Digital Government and Covid 19: A Structured Literature Review

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Abstract

The COVID-19 pandemic has hindered government performance. Therefore, innovation through the implementation and improvement of digital government is the primary key. The purpose of this study is to undertake a systematic review of published works on the subject of Digital Government. The purpose of this study is to ascertain the trend of studies on the development of digital government models conducted by numerous governments during the Covid-19 epidemic. This study does descriptive analysis on primary data gathered from the Scopus database under the keywords digital government and Covid-19 for the timeframe 2020-2021. The data is then processed and visualized with Vos-Viewer which shows that data, policy, health, innovation, effect and digital transformation are the most dominant concepts. These concepts are the dominant or massive focus previously studied. The contribution of this research is a reference for many countries to innovate internet-based public services to be more efficient and effective. This research is limited because the data source only comes from Scopus. Therefore, in order to produce a comparative, broad and comprehensive analysis, further studies need to include sources of other reputable international journals such as the Web of Science (WoS).

Abstrak

Pandemi COVID-19 telah menghambat kinerja pemerintah. Oleh karena itu, inovasi melalui penerapan dan peningkatan pemerintahan digital menjadi kunci utama. Tujuan dari penelitian ini adalah untuk melakukan tinjauan sistematis terhadap karya-karya yang diterbitkan tentang Pemerintahan Digital. Tujuan dari studi ini adalah untuk mengetahui tren studi tentang pengembangan model pemerintahan digital yang dilakukan oleh berbagai pemerintahan selama wabah Covid-19. Studi ini melakukan analisis deskriptif terhadap data primer yang dikumpulkan dari database Scopus dengan kata kunci pemerintahan digital dan Covid-19 untuk rentang waktu 2020-2021. Data tersebut kemudian diolah dan divisualisasikan dengan Vos-Viewer yang menunjukkan bahwa data, kebijakan, kesehatan, inovasi, efek dan transformasi digital merupakan konsep yang paling dominan. Konsep-konsep ini adalah fokus dominan atau masif yang dipelajari sebelumnya. Kontribusi penelitian ini menjadi acuan bagi banyak negara untuk melakukan inovasi layanan publik berbasis internet agar lebih efisien dan efektif. Penelitian ini terbatas karena sumber data hanya berasal dari Scopus. Oleh karena itu, untuk menghasilkan analisis yang komparatif, luas dan komprehensif, kajian lebih lanjut perlu menyertakan sumber dari jurnal internasional bereputasi lainnya seperti Web of Science (WoS).

Introduction

The Covid-19 pandemic has become a serious problem that hinders the government's performance in providing public services. The application of restrictions on social activities is one of the fundamental reasons the pattern of relations between the government, the private sector and the community is becoming increasingly distant and hindered (Joyce, 2021). The pandemic situation requires the government to innovate in order to remain optimal in maintaining the pattern and quality of public services. Optimizing the digital government concept is viewed as a critical aspect in ensuring that the quality of public services remains optimal. Due of the distance necessary during the pandemic, it is critical to maximize the notion of digital government (Lim & Lee, 2021).

Digital government or in its incarnation, can also be interpreted as e-government is a concept of utilizing information technology taken by the government to provide more effective and efficient public services for the community (Pratiwi, 2020). The old service patterns or conventional patterns are considered less effective to be maintained in today's modern era. The utilization of information technology is a must in the modern era in order to continue to provide massive and comprehensive information and public services (Wasistiono, 2019). The digital/electronic-based government system makes the relationship between the government, the public and the private sector easier to access. The ease of access between each other is realized because the concept of digital government relies on internet networks to connect one party to another. This is also important considering how most of the adult world community has now been able to access the internet well (Firdaus et al., 2021).

The use of digital media in the concept of e-government brings considerable changes to aspects of management, organization, leadership, society so that it has implications for government practice or performance (Wasistiono, 2019). Changes in the pattern of public services brought about by the digital government system require the government and the public to have good quality literacy. Digital government is critical in the era of the Covid-19 pandemic and must be fully realized by the government. The impact of such a large pandemic in particular also affects the pattern of giving and receiving public services between the government and the community (Raghavan et al., 2021). Optimizing the digital government system is considered to be the main solution in overcoming obstacles to public services by the government during the pandemic. Various public axiety during the pandemic is the responsibility of the government; these problems must be resolved with various patterns and innovations. Most of this can be answered by presenting the optimization and development of the concept of digital government (Kuc-Czarnecka, 2020).

Studies related to digital government and Covid-19 have been widely done by several previous researchers. Various findings and new concepts from previous studies become a reference for authors in conducting studies on related themes. There are several previous studies on digital government and Covid-19, for example in a study conducted by Mihalis(2020) with the theme "Ten technologies to fight coronavirus". The research indicated that the government's numerous inventive applications became a significant deal and benefited the community in coping with the various problems and consequences of the Covid-19 pandemic. During a pandemic, the government must respond rapidly to community concerns. As a result, the government's innovative applications serve as a problem solver, ensuring that the community

may continue to reach out to and utilize government services. On the other hand, Karagul et al., (2021) considered that the public service system, especially in the education sector, was greatly affected by the presence of the pandemic. To overcome this, the government must present digital public service innovations to ensure access to public services in the field of education so that it continues to run. However, this e-learning concept must be accompanied by competent human literacy so that the concept can run as it should.

