

DIGITALIZATION OF LAND MEASUREMENT MAP TO MINIMIZE LAND DISPUTE

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Abstract

The purpose of this research is to digitize land maps, namely plotting land parcels which are the result of digitally redrawing (digitizing) Measurement Letters (SU) which are mapped onto land registration maps. The research method used is bibliometric analysis with three stages, namely harvesting data on Google Scholar, screening data in CSV format, and visualization using VOSviewer. The results of the study show that the digitization of land measurement maps should be carried out optimally to provide legal certainty in the land sector and to avoid land disputes. Digitizing the land map, which is meant by a digital map, functions almost the same as Google Earth which can display and visualize land maps. Thus, all land boundaries and land area measurements can be seen digitally and can be accessed online anytime and anywhere. The existence of a digital land map will reduce the occurrence of land disputes.

Keywords: Digitization, Land disputes, Land measurement maps.

1. Introduction

Digitization of land maps must be carried out because entering the era of society 5.0. [1, 2]. This is interpreted as high competition in various sectors that directly intersect with the needs of society because at this time people are required to live side by side with technology, master and utilize technology [3-5]. The digital era is an era where all activities that support life are facilitated by technology. Thus, it is more practical and modern. In the Land Sector, to realize the modernization of land services, begins with the application of electronic-based land services, up to the production of documents in the form of electronic documents [6]. The urgency of land ownership in Indonesia does not always find a safe point because currently, land disputes are rife in Indonesia [7]. Therefore, the program to digitize databases in the land sector is one of the government's programs [8].

Two types of land data can be digitized, namely textual data and spatial data. Textual data is data in the form of text contained in the form of items in the measurement letter that describes the physical condition of the land, both location, location, land condition, area, and so on. While spatial data is vector data in the form of lines that have direction and length [9]. Land administration which is still conventionally based must be shifted towards digital-based land administration. Land administration services such as systematic complete land registration that are not yet digitally based must be directed at digitization, especially in the era of accelerated development of science and technology [10]. One of the digitization of land administration is the digitization of land maps because the availability of digital data is the main prerequisite for electronic services in the land sector [11]. It is very important to start utilizing technology, namely in the land sector, especially the digitization of land map measurements. Because until now one of the problems in Indonesia is not having land maps that are integrated digitally and systematically and use conventional maps and measurements which are very vulnerable to manipulation, loss of documents, and changes to land boundaries, giving rise to land disputes. This dispute is caused by many factors, including multiple certificates, unclear land boundaries, and so on.

Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency ATR/BPN Number 6 of 2018 concerning Complete Systematic Land Registration has formulated efforts to digitize land administration. This formulation can be observed from the provisions of Article 17 paragraphs (1) and (2) of the ATR/BPN Regulations, each of which states that: The first, implementation of collection, processing, and maintenance of physical data and juridical data on land rights determination and registration using checklists, blanks, maps, and other lists as well as entries or entries in the KKP application. Second, the Head of the Land Office must ensure the suitability of the data generated from the Complete Systematic Land Registration activity with the electronic data in the KKP application as referred to in paragraph (1).

The novelty of this research is that you have to immediately switch from conventional/manual land administration to digital-based administration such as "land registration, land surveying also including making digital-based national land maps." We used bibliometric analysis in this paper, based on several previous bibliometric studies [12-26].

2. Method

In this study, we used the bibliometric analysis method using the Publish or Perish application by entering keywords on Google Scholar, namely "Digitizing, land map, land measurement" for the period 2018 to 2022, and found 500 articles with 121945 citations. Data collected from Google Scholar is then stored in CSV format for screening according to the year of publication. The results of screening in the CSV format carried out on Microsoft Excel correspond to the year of publication, namely in 2018 there were 225 articles, in 2019 there were 162 articles, in 2020 there were 62 articles, in 2021 there were 20 articles and in 2022 there were 11 articles, so that from a total number of 500 articles after screening according to the year of publication there were 480 articles and 2 articles without the year of publication. The selected and screened data is then saved in the RIS/Refmanager format for analysis using VOSviewer.

