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## Impact Evaluation of Fishing Boat Assistance (Case Study of Fishermen in Tomini Bay, Gorontalo Province)

Ivan Santoso, Fahrudin Zain Otiingo

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Our decision is: Revisions Required

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1	Introduction	It is well
2	Literature Review	Good
3	Methodology	Goods
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**REVISI**

## Impact Evaluation of Fishing Boat Assistance (Case Study of Fishermen in Tomini Bay, Gorontalo Province)

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### Abstract

*The fishermen's welfare program is one of the government's concerns in the development of coastal areas. Among the forms of these efforts are the help of ships. However, along the way, it is sometimes difficult to identify the impact and success factors of the program. The purpose of this study was to analyze the impact of fishing boat assistance from the economic, socio-cultural, and institutional aspects. This study focuses on analyzing the impact and success factors of ship assistance to obtain a comprehensive picture of the sustainability of the fishing boat assistance program. The method uses the Multidimensional Scaling (MDS) technique with the help of the RAPFISH (Rapid Appraisal for Fisheries) method attributes. The results of the study found that the RSQ was 47.93% for the economic aspect, 36.37% for the cultural aspect, and 54.87% for the institutional aspect. The institutional aspect has the greatest level of sustainability. In addition, the guidance indicator is the main factor supporting and leveraging the success of fishing boat assistance. This research contributes to the description of the economic, social, and institutional impacts of fishing boat assistance so that it becomes the basis for determining government directions and policies in increasing fishing productivity in general and more specifically in the Tomini Bay Area.*

**Keywords:** *Evaluation, Impact of Ship Aid, Fishermen, Tomini Bay*

### 1. INTRODUCTION

Development in coastal and marine areas is an important element, to raise the standard of living of fishermen so that traditional coastal resource management is still respected and maintained. Small islands are an unavoidable reality of income inequality and economic development gaps compared to other mainland areas. Social and economic policies related to coastal communities need to be reorganized to realize the welfare of Indonesian coastal communities (Rukin, 2018). Several government efforts to pay attention to local institutions by reinforcing these institutions can be a forum for fishermen in villages to empower them without having to bring in external institutions because in principle the institutions that grow and develop in the community have helped fishermen in rural life and is social capital.

Tomini Bay is the largest bay in Indonesia with a water area of 137 700 km<sup>2</sup> and a coastline of 1,350 km where this area is rich in biological resources, marine life, and minerals and is located in the Wallacea Zone which historically was a separate area from the Asian and Australian Continents (Purbayanto, 2011). Tomini Bay is classified as semi-enclosed water which is in direct contact with 3 provinces, namely North Sulawesi, Central Sulawesi, and Gorontalo, and also consists of 14 districts/cities and 23 river mouths. The Tomini Bay area is also surrounded by large and small and beautiful islands that have great potential for tourism development. Among these islands is the island of Togean in Central Sulawesi which has been visited by tourists from both domestic and foreign countries. Tourism development cooperation between North Sulawesi, Gorontalo, and Togean Central Sulawesi is very important because tourists entering from Manado generally pass-through Gorontalo and then head to Togean Central Sulawesi. In Gorontalo, tourists still use the opportunity to enjoy tourist visits in Gorontalo, including seeing the whale shark attraction in Botubarani Village, Bone Bolango district. In addition to having diverse tourism potential, Tomini Bay also has a large fishery potential, both pelagic fish and demersal fish. In 2011 the potential for pelagic fish reached 486 tons and for commercial fish 96 thousand tons (Syahrul, 2020). The potential that has been utilized is only around 10%. Thus, we still have the opportunity to increase the catch that can be used for the welfare of the people of Tomini Bay. Even though Tomini Bay holds a variety of wealth, both tourism potential and fishery potential, the people who inhabit Tomini Bay are generally still underdeveloped, which can be seen from various indicators, namely poverty rates, income levels, education, and health. The poverty rate ranges from 17–18%, and the Human Development Index (HDI) ranges between 64 and 65, or still below the national standard.

The government's efforts to assist the development of fisheries in Tomini Bay have been carried out, among others, through the assistance of fishing vessels to fishermen. However, until now the fishermen in the Tomini Bay area are still below their standard of living. Previous studies have found several results related to the development of coastal areas, both in terms of impact evaluation (Utari et al., 2021; Arnawa et al., 2016; Karim, 2017; Putri et al., 2021; Rangkutty, 2018), obstacles in the implementation of assistance programs (Mira, 2013) (Syahputra & Eriyanti, 2020), empowerment of fishermen's economic conditions (Nurjanah, 2020; Tan et al., 2021), digital-based system support (Teniwut et al., 2022) as well as stakeholder perception studies (Soma et al., 2018), however, research examining the impact of aid from an economic, social and institutional perspective is still very limited. Therefore, this study aims to evaluate the existence of assistance from fishing boats and the extent of their impact on the level of welfare of fishermen from the economic, social, and institutional aspects, so as to identify the driving factors and levers for the success of the assistance of fishing boats in the Tomini Bay area. It is hoped that with this aim this research can provide benefits for fishermen who receive ship assistance in the future through more effective government policies. This research not only offers novelty in terms of a comprehensive analysis of the

impact of aid, but as well as from the research locus, namely the Tomini Bay fishermen group, where Tomini Bay is right on the equator and has a semi-enclosed marine ecosystem, this bay holds large fishery resources, endemic coral reefs, vast expanses of mangroves, and abundant coastal resources.

## 2. LITERATURE REVIEW

### 2.1 Evaluation

Evaluation is an activity to assess looking for new breakthroughs for improvement. Evaluation is also an analytical process that emphasizes the creation of value premises that provide an assessment of the performance of a program, policy, or activity. The evaluation process also provides a response to the question, "What difference is made?". This means that evaluation is an analysis of a fact and the responses generated when a program or policy is implemented (W. Dunn, 1994)

The term evaluation has related meanings, each referring to the application of some value scale to the outcome of a policy or program. In general, the term evaluation can be interpreted as an assessment, rating, and assessment, words that express efforts to analyze the results of a policy in terms of its unit value. In a more specific sense, evaluation is concerned with the production of information about the value or benefits of policy outcomes. When policy outcomes do have value, it can be said that the policy or program has reached a meaningful level of performance, meaning that policy issues are made clear or can be addressed.

The main description of evaluation is that evaluation produces evaluative demands. The questions asked about evaluation are not about facts (does something exist?) or action (what should be done?), But it deals with value (How much is it worth?). Therefore evaluation has characteristics that distinguish it from other policy analysis methods, namely: (W. N. Dunn, 2017):

- a. Value focus. Evaluation is different from monitoring, which focuses on assessing the need or value of a policy or program.
- b. Fact-Value Interdependence. The demand for evaluation depends on both 'facts' and 'values'. To state that a particular policy or program has achieved the highest (or lowest) level of performance requires not only valuable policy outcomes for some individuals, groups, or the whole society.
- c. Present and past orientation Evaluation demands, in contrast to advocating claims, are directed at present and past outcomes, rather than future outcomes. Evaluation is retrospective and after actions have been taken (ex-post). Recommendations, which also include value premises, are prospective and are made before actions are taken (ex-ante).
- d. Duality of values. The values that underlie evaluation demands have a dual quality because they are seen as both an end and a means. Evaluation is the same as a recommendation as far as value is concerned. Can be considered intrinsic or extrinsic. Values are often arranged in a hierarchy that reflects the relative importance and interdependence of goals and objectives.

## 2.2 Aspects of Coastal Community Life

Characteristics of coastal communities can be seen from several aspects, including aspects of knowledge, belief (theological), and the position of social fishermen (Wahyudin, 2013). Viewed from the aspect of knowledge, coastal communities get knowledge from their ancestral heritage, for example, to see calendars and directions, they use constellations. Meanwhile, judging from the aspect of belief, coastal communities still think that the sea has magical powers so they still often do sea parties or sea alms. However, nowadays there are already some residents who do not believe in customs such as the sea party. They only perform the ritual only for formality. Likewise with the position of social fishermen, in general, fishermen belong to a low caste.

