

BIBLIOMETRIC ANALYSIS OF RESEARCH TRENDS IN TRANSPORTATION MANAGEMENT POLICY IN IMPROVING THE REGIONAL ECONOMY

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ABSTRACT

This study aims to analyze how research on transportation policy in improving the economy of a region is classified along with its trends to find out what topics can be used as research variables in the future and what potential policies can be carried out in realizing regional economic improvement. The research method is a literature review using a bibliometric analysis approach starting from defining the keywords 'Transportation, Transportation Policy, and Regional Economic Improvement' in the Publish or Perish application with Google Scholar as a database. After narrowing the results by selecting topics, 55 related articles were obtained for review from a total of 100 articles from the initial search results. Then the meta data was compiled using the Mendeley application. The Vosviewer application is used to visualize research trends. The results showed that effective transportation policies can open up opportunities for better access for people, businesses, and goods to various regions, enabling sustainable economic improvement. This research is limited by the number and lack of variety of research topics of the articles reviewed.

Keywords: *Bibliometrics, Regional Economics, Policy, Transportation Management.*

1. INTRODUCTION

Transportation is one of the key factors in the economic development of a region. Transportation is closely related to economic productivity. Progress in transportation will bring increased human mobility, mobility of production factors, and mobility of processed products that are distributed or marketed. However, there are several problems in the transportation system that can hinder regional economic development. One of the problems often faced is the lack of adequate transportation infrastructure. Poor or low-quality road, bridge, port and airport infrastructure can slow down the movement of goods and people, thereby hindering business growth and investment in the area. In addition, frequent traffic congestion and congestion can cause increased logistics costs, which in the end can reduce a company's competitiveness and profits [1].

Apart from inadequate infrastructure, another problem that can hinder a region's economy is limited accessibility. If the area is difficult to reach physically, either by land, water or air, then opportunities to develop business and attract investment from outside the area will be limited. Poor accessibility can also affect population

mobility, which in turn can hinder access to quality education and health services. Apart from that, unreliable transportation can also cause uncertainty in the supply chain and distribution of goods. This can disrupt production and delivery of goods, which in the end can reduce the company's operational efficiency and result in financial losses. The development of an area or region depends on the development of transportation facilities and infrastructure or vice versa [2].

Poor transportation policies can cause various economic problems that are detrimental to a region. One of the common problems that arises is increasing logistics costs. When transportation systems are inefficient or hampered, the cost of shipping goods becomes higher, which can ultimately increase product prices for consumers or reduce company profitability. This can reduce the competitiveness of local products in regional or national markets. Apart from that, poor transportation policies can also hinder investment and business growth. If accessibility to a particular area is limited or transportation to the area is unreliable, a company may be reluctant to open a branch or production facility there.

This can hinder job creation and local economic opportunities [3].

In addition, poor transportation policies can also slow down tourism development. Discomfort or uncertainty in travel, especially if related to air or rail transportation, can reduce tourists' interest in visiting an area. This can reduce revenues from the tourism industry, which is often a significant source of income for many regions. Finally, poor transportation policies can also cause economic inequality between regions. Regions that are more remote or less connected to major transportation networks may experience greater difficulties in accessing resources and markets, which may lead to worsening economic inequalities between regions [4].

In order to overcome economic problems arising from poor transportation policies, it is important for the government and stakeholders to evaluate and reform transportation policies, invest in adequate infrastructure development, and promote a more efficient and sustainable transportation system. In human life, transportation plays a very important and strategic role because human mobility from one place to another requires transportation services. This will help increase economic growth and community welfare in an area [5].

The transportation system is a basic element of infrastructure that influences urban development patterns. To overcome transportation problems that can reduce a region's economic potential, the government can adopt various strategic policies. First of all, the government can invest in better transportation infrastructure, such as roads, bridges, ports and airports. Adequate infrastructure will facilitate the flow of goods and people, allowing businesses to be more efficient in the distribution of their products. In addition, the government can implement support policies for the development of efficient and affordable public transportation. This could include the development of rail systems, bus rapid transit, or other public transportation services. Good public transportation can reduce traffic congestion, reduce air pollution, and increase population mobility, all of which can support economic growth [6].

