three images, namely Network Visualization which functions to describe various relationships that occur in keywords obtained from data, secondly Overlay Visualization to describe data according to the year of publication, and Density Visualization which functions to describe the density of research subjects which has been done. To be able to explain network visualization more clearly, researchers will discuss based on the clusters that have been obtained from the analysis results.

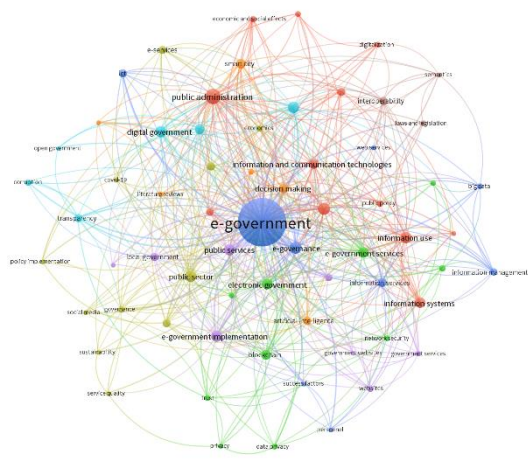


Figure 5. Visualization using bibliometric analysis of *e-Government publications* on the *VosViewer* application in 2019-2023 with *Network Visualization*

a) Keyword Distribution Map Using *Overlay Visualization*

The image below is found in the Visualization Overlay analyzed using published journal data for 2019-2023. The darker the color in this visualization overlay, the more publications that contain these keywords. In Figure 14, it can be seen that e-government is connected with various keywords with different colors. Dark blue is the color most connected to the main keyword, namely e-Government, while yellow is the least color in this visualization overlay, namely only 11 keywords.

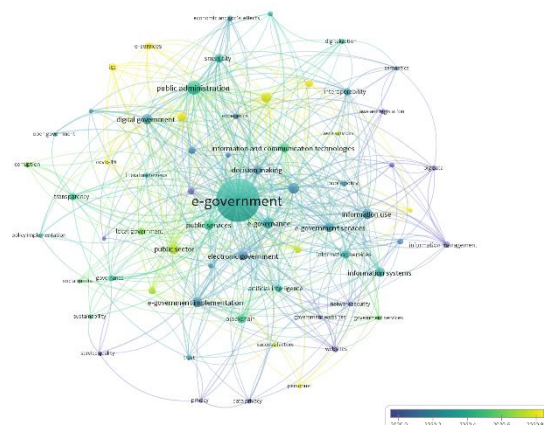


Figure 14. Visualization using bibliometric analysis of *e-Government in the VosViewer application* in 2019-2023 with *Overlay Visualization*

b) Keyword Distribution Map Using *Density Visualization*

Based on the density visualization, the brighter the color, shows that a lot of research has been done related to the words in that color, whereas the dark blue color does not contain any words. If the color is getting faded, it shows that not much research has been done based on the keywords in that color. So there is a need for further research based on a small number of keywords. In Figure 15, it can be seen that the e-Government keywords have a bright yellow color, so it can be concluded that many publications with these keywords have been made. While around it there are several keywords with bright but slightly faded colors, namely public administration, public services, and digital government. For keywords with increasingly faded colors, you can also find a lot with this density visualization, which means that there are still very few publications related to these keywords.

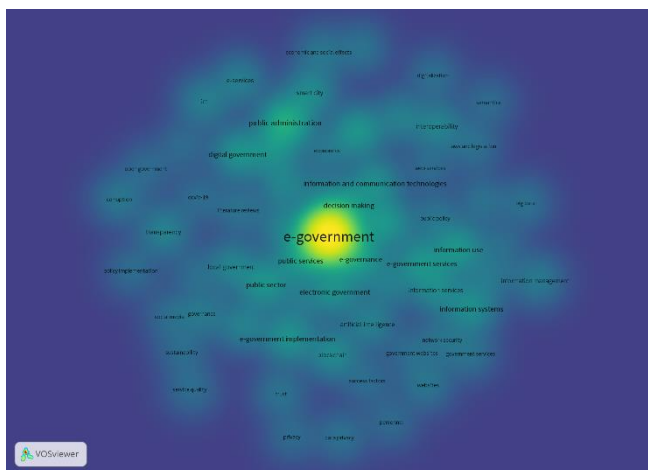


Figure 15. Visualization using bibliometric analysis of *e-Government publications on the VosViewer application in 2019-2023 with Density Visualization*

Publication Visualization using R Application (Biblioshiny)

a) Based on Wordcloud

In the publication visualization based on figure 16 which is analyzed using bibliometrics using *software based on the e-Government Implementation* keywords, e-Government is the most used keyword, followed by Public Administration, Information system, and many other keywords as shown in the picture. 16 below. The number of keywords related to the implementation of e-Government makes it easier for researchers to find gaps related to previous studies.



Figure 16. Visualization based on the word cloud

DISCUSSION

Based on the results of an analysis of the development of publications regarding the implementation of e-Government using VosViewer and RStudio, it is found that Indonesia is the country with the most publications regarding the implementation of e-Government. Based on the year, there were 741 publications regarding the

implementation of e-Government during 2019-2023 and 2019 was the year with the most publications, namely 209 publications. *Conference Paper* is the most published type of document regarding implementation, this is influenced by the number of publications originating from conferences conducted by the government. The subject that is most related to the keywords e-government is computer science, this happens because e-government is the result of the development of computer science where many technologies are used to support various lives, one of which is in the world of government. Data visualization generated from VosViewer found 8 clusters of 65 keyword items, where the first cluster consisted of 12 items. The second cluster consists of 11 items. The third cluster consists of 10 items, the fourth 9 items, the fifth 8 items, the sixth 6 items, the seventh 6 items, and the last cluster is 8 with 3 items.

CONCLUSIONS

Based on the results and discussion, it can be concluded that the development of publications regarding the implementation of e-Government in 2019-2023 with the highest Scopus index occurred in 2019 which reached 209 publications. Most international publications regarding the implementation of e-Government come from Indonesia with the most number of publications and instrumentation fields with the most subjects being computer science and social sciences. Map of the development of the field of instrumentation based on co-words grouped into 8 clusters. Meanwhile, in the e-Government word cloud visualization, it is the most used keyword in several journal articles.

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