

The Familial Economy of Household Fisheries in Indonesia

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familial relationship, mutual cooperation

Abstract

The objective of this study is to investigate the characteristics of the familial economy of household fisheries in 2 urban and 2 rural fishing villages of Pati Regency, Central Java, Indonesia. We analyzed the results of the socio-economic survey on 152 fishing owner households and 92 fishing labor households from the old and the young generations.

Household fisheries in this area is still in a stage of transition from a subsistence to an exchange economy. In this stage social obligations in the family and in the community are strong, while contractual obligations of commercial type are unfamiliar. These communities are characterized by a high degree of cooperativeness and cohesion which are based on the spirit of "*kekeluargaan*" (familial principle). This spirit was moved by the motivating force of social justice which lead by the feeling of "*malu*" (shame) and "*hutang budi*" (to owe a favor). Their organization has a great potential power for the promotion of their self-reliance and participation in the development process.

1. Introduction

Since the Indonesian government is aware on the important role of the people's participation in the development process, household fisheries as a primary unit of social organization has received increasing attention. They are not only the basic social unit for most of economic and social activities, but also as an object of terminal goal of the fisheries development policy. As known, until now Indonesian fishery is still dominated by small scale operations using small boats and simple gear, and rely on labor intensive and continually restricted to the coastal water¹⁾. In 1986 contribution of small scale fisheries accounted about 90% of the total fish production²⁾. Nevertheless they are often faced with seemingly impossible obstacle in their attempts to uplift themselves conditions³⁾; hence, they need financial and technical assistance from the government, as well as their organization.

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In the recent, there has been remarkable increased in awareness of some development planners that the top-down approach which commonly used is not working. Paternalistic governments and local elites either could not make any evaluations nor decision concerning development program that may result in the effectively increasing the quality of life of the poor rural areas. They also lacked some necessary informations at the local level or feared that potential changes would reduce their power⁵⁾. In case of the Indonesian government, lack of necessary informations at the local level looks remarkable. Data or publication pertaining to the necessary information such as socio-economic and ecological conditions at the local level is very limited. Many cases on the failure of the fisheries development showed that the development policies did not conform with local conditions, because it was directly adopted from the western concepts with only slight modification⁶⁾, or if any, the modification based on the knowledge of farming sociology⁷⁾.

As well known, there are many differences between the fishing community and the peasant agriculture. These are: the nature of production unit, opportunity to investment, production process, marketing and the yield in relation to nutrition and food habits.⁸⁾ All of these factors, resulting in the differences of personal temperament and behavior of the fishermen compared to that of farmers. Therefore, any policy or program which was successfully implemented for the farmers not always succeed with the similar degree in the fishing society⁹⁾.

The economic life of household fisheries is characterized by predictable variations in the availability of target species. The seasonality of fishing has influenced several behavioral responses which are reflected in day to day life¹⁰⁾. In fishing they are as hunters, depend parasitically on whatever natural resources has to offer. They can not control weather and location of fish. When they are lucky, they have enough food and the income to spare, and they may satiate themselves. Their economic activities depend on the work of their family members, as the conditions in an agricultural peasant economy. The decisions are taken with a view to domestic needs. Production is based on familial requirement. Because their fishing is uncertainty, frequently they get into speculating attitudes to maximize their catch as well as their income such as capitalist firm.

Since household fisheries always face the uncertainty in fishing, they need entering into agreements with each others to minimize the risk of starvation¹¹⁾. The rise of these agreement is oftenly in the form of social norm or social organization displayed within household members, relatives, companion, neighbor of their society. Generally, social norm in Indonesia is based on the spirit of "*kekeluargaan*" (familial principle). The spirit of family cooperation, compassion and mutual respect for others are found equally among all sections of the population, and are transformed into social solidarity¹²⁾.

The norm of social relationship or social organization, traditionally performed multiple functions including community decision making and communication with the outside world¹³⁾. Automatically these norm and social organization will influence to the fisheries development program, directly or indirectly. Therefore, if the people's participation approach will be used in the development process, the socio-economic data pertaining to life and work at the household and village level are very important. These data are needed almost in all stages of

the development process, such as in motorization of fishing boats, modernization of fishing techniques and gears, fish processing, fish marketing system, resources management and also in arrangement of fishermen's organization in the form of cooperative movement or fishermen's association.

This study focuses on the socio-economic characteristics of household fisheries in Indonesian fishing villages. The present of their socio-economic conditions are discussed against the background of their management system pertaining to their activities as a primary unit of organization in coastal fishing community. Socio-economic factors were analyzed as local economic circumstances, fishing activity, their socio-demographic profile, the occupational structure and background, income and expenditure, and their familial relationship. More specifically objective of this study is to investigate the characteristics of the familial economy of household fisheries in Pati Regency of the northeastern coast of Central Java, Indonesia.