Next, Peleg et al., (2021) who conducted a study in Israel revealed how the government, especially the Ministry of Health in the country collaborated with various stakeholders in overcoming difficult situations amid the Covid-19 pandemic The partnership took place digitally, indicating that the Israeli government was attempting to maximize the concept of digital government in order to overcome the country's Covid-19 epidemic problem. The results of the various studies in the collaboration were then put into the form of regulations by the Israeli government. Furthermore, a study on related themes was also carried out by Khlaif et al., (2021). The focus of the study is on the challenges faced by developing countries (Palestine, Libya and Afghanistan) in distance learning methods. The results show that these developing countries have not been able to optimally apply the concept of digital public services during the pandemicFinally, Kharlamov et al., (2021) previously examined how the concept of digital governance is incorporated into the concepts of smart cities and community readiness. The smart city idea places a premium on the community's digital literacy when it comes to submitting services and collecting information about public services from the government. Therefore, the quality of human resources in utilizing digital platforms launched by the government is the most fundamental thing.

Based on the previous formulations, it can be understood that it is imperative to conduct studies related to digital government and Covid-19. Studies related to digital government and Covid-19 can be a reference and reference from the scientific field for the government in overcoming problems caused by the current Covid-19 pandemic. Various findings related to digital government and the handling of Covid in previous studies are valuable. Findings that are not optimal or innovations from the digital government concept can be used as a reference in overcoming the Covid-19 pandemic situation in the future. Therefore, it is important to conduct massive and in-depth studies on related themes in the future.

Theoretical Framework
Digital Government

Digital government or can also be interpreted as e-government is a concept of utilizing information technology adopted by the government in order to provide information and public services that are more effective and efficient for the community. The presence of digital government in the modern era also aims to change the patterns of conventional relationships between the government, the private sector or other institutions to a simpler and more practical direction (Wasistiono, 2019). Through the use of digital/electronic tools, the government is believed to be able to provide optimal and efficient public services. The concept of digital governance makes it easier for the public to access information and public services. The concept of digital government also makes the relationship between the government and the people who

were once far away become closer even though it is within the limits of virtual space (Nikiforova, 2021).

A government system that is digital/electronic in nature fosters a more integrated relationship between the government, the community, and the commercial sector. Transformation of public services via a digital government system requires an adequate level of digital infrastructure. The government's readiness to build facilities and infrastructure to support the digital government system is the basis for the successful implementation of this concept (Pratiwi, 2020). Countries with a reasonably broad coverage area are sometimes constrained by this problem, but if the infrastructure supporting the digital government system is able to be fulfilled comprehensively, then on the contrary, it will present a positive value or reform of a more efficient public service system (Martin, 2021).).

On the other hand, the digital governance system must be linear with the human resource capacity of the bureaucracy and the community. Underlying this, it is essential to invest in improving the quality of bureaucratic and community resources in order to realize the digital government concept as aspired (Peleg et al., 2021). The bureaucracy as the executor of community services and the community as service recipients must first understand the pattern of using the concept of digital government. The minimal quality of human resources will make the concept of digital government unable to run optimally. Therefore, it is again emphasized that all elements must have a quality understanding that is qualified in carrying out the concept of digital government (Firdaus et al., 2021).

Digital governance in the aftermath of the Covid-19 pandemic

The epidemic of Covid-19 necessitates the government to maintain the highest level of public services possible. Public service innovation must be accelerated to ensure that the government's public services remain of high quality even during the Covid-19 pandemic's challenging times (Lim & Lee, 2021). The Covid-19 pandemic, which is so skewed and has several harmful consequences for all spheres of human existence, including economic, political, educational, social, cultural, religious, and other spheres, necessitates that the government as a policymaker give a response. In this instance, the concept of digital government may be critical to the government's ability to maintain optimal public services (Nikiforova, 2021).

Local governments are being encouraged to use the notion of digital government, which is represented in the smart city concept, in order to better deal with the impact of the Covid-19 pandemic, according to the smart city concept. The use of ICT-based apps in the smart city idea provides a solution for the community by allowing them to continue to access government services. On the other hand, local governments that are able to maximize this concept will certainly find it quite easy to provide public services to the community (Rachmawati et al., 2021). However, it is important to know that in this case, it must be linear with the facilities and infrastructure built by the government to support the electronic government system or the smart city concept (Kharlamov et al., 2021).

During the Covid-19 epidemic, the concept of digital government should be utilized to the greatest extent possible in order to reduce and normalize the impact of the epidemic. Through the use of technology that is now increasingly sophisticated and practical, the government can collect information and disseminate information related to the pandemic only

on digital platforms (Raghavan et al., 2021). Through information disclosure and public education on this digital platform, it is believed to provide a sense of security to the community during the pandemic (Kuc-Czarnecka, 2020). However, what needs to be re-understood in this case is the public's understanding and knowledge regarding information filtering patterns during the pandemic. This is the government's "homework" as a public service in order to improve public literacy and comprehension on the use of digital platforms for public service during in the current Covid-19 epidemic (Malays Sari Sakti et al., 2020).

