



# Geographic Information System of Fish Farmers Location in Tulungagung District Using Leaflet

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**Abstract—** Tulungagung District is famous for its fish cultivation, especially the cultivation of ornamental chef fish and gourami consumption. However, this abundant fish cultivation product is not accompanied by information facilities on the locations of fish cultivators in Tulungagung District so that buyers have difficulty finding locations for fish cultivators in Tulungagung District. In this study will make a Geographic Information System featuring fish cultivators in Tulungagung District. This system provide a solution to the above problem by creating a GIS-based website using leaflets. To display data on a website using longitude and latitude coordinates. As for the test, a comparison will be made between leaflets and api maps. For the test results, the GTmetrix leaflet got grade A, while the google api maps got grade B.

**Keywords—** Fish Cultivators, GIS, Leaflet, Tulungaung

## I. INTRODUCTION

Fish cultivators are people who carry out fish cultivation activities to produce fish commodities for both consumption and ornamental purposes. Fish rearing can be done by various methods in various places. The media most widely used in fish farming are concrete ponds and ponds. In Tulungagung District, the most famous is the cultivation of ornamental fish [1, 2]. The mascot of ornamental fish in Tulungagung District is the chef fish. According to the news platform money kompas.com [3] ornamental fish cultivated in Tulungagung District control almost 90 percent in Indonesia and some have been exported to neighboring countries, one of which is used as a mascot, namely Mas Koki fish, strain Tosa, and the superior product of Tulungagung District for In addition, based on data from the Central Statistics Agency (BPS) in 2014, ornamental fish cultivators rank first in fishery business households with the highest income of IDR 50 million per year.

The problem discussed in this case study is the difficulty of the community in finding the location of fish farmers in Tulungagung District. Therefore, to overcome the above problems, a geographic information system was created that displays data on fish cultivators in Tulungagung District. A geographic information system is a computerized system for manipulating, analyzing, and storing geographic information [4, 5, 6]. In this research I use leaflets to display maps. The following are some previous studies of geographic information systems that display maps using leaflets.

Abdillah, Muhammad Zakki, Devi Astri Nawangnugraeni, and Abdul Hakim Prima Yuniarto. [7] In this study, spatial data obtained from the leaflet library was used to process greenpark data. The processed data is presented in the form of a polygon map so that people can easily understand it.

Moyon, Elbert S., Edsel Matt O. Morales, and Jaymer M. Jayoma [8] In this study, web GIS is used in agriculture which focuses on the problem of duplication of FMR projects. To overcome these problems, a GIS web was created by utilizing a leaflet library to facilitate the visualization of analytical funds to implement them into FMR to facilitate data management and report generation [9].

Renaldi, Ridwan, and Dimas Aryo Anggoro [10] This study uses a library leaflet in the use of maps displayed on the geographic information system website. For the data displayed on the geographic information system website in the form of data on the location of SMA / SMK in Surakarta City. The results of this research library leaflets simplify the process of making maps and displaying maps.

In this study, this journal uses fish cultivator location data to be processed into maps containing the locations of fish cultivators so that people who want to know the locations of



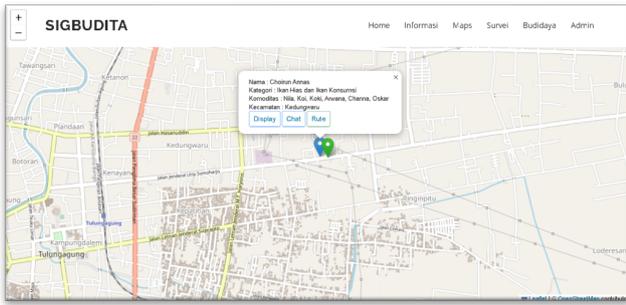


Fig. 5. Maps

In Figure 5 the input of cultivators is used to input data and location points of cultivators which will be displayed on maps. This feature is divided into 3 categories of cultivation, namely ornamental and consumption fish, ornamental fish, and consumption fish. The results that have been inputted based on each category will be distinguished based on the color on the maps.

