Socio-economic studies of coastal communities at the Fishing Port of Kutaraja, Banda Aceh, Indonesia

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Abstract. Kutaraja Ocean Fishing Port (KOFP) has undergone significant development from small traditional-based fishing port (PPP, type C) to large modern-based fishing port (KOFP, type A) in the past couple years. The rapid development of the Kutaraja fishing Port has certainly had implications on socio-economic status of coastal communities around it. This study aimed to determine the socio-economic status of coastal communities around Kutaraja Ocean Fishing Port. Samples were taken from several respondents; fishermen (20 people), fish traders (15 people), food vendors (10 people) and management staff (2 people) to obtain primary data and secondary data. Data analysis was conducted descriptively with a quantitative approach i.e. the data collected was subsequently tabulated in the form of tables and graphs by using excel application. The results showed that the highest level of education of coastal communities around KOFP was high school level and the average ages of respondents was belong to the productive age at group of 27-50 years. Economic activity was seen from the number of dependents at most three people in each family and the rate of income averaged Rp.1.500.000-Rp. 2.000.000 per month. The pattern of public adaptation of social activity was demonstrated by the presence of some fish traders and food vendors who are still using the jetty area to perform their activities and cooperate with each other in utilizing the facilities. It can be concluded that the socio-economic status of coastal communities around KOFP was affected by activities in KOFP. The existence of KOFP showed a big impact on the socio-economic status of the coastal community around KOFP.

1. Introduction
Aceh is one of province in Indonesia that are well-known for its abundance and diversity of fisheries resources [1-3] including shrimp [4-6], mollusk and bivalves. In capture fisheries sector, Aceh has a lot of fishing port spread around western and eastern coast of Aceh. One of the leading fishing port in Aceh is The Kutaraja Ocean Fishing Port (KOFP). The Kutaraja Ocean Fishing Port (KOFP) is the only type A fishing port located in Aceh province which has been developing from a Coastal Fishery Port (type C) to an Ocean Fishery Port (type A). This fishing port is planned to serve ships at sea scale with a maximum weight of 60-120 GT (Gross Tonnage). The welfare of fishermen or other users can be seen from the facilities available at KOFP Kutaraja. The Kutaraja Ocean Fishery Port is still under construction and development, both in terms of infrastructure and the availability of industries that can create jobs for the surrounding community. There are many changes that have occurred from type C to type A port for the community around the port, including interactions among KOFP users while on the
move, namely social relations between fishermen, fish traders, pedicab drivers, and fish transporting workers in working together to take advantage of the facilities available at KOFP.

There are two models of social relations within the fish trader community at Kutaraja Ocean Fishing Port (KOFP), namely social relations in one working group [7]. Another purpose of this social relationship is a relationship that is born in a working group with fish traders, such as a working relationship between fish traders and investors. Another studies related to socio-economic of community in different area in Indonesia have also been reported [8-12].

The development of the KOFP status is also expected to provide great benefits in the lives of the surrounding community in order to improve their welfare. Based on the initial survey in the field, it is not certain how the socio-economic relationship between the people of Kutaraja and the development of KOFP status. The capacity of the fish auction place that is too narrow is suspected to be one of the reasons traders have to sell at the jetty. In addition, the marketed fish price is still unstable. This is presumably because the number of catches landed has sometimes increased significantly, but this condition is not supported by adequate facilities and a lack of industry for processing catches with low economic prices.

However, it is hoped that the development and development of KOFP will not only have a positive impact on part of the community, but for all people who carry out socio-economic activities at KOFP in general. Therefore it is important in conducting research on the social and economic activities of the community at KOFP.

2. Materials and Methods

2.1. Time and Place of Research
The research was carried out in April-May 2019, which took place at the Kutaraja Ocean Fishing Port (KOFP), Kuta Alam District, Banda Aceh City, Aceh Province (Figure 1).

Figure 1. Map of the research location

2.2. Research methods
The method of data collection was done by using purposive sampling method on several respondents as population. The purposive sampling method is purposive sampling which is considered to represent each population so that the desired objectives are achieved. Respondents taken consisted of ships that landed at KOFP, based on the initial survey conducted there were 355 units of the number of ships, and fish
traders as many as 5,000, food traders around the dock area as many as 20 people. The formula used to calculate the number of samples used as respondents is as follows [13].

\[ n = \frac{N \cdot Z^2 \cdot P (1 - P)}{N \cdot d^2 + Z^2 \cdot P (1 - P)} \]

Information:
- \( n \) = Number of samples taken
- \( N \) = Total population
- \( d^2 \) = maximum error that can be accepted (0,1)
- \( Z^2 \) = Normal variable (1.96)
- \( P \) = Percent variance (0.05)

Based on the formula above, a sample of 20 fishermen has been obtained, 15 fish traders and 10 food traders. The sample of respondents obtained primary data sources. Respondents were also taken from related agencies to obtain secondary data, the management of the KOFP was two people. Data were collected by direct interviews and observations of socio-economic activities taking place at KOFP.

