Bibliometric Analysis of the Optimization of Goods and Services Procurement Administration through E-Purchasing Implementation in the Public Sector

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Abstract

This study conducts a bibliometric analysis to examine the development of e-purchasing implementation in the procurement of goods and services within Indonesia's public sector from 2019 to 2024. Utilizing data sourced from the Google Scholar database via Publish or Perish (PoP) and analyzed with VOSviewer software, the study found a significant annual increase in scientific publications on e-purchasing, with a total of 537 articles identified. Furthermore, this study highlights several challenges in the implementation process, including limited human resource capacity and resistance to changes in organizational work culture. The bibliometric mapping also reveals the existence of four main research clusters, along with evolving terminology trends in publications over the years.

Keywords: *procurement, e-purchasing, public sector*

INTRODUCTION

Rapid technological developments have made the government have standards for implementing Good Governance in Indonesia. Good Governance or good governance is a collective concept that involves various actions or behaviors that aim to control, direct, or intervene in matters concerning society in order to reflect the values of goodness in daily activities (Nurhidayat, 2023). Good governance is used as a step to achieve more optimal and focused government performance, especially to realize the legal needs of the community.

One of the steps that can be taken in realizing or actualizing Good Governance is to implement E-Government by utilizing digital technology to increase the efficiency of public services and responsibility for government performance. The implementation of E-Government is considered to have a strategic role in supporting the process of government activities, especially in the realm of procurement of goods/services. This condition is based on

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the use of digital technology which is believed to be able to increase transparency, efficiency, and accountability at every stage of procurement activities, from determining needs to submitting final results.

Procurement of Goods and Services is an activity of procuring goods and services by Ministries/Institutions/Regional Apparatus funded by the APBN/APBD whose process starts from identifying needs to handover of work results, this definition has been stipulated in Presidential Regulation of the Republic of Indonesia Number 12 of 2021. In the context of procurement of goods and services, e-purchasing is one of the important mechanisms stipulated in Presidential Regulation Number 12 of 2021, which allows purchases to be made transparently and efficiently through e-catalogs or online stores. According to Presidential Regulation Number 12 of 2021 concerning Amendments to Presidential Regulation Number 16 of 2018 concerning Procurement of Goods/Services, E-purchasing is a procedure for purchasing government goods/services through an electronic catalog system or online store. However, in its implementation, e-procurement still leaves several obstacles in its implementation. Limited Human Resources, where there are still procurement employees who are still poorly trained in procurement administration and information technology. This limitation results in a lack of understanding of how to use digital systems to increase efficiency. Furthermore, the implementation of e-purchasing requires a change in work culture in government agencies, but often faces resistance from employees who have been funded by conventional procurement methods. In addition, there is still a gap in website infrastructure which causes the e-procurement process to only be carried out in a few areas (Chaidir & Susanti, 2024). Bibliometric analysis will be used in this study to identify developments in the application of e-purchasing in the procurement of goods/services. By analyzing relevant literature, this study will try to unravel the problems (1) To what extent has the growth of scientific publications related to the topic of e-purchasing in the procurement of goods and services from 2019 - 2024; (2) How is the distribution map of scientific publications with the topic of e-purchasing in the procurement of goods and services from 2019 - 2024. The purpose of this study is to identify how the growth of publicity from the discussion of e-purchasing in the procurement of goods and services.