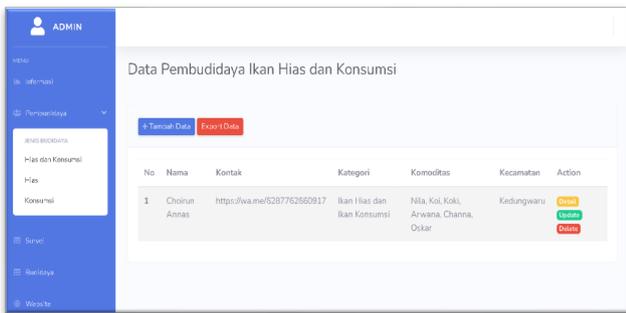


Fig. 6 Data List

in figure 6 loads the view when adding data. The data entered by the admin will be added to each database table based on the category of cultivation type. For contact input, it is entered in the form of a wa api link so that it is easily accessible by the user when being contacted. For the display form, input the link for each fish cultivator commonly used for promotion. To display the location, use the longitude and latitude of the cultivation location.

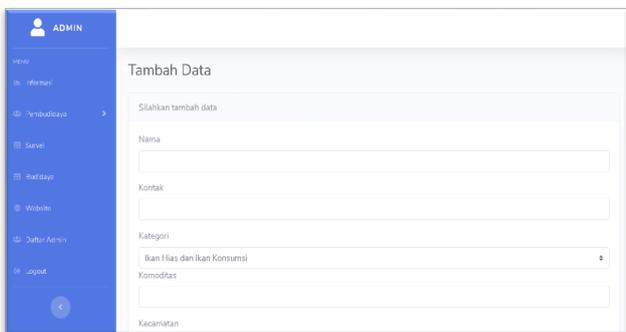


Fig. 7 Data Input

#### IV. PERFORMANCE EVALUATION

In the process of testing this project, GT metrix is used to test maps that use leaflets with maps that use google api. In figure 5 the performance of the leaflet is superior to the google maps api. So for loading performance in displaying websites, leaflets are superior because they are small in size.

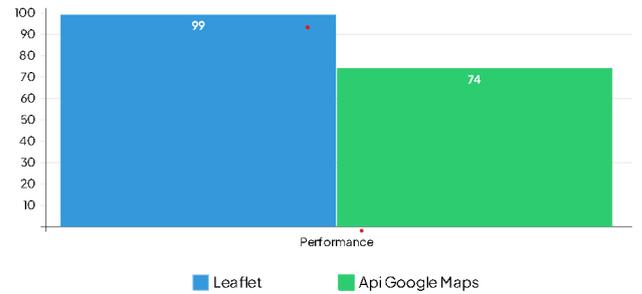


Fig. 8. Loading Performance

For figure 6 The structure of the google maps api website is superior. Testing the structure of the web using GT metrix in testing the structure. The website structure on google api maps is more complex than leaflets.

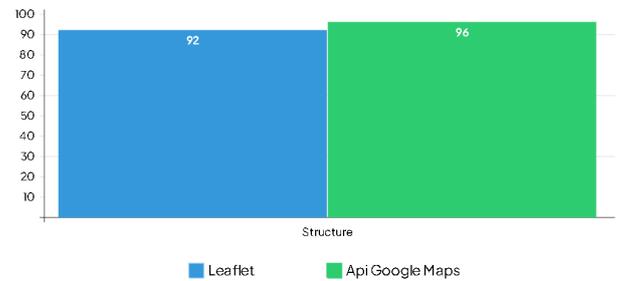


Fig. 9. Complexity of Structure

#### V. CONCLUSION

Tulungagung is one area that is famous for its many fish cultivators, both ornamental fish and farmed fish. However, many people still don't know which locations are fish cultivators, which makes it difficult for buyers to find them. So in this study a system was created to display the location of fish cultivators using geographic information system technology with library leaflets. The results of testing the use of library leaflets compared to Google Maps Api found that the loading time for Leaflets is faster than Google Maps Api. With this system, it will be easier for the community to find the location of fish cultivators in the Tulungagung area. And suggestions for further research is for this system to be developed with online sales features such as e-commerce..

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