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# FISHING TECHNOLOGY CONVERSION, DIFFERENTIATION, AND SOCIAL MOBILITY OF FISHERMAN IN LAGASA VILLAGE OF MUNA REGENCY

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**Abstract**

The modernization through the improvement, the application of technology of fishing utility, the funding support which affects on the activity and organization of fisherman and eventually causes the transformation in the society. The aim of this research was to analyze the impact of fishing technology conversion to social structure of *Bajo* tribe fisherman. The methods used to collect the primer and secondary data from informant were: completed questionnaire, deep interview with both informants and respondents, and live observation (participate observation). Analysis of data was performed descriptively which is concept development, collect the evidences but did not perform the hypothesis trial, and analyze the variable relationship for hypothesis testing by applying the quantitative and qualitative tabulation. The results of this research was the fishing technology conversion in fisherman society brings up many impacts on various aspects in fisherman's life. The application of every type old technology affected on the consequences or impacts such as the work pattern, social structure, and the fisherman prosperity level. The relationship between the *ponggawa* as the owner of production utility and the sawi as the worker is not the exploitative characteristic, because both of them still apply the cultural values which help each other not only in teamwork but also in relationship pattern in their daily life. So that the characteristic of the relationship pattern is not exploitative and require each other. The difference does not show the polarization indication because the *Bajo* tradition to help each other is still applied.

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Keywords: technology conversion, mode of production, the social structure of fisherman
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## INTRODUCTION

Geographically, location of Nusantara archipelago (Indonesia) is very strategic in the context of international sea trading between west and east part of the world. In those various territories, sea is the link among the islands, besides, as the main spot of fish-catching activity and other marine resources for fishermen. Kusumastanto (2002) noted that in Indonesia, there are 42 cities and 181 regencies located in coastal areas. About 90 percent of the fish resources as the sources of consumptions come from coastal areas. In addition, Syam in Suhartini, *et.al* (2005) assumes that the extension of maritime areas of Indonesia attains 5.8 million square kilometers and may become the potential marine resource as one of future foothold expectation.

Winahyu and Santiasi in Mubyarto *et.al* (1993) extend the analysis by comparing the coastal village society to the other communities. The fisherman is the poorest compared to the outside coastal communities. The characteristics of fishermen's income are characterized

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as daily income and the amount cannot be predicted. Besides, their incomes are unstable depending on the season and the status of the fisherman (the owner of boat or just the worker).

Based on the factors such as the fishermen's houses, clothes, nutrient compliances, life-style and social status, generally, can conclude that the fisherman is in an unprosperous condition. In fisherman society, there are slums living environment and below average plain houses. Only small parts of fishermen have good houses and commonly the houses are owned by the owners of the boats, financiers, or creditors.

The government assumes that we need to improve the living standard of the fishermen. The attempt is supported by many businessmen in observing the potency of marine business. The realization was performed such as the form of technology conversion (Blue Revolution) by the government and nongovernment (*private*). The modernization conducted by government and the other party is intended to be the form of concern and the improvement of fisherman prosperity, in addition to improving the production as the compliance of the fish demands in national, regional and local context. Those programs are modification supports of fishing utility, provide a revolving credit for coastal society, counseling of coastal and ocean society.

Basically, every program directly connecting to the society will affect at the value, norm, and local culture as well as at continuity of marine and coastal environment as the main income of fisherman activities. Almost all program subjects are basically from the outside society who does not think of the value and the norm in the society, and just perform and reach out the purpose of the program. Those indications added to simplicity of accessing communications and easier information can replace the ideal values with the actual values. [1]

In the fisherman society, there are observable transformations such as the work pattern, the stratification system not only because expert in production tools but also because the power. The stratification transformation also occurs in the fisherman organization as implication from that technology conversion**,** so that the institution of the fishermen established previously commonly also will be the difference. There is the attempt diversification as impact from technology conversion (Satria, 2001) in which this research is intended to the modern item of fishery sector.

The modernization through the improvement, the application of technology of fishing utility, the funding support which affects on the activity and organization of fisherman and eventually causes the transformation in the society. The motorization program of boat and technology conversion of fisherman in 1980s known as The Blue Revolution, according to Solihin (2005), it is not to create the more advance fishery and make the fisherman become prosperous.

This problem becomes an attention because not all of the fisherman layer can take the modernization oppurtunity. Before the government's program, Fishing Technology Conversion, the major activity of fishermen of *Bajo* Tribes is traditional fishery system, in which one of the characteristics is structure of homogeny society and the differentiation level of social which is still low. The

[1] Wirutomo (2005) membagi gejala menonjol dari proses perkembangan nilai di Indonesia adalah antara lain jurang antara nilai ideal dan nilai aktual.

