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# The Role of Fishing Techniques with *Tuah Teng* on Food Security in Facing the Asean Economic Community

Role of Fishing  
Techniques  
with *Tuah  
Teng*

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## Abstract

**Purpose** – The purpose of this research is to identify *Tuah Teng* fishing techniques in food security to facing ASEAN economic community (AEC) and to give description about *Tuah Teng* fishing techniques and its relationship with food security of coastal society in face of AEC era.

**Design/Methodology/Approach** – The method of sampling is by snowball technique, because every generation of fisherman community has used this since a long time ago. The method of analysis is done by descriptive qualitative based on primary data by observation and secondary data from the literature study.

**Findings** – The technique of fishing *Tuah Teng* is done by attracting the fish relying on simple equipment consisting of stereofoam, plastic cans, vats with cement and rubber wheel, and fish bait from dried coconut leaves tied to the rope. Availability of fish can support the food security. During season, the prices of fish can be very cheap or even just distributed free to the community.

**Research Limitations/Implications** – Food security in the era of ASEAN economic community encourages food self-sufficiency and ultimately realizes food sovereignty. The community no longer imports the fish, even they can export because the needs of fish in domestic has been fulfilled.

**Practical implications** – The Office of Marine and Fisheries (DKP) has provided assistance in the form of radar and a more modern computer to be able to detect the fish. But fishermen still survive with this traditional method.

**Originality/Value** – This research identifies *Tuah Teng* as a traditional of fishing technique in Aceh Utara.

**Keywords** Food security, Technique of fishing, *Tuah Teng*

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## 1. Introduction

Indonesia is a country that has very large potential of marine. Indonesia is in-between two oceans, the Indian Ocean and the Pacific Ocean. Indonesia is also between the Asian and Australian continents, making Indonesia a very strategic location as a maritime center in global trade (Republic of Indonesia, 2016a). Aceh, one of the provinces in Indonesia, also has



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great marine fisheries potential. Aceh's marine area reaches 295 thousand km<sup>2</sup> and has a coastline of 2,666 km (Aceh, 2017). The Potential of fishery per year in Aceh according to Central Bureau of Statistics in 2016 reached up to 1.6 million tons (Republic of Indonesia, 2016b). Although the waters of Aceh are quite large and have great fishery potential, the fishermen in Gampong Pusong Lama, Lhokseumawe City still uses traditional techniques to catch the fish. They use a technique called *Tuah Teng*. This technique has long been used by fishermen in Gampong Pusong Lama.

*Tuah Teng* is taught from generation to generation, so *Tuah Teng* can be categorized as local fisherman's wisdom. This technique is very simple and can be learned easily by fishermen. The amount of fish catch can supply the market demand and fisherman's income. Therefore, *Tuah Teng* technique is still used today. Local wisdom is a knowledge in the community to help humans in running their lives. Local wisdom here becomes the benchmark for the people's behavior in community. In the local wisdom, there is a knowledge and technology sourced from the local community environment. Local wisdom has been modernized into individuals as members of the community. In the process of internalization, one will experience learning from the surrounding environment both from the family environment and social environment. The longstanding and continuous internalization process of being an individual will follow what has become a habit in society (Narwoko & Suyanto, 2014). Likewise with *Tuah Teng* is still used because there has been an internalization process among the fisheries communities.

The availability of fish in the market can affect food security in coastal communities. Because the community has a habit to consume fish every day. If there is no fish they will complain, even though there are the other sources of animal protein such as chicken and meat. This also happens because consuming fish has been internalized in the community. The fish which was caught by *Tuah Teng* method is mostly tuna. These fish are commonly found in Aceh's sea waters. Tuna has the highest third nutritional value after salmon and mackerel. Nutrient content consumption has calories equal to 111, protein 24 g, fat 1 g, and iron equal to 0.7 mg (Republic of Indonesia, 2015). Skipjack and Tuna is the first of 10 species of fish consumed by the community (Republic of Indonesia, 2013). The province of Aceh is also the province with the highest percentage of people consuming fish, which is 95.8% (Republic of Indonesia, 2012a). The Majority of people in Aceh consume fish every day. Although the price of fish is expensive, Acehnese still favor fish as a source of animal protein to eat. The large production of fisheries in Aceh can be one of the largest fish producer areas in Indonesia. Indonesia's position as the country with the second largest fishery production after China (United Nation, 2016), so it can make Indonesia one of the world's major fishery producers. Indonesia can improve competitiveness in the era of the ASEAN economic community (AEC). The purpose of this research is to identify the role of *Tuah Teng* fishing techniques in food security to facing the era of AEC and to give description about *Tuah Teng* fishing technique and its relationship with food security of coastal society in face of AEC era.