2. Survey Methodology

Pati Regency was chosen as a study area due to several important and practical considerations. Pati Regency is an agricultural region with fisheries sector which is still dominated by small scale fisheries. Compared to the other regions in Indonesia, Pati Regency is in the middle stage of development and their fishing community is still in a stage of transition from a subsistence to an exchange economy; therefore, it might be acceptable as a typical representative of Indonesian fishing communities. Based on our preliminary investigations, it was reliable that the study area is one of the populous coastal areas in Java where household fisheries are still in the developing process; characteristics of local traditions, belief, peasant and money economy are existing in their economic behaviors simultaneously. Communication, personal support and other facilities from local government and village cooperative unit of Pati Regency (KUD "*Sarono Mino*") are also as important considerations, particularly during the fieldworks and data collection.

The data were collected during two periods. The first period was for 6 weeks in July and August 1988. In this period, test questionnaire and secondary data collection from the government offices of Pati Regency, village offices and other relating publication were conducted. In the second period, during almost 2 months from August to September in 1989, we focused on the primary data collection and completed the secondary data.

Based on the demographic data obtained from the statistical office of Pati Regency, we chose four fishing villages: Bendar and Sambiroto fishing villages which located near the center of local economic activities were chosen as representatives of the urban fishing communities. While Puncel and Pecangaan fishing villages which relatively isolated and far from the center of local economic activities were chosen as representatives of the rural fishing communities (See Fig. 1). It is based on the assumption that there are differences between urban and rural villages, particularly in the factors influencing the social-economic conditions of household fisheries such as alternative jobs available to the household members, or

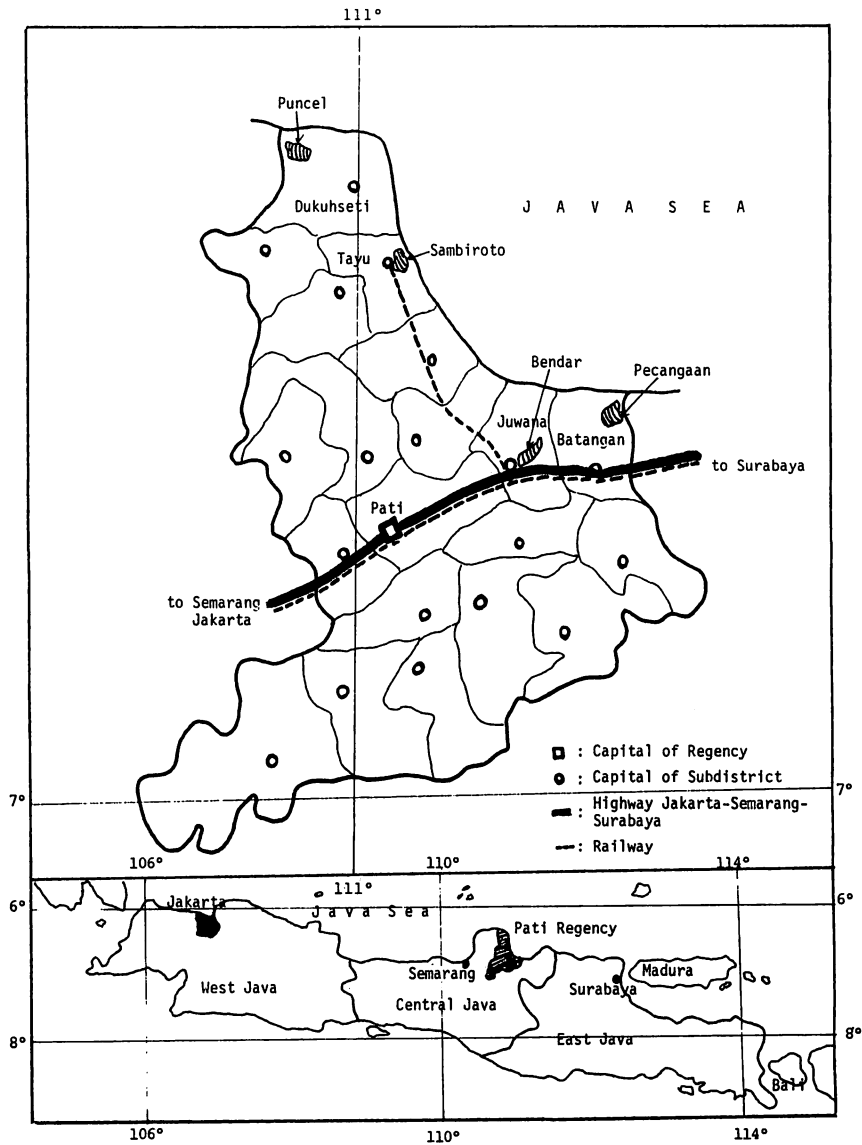


Fig. 1. Pati Regency and Location of the Study Areas (Insert is Java Island)

to the household head during off season, transportation and information facilities, opportunity to get a credit, to buy the means of production, to sell fish production, to get health facilities, and educational facilities. Therefore, the way of thinking between the fishermen who live in urban areas may be different from with those who live in rural areas.

