

# Mapping of the Creative Industries of the Used Rubber Crafts Sector Using Geographic Information Systems Against the Economic Impact of the Community With Productivity Measurements

Oktalia Triananda Lovita<sup>a,1,\*</sup>, Meraty Ramadhini<sup>b,2</sup>

<sup>a</sup> South Aceh Polytechnic, Jl. Reklamasi Pantai, Tapaktuan and 23711, Indonesia

<sup>b</sup> South Aceh Polytechnic, Jl. Reklamasi Pantai, Tapaktuan and 23711, Indonesia

<sup>1</sup> [Oktalia.t.lovita@gmail.com](mailto:Oktalia.t.lovita@gmail.com) \*; <sup>2</sup> [meraty.ramadhini@yahoo.com](mailto:meraty.ramadhini@yahoo.com)

\* Oktalia Triananda Lovita \* Meraty Ramadhini

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## ABSTRACT

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The handicraft industry is one of the industrial sectors that provides a major contribution to the community's economy. Creative industries have 14 sectors according to the provisions of the KBLI (Indonesian Business Field Book Classification). This research was conducted in the Kluet Sub-district of South Aceh by mapping the creative industries in the Kluet Sub-district of South Aceh on the economic impact of the community which is influenced by 4 indicators namely labor, capital, total production and income. South Aceh Kluet Subdistrict is dominated by one sector, namely the Used Tires Rubber craft sector. To determine the development and influence of the creative industry on the economy, productivity is measured by making a ratio between effectiveness (output) and efficiency (input). The results of the assessment of each indicator by comparing 2018 and 2019. There is an increase from the previous year, meaning that the greater the value of productivity, the better the achievement target. Productivity measurement of the results obtained is based on labor indicators in 2018 obtained capital value in 2018 gained Rp1.4 and in 2019 amounted to Rp 1.9. There is an increase from the previous year, meaning that the greater the value of productivity, the better the achievement target. Productivity measurement results obtained are based on labor indicators in 2018 obtained productivity values of 3 units / person in 2019 amounted to 5 units / person, the above results show an increase from 2018 to 2019. This means that the effectiveness of achieving quality levels of efficient use of resources has increased. The results above indicate an increase from 2018 to 2019. This means that the effectiveness of achieving the quality level of the efficient use of resources has increased.

*Keywords:*  
*productivity measurement,*  
*output,*  
*input,*  
*labor.*

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## I. Introduction

South Aceh Regency is geographically bordered by the Indian Ocean (Indonesian Ocean) with a coastline of up to 140 Km and an area of  $\pm 4,005.10$  Km<sup>2</sup>. To improve economic growth and prosperity of the people in Indonesia, the government makes policies one of them by prioritizing the industrial sector. Not only relying on industry as a source of the country's economy but also relying on creative Human Resources. The economic value of a product or service is also no longer determined by raw materials or production systems, but rather the use of creativity and innovation creation through increasingly advanced technological developments.

Creative industry itself is the development of concepts based on creativity capital that can potentially increase economic growth and public welfare. The rapid technological growth in the era of globalization will make all sectors in Indonesia experience tighter competition, especially in the industrial sector. The industrial sector is one sector that affects the Indonesian economy, especially in the creative industries. that the creative industry consists of several sub-sectors including: advertising, architecture, art and antique markets, crafts, design, fashion, film, video and photography, interactive games, music, performing arts, publishing and printing, computer services and software television and radio, research and development. The study was conducted in the Districts of North Kluet, South Kluet and East Kluet which were dominated by the handicraft sector, namely used tire rubber crafts.



Geographic Information System (GIS) method of productivity measurement analysis is one of the methods that can be used in determining the distribution of used tire rubber craft locations, so that this research is expected to be useful in exploiting opportunities and potential in Human Resources (HR) and able to create expansion of employment opportunities and opportunities business, increase the ability in the field of handicraft and institutional, sustainable and competitive.

## II. The Proposed Method/Algorithm

### A. Creative Industries

According to the Indonesian Ministry of Trade (2009), Creative Industries are industries that originate from the use of individual creativity, skills and talents to create prosperity and employment by producing and empowering the creative power and creativity of the individual<sup>[2]</sup>. also explained that the creative industry is an industry that relies on talent, skills and creativity which are the basic elements of each individual<sup>[9]</sup>. The main elements of the creative industry are creativity, expertise, and talent that have the potential to increase well-being through offering intellectual creation. The scope of activities of the creative economy can cover many aspects. The Department of Commerce (2008) identified at least 14 sectors included in the creative economy, namely: Advertising, Architecture, Art Market, Handicraft, Design, Fashion, Film, Video and Photography, Interactive Games, Music, Performing Arts, Publishing and printing, Computer and software services, Radio and Television, Research and Development<sup>[2]</sup>.

