



Determinant Factors of Livelihood Shifts Fisherman in North Gorontalo District in The Faceclie Season

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Abstract: North Gorontalo is one of the regencies whose position is directly adjacent to the Sulawesi Sea, so it is rich in marine products. The amount of natural resources in the fisheries and marine sector in North Gorontalo Regency has not been able to improve the welfare of fishermen, especially outboard boat fishermen. This is caused by economic conditions that are not sufficient to buy sophisticated fishing gear and motorized boats. Fishermen can be divided into three categories, namely full-time fishermen, main part-time fishermen and additional part-time fishermen. Fishermen in North Gorontalo Regency are dominated by fishermen in the category of full-time fishermen, whose entire lives are fishermen and do not have other jobs. The research aims to identify the factors that influence the shift in fishermen's livelihoods in North Gorontalo Regency when the famine season arrives and to find out how the economic conditions of the fishing communities in North Gorontalo Regency after changing livelihoods. The research was conducted in March-June 2023, located in the coastal area of Sumalata District, Biau District and Tolinggula District, North Gorontalo Regency, Gorontalo Province. As for the indicators used to determine the level of welfare, namely by using indicators of a prosperous family. Based on the results of the study, it can be concluded that most fishing communities who are respondents know when the fishing season changes cycle with a percentage value of 87.9%. According to 95, 5% of respondents, wave and wind seasons are very influential on the amount of income and catches. The absence of the government's role in providing counseling related to alternative livelihoods is the main problem for supporting the fishermen's economy during the lean season according to 93.2% of fishermen respondents. Based on the analysis of welfare levels using BPS indicators, it was concluded that fishing communities in Sumalata, Biawu and Tolinggula Districts, North Gorontalo Regency were included in the moderate welfare category with a score of 2.40.

Key words: Determinant Factors, livelihood shifts, fishermen

INTRODUCTION

Fishery should be the most superior sector in Indonesia because of Indonesia's geographical condition, which is an archipelagic country, has an abundance of very large capture fisheries resources. The abundant natural wealth in the marine resource sector usually has a positive impact on coastal communities, especially those who work as fishermen. Fishery resources can potentially be utilized to improve the standard of living and welfare of fishermen, but in reality there are still quite a lot of fishermen who are in unfavorable economic conditions because they cannot increase their catch, so their income does not increase (Ridha, 2017).

According to Wahyono et al., (2001) the income of fishermen from fishing is very different from other types of businesses, such as traders or even farmers. If traders can calculate the profit they get every month, so can farmers predict their yields, then this is not the case with fishermen whose activities are full of uncertainty and are speculative and fluctuating.

According to Sujarno (2008), several factors that affect fishermen's income include social and economic factors as well as educational factors. Social and economic factors consist of costs, number of boats, number of workers, distance traveled, and experience. Meanwhile, the education factor for fishermen whose job is to go to sea, according to them, does not require a high level of education. As traditional fishermen they consider it to be menial work that relies more on muscles and experience. The problem that will arise from the fishermen's low level of education is when they want to get another job. With a low level of education and not even graduating from junior high school, this condition will make it difficult for traditional fishermen to choose or get other jobs besides being fishermen. North Gorontalo is one of the regencies whose position is directly adjacent to the Sulawesi Sea, so it is rich in marine products. The amount of natural resources in the fisheries and marine sector in North Gorontalo Regency has not been able to improve the welfare of fishermen, especially outboard boat fishermen. This is caused by economic conditions that are not sufficient to buy sophisticated fishing gear and motorized boats. Fishermen can be divided into three categories, namely full-time fishermen, main part-time fishermen and additional part-time fishermen. Fishermen in North Gorontalo Regency are dominated by fishermen in the category of full-time fishermen, whose entire lives are fishermen and do not have other jobs. This condition is a challenge for the government in achieving the development goals of the fisheries sector, including improving the welfare of fishermen and coastal communities. The potential possessed by the North Gorontalo coastal region cannot be separated from the coastal communities who live from the resources around them. Satria (2002) states that sociologically coastal communities have social characteristics that are different from other communities, because of the different characteristics of the resources they face. The economic well-being of coastal communities is highly dependent on fishery resources, both marine capture fisheries and aquaculture, which until now are still open access, so that the environmental conditions of coastal and marine areas determine the sustainability of their socio-economic conditions. When it comes to welfare issues, the fishing community is one of the community groups, most of which are classified as poor. This can be seen in the fact that fishermen are currently still below the poverty line (Triyanti and Firdaus 2016).