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social lives of fishermen of *Bajo* Tribes after occuring the modernization become the focus of the observation in this research.

Moreover, the fishermen as the subject who apply the technology as part of the modernization are faced on the choice to adopt the technology or not. Many factors influence the adaptation, such as how the fisherman appreciates the ocean and his occupation over the time. The appreciation is so important that covers their perspective to the object that directly related to their livelihood in many aspects such as economy, social, religion, psychology, and culture.

*Bajo* Tribes, since a long time ago, have placed the ocean, coast, archipelago, and even impress that they cannot perform their activities in mainland compared to other tribes such as *Bugis* and *Makassar* that can conduct their lives in all places. Almost all modernization programs influence on the life and social system in the society. The majority of *Bajo* Tribes work as fishermen from generation to generation. Because the life of *Bajo* Tribes is closely related to the ocean, there is a matter which needs to observe that the fisherman and ocean can be viewed as the culture, livelihood or the means of preserving the marine and coastal environment. The dynamics of *Bajo* Tribe's life is very familiar with ocean. It makes the study of *Bajo* Tribes involving the side of social life become interesting.

The study of Peribadi (2000) concluded that in attempt of livelihood, there have occurred the frictions from social to economy orientation. Another research was also conducted by Wunawarsih (2005) agreed and reported that the conclusion of citizen relocation causes the occurrence of vertical mobility, for example, the transition of *sawi* into *Ponggawa* position. Many development programs of fishery and aquaculture have connected and influenced both directly and indirectly on society life of *Bajo* Tribes.

The aim of this research was to analyze the impact of fishing technology conversion to social structure of *Bajo* tribe fisherman.

**Framework Concept**

The poverty and social discrepancy in the fisherman's life develop into one of the main concerns for the policy of fishery sector. According to government, the poverty and backwardness of fisherman are caused by the haul which is in a small quantity while the stock of fish is overflowing. It can be caused by applying the inadequate fishing utility or the simple technology. The simple technology can only reach out the coastal territory with limited population of fish.

The government assumes that we need to improve the living standard of the fishermen. The realization was established as the form of fishing technology conversion (Blue Revolution). The most important thing of fishing technology conversion is the improvement of ship technology or fishing utility to increase the production. One of the important aspects from modernization of fishery field is the substitution of production technique of traditional manner to the more rational manner. The policy of the modernization is expected to be a productivity improvement which can directly effect the improvement of the prosperity of the fisherman.

Fishing technology conversion effects on the social life and the society of the fisherman. The effects are the transformations of work pattern from applying the old technology to the new one which is more modern, effective and efficient. The effectivity and efficiency of the modernization inflict the differentiation of showing up the new social units which influence the social structure diversity of fisherman. The structural divesity occurs in the

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fisherman and the community. In the fisherman level, the differentiation affects on fisherman stratification in several layers. The transformations of the fisherman layer clearly affect on the stratification transformations in community level so that the social structure become different. The pattern also affect on the haul which influences the fisherman's income. Therefore, the modernization in the form of technology conversion also affected the prosperity of the fisherman.

The application of the modern or old technology influence the work pattern, social structure, and the well-being level of the fisherman. In the application of old technology, the work pattern is closer to the dimension of exploration capability, the time of fishing is shorter, and quantity of the workers are smaller. Whereas, the application of modern technology of work pattern consists of the further dimension of exploration capability, the longer time of fishing, the more quantity of the worker, as well as the clearer work classification.

Before the application of modern technology, in the social structure, the application of old technology had no variety of the differentiation dimension, the stratification in society still was based on the honor and occupation (*ascribed and achieved status*), and the relationship pattern was non-exploitative and egalitarian. On the other hand, the application of modern technology has various differentiations, the stratification is based on *achieved status,* as well as the relationship pattern is half-exploitative and hierarchical.

Whereas the transformations of prosperity level shows that the increase of the *Ponggawa* fisherman's income is quite high but the increase of the *sawi* fisherman's income is not significant.