Methods

Descriptive analysis with literature study is the choice of method used by researchers in reviewing themes related to "Digital Government and Covid-19". The descriptive analysis method was carried out by utilizing the VOSviewer analysis tool for data processing and helps simplify qualitative data analysis. Most of the article data was obtained through the SCOPUS database. The SCOPUS database was chosen as the main data source because it has the highest reputation and track record in international scientific concepts. A number of article/journal data that have been obtained are then analyzed and reviewed by the authors in order to answer and find research concepts related to the theme "digital government and Covid-19".

The focus of this research was to ascertain the state of research and the extent to which past studies on digital governance and Covid-19 had been examined. Referring to this, this study is focused on conceptualizing studies in the development of research related to digital government that has been studied by researchers in various studies/countries before. This structured review literature study was based on several focuses of writing in order to maintain the essence of the description and description of a well-systematic discussion. These include, for example, research topics or keywords, frameworks, and several other research findings that have been published and indexed in the Scopus database. In detail, the following are several stages/series of the research process pursued by the researchers in this study:
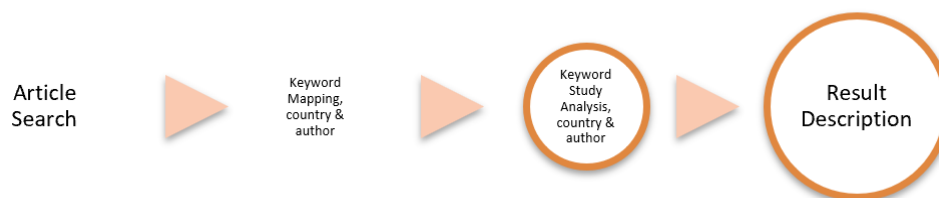

Figure 1. Series of Research Mechanisms

Based on Figure 1 above, it is believed that this study will be more focused and structured through several basic questions, such as: 1) How are relations and clustering in studies related to digital government and Covid-19. 2) What are the dominant keywords and themes in studies related to digital government and Covid-19. 3) What mapping was carried out in studies related to digital government and Covid-19, and 4) How was the concept of the study based on the results of mapping in previous studies related to digital government and Covid-19? The table above is designed to keep the research direction structured and systematic.

Result and Discussion

The Covid-19 epidemic, which has affected every country on Earth, needs governments and all facets of society to adjust significantly in order to deal with various developments. The Covid-19 epidemic also has an effect on the government's ability to provide public services to its inhabitants. These obstacles in providing public services require the government to pay attention to the quality of services that can still be provided optimally. The concept of digital government, in this case, is a system that must be emphasized in order to overcome various barriers to relations between the government, the community and the private sector during the pandemic (Rachmawati et al., 2021).

Digital transformation must be optimally adapted and developed by the government during the pandemic in order to provide efficient public services to the community. The use of big data in the digital government system is believed to be the main choice in optimizing government work during the pandemic. Various problems both related to social, economic, educational, health problems experienced by the community must be achieved by the government as a public service provider (Gorelova et al., 2021). The implementation of the digital government must of course be linear with the understanding or quality of human resources, both from the parties and the community. Digitizing public services during a pandemic basically requires educational support and understanding from all elements in order to achieve the vision that has been proclaimed. The balance of utilization and use of services on the digital platform is the main key to realizing excellent service even amid an outbreak (Calzada, 2020).

Here are some reviews related to digital government and covid studies based on the year the article was published in the Scopus database:
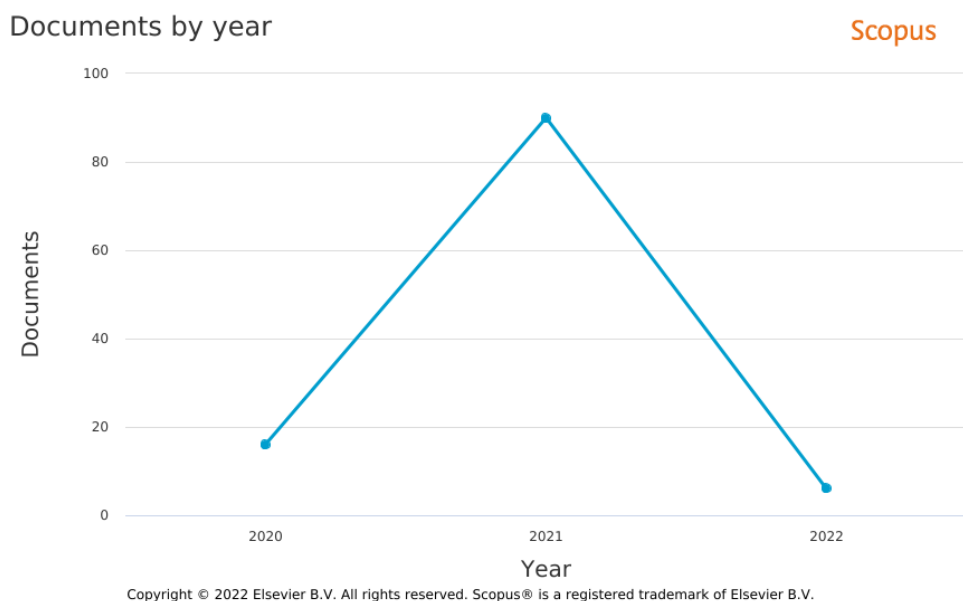
Figure 2. Digital Government and Covid Study by Year