Sociologically, coastal communities have a distinctive characteristic in terms of social structure, namely the strong relationship between patrons and clients in market relations in fishery businesses. "Usually the patron provides assistance in the form of capital to the client. This is a tactic for patrons to tie clients to their debts so that the business continues." From the debt problem, conflicts often occur, but the conflict that dominates is the competition between fishermen in fighting over the limited number of fish resources. Therefore, it is very important that there are parties who can develop marine resources and regulate their management.

The role of the government from the local level to the central level is very important in its role in creating rules for the survival of coastal communities and the sustainability of their natural resources. This needs to be emphasized because like other natural resources, their nature can be destroyed and become scarce if not managed wisely, it will cause conflicts in the future. (Granado et al., 2021). Regulations are thus very important, including ensuring the right to use natural resources for local communities. In addition to the government, non-governmental and community-based institutions such as Non-Governmental Organizations (NGOs) are very helpful in directing strategies for empowering and utilizing existing potentials needed by coastal communities and supporting the management of marine environmental resources around their homes, such as aquaculture. This management is carried out with real activities that match the color of the local community culture. For this reason, NGOs must be able to provide input and critical thinking for strategies for developing and managing coastal areas and their communities.

Coastal communities are generally understood as communities with the main livelihood of fishermen. This is understandable because fishermen are the main source of livelihood for community groups living around this beach. What needs to be observed in coastal communities are problems related to their roles and livelihoods as fishermen (Yunika Puspasari, 2020). The various policies that have been carried out have not been able to lift the poverty cage of the fishermen. Marine and fisheries development policies, so far, have tended to be more focused on "productivity" policies by maximizing the results of the exploitation of marine resources without adequate policies to control them. The direction of modernization

in the fisheries sector that has been carried out so far has only provided benefits to a small group of people who have economic and political capabilities, so an alternative paradigm and strategy for development that is holistic and integrated and can maintain a balance between production activities is needed (Nurjanah, 2020).

### 3. RESEARCH METHOD

#### 3.1 Research Time and Place

This research will be conducted in the Tomini Bay area, case studies of 5 districts/cities in Gorontalo Province, namely Bone Bolango Regency, Gorontalo, Boalemo, Pohuwato, and Gorontalo City. The object of research is the assistance of fishing boats of the Inka Mina and Mina Maritim types. The limitation of the scope of the research is only on two types of ship assistance because these types of assistance are long-term and involve many fishermen as beneficiaries.

#### 3.2 Data Types and Sources

The data needed in this study are primary data and secondary data. Primary data will be obtained from respondents who receive assistance from fishing boats in the waters of Tomini Bay, especially 5 regencies/cities in Gorontalo Province, namely Gorontalo City, Bone Bolango Regency, Gorontalo, Pohuwato, and Boalemo. Secondary data includes data on ship aid recipients that will be obtained from the Fisheries Service, both Gorontalo Province and Tomini Bay Regency/City, especially the Gorontalo Province. Apart from that, the data will be complemented by data from informants from various stakeholders, including the provincial, district/city fishery offices, Bappeda and related agencies, entrepreneurs in the fisheries sector, community leaders, NGOs, and other sources related to the objects and problems studied.

#### 3.3 Analysis Method

**This study uses a quantitative approach using the Multidimensional Scaling (MDS) analysis method** (Mead, 1992) **and attribute assistance to the RAPFISH (Rapid Appraisal for Fisheries) method**. The advantages of attributes in RAPFISH are a lot of quantitative information from the resulting projection value (Hudson, 1982). MDS is a technique of making graphs or maps to describe the position of an object that will analyze the economic impact, social impact, and institutional impact of the assistance provided to fishermen in a certain period. The method will be able to determine 1) the developmental status of the aid by a composite index and 2); Leverage attributes or attributes that need to be improved (leverage attributes or sensitive attributes) as a basis for drawing up an action plan to make it easier to determine appropriate interventions; 3) The assessment involves participatory respondents. Multidimensional Scaling requires primary data which is structured to



be asked to fishers who receive assistance by distributing questionnaires containing indicators of economic impact, social impact, and institutional impact of fishing boat assistance. The emphasis of the MDS analysis is on the cluster or group of recipients of fishing boat assistance under the coordination of the group and under the control of the local fisheries service. The MDS method can completely analyze the dimensions of regional development and can also summarize multidisciplinary data obtained in the field so that a lot of quantitative and projected information can be obtained.

Primary data will be obtained from fishers who receive assistance after receiving data distribution from the Fisheries Service of Gorontalo Province. The initial information obtained was that fishermen who received assistance from the Inka Mina ship were 40 fishermen while the recipients of the assistance from the Mina Maritim were 120 fishermen spread over 5 regencies/cities in Gorontalo Province. The samples of fishermen who were interviewed were 10 fishermen who received assistance from the Inka Mina boat and 30 fishermen who received assistance from the Mina Maritim ship which will be proportionally determined in 5 districts/cities. To support data collection, a structured list of questions will be drawn up on the impact of the aid of fishing boats in terms of Economic, Social, and Institutional Impacts. Each dimension will be asked for 5 indicators with a weight of 0 to 3 which will be used as material in calculating the MDS index. The higher the MDS index, the better the justification for aid, and vice versa, the smaller the MDS index, the worse the justification for aid. The MDS score will describe the overall value of the indicator, it will also be able to assess assistance in detail from the economic, social, and institutional dimensions.

#### 4. RESULT

**This description of the results aims to get an overview of the impact of the evaluation and the driving factors of the fishing boat assistance program, so this session will describe the results of the analysis of processed data for each type of fishing boat assistance, both from the Inka Mina and Mina maritime types, as well as the combination of the two aids. and its impact from the economic, socio-cultural and institutional aspects.**

##### 4.1 Multidimensional Scaling (MDS) Pre-requisite Testing: S-Stress Test

The results of the S-Stress Multidimensional Scaling (MDS) test are presented in the following table:

**Table 1: Results of S-Stress Multidimensional Scaling (MDS)**

No	Help Type	Aspect	S-Stress Value	Criteria
1	Inka Mina	Economy	0,13185 or 13,185%	Fulfill
		Socio-cultural	0,14270 or 14,270%	Fulfill
		Institutional	0,19706 or 19,706%	Fulfill
2	Mina Maritim	Economy	0,13699 or 13,699%	Fulfill
		Socio-cultural	0,17779 or 17,779%	Fulfill
		Institutional	0,16470 or 16,470%	Fulfill
3	Combined	Economy	0,16939 or 16,939%	Fulfill
		Socio-cultural	0,16191 or 16,191%	Fulfill
		Institutional	0,14160 or 14,160%	Fulfill

Source: Rapfish Analysis

Based on the table above, the entire S-Stress value is less than 20% so it meets good eligibility (fit).