The phenomenon that is now surfacing among fishermen in North Gorontalo is the shift in livelihoods, both side, temporary and permanent. This livelihood transition is carried out by switching professions to become farmers, ranchers, or to become other service workers. Other livelihood transitions are carried out by gardening such as corn and coconut which are the main commodities in Gorontalo Province. This is done by fishermen to survive when the famine arrives. Periodically, the most productive fishing season only occurs from February to July, which is commonly known as the harvest season. While the rest is the dry season or the West Season which occurs in early December to mid-February. and the transition season or East Season occurs in early August to the end of November. In general, during the lean season the production of fish catches decreases, so the price of fish rises because on the other hand demand or consumption is relatively constant or increases, but fishermen cannot go out to sea. Ismail (2004), the factors that influence fishermen's income from fishing activities are physical factors in the form of coastal environmental conditions, fishing technology, fishing locations, and capital, as well as non-physical factors related to climatic conditions (season), fishermen's age, fishermen's education, and sea experience. During the West Season, the weather conditions are usually bad with big waves and strong winds which prevent fishermen from going out to sea. This certainly has an impact on reducing the amount of

time fishing communities work in fishing activities, which in turn has an impact on decreasing their household income. Fishermen's income from fishing will decrease because fishermen do not dare to sail far from the coast due to high sea waves. One of the main problems that occur among fishing communities is the change of seasons which greatly affects the volume of fish caught. This change of season makes the amount of income earned by fishing communities, especially fishing communities in the coastal areas of North Gorontalo, unstable. Fishermen's income from fishing will decrease because fishermen do not dare to sail far from the coast due to high sea waves. One of the main problems that occur among fishing communities is the change of seasons which greatly affects the volume of fish caught. This change of season makes the amount of income earned by fishing communities, especially fishing communities in the coastal areas of North Gorontalo, unstable. Fishermen's income from fishing will decrease because fishermen do not dare to sail far from the coast due to high sea waves. One of the main problems that occur among fishing communities is the change of seasons which greatly affects the volume of fish caught. This change of season makes the amount of income earned by fishing communities, especially fishing communities in the coastal areas of North Gorontalo, unstable.

This change in season indirectly affects the pattern of livelihood carried out by fishing communities on the coast of North Gorontalo. During the fishing season or the transition season, the fulfillment of economic needs can be fully supported from the results of fishing. Problems arise when the fishing season has passed and entering times of famine. As a result, people who depend on coastal resources are increasingly having difficulty obtaining prosperity. Differences in regional characteristics greatly determine what livelihood strategies can be carried out by fishing communities as an effort to maintain their survival. However, one main pattern and characteristic is that whatever work they do while waiting for the fishing season does not escalate their economic strata. Even the tendency that occurs is economic stagnation or maybe worse than that. The factors that cause this in North Gorontalo have not been carried out much, so the availability of data that can be used as a basis for the development of fishing community development has not been optimal. Therefore, it is necessary to conduct a study of fishing communities in the coastal areas of North Gorontalo, in making efforts to survive, especially in facing the fulfillment of their necessities of life during famine.

Formulation of the problem

What are the views of the fishing community and the government's role during a famine?

What is the economic condition of the fishing communities in Sumalata, Biawu and Tolinggula sub-districts?

Objective

The research aims to identify the factors that influence the shift in fishermen's livelihoods in North Gorontalo Regency when the famine season arrives and to find out how the economic conditions of the fishing communities in North Gorontalo Regency after changing livelihoods. Climate change causes changes in sea surface temperature and stratification of the water column which then affects the upwelling process in the oceans. Changes in ocean circulation and the upwelling process cause changes in fish migration patterns and fish schools. Fish migration, in which schools of fish of a certain type cross a fishing area, is understood by fishermen as the fishing season or fishing season (Patriana and Satria, 2013).