3. Results and Discussion

As a result of registering a parcel of land, it will produce various types of documents that must be archived, in Article 33 Government Regulation No. 24 of 1997 states that the types of documents in the general register include land plot maps, land survey documents, and land books [12]. Measurement Drawings (GU) are used in land registration activities to describe land parcels, calculate the area of land parcels, as a reference in land registration data maintenance activities and return land parcel boundaries if needed at any time. GU which is authentic data regarding the object of rights has the power of evidence before a judge because the GU contains the amount of measurement and binding as well as the approval of land parcel boundaries from parties with an interest in said land parcels.

The intended Measurement Letter provides textual information about the location of the land parcels and geographical information about the land parcels. The Measurement Letter is made digitally using an application system at the Ministry of ATR/BPN, namely the Computerized Land Office (KKP) application in the form of sheets of paper. The Land Book includes land archives whose existence is kept at the land office. Land certificates that are generally known by the public as proof of land rights are copies of the Land Book. In issuing land rights certificates, documents are needed as proof tools as the basis for land registration. These documents are known as registration documents or Filling List 208 (DI 208).

Digitization in the land sector, namely the digitization of all administration/archives related to lands such as Measurement Drawings (GU), Measurement Letters (SU), Land Books (BT), and Warkah. Digitization of land has been carried out since 2017, especially for Measurement Drawings (GU). This digitization activity coincided with the start of the PTSL program. Digitization activities, especially Measurement Drawings, are only limited to digital/electronic documents from Measurement Pictures by taking Measurement Pictures with a digital camera and then storing the file on the computer and backing it up on the hard drive [27].

One of the problems in the land sector in Indonesia is the absence of a national land map. A land map is an illustrative map distribution of soil types in an area. At present the digitization of land maps is still being carried out in each region, such as the Jambi City Land Office, Jambi Province digitizing land maps with SIMTANAS, and the Sleman Regency Land Office using the LARIS [28].

application, and several other areas that have not yet become national land maps. Even though one of the services that Google provides is Google Earth.

Google Earth is an interactive mapping application issued by Google that displays a world map in 3D, topographical conditions, satellite photos, and terrain that can be overlaid with roads, buildings, locations, or other geographic information [29]. With Google Earth, the map of the mainland will be very clearly visible, even the boundaries of each country, province, city/regency, and sub-district can be seen just by typing what you are looking for. Digitization of land maps such as Google Earth needs to be done, that way all land boundaries on the digital land map will be visible and can minimize the occurrence of land disputes caused by land boundaries, and unclear land areas. As an example, when we typed the border of Central Java and East Java, Fig. 1 can be obtained. The development of this research trend is shown in Fig. 2. It explains the trend of research on the keywords "digitizing, land map, land measurement" in the last 5 years, which has decreased drastically. This is because there is not much research on land digitization, even though research on land digitization is very important for the benefit and welfare of the wider community and to minimize the occurrence of land disputes that occur around us every day.

Figure 3 describes the results of the network visualization analysis on VOSviewer which shows 6 clusters consisting of Cluster 1 in red has 5 items consisting of elemental mapping, large area, published map, scanning rate, and specific surface area. Cluster 2 in green, there are 5 items consisting of the feature map, field, high resolution, machine, and management. Cluster 3 in blue, there are 4 items consisting of digitization, land, land cover map, and terrestrial laser scanning. Cluster 4 in yellow has 3 items consisting of comparison, landslide susceptibility mapping, and study area. Cluster 5 purple clusters have 3 items consisting of future, google earth, and land use. Cluster 6 in light blue, 2 items consist of distribution and microstructure.



Fig. 1. The dividing line for Central Java and East Java uses Google Earth.

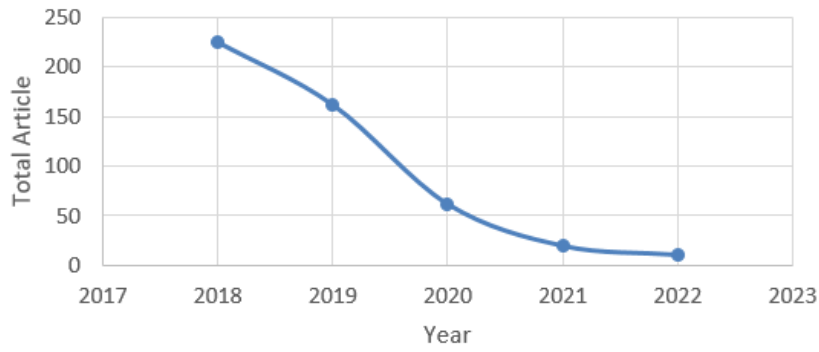


Fig. 2. Research trend.