#### 4.2 Rapfish Multidimensional Scaling (MDS) Results: Ship Assistance

The results of Radfish's RSQ Multidimensional Scaling (MDS) for ship assistance are presented in the following diagram:

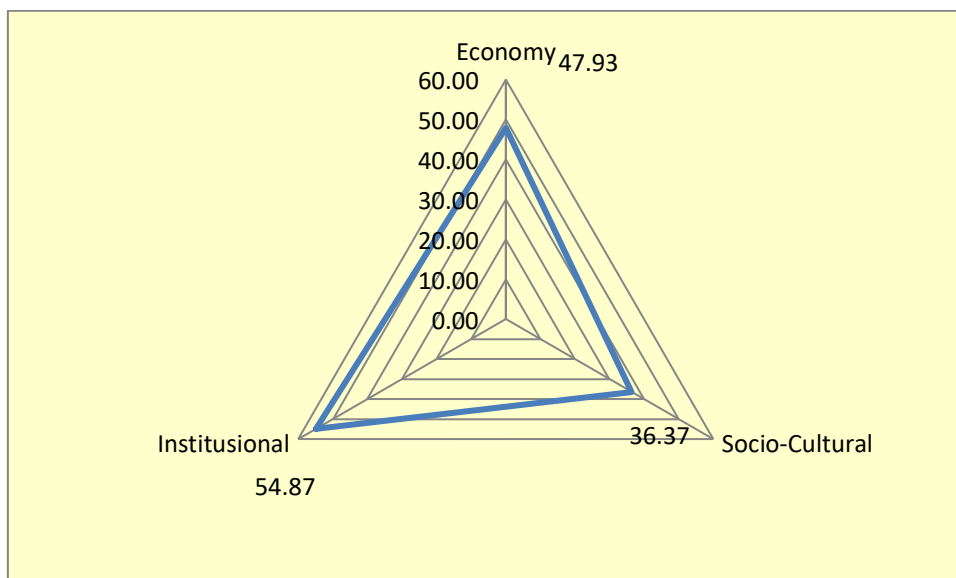


Figure 1: Ship Assistance RSQ Results

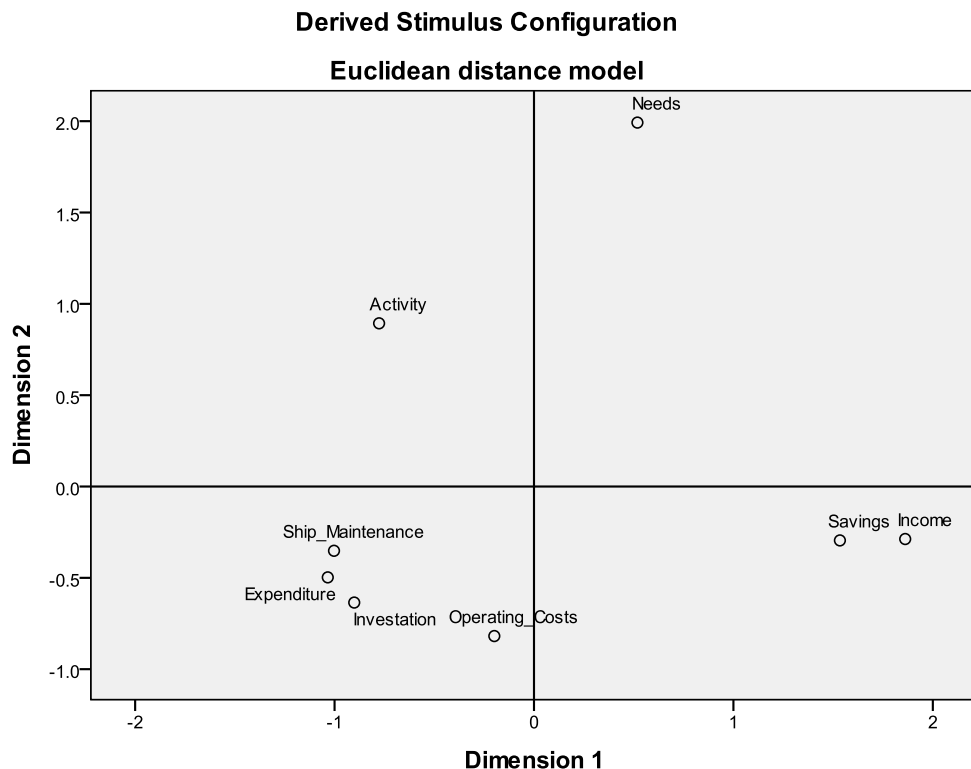
Source: Rapfish Analysis

Based on the figure, it can be seen that the RSQ of the economic aspect is 0.4793, which means that the sustainability of the economic aspect for ship assistance is 47.93%. Then the RSQ for socio-cultural aspects is 0.3637, which means that the sustainability of the socio-cultural aspects for ship assistance is 36.37%. As well as the institutional aspect RSQ of 0.5487 which means that the sustainability of the institutional aspect for ship assistance is 54.87%. In terms of sustainability comparison for the three aspects, it was found that the institutional aspect has greater sustainability potential, while the socio-cultural aspect is the lowest. This shows that the assistance of the two types of ships is able to provide institutional strengthening and the economic aspect is also quite optimal for its sustainability.

Then to identify the sustainability of the ship assistance provided by the government, the sustainability classification for each aspect and its indicators can be described as follows:

#### 4.2a Economic Aspect

The results of the sustainability classification of Radfish's Derived Stimulus Configuration Multidimensional Scaling (MDS) on Assistance in terms of Economic aspects are presented in the following figure:

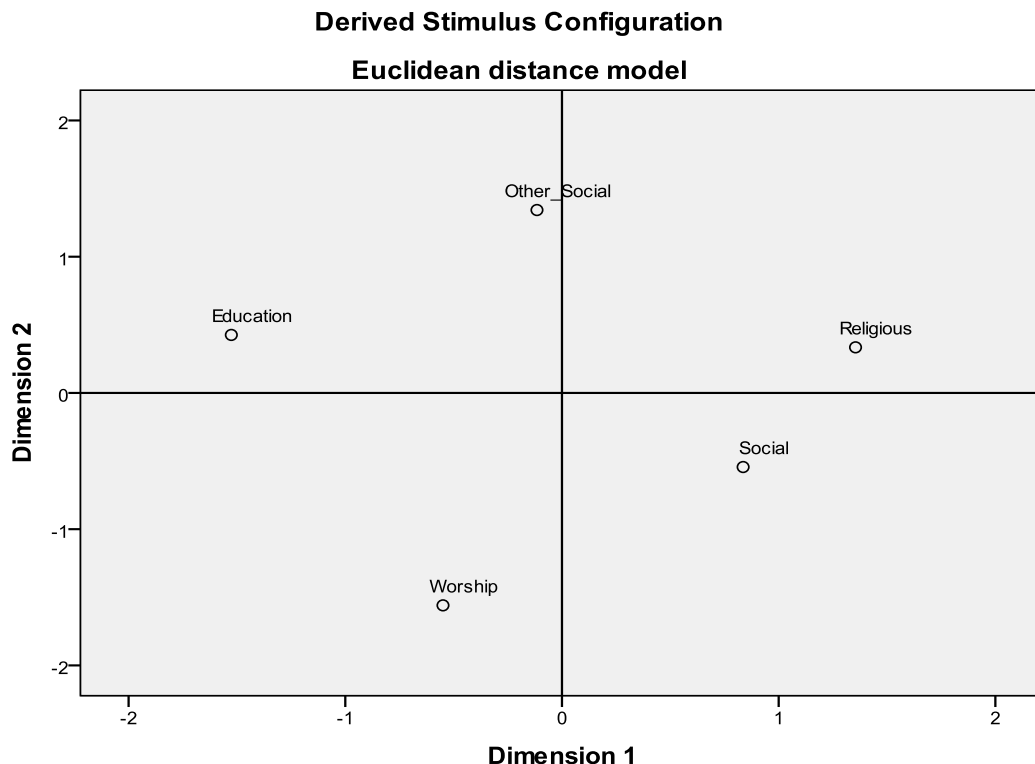


**Figure 2: Derived Stimulus Configuration Ship Help viewed from the economic aspect**  
**Source: Rapfish Analysis**

The picture above shows that in the economic aspect, the one with the best sustainability is the need indicator where expectations for this indicator are high which is then supported by the high achievement of both indicators. Then indicators with good sustainability are income and savings indicators, where expectations for this are indeed small but the results obtained are in the high category. Meanwhile, aspects that need attention to the economic aspect are activity indicators where changes in fishing intensity must be more optimal when getting assistance and the same is true with investment to be able to buy your own boat.