### B. Geographic Information System (GIS)

According system (Pratama 2018) is a set of interrelated and interconnected procedures for carrying out a task together. Information is the result of processing data from one or various sources, then processed so as to provide value, meaning and benefits. In the process of processing data into information verification processes are also carried out accurately, specifically, and on time. According to (Irwansyah 2013) is a system designed to capture, store, manipulate, analyze, organize and display all types of geographic data. From this definition can be broken down into several subsystems namely input data, output data, management data, and data manipulation and analysis<sup>[1]</sup>. According to (Eddy Prahasta 2009) can be broken down into the following subsystems<sup>[4]</sup>:

a. Data Input: This subsystem is tasked to collect, prepare and store spatial data and attributes from various sources. This subsystem is also responsible for converting or transforming the original data formats into a format (native) that can be used by the device in question.

b. Data Output: This subsystem displays or produces output of all or part of a database both in softcopy and hardcopy forms such as tables, graphs, reports, maps and so on. Data Management: This subsystem organizes both spatial data

c. Data Manipulation & Analysis: this subsystem determines information that can be generated by GIS and manipulates and modeling data to produce the expected information. Then the GIS subsystem can also be described as presented in Figure 2.1.

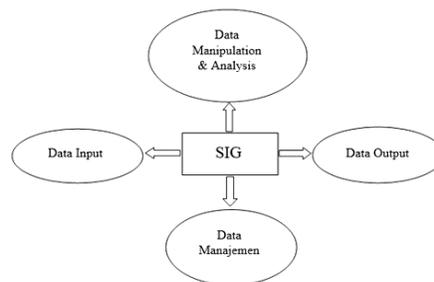


Figure 1. GIS Sub-System  
Source: Eddy Prahasta (2009)

### C. Productivity

Productivity is a tool used in a company in terms of economic management. Productivity is very beneficial for the course of a business by providing an assessment of effectiveness and efficiency. According to Mathis in (Butar, 2019) defines work productivity is a measurement and quantity of work by considering all the costs and things related to and required for the job. The results of the productivity assessment are in the form of a ratio between effectiveness as output and efficiency as input. In this case the performance index is measured to measure objectively the level of achievement<sup>[6]</sup>. According to Nasution (2016) Productivity is a concept that describes the relationship between them (the number of goods and services produced) and the source (the amount of labor, capital, land, energy, etc.) used to produce results<sup>[7]</sup>. From some of the above theories it can be concluded that work productivity is a comparison between the results of work achieved (output) with the overall resources used (input) of labor. The Productivity Formula can be stated as follows:

$$\text{Productivity} = \text{output/input} = \text{O/I or} = \text{efectivity output/efesiensi input.....( 2.1 )}$$

where :

O = *Output*

I = *Input*

### D. Factors Affecting Work Productivity

Various factors that affect employee work productivity proposed<sup>[3]</sup> include:

a. Mental attitude, in the form of:

1. Work motivation,
2. Work discipline,
3. Work ethics.

### E. Indicators of Work Productivity

According to Ranfil the key characteristics of productive employee profiles. The characteristics referred to are as follows<sup>[8]</sup>:

- a. More than fulfilling job qualifications.
- b. Highly motivated.
- c. Have a work orientation.
- d. Adult.
- e. Can get along effectively.

It can be concluded that productive employees have characteristics that are more than just fulfilling job qualifications, highly motivated, have work orientation, are mature, can get along effectively.

## III. Method

### A. Research Methods and Design

The methodology used in this study is the method of measuring productivity. Data Processing Methods Descriptive Analysis Some of the processing carried out to process data about the creative industries can be done as follows:

In theory, descriptive research is research that seeks to describe a situation, symptoms, events that are happening right now. The data will be processed using descriptive analysis as follows:

- a. Employment
- b. Operating revenues

- c. Production amount
- d. Capital / investment

#### B. Data Collection Techniques

Primary data collection techniques were obtained through interviews with five respondents, secondary data collection such as the Indonesian Earth Map (RBI) (Bappeda), thematic maps (related agencies), reports and literature from articles in relevant scientific journals.

#### C. Data Analysis Techniques

Productivity measurement is carried out to determine the ability or level of achievement of targets owned by each business actor, in this case the assessment is carried out by the four factors of the creative industry's contribution to the economy.

$$\text{Productivity Criteria I (Labor)} = \frac{\text{Production amount (Output)}}{\text{Total labor (Input)}} \quad (2.2)$$

$$\text{Productivity Criteria II (Capital)} = \frac{\text{Production amount (Output)}}{\text{Total capital (Input)}} \quad (2.3)$$

$$\text{Productivity Criteria III (Total Production)} = \frac{\text{Production amount (Output)}}{\text{Total working time/mount (Input)}} \quad (2.4)$$

$$\text{Productivity Criteria IV (Revenue)} = \frac{\text{Production amount (Output)}}{\text{Total working time/mount (Input)}} \quad (2.5)$$

#### D. Stages of the Research Process

This research generally includes 4 stages namely Data Identification

##### 1. Primary Data

The data is obtained directly from the observed sources, so the primary data is obtained from the relevant agencies, namely the BAPPEDA service and the Department of Industry.