## 2. Methods

The method used in this research is descriptive qualitative analysis. Descriptive qualitative means describing what happens on the field in according to the facts, which are then interpreted into an analysis. The method of determining the location is done purposively in Gampong Pusong Lama, Kota Lhokseumawe, because the majority of the people who work are fishermen. The method of taking informants was done by snowball sampling method. This method is used because the study aims to identify fishing techniques based on local wisdom existing in the community, so that the interview answers from the questions are

assumed to be the same. This local wisdom has been used for generations by the community in the research location. The technique in snowball sampling is the first informant, the interviewer will recommend the next informant, so the next interview continues until the data collected is sufficient (Sugiyono, 2011). Snowball sampling can be used because research aims are to identify patterns of local wisdom that have been used by the community. The first key informant to be interviewed was *Panglima Laot*, an adat leader in the fishing community. Furthermore, from *Panglima Laot* recommended fishermen who became crew (ABK) who work on large fishing vessels. Then from ordinary fishermen and ABK recommend *Pawang Laot* to get other information because *Pawang Laot* knows more about the technique of catching with *Tuah Teng*, so the informants in this study amounted to 15 people. This study uses questionnaires as a guide for obtaining data. Primary data was obtained through interviews with key informants such as *Panglima Laot*, *Pawang Boat*, and fishermen. While the secondary data obtained was found through literature studies in the form of books, journals, and articles.

### 3. Results and discussion

*Tuah Teng* is one of the traditional fishing techniques in Aceh. *Tuah Teng* has existed since ancient times and taught from generation to generation. The method of fishing with *Tuah Teng* is quite unique because it uses the bait of dried coconut leaves to attract fish.

The type of fish caught using this method is tuna. Tuna is widely found in the deep waters of Aceh the coast of *Tuah Teng* is located almost to the border of Indonesia with Thailand, with a travel time of seven to eight hours. The method of fishing with *Tuah Teng* uses some techniques such as stereofoam which serves as a marker of fish trap location and to float dried coconut leaves as bait. The dried coconut leaves are attached to the rope, and the ropes are tied to barrels, and used tires have been filled with cement placed on the ground as a weight. This ballast works so that the ropes and dried coconut leaves cannot be separated from the markers when the water current is strong and the waves come.

The dried coconut leaves are used to attract and tufted baits resemble small fish that become tuna fish, so the tuna is interested and swarm around the bait. The dried coconut leaves last for three days from day one laying to attract the attention of the fish. On the third day, the fish have eaten up the dried coconut leaves, then the fishermen begin to crawl with a purse seine. After the fish are caught, the fishermen will put more dry coconut leaves to attract the attention of more fish. The captured fish are then put into a fiber box with ice cubes. This fish cooling technique is also still done traditionally because it only relies on ice cubes. Fishermen also use radar, computers, and compass too. According to some informants interviewed, almost all fishermen (they call it with *boat tongkol*) located in Gampong Pusong Lama using *Tuah Teng* method to catch the fish. Each *Pawang Boat* (leader of a fishing boat) has an average of 10 *Tuah Teng*. The radar is used to see which *Tuah Teng* has been covered by the fish. Because the distance between *Tuah Teng* owned by fishermen is not too close.

The technique of fishing with *Tuah Teng* is actually already known by the world, which is almost the same as the dropline technique. However, dropline techniques use modern equipment such as ropes equipped with hook and bait resembling small fish, so the fish will eat the bait and snag the hook (Australia, 2017). Then the ballast on the dropline uses a more modern cement (box). The type of trawl used by fishermen in catching fish is purse seine. The ship used by fishermen is a traditional wooden boat with a size of 75 GT. There are 40 ships that catch tuna fish with *Tuah Teng* technique. The Fishermen that participated amounted to 35 people. This amount is because trawlers are pulled manually together so it requires a lot of manpower.

Fishermen say that this traditional way is still effective in fishing so they have no interest in switching to other methods. Though the cost required to make *Tuah Teng* ranged from 30 to 40 million IDR, with the most expensive cost to buy a rope along 2,000 m (average sea depth of 2,000 m). Then added with the cost of going to sea for three to five days of 7–8 million IDR. Although quite expensive, fishermen still feel good enough with the catch and income received. When it is a season of tuna fish, they can catch up to 8 tons of fish. On a typical day when it is not seasonal, they can catch up to 2 tons, and when it has a few fish they catch at least 200 kg. The fish caught by fishermen are influenced by the weather, waves, and reproductive cycle of fish.

During season, the price of tuna can be very cheap, which is 8,000 IDR/kg or even just distributed to the community because of too many fish stocks available. Until now there has been no tuna fish processing by coastal communities. Unlike the anchovy fish still has a value because it can be preserved into salted fish. When it is not season price of tuna become expensive is 30,000 IDR/kg. The normal price of tuna fish is 15,000 to 20,000 IDR/kg. Although sometimes the price of fish is expensive, but still can be reached by the community because the price of fish is relatively cheaper than chicken and meat.

