

# Relationship of Group Dynamics and Fishermen Independence in Fisheries Agribusiness Attaining Maximum Sustainable Yield

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**Abstract.** This study aimed to examine the factors and the influence of group dynamics and the independence of fishing group members in catch fisheries agribusiness activities. This research was carried out using a survey method in the *Rukun Nelayan Blimbing* in Paciran District, Lamongan Regency, East Java Province, Indonesia from February to March 2019. The result showed the group dynamics and independence of fishermen in catch fisheries was high, but group dynamics did not influence the independence of fishermen in catching fisheries agribusiness. The factors that influence group dynamics were structuring, coaching and development, atmosphere, effectiveness. The factors affected the independence of the group were the addition of production facilities, prices, market, and fishermen. Those factors are needed to attain the good management in maximum sustainable yield (MSY).

**Keywords:** Development fisheries sector, fishermenhood, increase welfare, social interaction, sustainability

## 1 Introduction

Indonesia is an archipelagic country with an abundant landscape of marine wealth. In its theoretical study, Lasabuda states that Indonesia has been recognized internationally through UNCLOS 1982 that the total area of Indonesia's sea area reaches 5 900 000 km<sup>2</sup>

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[1]. International recognition was later ratified by Indonesia in Law No. 17 of 1985. There are 3 200 000 km<sup>2</sup> of territorial waters that connect the entire archipelago. This condition makes Indonesia the largest archipelago country in the world.

PPN–*Pelabuhan Perikanan Nusantara* [Archipelago Fisheries Port] of Brondong Lamongan is the largest docked fisheries base in the northern region of East Java Province, Indonesia whose production reaches an average of 100 ton d<sup>-1</sup>. PPN Brondong activities involved 12 160 fishermen, 21 695 fishing gear, 1 385 motorboats, 312 traders/distributors and 170 fish processors. The north sea of the island of Java has various types of fish both pelagic and demersal. The fishing areas in Brondong District are in 712 Fisheries Management Areas (WPP 712) covering the areas of Masalembu, Matasiri, Kramean, and around Bawean, Indonesia.

The fisheries sector has a major role to play at the level of PAD- *Pendapatan Asli Daerah* [Local Government Revenue] of Lamongan Regency, Indonesia. Data Distribution of Percentage PDRB- *Produk Domestik Regional Bruto* [Gross Regional Domestic Product] of the fisheries sector in Lamongan Regency reached 17.49 %, outperforming the food crop sector contributed 13.09 % [2]. While the contribution of the fisheries sub-sector to the agriculture, forestry and fisheries sector in Lamongan in 2016 reached 44.39 % [3].

BPS-*Badan Pusat Statistik* Lamongan mentioned that the capture fisheries activities in 2015 employed 17 892 workers, then increased 6.36 % up to 19 030 in 2016 [2]. The large number of workers in the fisheries sector makes the emergence of fellow fishermen community groups to help each other solve common problems.

The fisheries sector can be developed through a group approach. Triwahyuni mentioned the development of dairy goat businesses driven by the role of livestock farmer groups to increase added value and efficient management [4]. Farmers can interact with one another in their group to increase knowledge and ability to manage agribusiness systems. Sondakh mentioned that social interaction of fishermen groups is the key to success and organizational goals undertaken by members consciously to build interaction between fellow members and administrators of fishing groups [5].

Research aims to determine the level of group dynamics, level of independence and the relationship between the two variables in the fishermen group in terms of catch fisheries agribusiness. Research provides an overview related to group dynamics and the independence of fishermen in catch fisheries agribusiness as scientific development material.

## 2 Methods

The group approach to fishermen is carried out through the RN- *Rukun Nelayan* (fishermenhood/Community Association). The study was conducted on RN Blimbing. RN Blimbing is one of the 17 RN in Lamongan Regency, Indonesia. RN Blimbing consists of 5 321 fishermen who work on 410 ships operating in the Java Sea. This research was conducted using a quantitative survey method. That aimed to explain the relationship between variables (explanatory). The sampling used simple random sampling. The indicator of group dynamic i.e. group goals, structure, function and task, coaching and development, compactness, atmosphere, pressure, effectiveness, hidden agenda, group dynamic. The research instrument has been declared valid and reliable in the test of validity and reliability. Research data have also been tested for normality, linearity, and homogeneity, then proceed to path analysis.

### 3 Results and discussions

#### 3.1 Level of group dynamics

**Table 1.** Results of indicators assessment of group dynamics (%)

Indicator	Low	Medium	High	Very high
Group goals	22.22	37.78	28.89	11.11
Structure	4.44	24.44	46.67	24.44
Function and tasks	11.11	22.22	37.78	28.89
Coaching and development	8.89	17.78	48.89	24.44
Compactness	15.56	20.00	26.67	37.78
Atmosphere	11.11	37.78	42.22	8.89
Pressure	24.44	40.00	28.89	6.67
Effectiveness	17.78	28.89	40.00	13.33
Hidden Agenda	15.56	37.78	26.67	20.00

Based on Table 1, group dynamics were in the high category as well as the supporting indicators structure such as functions and tasks, coaching and development, group atmosphere and effectiveness and cohesiveness. As for the group goals, the pressure and hidden intent were in the medium category. This result indicated that RN Blimbing has group activities that always accommodate the interaction between its members so that it brings up dynamics. Febriani et al. states that dynamics implied the interaction and interdependence between members in own group and other groups [6].