The government can also encourage the use of information and communication technology to manage traffic and transportation more efficiently. Smart traffic monitoring systems, smartphone-based transportation applications, and transportation data integration can help optimize the use of existing infrastructure. In addition, support for private investment in the transport sector could also be an important step. Public-private partnerships can help accelerate the development of needed transportation infrastructure while reducing the government's fiscal burden. Lastly, the government needs to pay attention to security aspects in transportation. Street crime and transport incidents can be a serious

obstacle to economic growth. Therefore, improving transportation security and strict law enforcement can create a safer environment for citizens and businesses. By implementing these various policies, the government can overcome transportation constraints that limit a region's economic potential, create a conducive environment for business growth, and improve people's quality of life [7].

From the description of the problem and background above, the formulation that is expected to be completed through the discussion in this research includes, what is the role of transportation policy in improving the economy of a region and how are recommendations for effective transportation policies carried out to improve the economy of a region?.

2. METHOD

This research adopts a literature review method with a bibliometric approach. The literature review will be carried out in a systematic, explicit, and replicable manner [8] or a mind mapping method that emphasizes the limits of knowledge [9]. Bibliometric analysis is an approach used to study the development of a research domain, including topics and authors, with reference to the social, intellectual and conceptual structure in a scientific discipline (Donthu, Kumar and Pattnaik, 2020). Bibliometric analysis is commonly used in scientific disciplines and focuses on the quantitative study of journal papers, books, or other types of written communication.

The bibliometric analysis method in this research was used with five steps introduced by [10]. These five steps include defining the words "the role of transportation policy in improving the regional economy" as the initial search key (Defining Search Keywords), search results (Search Results), Refinement of the Search Results, compiling statistics on the data (Compiling Statistics on the Data), and data analysis (Data Analysis).

2.1. Defining Search Keywords

The literature search was carried out in September 2023, using the keywords 'transportation policy, regional economic growth'. PoP software with a database from Google Scholar was used to collect data. At first, we entered a query into the PoP software, using the keywords 'transportation policy, regional economic growth', and setting specific conditions for 'journals/articles'. We excluded newspapers, magazines, books, book reviews, book chapters, and anything that was not a published scientific article. From the Google Scholar database, we obtained 100 articles in the initial search that had been published during the period 2020 – 2023.

2.2. Search Result

From the search results carried out, 55 articles were found that were in accordance with the provisions identified by PoP (Unrefined Search).

2.3. Refinement of the Search Results

We excluded articles that were not suitable for the screening criteria, Table 1 shows the results of this process. References from articles that seemed important met the requirements. From the initial 100 articles, we withdrew 55 articles. After checking the titles and abstracts, 45 articles were excluded for various reasons. Table 2 shows the comparison of metric data from the initial search and refined search.

2.4. Compiling Statistics on the Data

The resulting search after refinement was then downloaded, saved in the Mendeley application and exported to RIS format to include all important information related to the paper, including title, author names, abstract, keywords and journal specifications (journal of publication, year of publication, volume, issue and pages).

2.4. Data Analysis

This article presents a bibliometric analysis for the keywords 'transportation, transportation policy, regional economic growth through transportation aspects'. The bibliometric analysis in this article uses the PoP application and obtains 100 search result articles with 395 citations and (131.67 citations/year). Narrowing the search results based on predetermined categories left 55 articles (45% decrease); Data regarding citations also changed, namely 232 citations and 77.33 citations/year. The full results of the comparison of metrics before and after narrowing the search as summarized in Table 2.

Table 1. Article Screening Results

Search Screening	Number of Articles
Irrelevant	45
Topic Transportation improves regional economy	55
Total	100

Table 2. Comparison Matrix

Matrix Data	Initial Search	Refinement Search
Keywords and relevance	Transportation journal, transportation policy, regional economic growth through transportation	Relevant journals with keywords
Source	Google Scholar	Google Scholar
Articles	100	55
Citation	395	232
Citation per year	131.67	77.33
Citation per article	3.95	4.22
Author per article	2.26	2.24

3. RESULT AND DISCUSSION

The findings of this study show that the article written by RWD Tuti in 2020 with the title 'Analysis of the implementation of work from home policies on the welfare of online transportation drivers in Indonesia' is the most cited article with a total of 46 citations in research trends in the field of regional economic improvement through transportation policy. The second most cited article is the article by A Lubis, SM Putri, I Effendi in 2022 with the title 'Counseling Efforts to Increase the Number of Passengers on Rajawali Public Transportation Services Business in North Sumatra during the Pandemic', has 28 citations. [11].

After taking into account citation frequency and other metrics, we analyzed the output of the PoP application into the VOSViewer application to determine what keywords appear frequently [12]. The VOSViewer application was used to visualize the bibliometric map on three different visualizations, namely network visualization, overlay visualization, and density visualization [13].