#### 4.2b Socio-Cultural Aspect

The results of the sustainability classification of Rapfish Derived Stimulus Configuration Multidimensional Scaling (MDS) on Ship Assistance in terms of socio-cultural aspects are presented in the following figure:

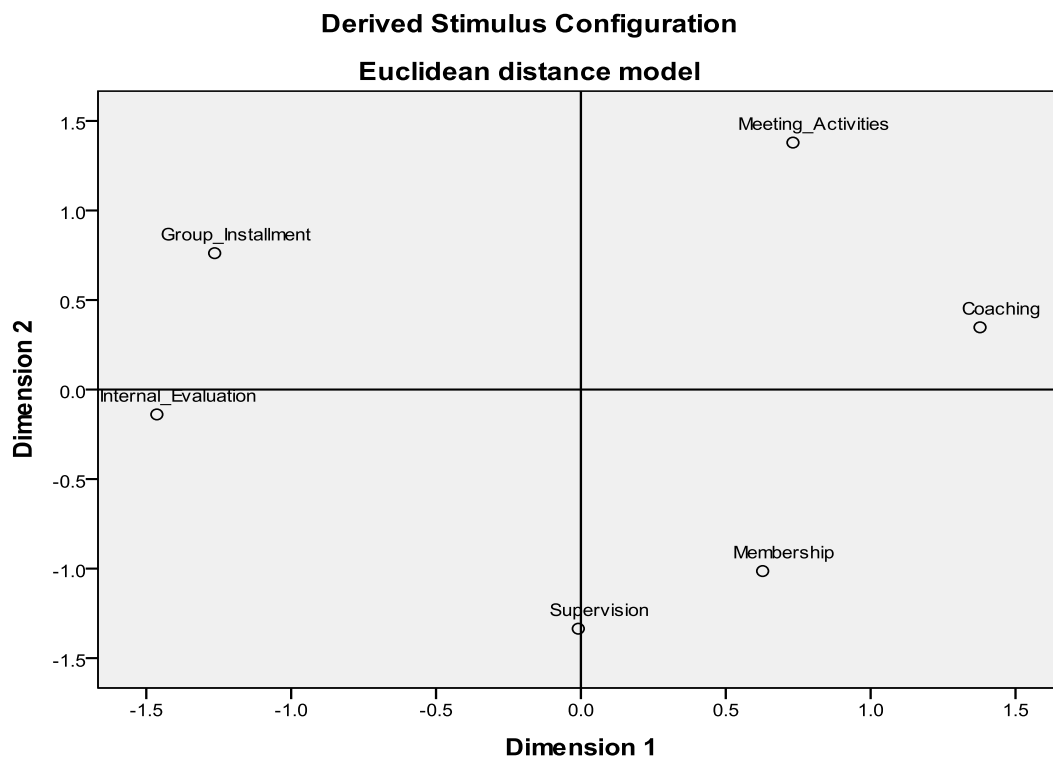


**Figure 3: Derived Stimulus Configuration Ship Assistance reviewed from the socio-cultural aspect**  
Source: Rapfish Analysis

The picture above shows that in the socio-cultural aspect, the one with the best sustainability is the indicator of religious activities where expectations for this indicator are high which is then supported by the high achievement of both indicators. Then indicators with good sustainability are also indicators of social activities, where expectations for this are indeed small but the results obtained are in the high category. Meanwhile, aspects that need to be paid attention to the socio-cultural aspects are other socio-cultural indicators and educational activities, where this requires the role of stakeholders where fishermen's children are also facilitated to enter the world of better education, especially for those fishermen in the Tomini Bay area.

#### 4.1.2 Institutional Aspect

The results of the sustainability classification of Rapfish Derived Stimulus Configuration Multidimensional Scaling (MDS) on Ship Assistance in terms of Institutional aspects are presented in the following figure:



**Figure 4: Derived Stimulus Configuration Ship Assistance in terms of Institutional aspects**  
**Source: Rapfish Analysis**

The picture above shows that in the institutional aspect, the one with the best sustainability is the indicator of meeting and coaching activities where the expectation for this indicator is high which is then supported by the high achievement of the two indicators. Then the indicator with good sustainability is also the membership indicator, where the expectation for this is indeed small but the results obtained are in the high category. Meanwhile, the aspect that needs to pay attention to the institutional aspect is the group installment indicator which has high expectations but still low realization.

## 5. DISCUSSION

Ship assistance by the government is aimed at improving the welfare of fishermen. Analysis of the economic aspect shows that the level of need of the fishermen for assistance is quite high. This is driven by the needs of fishermen as indicated by the high level of income and savings indicators. It is necessary to increase the fishing activity of fishermen after receiving assistance in the hope that they can invest in buying their own boats. On the other hand, the low impact of assistance on indicators of fisherman activity in changing fishing intensity based on the results of in-depth interviews is more to the constraints of government regulations that limit fishing activities of fishermen. (Sokseleuy, 2020), so that it becomes a matter of consideration for the local government in particular to review the regulations, so as to provide more flexibility for fishermen while maintaining order in the fishing area for fishermen.

Furthermore, in the socio-cultural aspect, religious indicators have the best sustainability. Ship assistance has the effect of fulfilling the basic needs of fishing families, so it has an impact on a conducive religious atmosphere that encourages improvements in both religious and spiritual aspects. The increase in income due to assistance also causes social activities such as being active in organizations and providing assistance to the needy to also experience a significant increase. Overall, in the socio-cultural aspect, ship assistance has a fairly good influence on fishermen in terms of relationships with God and among others, especially in fishing groups.

Based on the processed data, it shows that the institutional aspect has the best sustainability value. This also means that the impact of ship assistance from the government has good implications. In this institutional dimension, the achievements of the meeting indicators show that the level of cooperation and solidarity between fellow fishing groups is well established in order to progress together. This is supported by a high membership indicator, where the participation of members contributes to the sustainability of the institutional aspect, although in terms of the installment indicators the group still gets low results. On the other hand, the coaching indicator shows that the government's participation in providing training is a driving factor for the success of ship assistance. fisherman. The findings of this study also complement research from (Tan et al., 2021) where conditions of lack of motivation and technical knowledge, and technological equipment are far from the necessary conditions. **This condition is also the main cause of the problem**

in this study, where the standard of living of the fishermen in the Tomini Bay area is still at a low level, although efforts to develop assistance for fishermen from the government are still being realized. Therefore, it is very important to develop the motivation of fishermen and improve their ability in technical knowledge and overall skills. However, in this case, based on the results of interviews fishermen prefer to repair independently, if there is damage to the ship rather than waiting for help from the government, so this needs attention from the local government regarding this problem where the cost of repair is a separate obstacle for the fishermen.

## 6. CONCLUSION

Based on the results of research using the RSQ Multidimensional Scaling (MDS) Rapfish technique for ship assistance (Inka Mina & Mina Maritim) it can be concluded that each of them is 47.93% for the economic aspect, 36.37% for the cultural aspect and 54.87% for the cultural aspect. institutional. These results also show that the institutional aspect has the highest level of sustainability. In addition, the supporting factors and levers for the success of the assistance of fishing boats in the Tomini Bay area are the indicators of guidance from the relevant agencies. Guidance in the fishing boat assistance program carried out by the government must continue to be improved and become a priority to increase the success of the aid ship program through strengthening the attributes of microfinance institutions, social institutions, extension agencies, strengthening supervisory groups, and fishing groups. In maintaining its existence, the institutional aspect requires innovative development so that it can compete in the future. Utilization of economic institutions from their own communities, so when the fish famine season is expected to be one of the survival strategies of fishermen. *Theoretically, this research has contributed to the implementation of the value-based evaluation theory proposed by Dunn (W. N. Dunn, 2017), while in terms of practical implications the research provides an overview of the economic, social, and institutional impacts of fishing boat assistance so that it becomes the basis for determining government direction and policies in increasing fishing productivity in coastal communities in general and more specifically in the Tomini Bay Area.* However, this research has limitations, so future studies can examine the regulations of the fishing area of the fishermen in terms of impacts and policies for the welfare of fishermen that can fill the gaps and limitations in this study.