Shortly, the cycle of framework concept of this research can be drawn as follows:

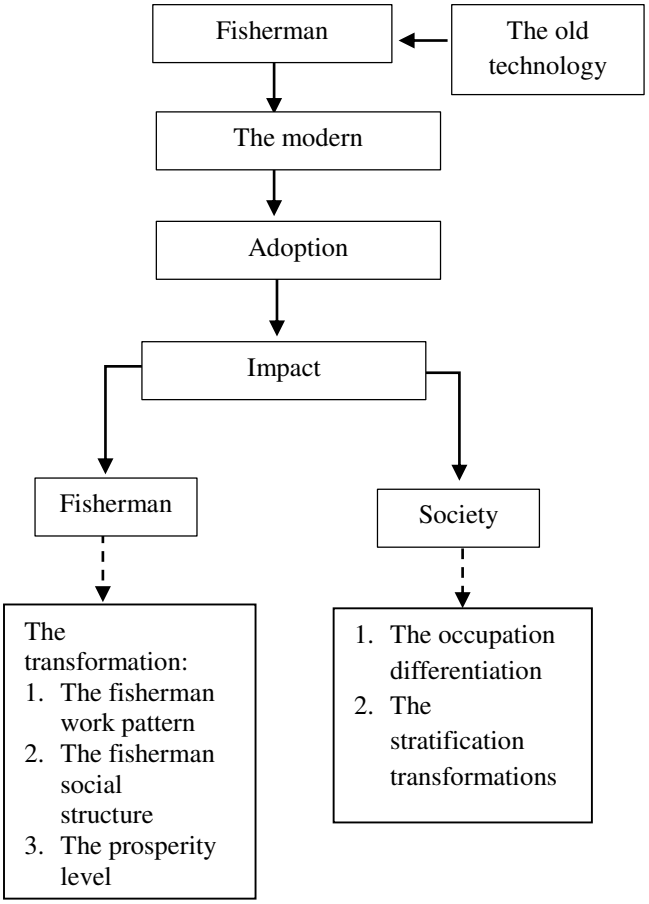


Figure 1. The cycle of framework concept research of fisherman society respond to fishing technology conversion.

Information:
⟶ : Influence
- - - -→ : Variable

## MATERIAL AND METHOD

### Location and Respondents

This research was conducted from July to September 2007, in Lagasa Village, Duruka Sub District, Muna District South East Sulawesi Province. After categorization was conducted, we obtained 100 samples from respondents, 45 from the owner of the boat (*Ponggawa*), 30 from the local worker, and 25 from the outside worker. The informant in this research was Village Head, ex. Village Head, the retired officer of Muna fishery department living in Lagasa Village, fish auction (*TPI*) employee and ex-*ponggawa*.

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**The Methods of Collecting data**

The methods used to collect the primer and secondary data from informant were:

1. Completed questionnaire
2. Deep interview with both informants and respondents
3. Live observation (participate observation)

**Analysis of Data**

Analysis of data was performed descriptively which is concept development, collect the evidences but did not perform the hypothesis trial, and analyze the variable relationship for hypothesis testing by applying the quantitative and qualitative tabulation. In quantitative primer data, the data are managed by applying the frequency table and the simple cross tabulation. The analysis results were concluded by adding the results of deep interview and observing to figure out the questionnaire data. The qualitative analysis was performed by reduction step and data presentation and then it was formed into writing.

## RESULT AND DISCUSSION

**The Impact of Fishing Technology Conversion**

The fishermen in Lagasa Village are applying various fishing facilities, such as boat and fishing utility. The application of the many utilities composed of traditional boat with paddle (*boseh*) in the local name called *koli-koli* and fishing rod or *tassi* net. Then, the fishermen are applying machine sail boat (*ngkuru-ngkuru*) with fishing rod and *tassi* net (*pukak tassi*) and modern utility such as the application of pursein small boat technology with capacity of 5 – 10 GT and ring trawl fishing (*gae*).

The application and the transition of the utility affect the consequence or the impact on the work pattern, social structure, fisherman prosperity level and the haul of those are different. The result of applying the *koli-koli* is not considerable because the scope is only in the coast. In the next period, the result obtained by the fisherman can be higher because the dependence of physical fisherman may be helped by machine.

Table 1. The transformation of work pattern (mode of production) in applying the fishing utility

| Dimension | Types of the fishing utilities | | |
|---|---|---|---|
| | *Koli-Koli* | *Ngkuru-ngkuru* | *Gae* |
| The Exploration Capability | *Inshore* | *inshore* | *offshore* |
| The Quantity of Workers (*Sawi*) | 2 - 3 people | 3 - 4 people | 12 - 15 people |
| a. Charac-teristics | Free | Free | Half-free |
| b. Recruit-ment patterns | Sponta-neous, Communal | Sponta-neous, Communal | Selective |
| The fishing durations | ≤ 7 hours/day | ≤ 7 hours/day | > 12 hours/day |
| The work classification | None | Yes, but not clear | Yes, clear |

From the efficiency aspect, the work of *sawi* after using the modern technology becomes lighter than those of the old technology. Previously, the fisherman considers the risk, energy, and distance which is hard to reach. After using the modern technology, the work of the fisherman become more easy, does not need energy to panddle and usually trawl care like before.