Groups make positive contributions to the organization such as creating collaboration between group members, build effective communication, increase job satisfaction and motivation, and a culture of competition. On the other hand, conflict can have negative impacts such as decline poor productivity and competition. To prevent it, organization need to be aware of group functions, group dynamics, individual boundaries, as well correct communication methods and techniques [7].

Based on their work activities, the fishing profession has social and economic stratification. Resilience status of ship owners as a means of livelihood has the strongest position, followed by the captain and the weakest, namely ABK [8]. Zain et al. revealed that the low quality of life of fishermen is caused by competition between fishermen. Fishermen can compete with each other for big profits [9].

The higher resilience of certain groups in fishing communities contributes to increased social differentiation, which in turn undermines community resilience. Resilience at the individual, household and group level will encourage persistence, adaptability, and the ability to transform in work so as to encourage complementarity, not conflict [10]. In this case, fishermen groups have a strategic position to suppress socio-economic differentiation and build a spirit of cooperation and collaboration for the welfare of all fishermen members.

In addition, Blimbing RN also has an open relationship with members outside groups such as the government in the fisheries sector. This interaction is more responsive and critical in responding to issues outside the group and becomes a conversation within the group. Social interaction carried out by fishermen can be a strength in achieving group goals together. Communication with related local governments has a strategic role and even has an impact on fishermen's income. Moento, et al. states that the Merauke Regency

Fisheries Department plays a role in increasing the income of the fishing community in Pelita Samkai Village [11].

Sondakh et al. states that social interaction of fishermen groups is the key to success and organizational goals are carried out on the awareness of members to consciously establish communication or interaction between one another, between members and management of fishermen groups [5]. Squires et al. adding aspects of social and institutional sustainability can be seen from how group members resolve conflicts and continue to work together [12]. Conversely, social exclusion influences interest and affiliation behavior in the group [13].

Fishermen of RN Blimbing on average go fishing for 1 wk to 3 wk. This potent to become an obstacle for the group in carrying out activities to gather whole members. Group member interactions have problems such as no free time because the members have to go fishing [14]. By high dynamics, the management and members of the Blimbing RN have had the right strategy in dealing with these problems. They utilize free time to carry out group activities when bad weather, so that the majority of members can be involved.

### 3.2 Level of fishermen independence

**Table 2.** Result of indicators assessment of fishermen independence (%)

Indicators	Low	Medium	High	Very high
Independence determines the catching area	22.22	37.78	28.89	11.11
Independence determines the addition of production facilities	4.44	24.44	46.67	24.44
Independence determines prices	11.11	22.22	37.78	28.89
Independence of market	8.89	17.78	48.89	24.44
Independence in occupational health and safety	15.56	20.00	26.67	37.78
<b>Independence of fishermen</b>	11.11	37.78	42.22	8.89

The fishermen's independence reached a high category 42 %. Indicators of independence that are in the high category are the means of production, pricing, marketing, and occupational health and safety in the very high category. The independence in determining the area of capture is in the medium category.

The high level of independence illustrates that so far fishermen have been able to face their own problems so that they do not have excessive dependence on other parties' assistance. Government assistance was not a priority for fishermen to keep running their fishing activities. Fishermen become resilient due to the pressure of the necessities of life that requires them to continue to exist and survive in their work.

In India, fishermen groups are said to have a role in increasing the maximum yield from fishery resources so as to increase the income and welfare of their members [15]. Education or learning in fishing group activities can improve the socio-economic status of fishermen. Basavakumar et al. states that the socio-economic status of fishing communities can be

improved by providing education such as the application of better fishing methods [16]. Good fishing methods can improve the quality of fish caught. Fish quality is a factor that has a significant effect on fish prices [17].

Richmon et al. explained that the framework for the sustainability of fishing communities includes four categories, namely economy and markets; social and community; physical infrastructure and critical services; environment and regulation. The sustainability of this category is very important for the long-term survival of fishing communities and strategic plans to encourage improvement, expansion, or investment in all areas. Each category is connected and dependent on each other in the fishing community [18].

A well-managed fishing group can encourage professional investment collaborations. Additional capital for investment and operational costs will encourage participation and institutional strengthening. Group members have the values of helping each other, caring, open communication, and collaboration in groups. They develop mutual understanding and can manage conflict peacefully [19].

## 4 Conclusion

The results of this study are taken into consideration and become input in developing and fostering fishermen groups. As an effort to optimize the potential of fishermen groups in conducting capture fisheries agribusiness activities, especially in Lamongan Regency, East Java Province, Indonesia. Both the group dynamics and independence of fishermen in catch fisheries was high, but group dynamics did not influence the independence of fishermen in catching fisheries agribusiness. The factors that influence group dynamics were structuring, coaching and development, atmosphere, effectiveness. The factors affected the independence of the group were the addition of production facilities, prices, market, and fishermen. Those factors are needed to attain the good management in maximum sustainable yield (MSY).

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