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# **Impact Evaluation of Fishing Boat Assistance (Case Study of Fishermen in Tomini Bay, Gorontalo Province)**

BY

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## Impact Evaluation of Fishing Boat Assistance (Case Study of Fishermen in Tomini Bay, Gorontalo Province)

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### Abstract

*The fishermen's welfare program is one of the government's concerns in the development of coastal areas. Among the forms of these efforts are the help of ships. However, along the way, it is sometimes difficult to identify the impact and success factors of the program. The purpose of this study was to analyze the impact of fishing boat assistance from the economic, socio-cultural, and institutional aspects. This study focuses on analyzing the impact and success factors of ship assistance to obtain a comprehensive picture of the sustainability of the fishing boat assistance program. The method uses the Multidimensional Scaling (MDS) technique with the help of the RAPFISH (Rapid Appraisal for Fisheries) method attributes. The results of the study found that the RSQ was 47.93% for the economic aspect, 36.37% for the cultural aspect, and 54.87% for the institutional aspect. The institutional aspect has the greatest level of sustainability. In addition, the guidance indicator is the main factor supporting and leveraging the success of fishing boat assistance. This research contributes to the description of the economic, social, and institutional impacts of fishing boat assistance so that it becomes the basis for determining government directions and policies in increasing fishing productivity in general and more specifically in the Tomini Bay Area*

**Keywords:** Evaluation, Impact of Ship Aid, Fishermen, Tomini Bay

### 1. INTRODUCTION

Development in coastal and marine areas is an important element, to raise the standard of living of fishermen so that traditional coastal resource management is still respected and maintained. Small islands are an unavoidable reality of income inequality and economic development gaps compared to other

mainland areas. Social and economic policies related to coastal communities need to be reorganized to realize the welfare of Indonesian coastal communities (Rukin, 2018). Several government efforts to pay attention to local institutions by reinforcing these institutions can be a forum for fishermen in villages to empower them without having to bring in external institutions because in principle the institutions that grow and develop in the community have helped fishermen in rural life and is social capital.

Tomini Bay is the largest bay in Indonesia with a water area of 137 700 km<sup>2</sup> and a coastline of 1,350 km where this area is rich in biological resources, marine life, and minerals and is located in the Wallacea Zone which historically was a separate area from the Asian and Australian Continents (Purbayanto, 2011). Tomini Bay is classified as semi-enclosed water which is in direct contact with 3 provinces, namely North Sulawesi, Central Sulawesi, and Gorontalo, and also consists of 14 districts/cities and 23 river mouths. The Tomini Bay area is also surrounded by large and small and beautiful islands that have great potential for tourism development. Among these islands is the island of Togean in Central Sulawesi which has been visited by tourists from both domestic and foreign countries. Tourism development cooperation between North Sulawesi, Gorontalo, and Togean Central Sulawesi is very important because tourists entering from Manado generally pass-through Gorontalo and then head to Togean Central Sulawesi. In Gorontalo, tourists still use the opportunity to enjoy tourist visits in Gorontalo, including seeing the whale shark attraction in Botubarani Village, Bone Bolango district. In addition to having diverse tourism potential, Tomini Bay also has a large fishery potential, both pelagic fish and demersal fish. In 2011 the potential for pelagic fish reached 486 tons and for commercial fish 96 thousand tons (Syahrul, 2020). The potential that has been utilized is only around 10%. Thus, we still have the opportunity to increase the catch that can be used for the welfare of the people of Tomini Bay. Even though Tomini Bay holds a variety of wealth, both tourism potential and fishery potential, the people who inhabit Tomini Bay are generally still underdeveloped, which can be seen from various indicators, namely poverty rates, income levels, education, and health. The poverty rate ranges from 17–18%, and the Human Development Index (HDI) ranges between 64 and 65, or still below the national standard.

The government's efforts to assist the development of fisheries in Tomini Bay have been carried out, among others, through the assistance of fishing vessels to fishermen. However, until now the fishermen in the Tomini Bay area are still below their standard of living. Previous studies have found several results related to the development of coastal areas, both in terms of impact evaluation (Utari et al., 2021;

Arnawa et al., 2016; Karim, 2017; Putri et al., 2021; Rangkuty, 2018), obstacles in the implementation of assistance programs (Mira, 2013) (Syahputra & Eriyanti, 2020), empowerment of fishermen's economic conditions (Nurjanah, 2020; Tan et al., 2021), digital-based system support (Teniwut et al., 2022) as well as stakeholder perception studies (Soma et al., 2018), however, research examining the impact of aid from an economic, social and institutional perspective is still very limited. Therefore, this study aims to evaluate the existence of assistance from fishing boats and the extent of their impact on the level of welfare of fishermen from the economic, social, and institutional aspects, so as to identify the driving factors and levers for the success of the assistance of fishing boats in the Tomini Bay area. It is hoped that with this aim this research can provide benefits for fishermen who receive ship assistance in the future through more effective government policies. This research not only offers novelty in terms of a comprehensive analysis of the impact of aid, but as well as from the research locus, namely the Tomini Bay fishermen group, where Tomini Bay is right on the equator and has a semi-enclosed marine ecosystem, this bay holds large fishery resources, endemic coral reefs, vast expanses of mangroves, and abundant coastal resources.

## **2. LITERATURE REVIEW**

### **2.1 Evaluation**

Evaluation is an activity to assess looking for new breakthroughs for improvement. Evaluation is also an analytical process that emphasizes the creation of value premises that provide an assessment of the performance of a program, policy, or activity. The evaluation process also provides a response to the question, "What difference is made?". This means that evaluation is an analysis of a fact and the responses generated when a program or policy is implemented (W. Dunn, 1994) The term evaluation has related meanings, each referring to the application of some value scale to the outcome of a policy or program. In general, the term evaluation can be interpreted as an assessment, rating, and assessment, words that express efforts to analyze the results of a policy in terms of its unit value. In a more specific sense, evaluation is concerned with the production of information about the value or benefits of policy outcomes. When policy outcomes do have value, it can be said that the policy or program has reached a meaningful level of performance, meaning that policy issues are made clear or can be addressed.

The main description of evaluation is that evaluation produces evaluative demands. The questions asked about evaluation are not about facts (does something exist?) or action (what should be done?), But it deals with value (How much is it

worth?). Therefore evaluation has characteristics that distinguish it from other policy analysis methods, namely: (W. N. Dunn, 2017):

- a. Value focus. Evaluation is different from monitoring, which focuses on assessing the need or value of a policy or program.
- b. Fact-Value Interdependence. The demand for evaluation depends on both 'facts' and 'values'. To state that a particular policy or program has achieved the highest (or lowest) level of performance requires not only valuable policy outcomes for some individuals, groups, or the whole society.
- c. Present and past orientation Evaluation demands, in contrast to advocating claims, are directed at present and past outcomes, rather than future outcomes. Evaluation is retrospective and after actions have been taken (ex-post). Recommendations, which also include value premises, are prospective and are made before actions are taken (ex-ante).
- d. Duality of values. The values that underlie evaluation demands have a dual quality because they are seen as both an end and a means. Evaluation is the same as a recommendation as far as value is concerned. Can be considered intrinsic or extrinsic. Values are often arranged in a hierarchy that reflects the relative importance and interdependence of goals and objectives.

## 2.2 Aspects of Coastal Community Life

Characteristics of coastal communities can be seen from several aspects, including aspects of knowledge, belief (theological), and the position of social fishermen (Wahyudin, 2013). Viewed from the aspect of knowledge, coastal communities get knowledge from their ancestral heritage, for example, to see calendars and directions, they use constellations. Meanwhile, judging from the aspect of belief, coastal communities still think that the sea has magical powers so they still often do sea parties or sea alms. However, nowadays there are already some residents who do not believe in customs such as the sea party. They only perform the ritual only for formality. Likewise with the position of social fishermen, in general, fishermen belong to a low caste.