The implication of transformation in every fishing utility is the difference of social structure in fisherman. The transformation is categorized by showing the occupation differentiation as the consequence of using the machine. Many work positions affect the fisherman to be stratified in the various layers. Moveover, the diversity of relationship pattern becomes hierarchical pattern but does not leads to the exploitative one.

The occupation differentiation in the work pattern affects on the social differentiation because the characteristics of the position are vertical, hierarchical and divided into levels. The *sawi* position

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with particular expertise will obtain more portion than those of the other *sawi*. This condition becomes the tendency for the *sawi to "study"* so that they can obtain the positions with particular expertise. In the policy of profit sharing, the *sawi* with particular expertise wiil obtain more goods than those of the other *sawi* using only their physical strenght as the usual *sawi*.

Table 2. The transformation of social structure in applying the kinds of the fishing utilities

| Dimension | Fishing utilities | | |
|---|---|---|---|
| | *Koli-Koli* | *Ngkuru-ngkuru* | *Gae* |
| Differentiation | 1.*ponggawa*, 2.*sawi* | 1. *ponggawa,* 2. *sawi* 3. *lume* worker | 1.Captain/ *ponggawa*, 2.*bas,* 3.*pakacca,* 4. electrician, 5.wrapping worker, 6. *Tare* worker, 7. *bage* worker, 8. *Lume* worker |
| Stratification 1. Fisherman | | | |
| a. Society level | Upper (*Ponggawa)*, Lower (*Sawi)* | Upper (*ponggawa)* Lower (*sawi, Lume laborer)* | Upper (*Ponggawa)* Middle (Bas, wrapping worker, electrician, *pakacca*) Lower (*tare* worker), *Bage* worker, *lume* worker |
| b. Standards of measurement | Ownership, position, income | Ownership, position, income | Ownership, position, income |
| Stratification 2. Society | | | |
| a. Society level | Upper (*lolo, kades,imam, ponggawa)* Lower (*atta, sawi)* | Up (*lolo,kades,imam, ponggawa*), Bawah (*atta, sawi,* tukang *lume*) | Up (*kades,imam ponggawa),* Menengah (bas, tukang lingkar, tukang listrik, *pakacca*) Bawah (tukang *tare*, tukang *bage*, tukang *lume)* |
| b. Standards of measurement | Ownership and honor (*ascribed and achieved status*) | Ownership and honor (*ascribed and achieved status*) | Ownership, position, income (*achieved status*) |
| Relationship pattern | Non-exploitative, egalitary | Non-exploitative, egalitary | Non-exploitative, hierarchial |
| Profit sharing system | 50% of *sawi* products is given to *ponggawa* | *potong tengah* (operational costs) 50% (*ponggawa*) 50% (*sawi*) | *potong tengah* (operational costs) 50% (*ponggawa*): 50% (*sawi*) |

Although the quantity is not consistent in the particular institution. For the *gae* whose the machine pull the trawl, the position of *tare* worker will not be required anymore because it is subtituted by the machine controlled by engineer (*bas*). Therefore, usually, the engineer obtain enough profit sharing. The stratification system reveals that the fishermen in Lagasa Village have the open stratification system and the *achieved status* is applied.

Table 3. The new position in the Gae work pattern

| No | Position | Job description |
|---|---|---|
| 1 | Captain/*ponggawa* | - Controlling the boat<br>- Deciding the navigation<br>- Deciding the fishing spot |
| 2 | Engineer/*Bas* | - Operating machine<br>- Maintenance and machine recovery |
| 3 | *Pakacca* | - Observing the quantity of the trapped fish before withdrawal |
| 4 | Electrician | - Operating machine generator |
| 5 | Wrapping worker | - Wrapping the trawl around the lamp |
| 6 | *Tare worker* | - Pulling the trawl |
| 7 | *Bage worker* | - Sorting the fish based on size and shape<br>- Giving dispense (*jame-jame*) to *sawi* |
| 8 | *Lume worker* | - Removing sea water and litters from the boat |

In the armada of the *gardang* machine, the *sawi* fisherman recruitment becomes more selective. The two of the armada with *ponggawa* HA have a *gardang* machine. *The sawi* fishermen using only their physical strenght are not considered to be hired in the *gae gardang*.

Furthermore, the transformation in the fisherman prosperity have occured on applying the fishing facilities. The fisherman prospeority is based on the income, dietary habit, the house condition, education and the dressing style. The increase of the income plays as the implication of fishing technology conversion. The machine application on the boat will facilitate the fisherman group to determine the fishing area without considering the strenght to paddle. The size of the boat which is bigger also

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enables the more load capacity of the haul. Besides that, the more advanced fishing utility can produce more houl than that of the old utility. The transformation of the fisherman's income can be obeserved in the Table 4.