##### 2. Secondary Data

Data obtained from observations and previous studies as a supporter of the observation process, in this study obtained secondary data from the Department of Industry and Trade. Data Collection Method The method for collecting data in conducting research, namely:

###### 1.1. Discussion group

The initial steps are carried out by conducting initial discussions. Each question originates from each individual's thoughts or hypotheses which are conducted every week.

###### 1.2. Ground Truth

The steps taken are collecting primary and secondary data, making observations directly on the object to be studied. The first observation was made to obtain information on creative industry data contained in the Districts of North Kluket, Kluket Timut and South Kluket, the data was obtained from related agencies including the industry and trade agencies. The flowchart of the research stage can be seen in the Figure below:

## IV. Results and Discussion

### 1. Data Collection

The subjects in this study are the owners of used tire rubber businesses in the North Kluet, East Kluet and South Kluet Districts. As for a number of villages in three districts, among others, Simpang Empat Village, Sapik Village, Pulo Goat Village, Indra Damai Village, Pulo Lee Village and Kedai Kandang Village. Creative industry data presented includes a profile of the company including the name of the owner, type of product produced, address, and duration of the business. *Authors and Affiliations.*

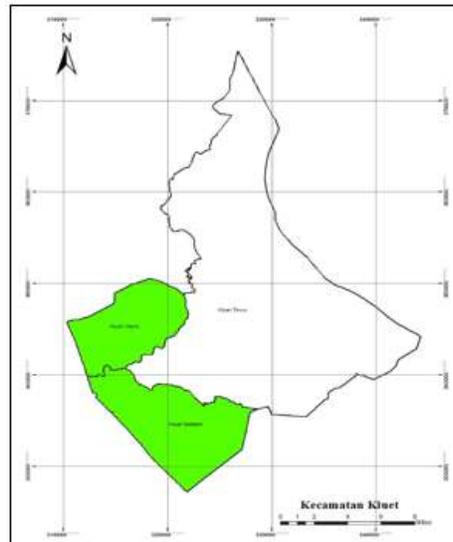


Figure 4. District used as a location point

### 1. Descriptive analysis

The used tire rubber craft is one of the handicrafts owned by the area that has an economic contribution value in North Kluet Subdistrict, East Kluet and South Kluet, this is because in terms of employment that absorbs from the surrounding environment, the initial capital of each owner to establish a used tire rubber industry, the amount of production produced each week net income received from business owners.

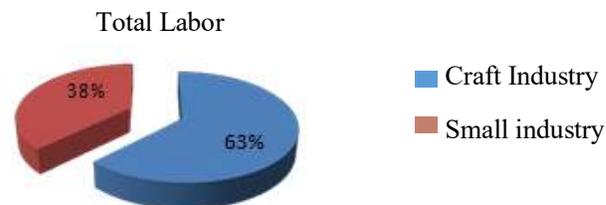


Figure 6. Percentage of labor

Based on the graph above there is a comparison between the percentage of the handicraft industry and small industry. The difference between the two types of industries is based on the number of employees owned by each business actor. Classification, namely the craft industry only has a number of employees between 1-4 employees, small industries have employees between 5-19 employees, medium industries with a range of 20-99, and large industries have a number of employees around 100 employees. In this case the workforce has a major influence on the course of each company and small business. In this study labor is measured based on the value of productivity,

productivity measurement is able to have a positive impact on labor that is able to carry out its work better than yesterday or before. Capital is the result obtained from every business actor for the sustainability of the production process. The data obtained are in 2018 and 2019. The data is measured productivity to find out the ratio between investment and production amount,

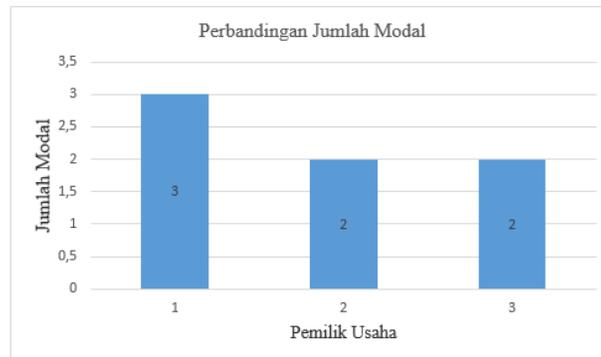


Figure 7. Amount of Capital

The amount of production has a very big influence in a company or business. The amount of production will affect the progress of a business. If the company is able to produce large products and large sales, the company is able to receive high income, so when viewed in terms of the economy that the creative industry is able to contribute to the economic community. The amount of production will depend on the number of employees and capital.