Based on the visualization shown in Figure 2 above, it can be seen that the massive publication of articles in digital government and covid studies, especially in the range of 2020 to

2022. The data shows that digital government and covid studies are dominantly studied in 2021 with more than 80 number of studies. Meanwhile, at the beginning of the rise of Covid, namely in 2020, studies related to digital government and Covid were not so massive. This can be referred to in the less than 20 studies conducted. On the other hand, until early 2022, studies related to digital government and covid studies have not seen so many or it can be said that they are still very minimal. This can be justified when referring to the data above, where studies related to digital government and covid did not reach as many as 20 studies. In general, a relatively massive number of studies carried out in 2021 is indeed a natural thing. This is because in 2021, the Covid-19 pandemic began to be mapped in a focused study, especially with regard to digital government.

The next elaboration relates to the dominant countries that are studying digital government and covid studies:
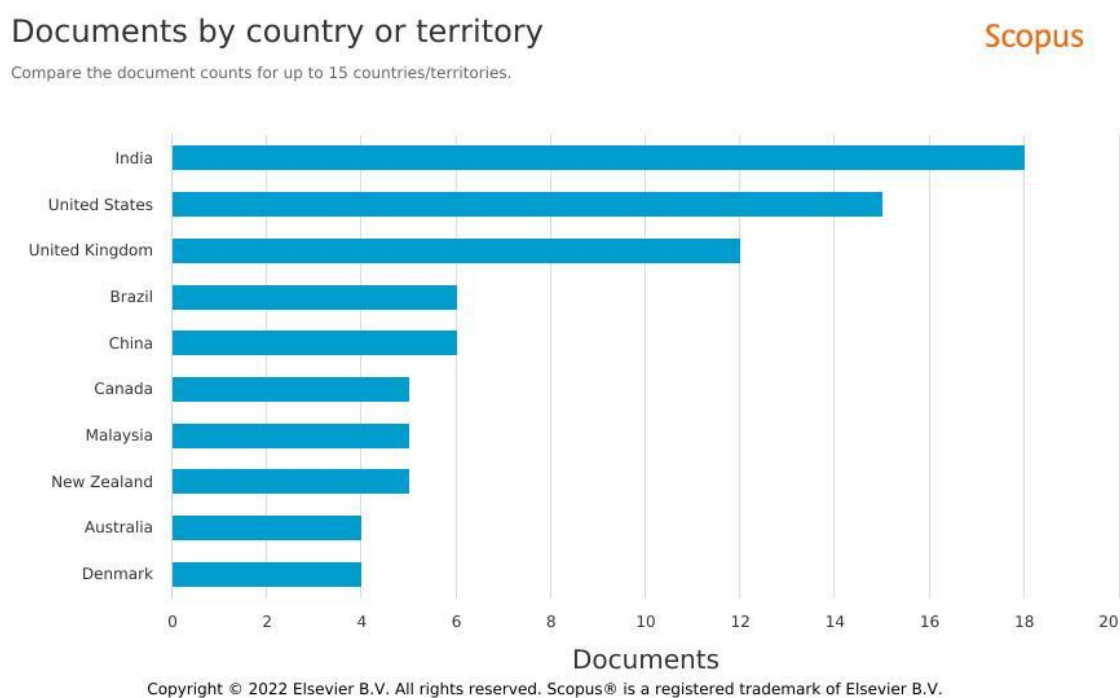

Figure 3. Digital Government and Covid Study by Country Name

The next elaboration will review several countries that are dominant in studying digital government and covid. Based on the data described in Figure 3 above, it can be seen that India is the most massive country in studying digital government and Covid. Cumulatively, India has 18 studies, followed by the United States in second place with 15 studies, and the United Kingdom with a total of 12 studies. Furthermore, there are several other countries that are also studying the theme of digital government and covid. Some of these countries are Brazil and China with a total of 6 studies each, then followed by Canada, Malaysia and New Zealand with a total of 5 studies each and Australia and Denmark with a total of 4 studies each.