RESEARCH METHODOLOGY

The research was conducted in March-June 2023, located in the coastal area of Sumalata District,

Biau District and Tolinggula District, North Gorontalo Regency, Gorontalo Province. The population is the entire research object, both consisting of real objects, abstracts, events or symptoms which are data sources that have certain and the same characteristics (Sugiyono, 2015). The population in this study were all fishing communities in Sumalata District, Biau District and Tolinggula District, North Gorontalo District.

The sample is part of the number and characteristics possessed by the population (Sugiyono, 2015). The sampling technique in this study was simple random sampling or (random sampling). In Ruqo'iyeh (2012). Simple random sampling is a way of taking samples by selecting directly from the population and the chance for each member of the population to become a sample is very large. So the respondents who will be studied based on the slovin formula above are a total of 133 people divided into 3 sub-districts, including 54 people in Sumalata District, 11 people in Biawu District and 68 people in Tolinggula District.

Data collection technique

Primary data is used to determine the perceptions of fishing communities about government assistance obtained through direct interviews with fishermen and the instrument used is a questionnaire. Interviews were conducted directly with the community, namely fishermen's families and direct observations in the field

Data Analysis

Welfare Analysis

Measurement of family welfare is carried out by the Central Bureau of Statistics (BPS, 2013) to measure the level of welfare.

Condition of residence

Home ownership status

The fuel used

Explanation used

Health of Family Members

Ease of getting health services

Ease of getting children into education

Ease of getting transportation facilities

According to the Central Bureau of Statistics (2005), the indicators used to determine the level of welfare are indicators of prosperous families which can be seen in Table 2.

Table 1. Prosperous family indicators based on BPS (2015).

No.	Indicator	Criteria	Score
1	Income	High(>Rp 10,000,000)	3
		Moderate(Rp 5,000,000-Rp 10,000,000)	2
		Low(<Rp 5,000,000)	1
2	Expenditure	High(>Rp 5,000,000)	3
		Medium(Rp 1,000,000-Rp 5,000,000)	2
		Low(<Rp 1,000,000)	1
3	State of the placestay	Permanent	3
		Semi permanent	2
		Non permanent	1
4	Facilityresidence	Complete	3
		Enough	2
		Less	1
5	Health of family members	Good	3
		Enough	2
		Easy	1
6	convenience get health services	Easy	3
		Quite difficult	2
			1
7	Ease of entering you into educational level	Easy	3
		Enough	2
		Difficult	1
8	convenience get transportation facilities	Easy	3
		Quite difficult	2
			1

Source: Prosperous family indicators based on the Central Bureau of Statistics (2015).

Based on the results of the scoring of the welfare indicators above, tabulation is then carried out to find out the total score obtained, then determining the level of welfare. The criteria for determining the level of welfare in Table 2.

Table 2. Criteria for determining welfare according to BPS (2015)

No.	Score	Description
1.	Score between 2.41 – 3.1	High level of welfare
2.	Score between 1.71 – 2.40	Moderate welfare level
3.	Score between 1.0 – 1.70	Low level of welfare

To obtain the total score, the weighting is carried out on each indicator which can be seen in Table 3.

Table 3. Determination of Weighting

No.	Indicator	Weight
1	Income	24%
2	Expenditure	18%
3	Condition of residence	9%
4	Residential facilities	9%
5	Health of family members	8%
6	Ease of getting health services	12%
7	Ease of getting you into education	12%
8	Ease of getting transportation facilities	8%
Amount		100%

Furthermore, the score of each indicator is multiplied by the appropriate weight with (Table 3). The results of the multiplication of each indicator and the weight are added up and then the results are adjusted to (Table 2), to determine the level of welfare. It is also necessary to note that the family welfare indicators above are representative of several indicators that have been determined by BPS (2015).

RESULTS AND DISCUSSION

North Gorontalo Regency is an administrative area which is the result of division of Gorontalo Regency, Gorontalo Province which was legalized through Law number 11 of 2007 concerning the Formation of North Gorontalo Regency. Geographically, more than 75 percent of the area of North Gorontalo Regency is a coastal area, with a coastline reaching 320 square kilometers (Km²), as well as the longest coastline in Gorontalo Province facing the Pacific Ocean. Administratively, North Gorontalo Regency has an area bordering: North side is bordered by Sulawesi Sea, West is bordered by Central Sulawesi Province, South is bordered by Boalemo Regency, East is bordered by North Sulawesi Province.