Table 4. The increase of the fisherman's income in the fishing utility

| The status of the fisherman | The income in the fishing utility (liter beras) | | |
|---|---|---|---|
| | *Koli-Koli* | *Ngkuru-ngkuru* | *Gae* |
| *Ponggawa* (n = 45) | 111 | 247.7 | 1040 |
| Local *Sawi* (n = 30) | 47 | 80.6 | 234.1 |
| Outside-village *Sawi* (n=23) | 46.5 | 84.4 | 232.3 |

Although the increase of the income occured based on the identification method of Bangdes, in the period of the application of the *gae* on the average, the fisherman is categorized as the poor society according to the *sawi* who have the income less than 360 kilograms of rice. Visually, in the life-style, the form of the house, and its furniture, there are 25 respondents (55.5%), there are 20 (44.4%) *ponggawa* who have permanent house (mansory wall) while the class I and II just have wooden construction of their house with some furniture, etc. all of their house being on the water (sea). Whereas, for the local and outside-village *sawi,* they have semi-permanent construction houses. All family members of the fisherman have a formal education at least in the elementary level and there is no person who are unable to read (0 percent).

## CONCLUSION AND SUGGESTION

### Conclusion

The fishing technology conversion in fisherman society brings up many impacts on various aspects in fisherman's life. The application of every type od the utility affects on the consequences or impacts such as the work pattern, social structure, and the fisherman prosperity level.

The work pattern in every transformation of technology step (from the simplest: *koli-koli*, *ngkuru-ngkuru, and then gae* machine boat) reveals the improvement of the work effectivity and efficiency.

The next impact is the transformation of the fisherman's social structure. The transformation is categorized as showing the occupation differentiation as consequence of both using the machine and using the simple utility.

Many job positions make the fisherman become stratified in many kinds of layers. The several fishing activities require the expert worker so that the classification of the differentitation has started. The work differentiation also affects on occuring social differentiation. The fisherman social differentiation affects on the transformation of social structure in the fisherman's life. The transformation of the egalitarian relationship pattern becomes hierarchical but not exploitative. In the stratification system, in society context, the coating basis changes from *ascribed* and *achieved status* into only *achieved status.*

The relationship between the *ponggawa* as the owner of production utility and the sawi as the worker is not the exploitative characteristic, because both of them still apply the cultural values which help each other not only in teamwork but also in relationship pattern in their daily life. So that the characteristic of the relationship pattern is not exploitative and require each other. The difference does not show the polarization indication because the *Bajo* tradition to help each other is still applied.

### Suggestion

Ocean plays as the *open acces* area and the resource of *common property* that causes the appearance of the competition

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among the fishermen that results in the lower-class fisherman elimination. Therefore, in the case of giving the help and the development program of coastal society, the government should notice the social aspect, the culture, and the consumption level of the fisherman. The program implementation which does not consider the aspects can affect the uncompleted program proposal such as the objection of adopting or the impact of damaging the fisherman's social life.

One of the aspects needed to become the government's consideration is how the government finds out how far the fisherman interprets both the ocean and his occupation as the fisherman. The program connected to the fisherman is the synergy between the economy and cultural aspect. It is caused because the fisherman group occurs the tendency of meaning friction from commercial (economic) but not leave the cultural meaning. Therefore, the government require an intensive interaction by informally following the traditions of the local society and minimize the distance between the government and the fisherman.

Next, because there is unbalanced conditions between the income of the high class fisherman and the income of low class fisherman, it needs a social institution in the profit sharing regulation between the high class fisherman (*ponggawa*) and the low class fisherman (*sawi*) so that the unbalanced income in each layer can be reduced and can decrease the occurance of the social conflict among the fishermen. It can be performed by establishing the profit sharing regulation and other reward which obtains the legality from the government.

This reseacrh was conducted in one of *Bajo* tribe society. The social interaction among other tribes is quite frequent, in addition to the easy access communication and information. Therefore, the next research should be conducted in *Bajo* tribes which are relatively far from another tribe, the restricted information access and communication. It is important to observe the description of *Bajo* tribe which is more complete.

The modernization impact of the prosperity should be analyzed more keenly to be performed in the spending of the fisherman household. The condition is connected with whether the characteristic and lavish behaviour which plays as the *stereotype* of fishermen also founded in the *Bajo* tribe fisherman. The analysis of the spending which is creating the feasibility category of the fisherman is more measureable.

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