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RESEARCH METHOD

The method applied in this study is descriptive bibliometric analysis. According to (Hakim, 2020) bibliometrics is a form of quantitative or qualitative measurement of the development of a field in research, literature, books or documents using statistical methods. Bibliometrics is generally divided into two categories, namely descriptive bibliometrics and behavioral bibliometrics. Descriptive bibliometrics represents the nature of a literature, while behavioral bibliometrics studies the bonds that develop between literature components. The data used in this study came from publications on e-purchasing in the procurement of goods and services in 2019 - 2024 with a limit of 1000 documents using the keywords procurement of goods and services, e-purchasing, public sector, as seen in Figure 1. The data collection technique was applied by utilizing the method of investigating publications indexed on Google Scholar using the Publish or Perish (PoP) application. Then, the data was obtained and archived in the form of RIS (Research Information System Citation File). The data that has been stored in the form of RIS will then undergo bibliometric analysis using VOSViewer software. VOSViewer is able to provide visualization of the relationship between citations and subjects, grouping articles, creating publication maps and is also able to create visualizations of trends in various articles (Lestary et al., 2023).
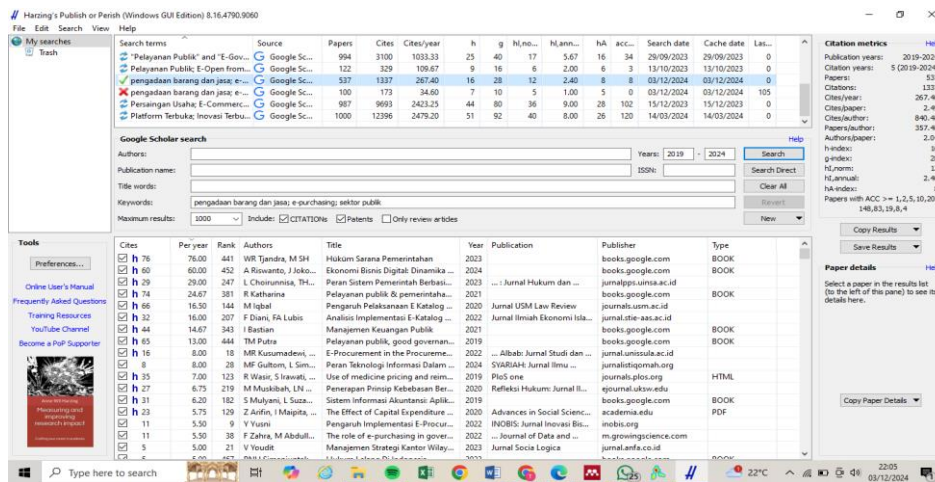

Figure 1. Google Scholar Database Search with Publish or Perish

Source: Publish or Perish (2024)

Based on the databasein figure 1 obtained through Google Scholar using Publish or Perish software from 2019 - 2024 in Table 1, it is recorded that articles on e-purchasing in the procurement of goods and services in the public sector include 537 articles, with a total of 1337

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citations. The average citation per year reaches 267.40, while the average citation per article is 2.49. Each article involves an average of 357.48 authors, and has an H index of 16, a G index of 28, and an individual H index of 12 and 8 for the annual index, and 8 for the total hA index.

RESULT AND DISCUSSION

The development of scientific publications on e-purchasing procurement of goods and services in the public sector published in journal articles indexed by Google Scholar from 2019 - 2024 shows an increase every year. Based on existing data, it shows that the number of scientific publications on e-purchasing in the procurement of goods and services in the public sector is 537 journal articles.

Table 1. Development of Scientific Publications

Years	Number of Publications
2019	50
2020	74
2021	75
2022	98
2023	109
2024	119

Source: Data processed by researchers (2024)

Based on Table 1. In 2019 there were 50 publications, followed by 74 publications in 2020, 75 publications in 2021, 98 publications in 2022, 109 publications in 2023, and 119 publications in 2024. However, there were 12 research publications whose year of publication was unknown. So there were 525 articles used in this study.
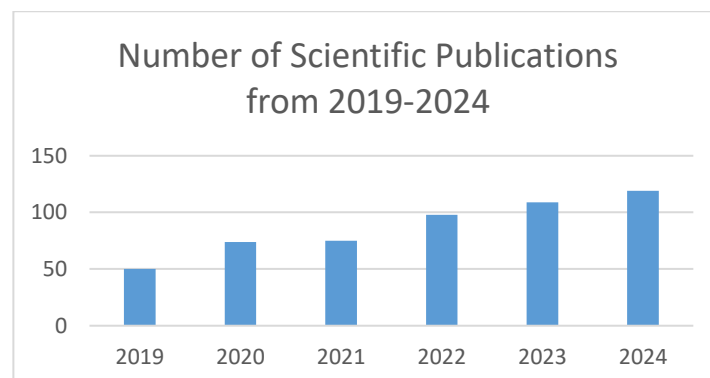

Figure 2. Growth of Scientific Publications 2019 – 2024

Source: Data processed by researchers (2024)

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Figure 2. Indicates that the curve chart has increased from 2019 - 2024. Based on the figure, there is an increase every year. Thus, it can be seen that the lowest publication in 2019 was 50 publications and the highest number of publications in 2024 was 119 publications. The research publications that have been obtained will then be mapped using software called VOSViewer. The distance between the circles connected in the network reflects the relationship between the variables studied, while the size of the circle indicates the number of variables analyzed simultaneously. The larger the circle, the more variables are involved in the study.