Furthermore, the review discussed was the mapping of studies related to digital government and covid based on the field of science. In detail can be seen in the following image:
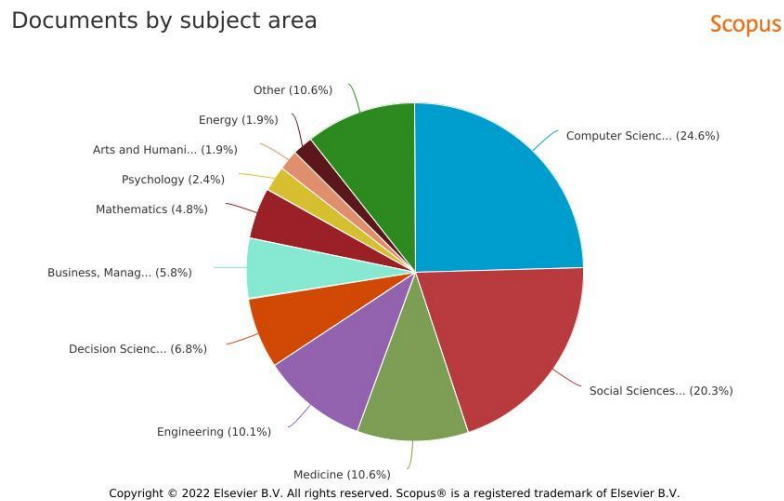
Figure 4. Digital Government and Covid Studies by Field of Science

The data processing results described in Figure 4 above are a mapping of digital government and covid studies based on scientific fields. According to this statistics, the majority of research on digital governance and covid was conducted in the discipline of computer science, accounting for a total of 24.6 %. Furthermore, it was found that other fields of science that are also dominant in studying digital government and covid are social sciences with a percentage of 20.3%. The field of science in the next order which is also dominant in studying this theme is Medicine with a percentage of 10.6%, then followed by the field of engineering science with a percentage of 10.1%. There are several other disciplines in the focus of this study, for example, decision science (6.8%), business management (5.8%), mathematics (4.8%), Psychology (2.4%), arts and humanity (1.9%), energy (1.9%) and several other scientific focus areas with a cumulative total of 10.6%.

The following elaboration relates to several names of dominant authors who focus on studies related to digital government and covid:
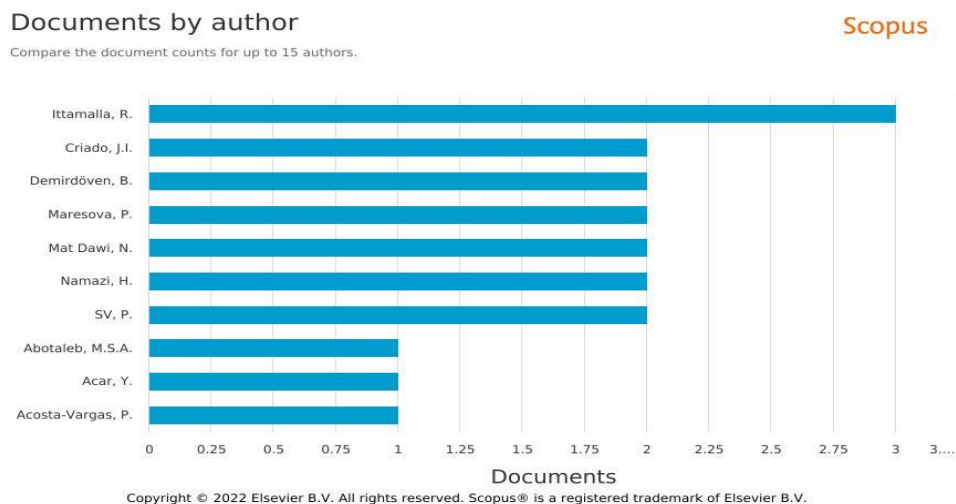
Figure 5. Digital Government and Covid Study by Author's Name

Various studies related to digital government and covid have certainly been carried out by several previous authors. The results of data processing carried out by the author found several dominant authors who studied related themes. Ittamalla is the most dominant author in studying digital government and covid themes; this is represented by 3 studies. Next, there are several other names such as Criado, Demirdoven, Maresova, Mat Dawi, Namazi, and SV, with each having 2 studies. Finally, the authors who also studied the digital government and covid themes were Abotaleb, Acar and Acosta-Vargas, with 1 study each. Some of the author's names with the intensity of their studies are something that needs to be discussed; this is because they can be examples or references for other authors who want to study themes or studies related to digital government and covid.