Based on the list of fishermen in the KUD "Saroni Mino"¹⁴⁾, 260 samples consist of 156 (60%) fishing owner household (FOH) and 104 (40%) fishing labor household (FLH) were

Table 1. General Economic Potential in the Four Selected Fishing Villages in 1988

Items	Urban areas		Rural areas	
	Bendar	Sambiroto	Puncel	Pecangaan
Total area (Ha)	194	183	992	49.5
– paddy field	75	41	106	—
– brackishwater pond	102	109	148	40
– dry field	8	25	364	7
– estate and forest	—	—	371	—
– others	9	8	3	2.5
Total population	1,888	3,145	4,980	900
Working population	1,195	2,522	2,827	372
– farmer	36	65	1,092	—
– landless farmer	—	190	1,133	—
– fishermen	843	508	38	366
– businessmen	—	82	7	—
– industrial labor	—	27	87	—
– construction labor	4	76	43	—
– trader	9	163	245	6
– transportation	2	21	59	—
– government official	11	55	42	—
– others	290	1,335	81	—

Source : Monograph from each village offices, 1989.

chosen. Yahaya and Yamamoto (1988), used the terminology of FOH for the fisher men who are owner-operators of means of production (boat, engine and gears), and FLH for fishermen who are working as hired labors in fishing¹⁵⁾. As is known, the fishing community is composed of FOH and FLH. The relationship between FOH and FLH is important since the fishing is uncertainty and risky activities, so that their operations always mobilize fishing crew, particularly to spread the risk of fishing. In addition analysis of their relationship and income is important to estimate probability of exchange of status from FLH to FOH or other way around. Generally, their status, either as FOH or FLH, reflect on their level of living standard, position and function in the community.

The primary data was collected through the intensive interview of 34 samples (about 13% of the total samples) and remainders (226 samples) through the questionnaire form. Of the 226 samples, 210 samples were eventually included for analysis. The rest, 16 samples were unavailable due to either did not send back or incomplete answers. Then number of samples in each village are 44 FOH and 26 FLH for Bendar, 44 FOH and 20 FLH for Sambiroto, 34 FOH and 22 FLH for Puncel, and 30 FOH and 24 FLH for Pecangaan village, respectively. Each sample was initially interviewed to establish basic parameters, such as individual data (age, marital status, level of education, inhabitant status, experience in fishing activity and previous job), family size and structure, employment, income and expenditure, management of their household and fishing operation, and opinions regarding of their socio-economic life.

Particularly to FOH, questions referred to the nature of fishing management, such as production, fish marketing, and credit facilities.

3. General Condition of the Study Area

1) Pati Regency

Pati Regency, located in the northeastern coast of Central Java, consists of 20 "*kecamatan*" (subdistricts), and 405 "*desa*" (villages). Based on statistical data in 1988¹⁶⁾, the total area are approximately 149,119 ha. Of which 41% were paddy field, 21% were dryfield/garden, 18% were buildings and yards, 12% were state forest, 5% were brackishwater pond, and the rest 3% were plantation, roads, and others. With a total population of 1,050,839 peoples, population density was 705 persons per km² which is below the average of Central Java of 740 persons per km².

Based on explanations of the statistic officer of Pati Regency, working population is mean from the population who have achieved 10 years old and earn an income. Total working population accounted for 725,757 peoples or 69% of the total population. Of which 452,668 peoples (62%) are working in agricultural sector including brackishwater pond farmers. Constituted about 49% of them are as self-employed peasants, 50% are as landless laborers, and only 1% are as fishermen. The remainder consists of several professions such as businessmen (2%), industrial labors (3%), construction labors (2%), traders (4%), and the others (army, civil bureaucracy, etc.) which were 27% of the total working population.

In 1986, the Regional Domestic Product (RDP) amounted to Rp. 342,5 million. Contribution of agricultural sector is dominant, approximately 52% of the total RDP, followed by trading sector (16%), industrial sector (10%), government sector (7%), housing, transportation, construction and other sectors were 4%, 3%, 3%, and 5%, respectively. Fisheries sectors both marine fisheries and inland fisheries (brackishwater and freshwater fisheries) contributed about 6% of the agricultural sector or about 3% of the total RDP. Even though the fisheries sector occupy only a small share of the RDP, they play an important role as a major source of animal protein, income, and employment, particularly for the coastal villages.