Identity of North Gorontalo Fisherman Respondents

This research concerns the title regarding the determinants of shifts in the livelihoods of fishermen in North Gorontalo Regency during the rainy season. Thus, to obtain research data, questionnaires will be distributed to fishermen in the Sumalata, Biawu and Tolinggula sub-districts. After obtaining a completely filled out questionnaire, the first step is to group the respondents based on filling out their personal identities which consist of the distribution of respondents, age, education, side job, length of work, source of capital and number of dependents as listed in the questionnaire.

North Gorontalo fishermen also see good weather and seasons for fishing. In the west monsoon the fishermen do not go fishing, this is because during the west monsoon there are strong winds, rain and big sea waves. During this season fishermen who use small boats cannot catch fish because it can endanger the safety of fishermen. Fishermen's knowledge of the catch can be seen in Table 6.

Catch

Table 4. Fisherman's Catch

Question Criteria Description	Type	Size(Kg)	Price	Condition last 5 yrs		
				Increase	Same	Size
Catch	snapper	40	50,000			Reduce
	skipjack	40	40,000			Reduce
	Tuna	35	17,000			Reduce

In general, the people of North Gorontalo work as fishermen, they often catch skipjack and tuna, but some catch various types of fish that live around coral reefs, one of which is snapper. In general, fishermen directly sell fish caught in fresh form to local entrepreneurs and direct consumers. In the last 5 years, catches have begun to decrease, which is marked by the fishing process and fishermen have to work longer hours to get maximum catches. North Gorontalo fishermen's perception of problems during the famine season. The definition of perception is an individual's assessment of an object (state) experienced by someone who is influenced by the behavior, situation, and one's needs in interpreting an object or situation in the environment. The success or failure of an empowerment program is an indicator of the sustainability of the program being implemented. One of the main factors that determine the success or failure of a community empowerment program is the perception of fishermen groups towards the empowerment program. Activities to deal with fishermen's problems during the famine season are steps that can help fishing communities in North Gorontalo Regency to stabilize economic conditions in various problems, especially during the famine season.

Table 5. Fishermen's Perception of Famine Season

No	Description	Answer		R	%		Amount
		Yes	No		Yes	No	
1	Are fishermen aware of the seasonal change cycle?	116	16	132	87.9	12.1	100
2	Does the Famine Season Affect Fishermen's Catch and Income?	126	6	132	95.5	4.5	100
3	Do fishermen have skills or side jobs during the famine season?	85	47	132	64.4	35.6	100
4	Does the government conduct outreach or socialization regarding alternative livelihoods in the season?	9	123	132	6.8	93.2	100
5	Is business capital assistance from the government when famine season?	16	116	132	12.1	87.9	100

The government's role should be necessary to support the economic conditions of fishermen in North Gorontalo Regency during the famine season. From the statement about the government's role in socializing alternative livelihoods during the famine season, answers were obtained based on the

results of the interviews, most of the respondents (93.2%) said that there were no related parties who provided socialization or counseling about alternative livelihoods during the rainy season. famine. However, around (6.8%) of respondents differed in opinion, they said that the village or related agencies had conducted socialization or training for entrepreneurship.

In addition to the importance of knowledge or knowledge about alternative livelihoods, fishermen also need assistance from the government or related agencies to support their lives when there is a famine. As many as (87.9%) of respondents said that the government had never provided assistance with living expenses to support fishermen's lives during the famine. However, approximately (12.1%) of respondents said that they had experienced village government assistance several times during the famine, namely in the form of groceries.

Welfare Indicator

Based on indicators according to the Central Bureau of Statistics in 2005 to determine the level of fishermen's welfare using 8 approaches, namely income, household consumption or expenditure, living conditions, living facilities, health of family members, ease of getting health services, ease of enrolling children in education and ease get transportation facilities.