Local wisdom is culturally relevant. Culture is an idea for every human behavior in life and can become a habit for that society (Koentjaraningrat, 2009). Local wisdom is a blend of knowledge and technology that develops in society. Local wisdom can be passed down from generation to generation through the learning process. In the seven elements of culture, the technological and equipment elements are in seventh order, which means the system can be easily changed according to the conditions of society and the changes that occur (Koentjaraningrat, 2015). *Tuah Teng* is one of the local wisdom of fishing communities in catching fish. *Tuah Teng* has been taught and learned by fishermen in Pusong Lama from generation to generation. Commander of the Sea (*Panglima Laot*) as a customary leader in the fishing community said that *Tuah Teng* has long been used by the fishermen in catching the fish. Fishermen also have not replaced this method with other more modern methods. Whereas the Office of Marine and Fisheries (DKP) has provided assistance in the form of radar and a more modern computer to be able to detect the presence of fish. But fishermen still survive with this traditional method. Fishermen say that this method is very easy to do and still can get fish even though the technology used is simple. However, it is possible that this method of fishing with *Tuah Teng* will be able to change and people can adopt more modern technology. But not necessarily local wisdom can survive. This may be due to the fact that local wisdom is no longer compatible with the habits of the present generation or local wisdom is not working for the community if it continues to use it. Culture works for people to face the challenges in life both from their natural environment and social environment. Then culture also serves to fulfill the basic human needs in living its life (Soekanto & Sulistyowati, 2015). For example, economically beneficial that can generate profits for the fishing community which will affect the fulfillment needs of the fishing community itself.

Fish catches are also related to the food security of coastal communities because people already have a habit of eating fish as an animal side dish rather than chicken or meat for everyday life. As we know that food security according to the Law of the Republic of Indonesia Number 18 Year 2002 on Food, Food Security is "The condition of the fulfillment of food for the state up to the individual, which is reflected from the availability of adequate food, both quantity and quality, safe, diverse, nutritious, equitable, and cannot be contrary to the religion, belief, and culture of the community, to be able to live healthy, active, and productive in a sustainable manner" (Republic of Indonesia, 2012b). So when the occurrence of fish catch can affect the food security community around the coast. This is based on

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responses from some communities around the coast that when the price of fish is expensive, they will complain, but when the price of chicken or meat is expensive it does not affect them except during the day *meugang* and Eid ul Fitr or Eid ul Adha. The habit is a person's regular behavior in his life. A person's habits can affect other people's habits as long as they are acceptable to others. Even habits can be a common benchmark of behavior in society (Subejo *et al.*, 2014). The habit of consuming fish has become a common standard in their daily consumption of food so it is difficult to remove.

Besides dealing with food security, gishermen catches also affect the contribution of global trade. Currently, Indonesia is, based on data (United Nation, 2016), ranked second after China in world capture fishery in 2012 which amounted to 5,380,266 tons. Indonesia is one of the ASEAN countries that participate in the top 10 in the world's world of capture fisheries. Myanmar is in the order of eighth with a production amount of 3,063,210 tons and the tenth position occupied by the Philippines with a production amount of 2,675,292 tons. This means that Indonesian fisheries have great potential and can affect the availability of fish in the global market. Indonesia can be one of the world's major fisheries producers, but it is not yet a major producer because Indonesia excels in the vastly available resources and yet does not have a competitive advantage (Subejo *et al.*, 2014). In the era of the ASEAN economic community, Indonesia could potentially become a major producer because the waters of Indonesia became the largest, of course, the fishery resources are large enough. If these fishery resources can be managed and utilized properly then it will potentially bring in more revenue for fishermen and coastal communities.

#### 4. Implications

Indonesia has very large fishery resources that must be utilized optimally but still must pay attention to the sustainability of environmental ecosystems. *Tuah Teng* as a traditional way of fishing can participate in maintaining the marine environment ecosystem because the trawl used is a purse seine. Then, if it still can serve to provide economic benefits for fishermen and coastal communities then *Tuah Teng* can continue to be used. The government only needs to supervise and review fishing techniques with *Tuah Teng* in order to remain environmentally friendly, to improve the welfare of fishermen, and the availability of fish in the community can be fulfilled. If all three things are fulfilled then it is not necessary to replace the capture technique. Unless the government has a technique that is easy to learn, environmentally friendly, and can more prosper the fishermen and coastal communities.

#### 5. Conclusion

The technique of catching with *Tuah Teng* is the local wisdom of the fishermen community in Gampong Pusong Lama. This technique has been passed down from generation to generation through the learning process. Although this technique is still traditional but fishermen feel they do not need more modern technology, because it is enough to fulfill the needs of their life. This technique is also easy to do, just by baiting dried coconut leaves, tied to a rope, and attached to a barrel containing cement placed on the seabed. Fishermen only need to wait for three days until the fish cob swarming the dry coconut. Local wisdom is part of the culture so that this culture becomes a habit that can be learned in a society. When the culture is still beneficial to society then the culture will continue to be used. The fish obtained with *Tuah Teng* can fulfill the people's demand for fish. For the people of coastal community, it is their habit to consume fish every day. The cheaper price of fish than other animal protein sources makes fish the main choice of people in their daily consumption of food, so the availability of fish in the market is related to the local food security. Indonesia is

also the second largest producer of fish in the world, which means that Indonesia has a contribution in world trade, especially in ASEAN, because in ASEAN only three countries become the main producers: Indonesia, Myanmar, and Thailand. If Indonesia can increase its fish production, it is not impossible that Indonesia can dominate global trade.

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