Marine fisheries in Pati Regency are dominated by small scale fisheries. From the total number of fishing boats (874 units), more than 95% (834 units) are using outboard engine and 5% (40 units) are using inboard engine. Motorization program in Pati Regency have been started since the First Five Year Development Plan (REPELITA I) around the first year of 1970s and was intensified after the "trawl ban" in 1980. The result of these programs shows that since 1986, there are no sailboats in Pati Regency.

The trammel net is the most dominant fishing gear in Pati Regency. This gear was introduced since 1978 by the fisheries office of Pati Regency with special purpose to elevate shrimp production and fishermen's income. Until the end of the Third Five Year Development Plan in 1983, almost all of fishing units in Pati Regency are small scale fisheries. After Juwana river which connecting fishing ground and landing place, was deepened in 1984,

middle scale fisheries had increased gradually, particularly purse seine and gill net. The number of trammel net have also increased rapidly since the modernization program of fishing gears which was done very intensive as a consequences of the "trawl ban" in 1980. In 1988, the number of trammel net was about 45% of the total fishing gears, gill net was 10%, purse seine was 4%, troll lines was 5% and the remainders (36%) are lempara, denis seine, lift net and other hook and lines. The composition of number of boat : gear : fishermen ratio in 1988 accounted for 836 boats : 1.266 gears : 3.242 fishermen; each boat uses 1.5 gears and was operated by 3.9 fishermen on average.

2) The four selected fishing villages

General economic potential of the four selected fishing villages in 1988 are shown in Table 1. Compared to Pati Regency, the four selected fishing villages are typically of coastal villages than agricultural villages, except for Puncel village where its land is dominated by estate and forest (37%) and dry field (36%). While the land used in Bender, Sambiroto and Pecangaan villages are dominated by brackishwater pond accounted for 53%, 60% and 81%, respectively. Especially in Pecangaan village during dry season (April to September) more than 60% of it brackishwater pond are used for salt production which is needed for consumption or preservation of fish. While paddy field in Bender, Sambiroto and Puncel villages were about 39%, 22% and 11% respectively. This percentage are low compared to average 41% paddy fields in Pati Regency.

Except for Pecangaan, each village has "*tanah bengkok*" or land usually in the form of paddy field, brackishwater pond or dry land which is used as incentive income for the members of village office and "*tanah kas desa*" or land stored for the villages and used as a source of village income. "*Tanah bengkok*" in Bender accounted for 28 Ha, in Sambiroto was 18 Ha and in Puncel were 15.5 Ha. While "*tanah kas desa*" in Bender accounted for 1.5 Ha and in Puncel was 2.6 Ha. Sambiroto village has no "*tanah kas desa*", so they have no village income from its land. As a substitute to the village income, a part of auction fee both from marine fisheries and brackishwater fisheries is taken. It is also a part of retribution from Tayu market in Sambiroto village. While income of Pecangaan village is allocated by the local government of Pati Regency, beside a part of retribution of auction fee both of marine and brackishwater fisheries. In addition each villages also have an other source of income from its farmers, particularly from the part of IPEDA (*Iuran Pembangunan Daerah* or the due for regional development) which are accounted relating to the productive land.

The number of working population in the four selected fishing villages varies ranging from 41% in Pecangaan village to 80% in Sambiroto village. While Bender and Puncel villages account for 63% and 58%, respectively, compared to Pati Regency which have 69% of the total population. From the occupational composition shows that the four selected fishing villages are simple communities than Pati Regency as a whole, except for Sambiroto where working population in primary sector (farmers and fishermen) account 30% only, compared to Pati Regency of 62%. Working population in Bender and Pecangaan villages are relatively concentrates in fisheries sector, account for 70% and 90%, respectively. While in Puncel

village agricultural sector accounts about 77% of the total working population.

It is true that Bendar is urban area, so they have higher opportunity to work in the other jobs in Juwana or other place, however, based on their opinion, to be a fisherman is better than the other job. For them, fisheries sector is more profitable than the others, every day they can earn cash-money and they have no problem with season, because during off season small scale fisheries can joint with purse seiners. While in Pecangaan village, the simple occupation shows the limiting opportunity of jobs for working population, due to the limiting potential of working population as well as varying the economic activities. On the contrary, in Sambiroto where the occupational composition is the most various than the others. It is a typical urban village with high opportunity of jobs for its citizens.

Table 2 show & the number of boats, fishing gears and fishermen which is based on the data from the KUD "Sarono Mino". It is shown that Bendar village have a shortage of fishing crew. As known, each fishing unit of the purse seine usually organizes about 40 crew, gill net about 8 crew and for the trammel net about 3 crew. While number of fishermen in Bendar village was 1.8 fishermen only for each boat, therefore, the owners of fishing boats also mobilize the crew from other villages, which particularly from Bajomulyo, Doropayung, Bumirejo villages located close to Bendar village. Each fishing boat in Bendar use in average 1.1 unit of fishing gears.