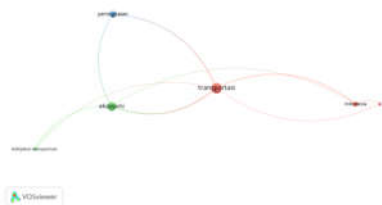
Table 3. Most Frequent Words

Term	Occurrences	Relevance Score
Ekonomi	20	6,595833333
Indonesia	6	11.318
kebijakan transportasi	3	5,688194444
Peningkatan	12	4,742361111
Transportasi	29	12.554

Table 3 displays the words that appear most frequently in the articles collected, accompanied by the number of occurrences and relevance score [14]. Data on the number of appearances and relevance score were obtained from journal data that had been collected via PoP and then processed using VosViewer. In the articles studied, the word "Indonesia" appears 6 times with a fairly high relevance score, namely 11,318. This shows that Indonesia is one of the main focuses in the articles analyzed [15].

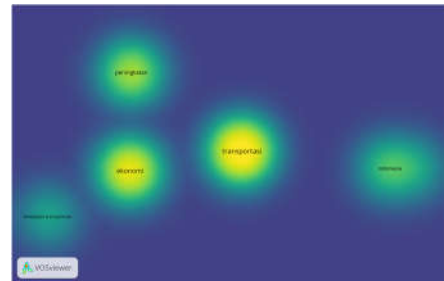
Then, the word "Transportation" appeared 29 times with a very high relevance score, namely 12,554. This indicates that transportation is a very main topic discussed in the article [16]. In addition, the word "Economy" appears 20 times with a relevance score of 6.595833333, indicating that the economy is also an important focus in the text [17]. "Improvements" appeared 12 times with a relevance score of 4.742361111, indicating that improvements in economic or transportation contexts may be a relevant topic. Finally, "transport policy" appears 3 times with a relevance score of 5.688194444, this indicates that transport policy is a topic that appears several times in the document, but perhaps not as many as other topics [18].

From this table, it can be concluded that the document is closely related to the topics of transportation, economics, transportation policy, and Indonesia, with special emphasis on transportation as the main topic [19].

**Figure 1** Research Trend Map Visualization

The full calculation on the PoP application was done with the number of occurrences set to 3 and resulted in 6 keywords and thresholds [20]. We also excluded inappropriate words such as transportation which is

wrong, resulting in five clusters. The first cluster is Transportation and Indonesia, with occurrences of 12 and 11 respectively [21]. The second cluster is Transportation Policy and Economy with occurrences values of 5 and 6 respectively. The third cluster is Improvement and Economy with occurrences values of 4 and 6 respectively [22].

**Figure 2** Visualization of Depth (Density) trend

Transportation plays a crucial role in determining transportation policy and the economic development of a region [23]. Effective transportation policies can open up opportunities for better access for people, businesses, and goods to various regions, enabling sustainable economic growth [24]. The transportation policy recommendations that can be made include:

1. By reducing logistics costs, increasing productivity and improving the competitiveness of a region. Efficient transportation can support important sectors such as trade, tourism and manufacturing [25].
2. Improving rural transportation systems to increase mobility and support economic and social growth in rural areas [26].
3. Development of public transportation to address traffic congestion and crowding [27].
4. Use of vehicles to support economic growth by increasing income and distributing it equitably to the community and the business world [28].
5. Urban transportation development carried out by the government is based on Transit Oriented Development (TOD) to meet the needs of the community [29].

This policy aims to improve the efficiency, effectiveness, reliability, quality, safety, and affordability of transportation services. The development of transportation infrastructure is very important in building the economy and connecting the diversity of identities in Indonesia. The implementation of the policy has successfully improved the economy of certain regions in Indonesia [30].

4. CONCLUSION

This study reviewed 100 articles with themes related to transportation policy in improving the economy of a region. Articles were collected from Google Scholar database using PoP software. 55 articles were screened from 100 articles at the beginning of the search. Narrowing the search results based on predetermined categories left 55 articles (45% decrease). The data on citations also changed, which was 77.33 citations/year. The gaps in this study suggest directions for future research agendas on the topic of transportation and its impact on the economic development of a region, as well as recap and support important findings from the review. Overall, this research topic is on an upward trend, with particular attention needed for more collaborative research across sub-topics such as transportation in specific areas, pollution aspects, cultural economy and so on.

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