Fishermen's income

Based on the monthly income of family respondents in the coastal communities of Sumalata, Biawu and Tolinggula Districts, North Gorontalo Regency, they were divided into 3 groups, namely 1) < Rp. 2,000,000, 2) a group with a family income of Rp. 2,000,000 to Rp. 5,000,000, and 3) groups with family income above Rp. 5,000,000, for more details on the distribution of income groups. income of fisherman respondents in Sumalata, Biawu and Tolinggula Districts who have the highest percentage income in the category of less than Rp.2,000,000 to Rp. 5,000,000 per month which reached 28.0% and then it was proposed that the respondent's income was more than Rp. 5,000,000, reaching 28.0% while in the lowest category with income less than Rp. 2,000,000 with a total percentage of 15.9%. This condition explains that in terms of income, fishing communities in Sumalata, Biawu and Tolinggula sub-districts are at a moderate level with an average income of between Rp. 2,000,000 SD Rp. 5,000,000.

Fishermen's Expenditure

Based on expenditure per month, fishermen who receive assistance in North Gorontalo Regency are divided into 3 groups, namely 1) < Rp. 2,000,000, 2) a group with a family income of Rp. 2,000,000 to Rp. 5,000,000, and 3) groups with family income above Rp. 5,000,000. For more details, the division of income groups is as follows. The monthly expenditure of fishermen in the Sumalata, Biawu and Tolinggula sub-districts is around Rp. 2,000,000 per month occupies the highest percentage with an achievement of 75.0%, followed by expenses of Rp. 2,000,000 to Rp. 5,000,000 with a percentage of 22.0%. Meanwhile, there are no fishing communities receiving assistance that have expenses of more than Rp. 5,000,000 per month, according to respondent data, it reaches 3.0%.

State of Residence

The condition of the residence is part of the family welfare indicator, where the condition of the residence is a characteristic that describes the quality of the household's residence. In addition, the condition of residence is a building where humans live and carry out their lives. The value system exists between one housing and another, depending on the area or the condition of the local community (Mahardika, 2013). In the results of a study of 132 fishermen, the majority with a

percentage of 70.5% had permanent residence conditions, there were only 29.5% of fishermen whose residence was in a semi-permanent state. This can be seen from the items assessed such as the type of roof, walls, house ownership status.

Table 6. Indicators of Living Conditions.

State of Residence		
<u>Category</u>	<u>Amount</u>	<u>Percentage</u>
Permanent	93	70.5
Semi-permanent	39	29.5
Non Permanent	0	0.0
<u>Total</u>	<u>132</u>	<u>100</u>

Fishermen in the Sumalata, Biawu and Tolinggula sub-districts are quite concerned about the conditions in which they live. Basically the existence of a house does not only have a function as a place of refuge, but the house has become part of a lifestyle symbol that influences the socio-economic status of the household and even shows the identity of the owner in society. The better the conditions of residence, the better the socio-economic conditions of the family.

Residential Facilities

Welfare is also related to the condition of the residence, the condition of the residence, namely facilities

Water facilities are also very important in human survival, both in agriculture, household life, and offices. To meet the community's water needs, a clean water supply system has been established, especially in urban and rural areas (Triatmadja and Radianta, 2007). Based on table 9, the clean water facilities used by fishing communities in Sumalata, Biawu and Tolinggula Districts, 79 respondents have used PDAM as a source of water for household needs with a total percentage of 59.8% and 51 respondents used private wells because of living conditions they find it difficult to get clean water facilities with a total percentage of 38.6%, the remaining 2 respondents or 1.5% use other facilities as a source of clean water.

7. Family Health

Family health is an important indicator used to measure the welfare level of a household. The following is the health condition of fishermen families in North Gorontalo Regency.

Table 7. Family Health Conditions

Family Health		
<u>Category</u>	<u>Amount</u>	<u>Percentage</u>
Healthy	129	97.7
Unwell	3	2,3
Sick	0	0.0
<u>Total</u>	<u>132</u>	<u>100</u>

The health of the respondent's family members is classified as good with a score

3. This can be proven by the number of respondent's families who are in healthy condition as much as 97.7% while the rest who are not healthy are only 3 respondents with a percentage of 2.3%.