2.3. Data analysis
Social activities are obtained through direct observation and interviews regarding community activities (fishermen, fish traders, food traders and other actors) in fishing ports. Then analyzed descriptively quantitative by presenting photos of the research results based on the data collected. The economic activity in question looks at the income obtained by fishermen, fish traders and food traders as well as how the adaptation patterns of the community around KOFP in using the facilities. Data analysis was carried out descriptively with a quantitative approach, namely the data collected was then tabulated in the form of tables and graphs which had been processed with Microsoft Office Excel software.

3. Results and Discussions
Social activities of fishermen, fish traders, food traders are measured based on the education level of fishermen and the age level of fishermen, fish traders and food traders. The results showed that the level of education at table 1 was mostly high school level. Higher education will affect the social activities of the community. It can be seen that the higher a person's education, the higher the knowledge that fishermen have in carrying out social activities at KOFP, both in terms of fishing and handling of catches. However, fish traders in KOFP are still categorized as student level, because when they finish high school they immediately choose to trade. Therefore, they really understand how to sell their catch to the community because they already know how to get the profit or loss.

Table 1. Educational Level of Fishermen, Fish Traders and Food Traders

| Level of education | Fisherman | Fish seller | Food Trader |
|--------------------|-----------|-------------|-------------|
|                    | f (Person) | %           | f (Person) | %           | f (Person) | %           |
| Elementary School  | 1         | 5           | 1          | 7           | 0          | 0           |
| Junior High School | 4         | 20          | 4          | 27          | 4          | 40          |
| Senior High School | 15        | 75          | 10         | 66          | 6          | 60          |
| **Total**          | 20        | 100         | 15         | 100         | 10         | 100         |

Based on Table 2, it shows that the highest education level is senior high school (SMA). The least education category that completes education is elementary school level. By looking at these data, it can be concluded that the average respondent has a fairly high level of education. This will affect the work
experience of each group of respondents. In addition, this condition will also affect the social activities of the respondents in KOFP.

### Table 2. Age Level of fishermen, fish traders and food traders

| Level Age | Fisherman | Fish seller | Food Trader |
|-----------|-----------|-------------|-------------|
|           | f (Person) | f (Person)  | f (Person)  |
| Age 19-26 | 3          | 6           | 0           |
| Age 27-34 | 7          | 4           | 8           |
| Age 35-40 | 2          | 3           | 20          |
| Age 41-50 | 8          | 2           | 0           |
| Total     | 20         | 15          | 10          |

The results showed that most of the samples of fishermen, fish traders and food traders working at KOFP are in the productive age, that is, in the 27-50 years age group. The age factor will certainly affect the work pattern of the community.

### Table 3. Work position at KOFP

| Respondent category | Number of respondents | Work position at KOFP |
|---------------------|-----------------------|-----------------------|
| Fisherman           | 20 people             | Parking officers      |
|                     |                       | Cleanliness Section   |
| Fish seller         | 15 people             | Security section      |
|                     |                       | Fish Transport Workers|
| Food traders        | 10 people             | Fish Cutting Services |
|                     |                       | Processing Industry Career |

Based on the research results from several questions with fishermen, fish traders and food traders, that there are several job positions available at KOFP. It can be concluded that with the KOFP there are various job opportunities for people who carry out activities at the port. After the existence of KOFP, it will have an impact on the existence of new jobs for the socio-economic progress of the community, while the KOFP's existing workers are pedicab drivers, fish transportation services, fish slaughtering services, fishing equipment traders, food traders and other actors. A study by [15] states that the construction of the Lempasing port has a positive impact on labor absorption and increases the income of the surrounding community (fishermen, traders, laborers, processors and farmers).

### Table 4. Level of social welfare of KOFP

| Respondent category | The level of community welfare |
|---------------------|--------------------------------|
| Fisherman           | The result of a lot of income  |
|                     | The rate of labor absorption / the number of people who work at KOFP |
|                     | Industry growth rate           |
| Fish seller         | The result of a lot of income  |
|                     | There is special training to handle the quality or quality of fish |
|                     | Adequate facilities and infrastructure |
| Food traders        | The result of a lot of income  |
|                     | Adequate facilities            |

#### 3.1. Economic Activity

The influence of KOFP on the progress of community economic activities has not fulfilled a major impact. This can be seen based on the results of interviews with several respondents, the needs are fulfilled for the family but the income does not increase to obtain business capital. Respondents hope that the change in port status can increase their income.

Based on Table 6 above, it can be seen that the largest number of family dependents are fishermen, rather than fish traders and food traders. It can be concluded that the expenditure for fulfilling the daily needs of the family is the highest among fishermen.
needs of fishermen is far more than that of fish traders and food traders. According to [16] the burden of family responsibilities will affect the desire or ability to do business. The larger the family members, the greater the dependents that must be borne by the head of the family, especially in meeting their daily needs.

KOFP fishermen in one fishing trip get a maximum of Rp. 1,000,000 and there are also in one trip you get Rp. 300,000-800,000 depending on the condition and size of the ship and the catch obtained. Kutaraja fishermen, to increase their income, sometimes fishermen take the initiative to fish by using a hand line, then the results can be obtained to increase the income of the fishermen themselves. The factors that hinder the fishing process of fishermen are storm winds, big waves, and damage to fishing machines or equipment.