The composition of number of boats, fishing gears and fishermen in Sambiroto, Puncel and Pecangaan villages shows typically trammel net fishing unit is handled by 3 or 4 crew. In Sambiroto number of fishing boats accounts for 105 units with 129 gears and 361 fisher-

Table 2. Composition Number of Fishing Boats, Fishing Gears and Fishermen in the Four Selected Fishing Villages in 1988

Items	Urban areas		Rural areas	
	Bendar	Sambiroto	Puncel	Pecangaan
Fishing boat :	354	105	56	113
– inboard :	16	—	—	—
– outboard :	138	105	56	113
Fishing gear :	394	129	41	150
– Purse seine :	40	—	—	—
– Gill net :	55	5	—	—
– Trammel net :	187	110	35	98
– Seine net :	74	5	—	—
– Troll line :	—	8	3	4
– Others :	38	1	3	48
Fishermen	643	361	210	372

Source : Annual Report 1988, the KUD "Sarono Mino" of Pati Regency, 1989

men or each boat is using 1.2 gears and is handled by 3.4 fishermen. In Puncel each fishing boat is using 1.3 gears and is handled by 3.8 fishermen. While in Pecangaan each fishing boat is using 1.3 gears and is handled by 3.3 fishermen, compared to the Pati Regency as a whole where each fishing boat is using 1.5 gears and is handled by 3.9 fishermen.

4. Economic Potential of Fishing

1) The trammel net fisheries

To analyze the economic potential of fishing here we focused on the trammel net fishing operation, because the majority of household fisheries in the study areas are using this net as a source of their household income. The considered factors are size of boat and engine, number of gears, number of crew, gross earning and variable cost, landing fee, net earning, depreciation cost, interest of capital and income per crew.

(1) Fishing boat and engine

Ordinarily measurement of a fishing boat is expressed by gross tonnage (GT). There are several formula for GT measurement of small fishing boats in existence which are similar in so far as each formula in some way combines several liner measures of the boats' dimension¹⁷⁾. According to the Indonesian Directorate General of Fisheries (1986), the formula used to measure of the Indonesian small wooden fishing boat is as follows :

Table 3. Means of Production, Operating Cost and Earning Distribution per Unit Effort of Trammel Net in the Four Selected Fishing Villages, August 1988

Items	Urban areas		Rural areas	
	Bendar	Sambiroto	Puncel	Pecangaan
1. Size of boats (GT)	4.1	2.5	2.8	3.3
2. Size of engine (HP)	9.5	5	7	6.3
3. Number of nets (pieces)	35	20	25	20
4. Number of crews (person)	4	3	4	3
5. Gross earning (Rp)	90,750	15,625	20,300	12,500
6. Variable cost (Rp)	4,950	1,950	3,700	1,400
— fuel	2,900	1,200	2,300	1,200
— ice	1,050	250	650	200
— others	1,000	500	750	500
7. Landing fee (Rp)	4,538	781	1,015	625
8. Net earning (Rp)	81,262	12,894	15,585	10,475
9. Depreciation and interest (Rp)	40,631	6,447	7,793	5,238
10. Income/crew (Rp)	10,158	2,149	1,948	1,746

Sources : Field research (1989)

$$GT = \frac{L \times B \times D \times 0.6}{2.83}$$

where L is length, B is breadth, D is depth, 0.6 is value of coefficient standard for small wooden fishing boats, and 2.83 is cubic meters enclosed space is considered 1 gross ton¹⁸⁾. Using this formula the average size of boat for trammel net in Bender is about 4.1 GT as the biggest boat than the other villages, followed by Pecangaan were 3.3 GT, Puncel were 2.8 GT and the smallest is in Sambiroto were 2.5 GT. All of these boats are using outboard engine. The size of engine in Bender is 9.5 HP, in Puncel 7 HP, in Pecangaan 6.3 HP and in Sambiroto 5 HP (Table 3).

Price of boat and engine varies depend on the size and quality of wood. For example, a fisherman in Sambiroto bought a boat sized 2 GT with Rp. 850,000 and Rp. 1,000,000 for engine of 4 HP. He estimates that boat and engine may be usable for 5 to 7 years depending on his maintenance effort to keep his boat and engine.

(2) Fishing gears

Trammel net which is used for catching demersal fish, particularly for shrimp species is constructed of three sheets of net which consists of small mesh size net hang loosely in the middle and two nets with big mesh sized are hang in both sides.

The size of trammel net in the study areas are relatively similar (length is about 34-37 m, and depth is about 1.5 to 2 m). Usually they buy the nets in Semarang, the capital city of Central Java, particularly if they need more than three pieces. The price is Rp. 26,000 per piece. While if they need only one or two pieces, sometime they buy from the KUD "*Sarono Mino*" or the traders who come to their village with price of Rp. 28,500 to Rp. 30,000 per piece. Usually each piece is used for three to five months after many time of repair due to torn off during the fishing.