Income is the main pillar of the people's economy. The greater the income earned by the community, then within that scope it can be categorized that the community's economy is good.

$$\begin{aligned}
 \text{Produktivitas capital (2018)} &= \frac{\text{production amount (output)}}{\text{capital (input)}} \\
 &= \frac{\text{IDR. 4.250.000}}{\text{IDR. 3.000.000}} \\
 &= \mathbf{IDR 1,4}
 \end{aligned}$$

$$\begin{aligned}
 \text{Produktivitas capital (2019)} &= \frac{\text{production amount (output)}}{\text{capital (input)}} \\
 &= \frac{\text{IDR. 7.450.000}}{\text{IDR. 4.000.000}} \\
 &= \mathbf{IDR 1,9}
 \end{aligned}$$

## 2. Partial Productivity Measurement

Productivity measurement by using the output / input ratio approach produces 2 types of productivity measures, namely partial productivity and total productivity. There are 4 factors that will be measured, namely labor, capital, total production, and income. Measurement of capital productivity is based on a comparison of the amount of production (output) with capital (input).

$$\begin{aligned}
 - \text{ capital productivity (2018)} &= \frac{\text{production amount (output)}}{\text{capital (input)}} \\
 &= \frac{15}{\text{IDR. 3.000.000}} \\
 &= \text{IDR 0,000005} \\
 \\ 
 - \text{ capital productivity (2019)} &= \frac{\text{production amount (output)}}{\text{capital (input)}} \\
 &= \frac{25}{\text{IDR. 4.000.000}} \\
 &= \text{IDR 0,000007}
 \end{aligned}$$

Measurement of income productivity from the comparison of the amount of production (output) with income (input).

$$\begin{aligned}
 - \text{ income productivity (2018)} &= \frac{\text{production amount (output)}}{\text{income (input)}} \\
 &= \frac{15}{\text{IDR. 500.000}} \\
 &= \text{IDR 0,00003} \\
 \\ 
 - \text{ income productivity (2019)} &= \frac{\text{production amount (output)}}{\text{income (input)}} \\
 &= \frac{25}{\text{IDR. 1.800.000}} \\
 &= \text{IDR 0,00001}
 \end{aligned}$$

### 3. Measurement of Total Productivity

Total productivity is the result of total output of total input. The output of this study is the result of production, so the total output comes from the sum of the total production of 6 business actors, while the input of this study is labor, working time, capital, and income

Total Output = N1 + N2 + N3 ..... + N32

N = Number of Production / month

$$\begin{aligned}
 - \text{ Total Input} &= \text{total labor} + \text{total capital} + \text{total work time} + \text{total income.} \\
 \\ 
 - \text{ Total IDR (2018)} &= \text{Price x Production Amount} \\
 &= \text{IDR 500.000 x 15} \\
 &= \text{IDR 75.000.000} \\
 - \text{ Total IDR (2019)} &= \text{Price x Production Amount} \\
 &= \text{IDR 520.000x 25} \\
 &= \text{IDR 130.000.000} \\
 \\ 
 - \text{ Total year productivity (2018)} &= \text{Total Output / Total Input} \\
 &= \text{Rp 75.000.000/30324005} \\
 &= 2,47328807 \approx \mathbf{2,4} \\
 - \text{ Total year productivity (2019)} &= \text{Total Output / Total Input} \\
 &= \text{Rp130.000.000/40324007} \\
 &= 3,22388595 \approx \mathbf{3,2}
 \end{aligned}$$

## V. Conclusion

The conclusions that can be drawn from the identification of the creative industries of used rubber tire crafts are as follows:

Kluet sub-district is dominated by the creative industry of the handicraft sector compared to other sectors. So in this study identification was carried out for the craft sector. This used tire rubber craft through measurement of productivity with a ratio of effectiveness (output) and efficiency (input), the results obtained are based on capital indicators in 2018 to get Rp 3.0 and in 2019 amounting to Rp 4.0. The above results show an increase from 2018 to 2019. Creative industries contribute to the economy of the community in 2018 to 2019 this is influenced by the number of workers in 2019 by 5 people so it has increased compared to 2018 which only 3 workers, the number of production in the year 2018 there were 15 units, and in 2019 there were 25 units. Revenues in 2018 amounted to IDR 75,000,000 to IDR 130,000,000. Measuring productivity with the ratio of effectiveness (output) and efficiency (input), the results obtained are based on labor indicators in 2018 obtained a productivity value of 3 units / person in 2019 of 5 units / person, capital in 2018 gained Rp 1, 4 and in 2019 Rp. 1.9. The above results show an increase from 2018 to 2019. The value of the total productivity index. This means that the effectiveness of achieving the quality level of the efficient use of resources has increased.

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