Table 5. Number of dependents for fishermen, fish traders and food traders

| The number of dependents | Fisherman | Fish seller | Food Trader |
|--------------------------|-----------|-------------|-------------|
| f(Person) | %  | f(Person) | %  | f(Person) | %  |
| 2 persons | 2 | 20 | 3 | 30 | 3 | 30 |
| 3 people | 3 | 30 | 0 | 0 | 3 | 30 |
| 4 people | 1 | 10 | 3 | 30 | 2 | 20 |
| 5 people | 1 | 10 | 2 | 20 | 1 | 10 |
| 6 people | 1 | 10 | 1 | 10 | 1 | 10 |
| 7 people | 2 | 20 | 0 | 0 | 0 | 0 |
| Total | 10 | 100 | 9 | 90 | 10 | 100 |

Table 6. Average monthly income of fishermen, fish traders and food traders

| Total Income | Fisherman | Fish seller | Food Trader |
|--------------|-----------|-------------|-------------|
| f(Person) | %  | f(Person) | %  | f(Person) | %  |
| Rp 500,000 - Rp 1,000,000 | 3 | 15 | 3 | 20 | 4 | 40 |
| Rp 1,500,000 - Rp 2,000,000 | 9 | 45 | 6 | 40 | 5 | 50 |
| Rp 2,500,000 - Rp 3,000,000 | 6 | 30 | 4 | 27 | 1 | 10 |
| Rp 3,500,000 - Rp 4,000,000 | 2 | 10 | 2 | 13 | 0 | 0 |
| Total | 20 | 100 | 15 | 100 | 10 | 100 |

Table 7. Factors affecting community economic activity

| Respondent category | Faktor-faktor                     | Efforts made                                      |
|---------------------|----------------------------------|--------------------------------------------------|
| Fisherman           | Weather factors such as wind, currents, high waves | Increase working hours, change fishing distance and collect ice from outside the port for product resistance. |
|                     | Number of hours worked           |                                                  |
|                     | Capture distance                 |                                                  |
|                     | Lack of ice bar stock            |                                                  |
| Fish seller         | Less stable fish prices          | Adding ice cubes and adding sales capital.       |
|                     | Defense of the quality / quality of fish |                                                |
|                     | Lack of capital                  |                                                  |
| Food traders        | Hot sun                          | Adding capital, using an umbrella.               |
|                     | Lack of capital                  |                                                  |

The monthly income level of fish traders at KOFP is Rp. 3,500,000-Rp. 4,000,000, while the lowest is Rp. 500,000- Rp. 1,000,000. This depends on the capital that is spent selling fish in the KOFP area and the different types of fish at the time of sale. The more capital that is spent, the more types of fish
are sold. Food traders at KOFP earn the most monthly income of around Rp. 1,500,000 and the lowest is Rp. The results of interviews with food traders indicated that this income had greatly helped their family's economy by selling at the KOFP jetty. The income earned is very fulfilling the daily life of food traders.

Factors that influence economic activity are weather factors when it is raining and hot sun. This determines the effect of the merchant's economic activity on the food being sold. However, there are some food vendors using umbrellas and carts to protect their food from the effects of the sun. Based on the observations during the research, the average person who buys food in the dock area is KOFP users such as fishermen, fish traders, fish transporting workers, buyers and other actors.

The adaptation pattern of the community in KOFP after the existence of KOFP greatly affects the socio-economic activities of the community both in terms of community income, as well as the existing facilities at KOFP. The adaptation process is a process of adjusting to overcoming obstacles that interfere with achieving goals. The greater the difference found in a new environment, the more it will slow down one's adaptation process [17]. Many changes have occurred, namely with the existence of KOFP, there has also been an increase in people who carry out socio-economic activities. However, users cooperate with each other in utilizing the facilities available at KOFP for now. Some fish traders and food traders still use the jetty area to sell. There have been changes in status from PPP to KOFP, many changes have occurred, such as the number of people who are active in KOFP, both people who live around the port or from outside the region. With the existence of a port, the community hopes that it will not have an impact on the people living around the port, but on the community in general. The activities of fishermen, fish traders and food traders need each other, they work together in carrying out their activities. This can be seen from how to use existing facilities at KOFP, fish traders and food traders side by side.

4. Conclusion
The conclusions of this research at the Kutaraja Ocean Fishing Port (KOFP) are as follows:
1. The influence of the existence of KOFP can be seen in social activities that the highest level of education is high school level and the average age of the respondents at Kutaraja KOFP is classified as productive age, namely in the 27-50 years age group. Economic activity is seen from the maximum number of dependents of 3 people in each family and the average income level is Rp. 1,500,000 - Rp. 2,000,000 per month.
2. The pattern of community adaptation can be seen based on the use of facilities at KOFP, fish traders and food traders currently still use the jetty area to carry out their activities, working together in utilizing the facilities at KOFP. The economic activities of fishermen and fish traders have not been able to fully handle the catch and maintain the price of fish when the fish are increasing.

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