In order to see the dominant concepts in studies related to digital government and Covid-19, researchers used the VOSviewer application as a data processing tool. The results of data processing using the VOSviewer application are carried out in several series of stages in order to obtain truly relevant data. Some of the dominant concepts/themes in studies related to digital government and Covid-19 can be seen in detail in Figure 6 below.
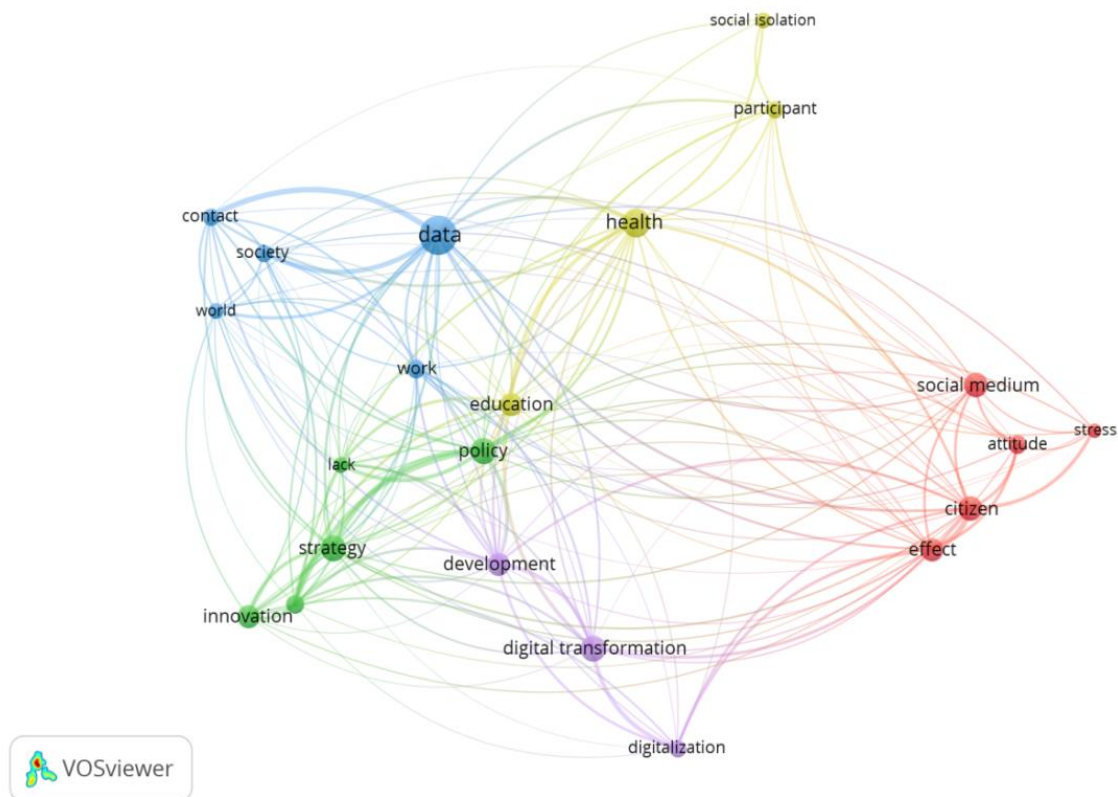

Figure 6. Dominant Themes in the Study of Digital Government and Covid-19

Based on the details shown in Figure 6. above, it can be understood that in total, there are five cluster categorizations in studies related to digital government and Covid-19. Each cluster is classified based on the similarity of concepts or keywords to one another. The draw of the net and the thickness of the circular points in Figure 6. above indicate the correlation and

dominant concept of the study related to the study of digital government and Covid-19. Then, the next elaboration will specifically discuss the grouping of themes/keywords based on clusters. The table 1 of the cluster is as follows.

Table 1. Keywords Categorized by Cluster

Cluster	Keyword	Total
Cluster 1	*Attitude, citizen, effect, social medium and stress.*	5
Cluster 2	*Implementation, innovation, lack, policy and strategy.*	5
Cluster 3	*Contact, data, society, work and world.*	5
Cluster 4	*Education, health, participant and social isolation.*	4
Cluster 5	*Development, digital transformation and digitalization.*	3

The keyword clustering in table 1 above is obtained by using the minimum number of occurrences of a term 15 times. Furthermore, it was found that 4062 terms were then narrowed down again and there were 48 terms that met the threshold or were quite relevant in studies related to digital government and Covid-19. Then, the 48 terms found were finally resummarized and 29 numbers of terms to be selected came out. This was used to find data which is then judged to be truly relevant and linear in studies related to digital government and Covid-19. These study concepts are topics that need to be studied and developed. This has major positive implications in the scientific world of course. For the purpose of better understanding how the Covid-19 pandemic impacts the concept of digital government, a study on digital government and Covid-19 should be conducted.