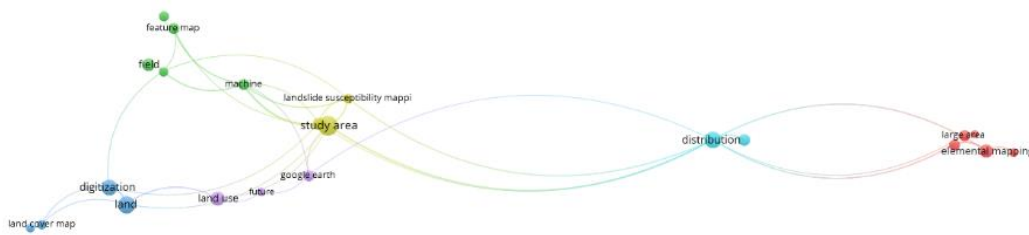


Fig. 3. Network visualization.

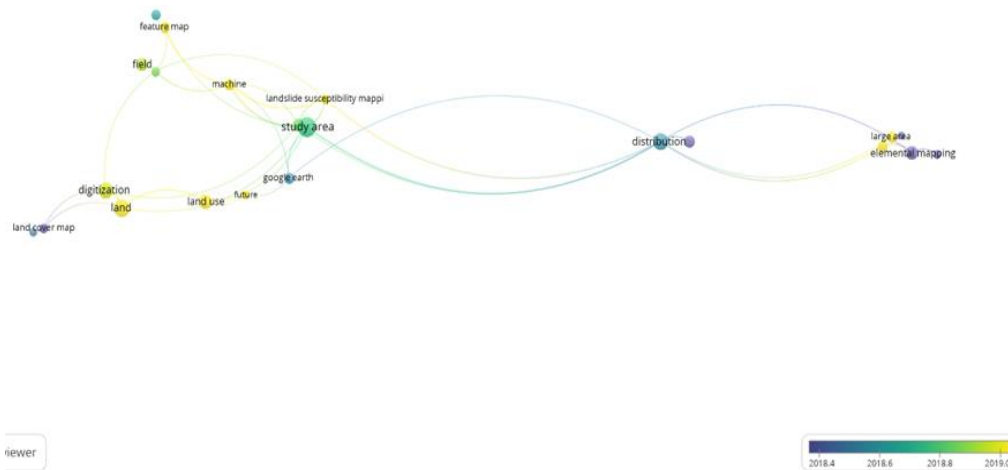


Fig. 4. Overlay visualization.

Figure 4 explains the oldest and newest years of the researched topic from the keywords. There are several colours ranging from dark purple to bright green and yellow. The darker color indicates the longest research year, namely 2018, while the yellow color indicates the most discussed topics in 2019, namely digitization, land, land use, future, machine, feature map, landslide susceptibility mapping, large area, and specific surface area. Figure 5 explains the topics that are currently being studied and have not been widely studied.

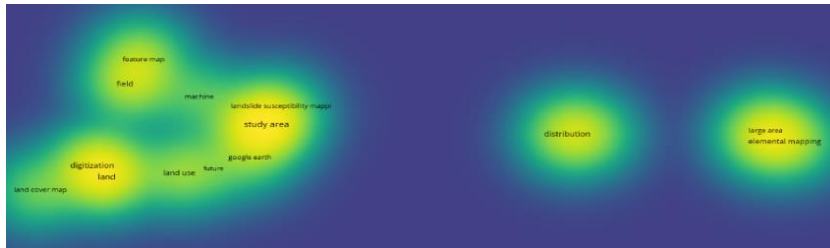


Fig. 5. Density visualization.

4. Conclusions

Digitalization of the land measurement map should be carried out maximally and optimally to provide legal certainty in the land sector and to avoid land disputes. Digitizing land maps, which are referred to as digital maps, function almost the same as Google Earth which can display and visualize land maps so clearly that all land boundaries and land area measurements can be seen digitally and can be accessed online anytime and anywhere.

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