Figure 3. VOSViewer Network Visualization

Source: VOSViewer

Based on Figure 3. It can be seen that the network visualization of the use of keywords together. These keywords include "Procurement of Goods and Services", "E-Purchasing" and "Public Sector". The keyword "Procurement" has a larger circle, this indicates that these keywords are often used for research on e-purchasing in the procurement of goods and services. In the figure, it is known that there are 4 clusters in it. The first cluster is red consisting of the topics of procurement, transparency, analysis, good, value, goods, implementation, risk, effect, e-catalog, system, government, service, corruption, public sector, public good, sector,

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direct procurement, services, government procurement. The green color for the second cluster includes e-purchasing, e-audit, LKPP, electronic catalog, e-catalogue, process, use, e-procurement, goods service, e-tendering, problem, procedure, epurchasing. The blue color for the third cluster includes procurement, distributors, procurement of goods and services, procurement sectors, procurement implementation, procurement activities, public, services, government services, direct procurement, public sector. While the yellow color for the fourth cluster includes providers, PPK, procurement of goods and services.
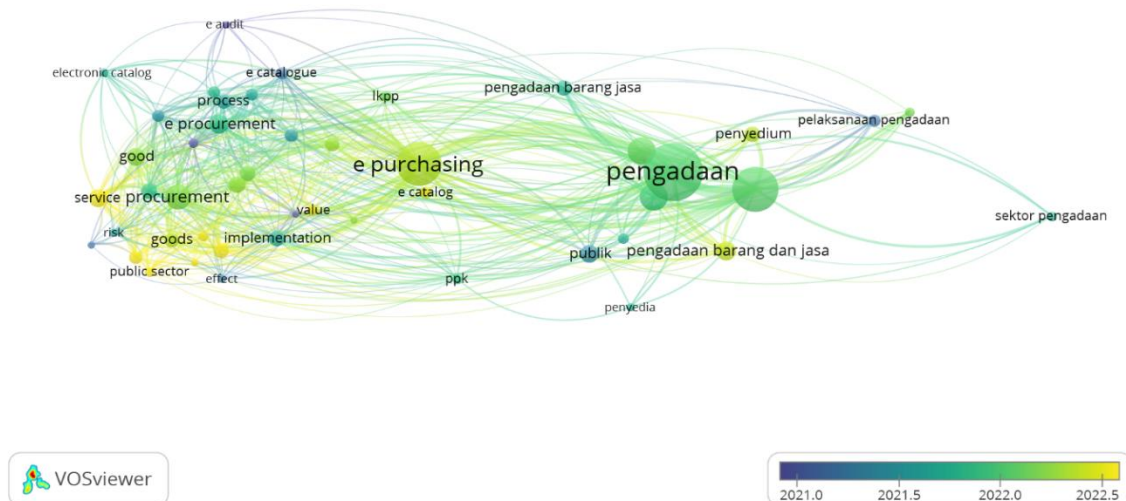

Figure 4. VOSViewer Visualization Overlay

Source: VOSViewer

Figure 4. Is an overlay image of the VOSViewer visualization that appears together with the year of publication. In the image there are three different colors, blue indicates if the keyword is used together in 2021 and green to yellow indicate the keyword is used together in 2022. This shows if there is a change in terms over a certain period of time.

Discussion

The results of the bibliometric analysis of the development of scientific publications on e-purchasing in the procurement of goods and services in the public sector in the period 2019 to 2024 show a fairly significant increasing trend. Based on the data that has been processed

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and displayed in Table 1, the number of publications has increased from 50 publications in 2019 to 119 publications in 2024. This increase reflects the growing interest of academics and practitioners in the issue of e-purchasing, which is one of the digitalization efforts in the procurement of goods and services in the public sector (Yuniarti, 2021).

Overall, 537 articles were identified, although only 525 articles could be used in this study because there were 12 articles with unknown publication years. The growth in the number of publications not only shows an increase in quantity, but also indicates an increase in the complexity and diversification of topics related to e-purchasing. This is clearly illustrated by the visualization produced using the VOSViewer software (Van Eck & Waltman, 2010).