Sociologically, coastal communities have a distinctive characteristic in terms of social structure, namely the strong relationship between patrons and clients in market relations in fishery businesses. "Usually the patron provides assistance in the form of capital to the client. This is a tactic for patrons to tie clients to their debts so that the business continues." From the debt problem, conflicts often occur, but the conflict that dominates is the competition between fishermen in fighting over the limited number of fish resources. Therefore, it is very important that there are parties who can develop marine resources and regulate their management.



The role of the government from the local level to the central level is very important in its role in creating rules for the survival of coastal communities and the sustainability of their natural resources. This needs to be emphasized because like other natural resources, their nature can be destroyed and become scarce if not managed wisely, it will cause conflicts in the future. (Granado et al., 2021). Regulations are thus very important, including ensuring the right to use natural resources for local communities. In addition to the government, non-governmental and community-based institutions such as Non-Governmental Organizations (NGOs) are very helpful in directing strategies for empowering and utilizing existing potentials needed by coastal communities and supporting the management of marine environmental resources around their homes, such as aquaculture. This management is carried out with real activities that match the color of the local community culture. For this reason, NGOs must be able to provide input and critical thinking for strategies for developing and managing coastal areas and their communities.

Coastal communities are generally understood as communities with the main livelihood of fishermen. This is understandable because fishermen are the main source of livelihood for community groups living around this beach. What needs to be observed in coastal communities are problems related to their roles and livelihoods as fishermen (Yunika Puspasari, 2020). The various policies that have been carried out have not been able to lift the poverty cage of the fishermen. Marine and fisheries development policies, so far, have tended to be more focused on “productivity” policies by maximizing the results of the exploitation of marine resources without adequate policies to control them. The direction of modernization in the fisheries sector that has been carried out so far has only provided benefits to a small group of people who have economic and political capabilities, so an alternative paradigm and strategy for development that is holistic and integrated and can maintain a balance between production activities is needed (Nurjanah, 2020).

### **3. RESEARCH METHOD**

#### **3.1 Research Time and Place**

This research will be conducted in the Tomini Bay area, case studies of 5 districts/cities in Gorontalo Province, namely Bone Bolango Regency, Gorontalo, Boalemo, Pohuwato, and Gorontalo City. The object of research is the assistance of fishing boats of the Inka Mina and Mina Maritim types. The limitation of the scope of the research is only on two types of ship assistance because these types of assistance are long-term and involve many fishermen as beneficiaries.



### 3.2 Data Types and Sources

The data needed in this study are primary data and secondary data. Primary data will be obtained from respondents who receive assistance from fishing boats in the waters of Tomini Bay, especially 5 regencies/cities in Gorontalo Province, namely Gorontalo City, Bone Bolango Regency, Gorontalo, Pohuwato, and Boalemo. Secondary data includes data on ship aid recipients that will be obtained from the Fisheries Service, both Gorontalo Province and Tomini Bay Regency/City, especially the Gorontalo Province. Apart from that, the data will be complemented by data from informants from various stakeholders, including the provincial, district/city fishery offices, Bappeda and related agencies, entrepreneurs in the fisheries sector, community leaders, NGOs, and other sources related to the objects and problems studied.

### 3.3 Analysis Method

This study uses a quantitative approach using the Multidimensional Scaling (MDS) analysis method (Mead, 1992) and attribute assistance to the RAPFISH (Rapid Appraisal for Fisheries) method. The advantages of attributes in RAPFISH are a lot of quantitative information from the resulting projection value (Hudson, 1982). MDS is a technique of making graphs or maps to describe the position of an object that will analyze the economic impact, social impact, and institutional impact of the assistance provided to fishermen in a certain period. The method will be able to determine 1) the developmental status of the aid by a composite index and 2); Leverage attributes or attributes that need to be improved (leverage attributes or sensitive attributes) as a basis for drawing up an action plan to make it easier to determine appropriate interventions; 3) The assessment involves participatory respondents. Multidimensional Scaling requires primary data which is structured to be asked to fishers who receive assistance by distributing questionnaires containing indicators of economic impact, social impact, and institutional impact of fishing boat assistance. The emphasis of the MDS analysis is on the cluster or group of recipients of fishing boat assistance under the coordination of the group and under the control of the local fisheries service. The MDS method can completely analyze the dimensions of regional development and can also summarize multidisciplinary data obtained in the field so that a lot of quantitative and projected information can be obtained.

Primary data will be obtained from fishers who receive assistance after receiving data distribution from the Fisheries Service of Gorontalo Province. The initial information obtained was that fishermen who received assistance from the Inka Mina ship were 40 fishermen while the recipients of the assistance from the Mina Maritim

were 120 fishermen spread over 5 regencies/cities in Gorontalo Province. The samples of fishermen who were interviewed were 10 fishermen who received assistance from the Inka Mina boat and 30 fishermen who received assistance from the Mina Maritim ship which will be proportionally determined in 5 districts/cities. To support data collection, a structured list of questions will be drawn up on the impact of the aid of fishing boats in terms of Economic, Social, and Institutional Impacts. Each dimension will be asked for 5 indicators with a weight of 0 to 3 which will be used as material in calculating the MDS index. The higher the MDS index, the better the justification for aid, and vice versa, the smaller the MDS index, the worse the justification for aid. The MDS score will describe the overall value of the indicator, it will also be able to assess assistance in detail from the economic, social, and institutional dimensions.

#### 4. RESULT

This description of the results aims to get an overview of the impact of the evaluation and the driving factors of the fishing boat assistance program, so this session will describe the results of the analysis of processed data for each type of fishing boat assistance, both from the Inka Mina and Mina maritime types, as well as the combination of the two aids. and its impact from the economic, socio-cultural and institutional aspects.

##### 4.1 Multidimensional Scaling (MDS) Pre-requisite Testing: S-Stress Test

The results of the S-Stress Multidimensional Scaling (MDS) test are presented in the following table:

**Table 1: Results of S-Stress Multidimensional Scaling (MDS)**

No	Help Type	Aspect	S-Stress Value	Criteria
1	Inka Mina	Economy	0,13185 or 13,185%	Fulfill
		Socio-cultural	0,14270 or 14,270%	Fulfill
		Institutional	0,19706 or 19,706%	Fulfill
2	Mina Maritim	Economy	0,13699 or 13,699%	Fulfill
		Socio-cultural	0,17779 or 17,779%	Fulfill
		Institutional	0,16470 or 16,470%	Fulfill
3	Combined	Economy	0,16939 or 16,939%	Fulfill
		Socio-cultural	0,16191 or 16,191%	Fulfill

		Institutional	0,14160 or 14,160%	Fulfill
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Source: Rapfish Analysis

Based on the table above, the entire S-Stress value is less than 20% so it meets good eligibility (fit).