The average number of trammel net per unit effort in Bender, Sambiroto, Pecangaan and Puncel are 35, 20, 20 and 25 pieces, respectively. It is related to the combination of the size of boat, engine, environmental condition such as the river and location of fish landing, and also the ability of owners.

(3) Number of crew

Crew who are involved in fishing operation are relatively flexible both for number and kinds of members. In a unit of effort it usually consists of household heads as an owner and also as a skipper simultaneously and one, two or three crew. Usually the crew come from the own household members or relatives, sometime from the owner's companion, friend or neighborers. Number of crew - including owners - in Bender and Puncel villages is about 4 persons respectively, while in Sambiroto and Pecangaan villages it is about 3 persons, respectively.

(4) Fishing operation

All of the trammel net in the study areas are for one day fishing. They go to fishing ground usually around 5 a.m. and come back to the landing place around noon (11 a.m.—1

p.m.) to 4 p.m. depending on the season and location. For example, it was dry season during the research study on August 1989; frequently the rivers in Sambiroto, Puncel and Pecangaan become shallow. Therefore, the fishing boat could not pass through these rivers, particularly occurred when the low tide at the day time between noon to 3 or 4 p.m. Therefore, they should come back to the landing place before the low tide, because location of landing place in the study areas is separated about 1-2 km from the sea. On the other hand, there is no problem for the fishermen in Bendar because the river is large and deep, so they can operate their boats until 2 or 4 p.m.

The main purpose of trammel net is to catch the demersal fish, particularly shrimp species. Usually, at the day time the shrimps dwell in rocky crevices or at the bottom of sand or mud. Therefore, the net is set in zig zag in the fishing ground around some reefs or set in circular shape at the morning. If the fishing ground is sandy or muddy areas, after throwing the gear, the boat comes back to the place where they started from and take the barrel. Then they pull up the rope which hang between the net and barrel. At the same time the boat moves in a semi circle until the net is completely changed direction. After that, the boat goes to another round and performs the same operation of towing. The operation is conducted many times until the time when they should go back to the landing place. In the dry season the fishermen in Bendar usually conducts 4 or 5 times. While the fishermen in Sambiroto, Puncel and Pecangaan only 2 or 3 times. Sometimes, they join operation of other fishermen to surround the fish in circle by net and force them to the trammel net like as in the operation of encircling gill net.

2) Earning and income distribution

During August 1989, the average gross earning of trammel net in Bendar is the highest of all the villages, accounted for Rp. 90,750 per unit effort per day. While gross earning in Sambiroto accounted for Rp. 15,625, in Puncel were Rp. 20,300 and in Pecangaan were Rp 12,500, respectively. The differences of these gross earnings might be due to the size of their boat and engine, and the time of their operation. In addition, average price of shrimp in Bendar is the highest than the other villages. During August 1989, average price of shrimp in Bendar accounted about Rp. 11,000 to Rp. 13,000/ kg, while in Sambiroto, Puncel and Pecangaan varies from Rp. 7,000 to Rp. 10,000. It might be due to the location of Bendar village which is very close to the center of fish market and almost of the factories of shrimp exporter have a branch in Jawana closeto Bendar village.

The variable costs in trammel net fishing are very simple, such as fuel, ice and other items including tobacco or foodstuff. Fuel consumption varies from 4 to 20 liters depend on the size of engine and period of fishing. The average price of fuel is relatively similar in the study areas accounted for Rp. 240 to 250 per liter. Also ice consumption varies from 5 to 80 kg depend on size of boat and time period of fishing. Average price of ice accounted for about Rp. 30 per kg. The other cost consists mainly of tobacco or foodstuff which are prepared by the owner; the crewmen never protest whatever the owners prepared and they always agree on cost of those stuff during the fishing.

All of fishing units landing and auctioning their production at the TPI (*Tempat Pelelangan Ikan* - fish landing place) are charged a landing fee accounted for 5% of the total gross earning. Of which 2% is as fishermen's saving which is used by the KUD "*Sarono Mino*" to substitute their economic activities and is given back to fishermen twice a year, usually before the "*idul fitri*", the muslim festival after one month fasting and before the fishermen's festival for "*sedekah laut*" as a grateful expression to the Almighty God for all of the livelihood which is received from the sea.

Based on general agreement between owner and crews the depreciation cost of boat, engine and gears and interest of capital are accounted for at 50% of the net earning. It includes the owners profit. The remaining 50% is divided equally among all crewmen, including owner. The chart of earning distribution is described in Figure 2.

The average income of each crew in Bendar in August 1989 almost 5 times (Rp. 10,158) higher than that of other villages, followed by Sambiroto Rp. 2,149 Puncel Rp. 1,940 and Pecangaan Rp. 1,746.