In Figure 3, a network visualization of the use of keywords that often appear together in related scientific publications is shown. The use of keywords such as "Procurement of Goods and Services", "E-Purchasing", and "Public Sector" is a major indicator that the main theme in these publications focuses on the digitalization of the procurement process in the context of transparent and efficient governance (Kurniawan, 2020).

The size of the circles in the visualization indicates the frequency of occurrence of keywords, and the position and proximity between circles illustrate the relationship between topics. For example, the keyword "Procurement" has a large circle size, indicating that this word is often used in various combinations of studies, making it central to the discourse on e-purchasing. This visualization is very helpful in understanding how these terms relate, as well as identifying the main focus of the research that has been conducted (Saragih & Lestari, 2022).

Furthermore, Figure 3 also shows four main clusters formed from the results of the keyword network analysis. The red cluster consists of keywords such as procurement, transparency, analysis, good, value, goods, implementation, risk, effect, e-catalog, system, government, service, corruption, public sector, public good, sector, direct procurement, services, and government procurement. This cluster tends to represent macro issues in the procurement of goods and services, including aspects of governance, transparency, and evaluation of public policies (Wibowo, 2023).

The green cluster which includes keywords such as e-purchasing, e-audit, LKPP, electronic catalog, e-catalogue, process, use, e-procurement, goods service, e-tendering, problem, procedure, and epurchasing indicates a focus on the technical mechanisms and

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implementation of e-purchasing itself. This cluster reflects attention to the role of institutions such as LKPP and the accompanying digitalization process (Rahmawati, 2021).

The blue cluster focuses more on the structure and implementation of procurement in the public sector, with keywords such as procurement, distributors, procurement of goods and services, procurement sectors, procurement implementation, procurement activities, public, services, government services, direct procurement, and public sector. While the smaller yellow cluster shows the relationship with the role of actors such as goods/service providers and Commitment Making Officers (PPK) (Hakim & Prasetyo, 2020).

Next, Figure 4 provides an overlay visualization showing changes in terms over time. The blue color in the visualization indicates that the keywords were predominantly used in the early years (around 2021), while the green to yellow colors indicate increased use in more recent years such as 2022 to 2024. This shows the dynamics in the shift in research focus, where terms that were initially general such as "procurement" and "services" began to shift towards more specific and technical terms such as "e-audit", "e-catalogue", and "e-tendering" (Nugroho, 2022). This phenomenon can be interpreted as a form of deepening academic studies on the issue of e-purchasing. If in the early years the focus was still on the basic concept and introduction of the e-purchasing system, then over time, researchers began to study more detailed implementations, technical challenges, and the role of institutions and regulations in supporting the success of the system. This development is certainly very positive, because it indicates that the issue of e-purchasing is not just a momentary trend, but has developed into an integral part of public governance and state administration studies.

However, the results of the analysis also found that there are challenges in the implementation of e-purchasing that often appear in publications, such as limited human resources (HR) and resistance to changes in work culture. These challenges show that the success of implementing e-purchasing does not solely depend on technology, but also requires a comprehensive organizational transformation, including HR training, business process adjustments, and changes in bureaucratic mindsets (Susanto, 2021).

Based on the results of this discussion, it can be concluded that the implementation of e-purchasing in the Indonesian public sector has experienced rapid growth in terms of the number of scientific studies, but still faces fundamental challenges that require further attention. Synergy is needed between aspects of technology, regulation, and human resource

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capacity development so that e-purchasing can be truly optimal in supporting bureaucratic reform and increasing the efficiency of procurement of goods and services in the public sector. Further research is expected to not only describe the e-purchasing phenomenon from a technical perspective, but also explore in more depth its impact on governance, accountability, and public services as a whole.

CONCLUSION

This study indicates that the implementation of e-purchasing in the procurement of goods and services in the public sector in Indonesia shows significant growth between 2019 and 2024, reflected in the increase in the number of scientific publications reaching 537 articles. Despite the progress, this study also identified several obstacles that hinder the implementation of e-purchasing, including limited human resources and resistance to changes in work culture. In addition, bibliometric analysis reveals four (4) main clusters in this study and changes in terms used in publications each year. The results of this study can provide stakeholders with an in-depth understanding to overcome challenges and improve the effectiveness of e-purchasing implementation in the public sector.

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