The following review is concerned with idea analysis using scattered publications' publication dates. Knowing the period of publication of keywords in articles is a crucial step to ensure which study concepts are dominant in attracting the attention of researchers and what study concepts need to be developed in the future. The data for the stretch of the publishing period was taken from June 2020 to January 2021 only to find out articles of interest to several previous researchers to study. The decision step is based on the researcher's needs in analyzing the data and the discussion that becomes the reference. In detail, the publication period of the article can be seen in the following figure7.
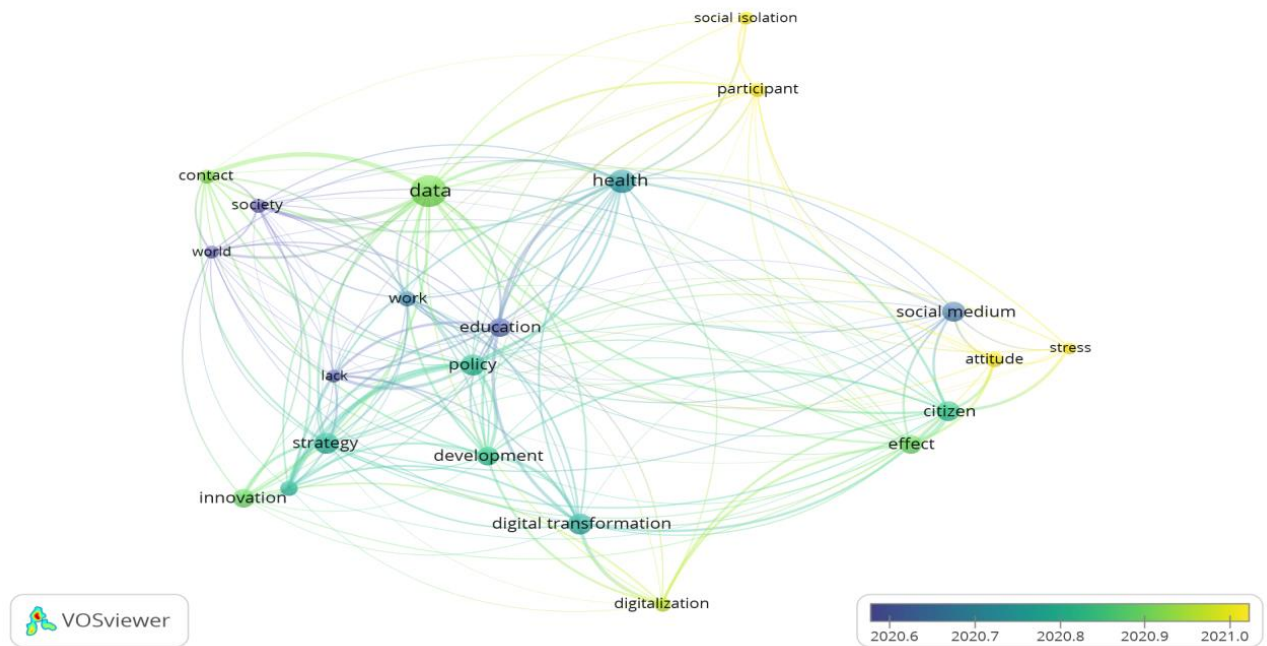
Figure 7. Dominant Concepts Based on Article Publication Period

Based on Figure 7 above, it can be understood that there are various periods of publication of articles in studies related to digital government and Covid-19. The color gradation distinction defines the period of publication of articles in digital government and Covid-19 studies. Various articles obtained from the Scopus database indicate that there are differences in keywords and then verified with a method of at least 15 mentions. This is carried out with a publication limitation period from June 2020 to January 2021.

There are several examples of dominant articles published in the range of June-July 2020, for example education, lack, social medium, word and society. Then in the July-September 2020 range, for example policy, strategy, citizen, digital transformation and contact. Meanwhile, articles spanning the period September 2020 to January 2021 are dominant related to data, effects, innovation, stress, attitude, social isolation and participants.

The next discussion is related to network mapping in terms of the dominant study concept. The thickness of the color is a differentiator in seeing which concepts are the most massive previously studied. The dominant mapping of the discussion concept is based on several categories such as links, total link strength and occurrences. The use of VOSviewers analysis tools produces dominant concept data in studies related to digital government and Covid-19 studies. Figure 8 is the breakdown of the dominant concepts in the digital government and Covid-19 study.
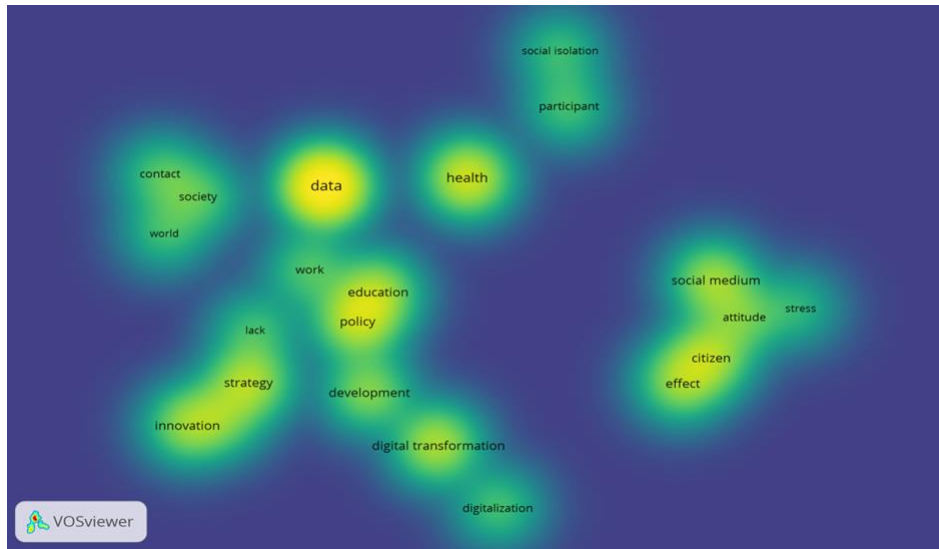
Figure 8. Dominant Concepts in Studies Related to Digital Government and Covid-19.