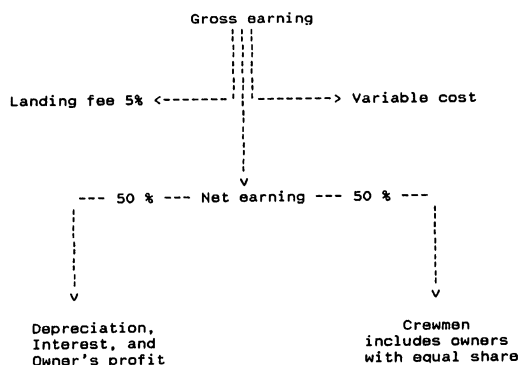


Fig. 2. Flow Chart of the Sharing System between Owner and Crewmen in Operating Trammel Nets in Pati Regency

For the investment of a new fishing unit, in Sambiroto the price of new 2 GT boat was Rp. 850,000, engine 4 HP was Rp. 1,000,000, 20 pieces of gears were Rp. 600,000. Therefore, the total capital investment is about Rp. 2,450,000. Every four months they should change about 50% of gears. Therefore, during a year they should pay 30 pieces \times Rp. 30,000 = Rp. 900,000. If the income that can be saved for new investment is equal to all of the depreciation and interest cost, and the average profit is about Rp. 6,447 per fishing day or Rp. 1,418,340 and the number of fishing day per year is 220 days, therefore, in a year they can save Rp. 518,340: Rp. 1,418,340 - Rp. 900,000. If interest rate of capital is 18% per year and inflation is about 8%, the owner can reinvest for the new trammel net fishing unit in about 6 years. With the similar manner the owners in Bendar and Puncel villages can reinvest in less than 6 years, while in Pecangaan they needs more than 6 years.

5. Demographic Profile of the Household

1) Classification

The analysis of the socio-demographic profile is focused on the household head alone, because this is closely related to the socio-economic conditions of the household as a whole¹⁹⁾. The household heads of both FOH and FLH are classified into two categories by age group. The first group is consisting of 40 years old and more and representing the old generation, and the second group is less than 40 years old representing the young generation. This age group classification is based on the following assumptions:

1. Household size of the household members from the old generation is higher than that of the young generation. Most of the fishermen in the north coast of Java marry between 20 to 25 years old. Usually at 40 years old they have decided the number of their children and also the first or second son or daughter become an adult with their potential to help or join in economic activities. On the contrary, the young generation are still in the process determining to their household size and all of the children still depend on their parents.
2. The economic potential of the wife from the old generation is higher than that of the young generation. Since their son or daughter become adult and self dependent, the task to rear their children would decrease automatically. Therefore they could have opportunity of economic activities to increase their household income. Inversely, the opportunity for the wives of the young generation are limited by task to rear their children. In addition, economic potential of the children from the old generation are also higher than that of the young generation. Therefore, the dependency of household members to the household head from the young generation are relatively higher than from the old generation.
3. The opportunity to attend an education for the young generation are relatively higher than that of the old generation, and also their basic literacy. Generally the basic literacy affects their aspirations, ability and quickness to innovate. Educated fishermen are able to communicate better with the representatives of the fisheries development agencies than those who have no educational background. Therefore the educated fishermen frequently have greater chance to have the benefit from any development program such as subsidized loan from the government.
4. The way of thinking of the young generation are relatively more unstable and frequently high mobility than the old generation, both in their business activity and in managing the daily life. In social activity, the old generation are relatively more conservative, while the young generation tends to be individualistic.

2) Household size

Table 4 shows that the household size of the old generation is relatively higher than that of the young generation. The household size of the old generation in urban areas are

Table 4. Socio-demographic Profile of the Heads of Fishing Owner Household (FOH) and Fishing Labor Household (FLH)

Items	Urban areas				Rural areas			
	Bendar		Sambiroto		Puncel		Pecangaan	
	FOH	FLH	FOH	FLH	FOH	FLH	FOH	FLH
Sample size by age group :								
– OG :	17	6	16	4	13	6	11	8
– YG :	27	20	28	16	21	16	19	16
Household size :								
– OG : <5	0	2	4	2	7	2	4	2
5 – 7	14	4	8	2	6	4	4	5
>7	3	0	4	0	0	0	3	1
– YG : <5	10	14	17	14	15	7	7	9
5 – 7	15	6	9	2	6	9	6	5
>7	2	0	2	0	0	0	6	2
Experience in fishing operation :								
– OG : <10								
10 – 20	0	0	1	0	0	0	0	0
>20	2	2	9	1	7	1	3	2
– YG : <10	15	4	6	3	6	5	8	6
10 – 20	4	4	8	10	2	2	4	10
>20	14	13	16	4	15	12	12	4
	9	3	4	2	4	2	3	2
Kinds of previous jobs :								
– OG : Nothing								
Farmer	17	2	8	4	7	4	8	8
Labor	0	4	6	0	5	2	3	0
Others	0	0	0	0	1	0	0	0
– YG : Nothing	0	0	2	0	0	0	0	0
Farmer	18	9	13	12	13	10	12	16
Labor	9	3	2	0	6	4	5	0
Others	0	4	6	4	2	2	2	0
	0	4	7	0	0	0	0	0
Inhabitant status :								
– OG : Native								
Comer	15	5	9	3	13	4	9	8
– OG : Native	2	1	7	1	0	2	2	0
Comer	18	16	17	14	21	10	16	16
	9	4	11	2	0	6	3	0