#### 4.2 Rapfish Multidimensional Scaling (MDS) Results: Ship Assistance

The results of Radfish's RSQ Multidimensional Scaling (MDS) for ship assistance are presented in the following diagram:

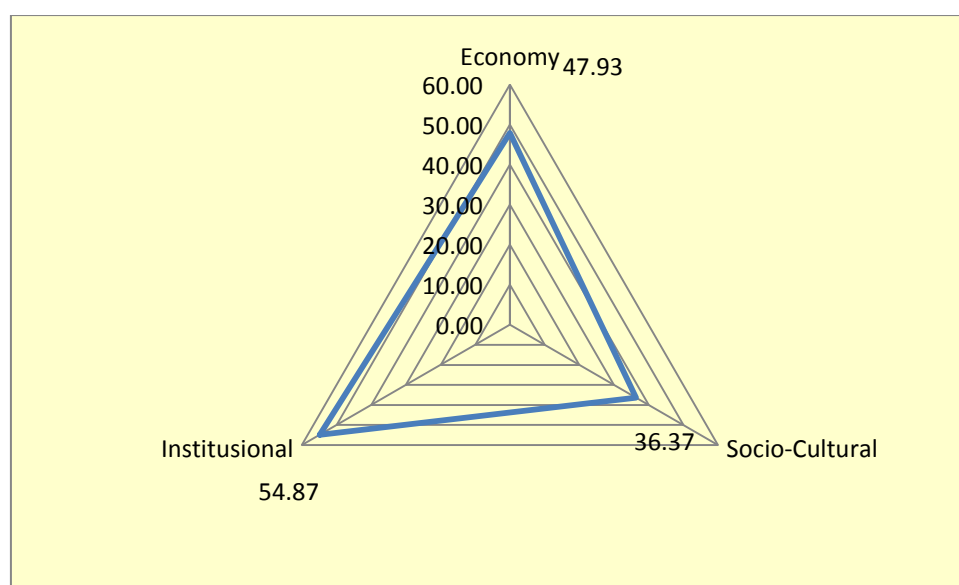


Figure 1: Ship Assistance RSQ Results

Source: Rapfish Analysis

Based on the figure, it can be seen that the RSQ of the economic aspect is 0.4793, which means that the sustainability of the economic aspect for ship assistance is 47.93%. Then the RSQ for socio-cultural aspects is 0.3637, which means that the sustainability of the socio-cultural aspects for ship assistance is 36.37%. As well as the institutional aspect RSQ of 0.5487 which means that the sustainability of the institutional aspect for ship assistance is 54.87%. In terms of sustainability comparison for the three aspects, it was found that the institutional aspect has greater sustainability potential, while the socio-cultural aspect is the lowest. This shows that the assistance of the two types of ships is able to provide institutional strengthening and the economic aspect is also quite optimal for its sustainability.

Then to identify the sustainability of the ship assistance provided by the government, the sustainability classification for each aspect and its indicators can be described as follows:

#### a. Economic Aspect

The results of the sustainability classification of Radfish's Derived Stimulus Configuration Multidimensional Scaling (MDS) on Assistance in terms of Economic aspects are presented in the following figure:

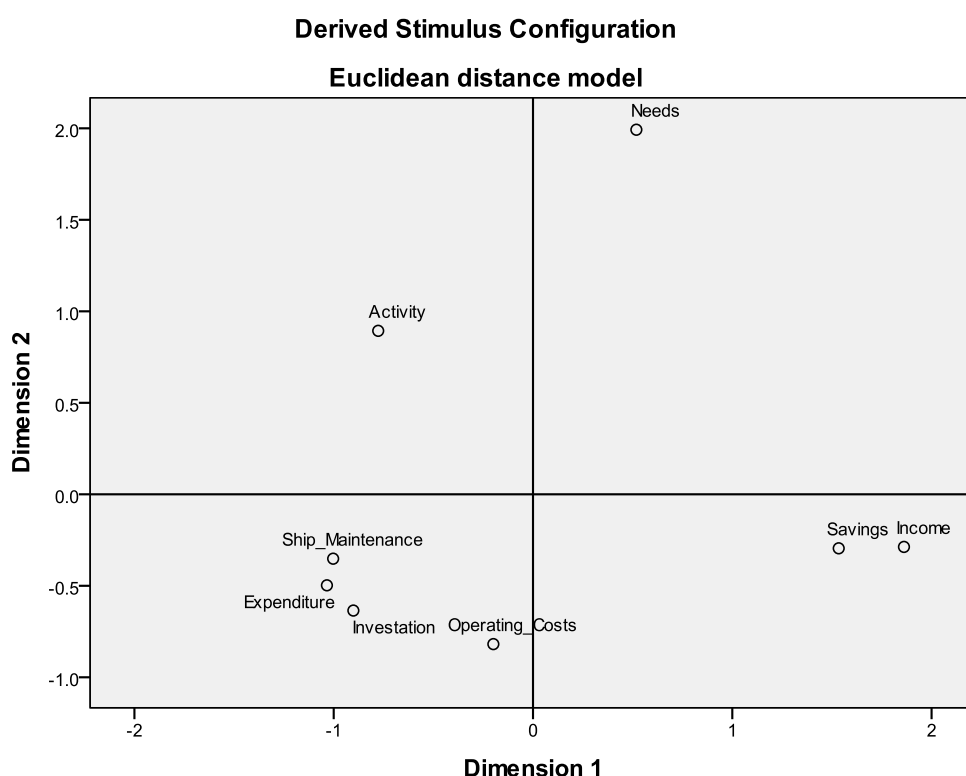


Figure 2: Derived Stimulus Configuration Ship Help viewed from the economic aspect

Source: Rapfish Analysis

The picture above shows that in the economic aspect, the one with the best sustainability is the need indicator where expectations for this indicator are high which is then supported by the high achievement of both indicators. Then indicators with good sustainability are income and savings indicators, where expectations for this are indeed small but the results obtained are in the high category. Meanwhile, aspects that need attention to the economic aspect are activity indicators where changes in fishing

intensity must be more optimal when getting assistance and the same is true with investment to be able to buy your own boat.

## b. Socio-Cultural Aspect

The results of the sustainability classification of Rapfish Derived Stimulus Configuration Multidimensional Scaling (MDS) on Ship Assistance in terms of socio-cultural aspects are presented in the following figure:

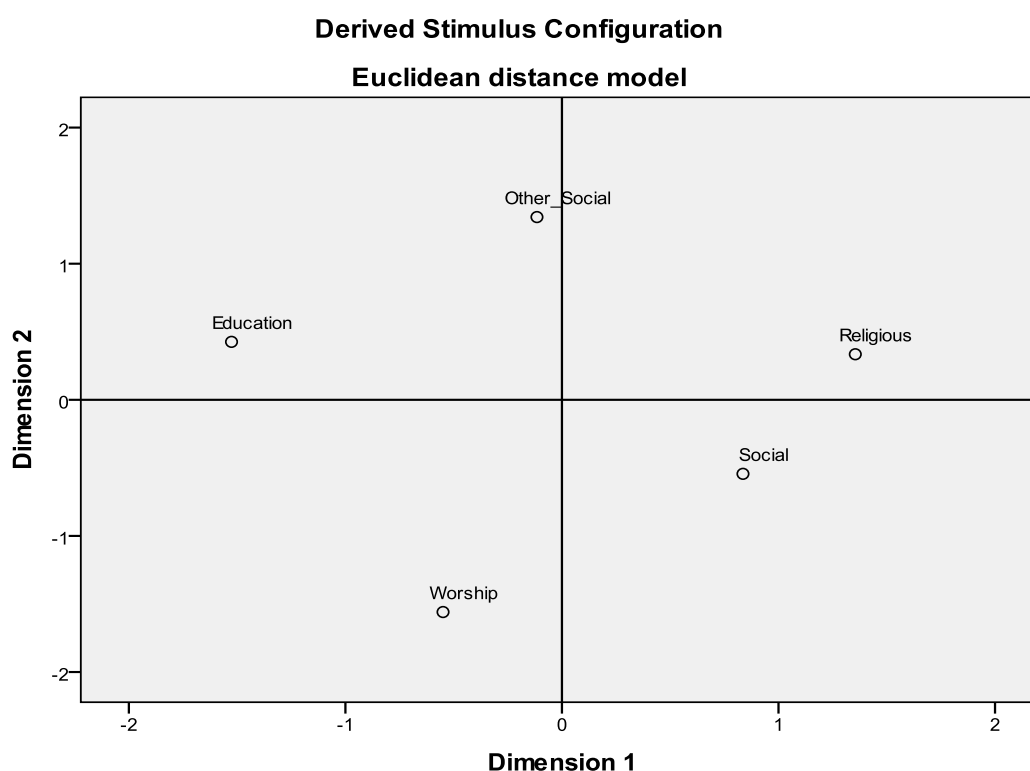


Figure 3: Derived Stimulus Configuration Ship Assistance reviewed from the socio-cultural aspect

Source: Rapfish Analysis

The picture above shows that in the socio-cultural aspect, the one with the best sustainability is the indicator of religious activities where expectations for this indicator are high which is then supported by the high achievement of both indicators. Then indicators with good sustainability are also indicators of social activities, where expectations for this are indeed small but the results obtained are in the high category. Meanwhile, aspects that need to be paid attention to the socio-cultural aspects are other

socio-cultural indicators and educational activities, where this requires the role of stakeholders where fishermen's children are also facilitated to enter the world of better education, especially for those fishermen in the Tomini Bay area.