Based on the description above, it can be seen that there are several dominant concepts in studies related to digital government and Covid-19. The dominant themes include data, policy, health, innovation, effects and digital transformation. On the other hand, there are several concepts that are also massively discussed in studies related to digital government and Covid-19 such as: citizen, strategy, education, digitalization, social medium, development, lack of participants, and so on.

The various groups of dominant concepts certainly have strong and complex correlations with one another. The existence of these relationships and attachments makes it easier for researchers to draw conclusions because the grouping of dominant themes can direct the study to be in accordance with studies related to digital government and Covid-19. This is the reason why this step of grouping the dominant concepts needs to be taken.

Through several data processing and analysis mechanisms that are carried out, it can be found a number of dominant concepts discussed by several previous researchers related to digital government and Covid-19 studies. The first is related to the keyword: data. A study using the keyword data, for example, can be seen in the study conducted by Kharlamov et al., (2021) with the theme "Smart city data sensing during covid-19: Public reaction to accelerating digital transformation". In the study, it was explained that the extreme conditions caused by the pandemic required the government to accelerate digital transformation. This digital transformation can be presented through an optimal data system in the smart city concept. The public service process that is hampered due to the impact of the pandemic is the fundamental basis for digital transformation, which must be accelerated. The second dominant theme is related to the keyword: health. As an illustration, studies related to the keyword health can be seen from the study conducted by Alvandi (2021) with the theme of the study "Understanding digital health ecosystem from Australian citizens' perspective: A scoping review". The study conducted in Australia revealed that digital health services are the best alternative solution that can be pursued during the pandemic. Digital health services must be supported by good human

resources. This means that the understanding and knowledge of the community in the use of digital technology is a basic thing to realize the vision of the program.

Furthermore, the third dominant theme or concept is related to the keyword: policy. Studies related to this dominant keyword, for example, have been studied by Gabryelczyk (2020). In the study, it was explained that the presence of a major Covid-19 pandemic affected the government as a policy maker to maximize digital transformation policies. Policies to accelerate and optimize benefits in digital transformation are very important in the midst of a pandemic. The distance situation required by the Covid-19 outbreak is the basis for the government to strengthen this policy. Public information services and provision must be carried out massively. The use of digital technology is a priority that is considered very effective and efficient to implement.

The next dominant keyword or the fourth is innovation. Rachmawati et al., (2021) which raised the theme of a study related to "Innovation in Coping with the COVID-19 Pandemic: The Best Practices from Five Smart Cities in Indonesia" emphasized that each regional administration must provide an innovation as a means of resolving various issues. complications resulting from the Covid-19 epidemic The government's response to the pandemic threat must be broad and swift. Thus, innovation in the form of a smart city is regarded to be one step toward ensuring the highest possible quality of public services. The government's implementation of the smart city idea includes the use of digital technology, such as ICT-based apps. Several cities were able to show unique and quite diverse patterns in response to the numerous crises produced by the Covid-19 pandemic outbreak through this application innovation. This can also be viewed as a catastrophe mitigation measure when it comes to resolving government and community issues in the current day.

The fifth and last prominent keyword is effect. As an example, the prominent keywords can be found in a study conducted by Meisters et al., (2021) titled "Is Loneliness an Undervalued Pathway between Socio-Economic Disadvantage and Health?" Along with socioeconomic and health consequences, the Covid-19 pandemic has an influence or impact on the loneliness epidemic and has ramifications for people's mental health problems. Meisters et alstudy .'s also demonstrated that public health policy should not overlook mental health issues. As a result, it is critical to consider other consequences in addition to the medical problems created by the Covid-19 epidemic, which is so heavily distorted today.

Finally, the sixth dominant keyword is related to digital transformation. As an illustration, it can be seen from the study conducted by Lim & Lee, (2021). Even in the difficult situation of the pandemic, the government as a public servant must continue to provide good services, of course. This can be done by carrying out a massive digital transformation. Public service with a non-face to face method is an external step. Information transparency and service quality are factors that influence people's trust in this system. This means that the concept can be well received by the public with a record that the services provided by the government in the digital system must prioritize the best quality.

Conclusion

The Covid-19 pandemic presents various obstacles in government affairs to provide public services as usual to the community. The distance situation that is required during the pandemic makes the concept of digital government a concept that must be optimized. The concept of digital government that is implemented optimally is believed to be able to minimize and normalize various government obstacles in providing information and public services to the community. Through the analysis carried out by researchers using an analytical tool called VOSviewer, it can be seen that several dominant concepts were discussed related to digital government and Covid-19 studies. These concepts are data, policy, health, innovation, effect and digital transformation. These various concepts are related to one another; on the other hand, they also have links to several external topics. This dominant concept is the focus of a massive study discussed previously in studies related to digital government and Covid-19.

Through this study, it is hoped that it can be useful as a reference for further research on related themes. This is critical in order to adequately investigate the issue and determine how the Covid-19 pandemic's digital government pattern is implemented. Meanwhile, this research has a drawback in that the publications analyzed were all sourced from Scopus, and thus lack comparative data. Therefore, future studies require the use of a comparative analysis approach that uses a Web of Science (WoS) database.

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