The ease of obtaining health services is supported by the existence of puskesmas in every sub-district in North Gorontalo Regency which is one of the supports for household health. The distance to the puskesmas is also not too far.

Health Service Facilities

Ease of obtaining health services consists of 6 items, namely distance to the nearest hospital, distance to drugstores, handling of medicines, prices of medicines and contraceptives.

Table 8. Health Facilities

Health services		
<u>Category</u>	<u>Amount</u>	<u>Percentage</u>
Easy	93	70.5
Enough	18	13,6
Difficult	21	15,9
<u>Total</u>	<u>132</u>	<u>100</u>

Based on the results of interviews with 132 fisherman respondents in Sumalata, Biawu and Tolinggula Districts. There were as many as 93 people or 70.5% of respondents answered that it was easy to get health facilities because of the availability of drugstores in each sub-district, besides that the village government had distributed BPJS for government assistance to support public health. However, there were some people who were dissatisfied with the health facilities with a percentage of 13.6% or as many as 18 people who thought that the local puskesmas only directly referred patients to hospitals without taking them seriously first. The remaining 15.9 had difficulty getting health facilities due to low economic conditions.

Educational Facilities

The ease of enrolling children in education consists of 3 items, namely school fees, distance to school and the admissions process. Educational facilities for fishermen families can be seen in the following table.

Table 9. Educational Facilities

Educational Facilities		
<u>Category</u>	<u>Amount</u>	<u>Percentage</u>
Easy	87	65,9
Enough	12	9,1
Difficult	33	25.0
<u>Total</u>	<u>132</u>	<u>100</u>

The ease with which fishermen enroll their children in education is also not an important issue. In terms of cost, distance to school, and the admission procedure is easy. This is supported by educational facilities that are quite complete in the Districts of Sumalata, Tolinggula and Biawu. Besides this, it is also supported by a free education program that makes it easier for fishermen to send their children to school. Education is a powerful vehicle to lift people from various backwardness, including poverty. Analysis of the Level of Welfare of the People of North Gorontalo

According to Rosni (2017), measuring the level of welfare of fishermen in the sub-districts of Sumalata, Biawu and Tolinggula during the famine season, indicators are needed that can provide a clear and precise picture. Indicators can provide a clear picture of both social and economic aspects, because welfare can be seen from these two aspects. Welfare issues are always related to the concept of needs, so that fishing communities must try to meet their household needs until they are fulfilled, then they are said to be prosperous.

In accordance with the BPS indicator (2015) which is used to determine the level of welfare can be seen in table 14.

Table 10. Analysis of Community Welfare Levels

Indicator	Score	Weight %	Total Score
Income	2	24	0.48
Expenditure	1	18	0.18
Condition of residence	3	9	0.27
Residential facilities	3	9	0.27
Family Health	3	8	0.24
Ease of Obtaining Health Services	3	12	0.36
Ease of Entering Children into Education	3	12	0.36
Ease of getting transportation facilities	3	8	0.24
Amount	21	100	2.40

Based on Table 10, BPS welfare level criteria, a total score of 2.40 is obtained, meaning that fishermen who receive assistance in North Gorontalo are included in the moderate welfare criteria. The welfare criteria are adjusted to the weight of the BPS (2015) welfare indicators, namely fishermen receiving boat assistance in North Gorontalo with a score between 1.71 – 2.40 including the category of moderate welfare level.

CONCLUSION

Based on the results of the study, it can be concluded that most fishing communities who are respondents know when the fishing season changes cycle with a percentage value of 87.9%. According to 95.5% of respondents, the season of waves and wind greatly influences the amount of income and catches. The absence of the government's role in providing counseling related to alternative livelihoods is the main problem for supporting the fishermen's economy during the lean season according to 93.2% of fishermen respondents.

Based on the analysis of welfare levels using BPS indicators, it was concluded that fishing communities in Sumalata, Biawu and Tolinggula Districts, North Gorontalo Regency were included in the moderate welfare category with a score of 2.40.

Suggestion

Based on the results and conclusions of the research, the suggestion for this research is that there is a need for follow-up from the Gorontalo Regency and Provincial governments on alternative livelihood development programs to support the economy of fishing communities during the lean season.

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