### 4.3 Institutional Aspect

The results of the sustainability classification of Rapfish Derived Stimulus Configuration Multidimensional Scaling (MDS) on Ship Assistance in terms of Institutional aspects are presented in the following figure:

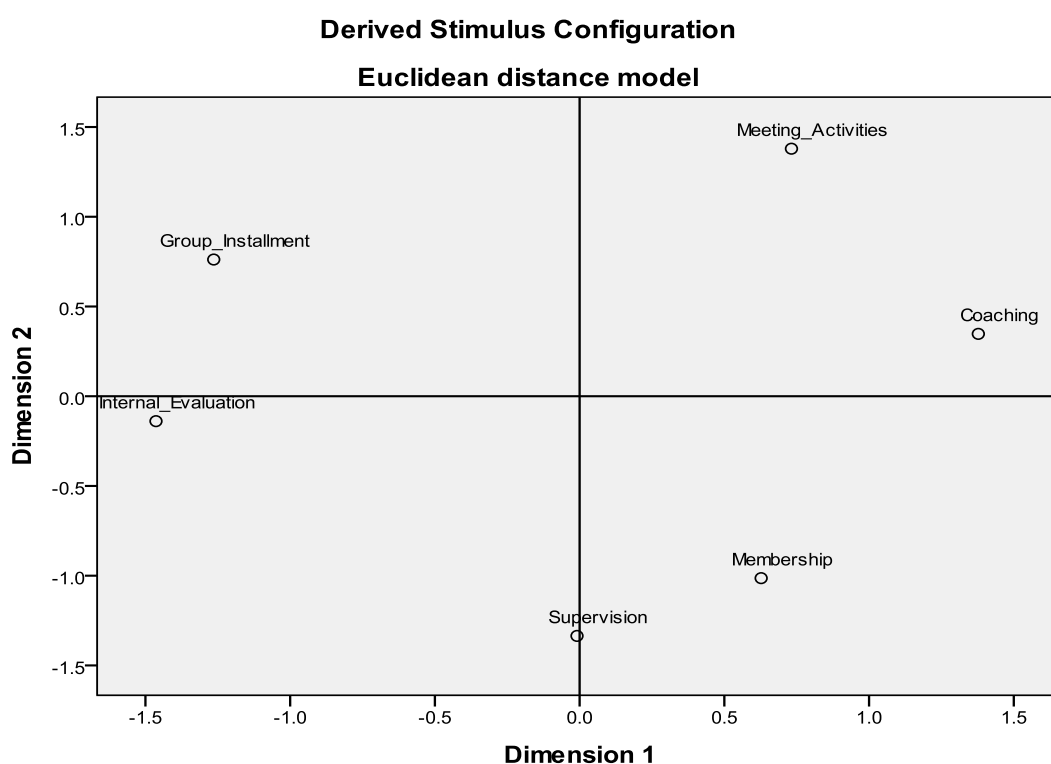


Figure 4: Derived Stimulus Configuration Ship Assistance in terms of Institutional aspects

Source: Rapfish Analysis

The picture above shows that in the institutional aspect, the one with the best sustainability is the indicator of meeting and coaching activities where the expectation for this indicator is high which is then supported by the high achievement of the two indicators. Then the indicator with good sustainability is also the membership indicator,

where the expectation for this is indeed small but the results obtained are in the high category. Meanwhile, the aspect that needs to pay attention to the institutional aspect is the group installment indicator which has high expectations but still low realization.

## 5. DISCUSSION

Ship assistance by the government is aimed at improving the welfare of fishermen. Analysis of the economic aspect shows that the level of need of the fishermen for assistance is quite high. This is driven by the needs of fishermen as indicated by the high level of income and savings indicators. It is necessary to increase the fishing activity of fishermen after receiving assistance in the hope that they can invest in buying their own boats. On the other hand, the low impact of assistance on indicators of fisherman activity in changing fishing intensity based on the results of in-depth interviews is more to the constraints of government regulations that limit fishing activities of fishermen. (Sokseleuy, 2020), so that it becomes a matter of consideration for the local government in particular to review the regulations, so as to provide more flexibility for fishermen while maintaining order in the fishing area for fishermen.

Furthermore, in the socio-cultural aspect, religious indicators have the best sustainability. Ship assistance has the effect of fulfilling the basic needs of fishing families, so it has an impact on a conducive religious atmosphere that encourages improvements in both religious and spiritual aspects. The increase in income due to assistance also causes social activities such as being active in organizations and providing assistance to the needy to also experience a significant increase. Overall, in the socio-cultural aspect, ship assistance has a fairly good influence on fishermen in terms of relationships with God and among others, especially in fishing groups.

Based on the processed data, it shows that the institutional aspect has the best sustainability value. This also means that the impact of ship assistance from the government has good implications. In this institutional dimension, the achievements of the meeting indicators show that the level of cooperation and solidarity between fellow fishing groups is well established in order to progress together. This is supported by a high membership indicator, where the participation of members contributes to the sustainability of the institutional aspect, although in terms of the installment indicators the group still gets low results. On the other hand, the coaching indicator shows that the government's participation in providing training is a driving factor for the success of ship assistance. fisherman. The findings of this study also complement research from (Tan et al., 2021) where conditions of lack of motivation and technical knowledge, and technological equipment are far from the necessary conditions. This condition is also the main cause of the problem in this study, where the standard of living of the



fishermen in the Tomini Bay area is still at a low level, although efforts to develop assistance for fishermen from the government are still being realized. Therefore, it is very important to develop the motivation of fishermen and improve their ability in technical knowledge and overall skills. However, in this case, based on the results of interviews fishermen prefer to repair independently, if there is damage to the ship rather than waiting for help from the government, so this needs attention from the local government regarding this problem where the cost of repair is a separate obstacle for the fishermen.

## 6. CONCLUSION

Based on the results of research using the RSQ Multidimensional Scaling (MDS) Rapfish technique for ship assistance (Inka Mina & Mina Maritim) it can be concluded that each of them is 47.93% for the economic aspect, 36.37% for the cultural aspect and 54.87% for the cultural aspect. institutional. These results also show that the institutional aspect has the highest level of sustainability. In addition, the supporting factors and levers for the success of the assistance of fishing boats in the Tomini Bay area are the indicators of guidance from the relevant agencies. Guidance in the fishing boat assistance program carried out by the government must continue to be improved and become a priority to increase the success of the aid ship program through strengthening the attributes of microfinance institutions, social institutions, extension agencies, strengthening supervisory groups, and fishing groups. In maintaining its existence, the institutional aspect requires innovative development so that it can compete in the future. Utilization of economic institutions from their own communities, so when the fish famine season is expected to be one of the survival strategies of fishermen. Theoretically, this research has contributed to the implementation of the value-based evaluation theory proposed by Dunn (W. N. Dunn, 2017), while in terms of practical implications the research provides an overview of the economic, social, and institutional impacts of fishing boat assistance so that it becomes the basis for determining government direction and policies in increasing fishing productivity in coastal communities in general and more specifically in the Tomini Bay Area. However, this research has limitations, so future studies can examine the regulations of the fishing area of the fishermen in terms of impacts and policies for the welfare of fishermen that can fill the gaps and limitations in this study.

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