Note : – OG (Old generation) = 40 years old and more

– YG (Young generation) = less than 40 years old

Sources : Field research (1989)

relatively higher than that of in rural areas, while the young generation in urban areas are less than that of in rural areas.

The household size of FOH both of the old and the young generations are higher than that of FLH. Generally, this is because the household income of FOH is relatively higher for the extend family. On the other hand, some of the family members of FLH migrate to look for the jobs in urban areas, particularly to Semarang, the capital of Central Java, or to Surabaya the capital of East Java, or to Jakarta the capital of Indonesia. The program of family

planning by the government may also play an important role to control the size of household, particularly for the young generation in urban areas. The 78% of FLH of the young generation in urban areas have members less than 5 persons and the rest of 22% have member between 5 to 7 members.

3) Experience and occupational background

Almost all of the old generation has 10 years experience or more, and half of them experience of more than 20 years. In Sambiroto and Puncel villages were dominated by FOH who have experienced for 10 to 20 years. The young generation, however, are dominated by the household head with experience for 10 to 20 years, except for FLH in Sambiroto and Pecangaan villages who has experience less than 10 years.

Experience in fishing activity of FLH from the old generation is relatively higher than that of FOH. The 75% of FLH has experience more than 20 years, while FOH were about 61%. This may be related to their occupational background. FLH from the old generation who are directly involved in fishing was about 75%, while FOH was 70%. It is also indicated that fishing experience has no significant effect to change the status of the fishermen from the labor to the owner.

The kind of previous jobs of the young generation is relatively more various than that of the old generation, except for FLH in Pacangaan. Both the old and the young generations of FLH in Pecangaan have no experience with other jobs, because after formal education they directly join in fishing activities. It indicates that alternative jobs was limited. Even though Bender and Sambiroto are located in urban areas, the old generation of FOH in Bender and FLH in Sambiroto also didn't have any experience with other jobs. It might be true that previously the alternative jobs in urban areas were also limited, but another stronger reason is that most of them thought to be a fisherman is better than to do the other jobs. It is because they were already familiar with the fishing activities, and they believe that the fishing can provide the better daily income, even though risky and uncertainty.

4) Inhabitant status

Both the old and young generations in the study areas generally are native fishermen, particularly FOH in Puncel and FLH in Pacangaan. There may be no potential to pull new comers to become FOH in Puncel or FLH in Pacangaan. FLH in Puncel, however, have relatively higher potential to pull new comers for the young generation than that for the old generation and for FOH in Pecangaan it was the contrary.

The potential of fisheries sector in Bender to pull new comers for the young generation is relatively stronger than that for the old generation. On the contrary, in Sambiroto village the ratio of number of native to new comers for the young generation is relatively lesser than that of the old generation. The previous jobs of the new comers for the young generation of FOH in Bender and the old generation of FLH in Puncel are the farmers. While the young generation of FLH in Puncel is either from farmer or laborer. In this case fisheries

Table 5. Occupational Background of Family Members of Fishing Owner Household (FOH) and Fishing Labor Household (FLH) in Percentage

Items	Urban areas				Rural areas			
	Bendar		Sambiroto		Puncel		Pecangaan	
	FOH	FLH	FOH	FLH	FOH	FLH	FOH	FLH
Main jobs on the father side :								
Fishermen	77	46	45	35	35	82	100	100
Farmer	3	15	14	18	29	18	0	0
Trader	10	8	9	21	6	0	0	0
Labor	5	8	14	14	11	0	0	0
Others	5	23	18	12	19	0	0	0
Main jobs on the father in law side :								
Fishermen	69	47	32	22	6	18	100	100
Farmer	13	15	18	14	64	64	0	0
Trader	5	15	9	17	12	9	0	0
Labor	0	0	9	11	12	0	0	0
Others	13	23	32	36	6	9	0	0
Main jobs on the own's relatives side :								
Fishermen	46	53	34	56	48	40	77	67
Farmer	5	9	16	7	30	33	0	0
Trader	0	6	20	9	6	7	0	0
Labor	13	23	7	9	5	11	0	0
Others	36	9	23	19	11	9	23	33
Main jobs on the wife's relatives side :								
Fishermen	24	38	21	25	29	35	56	46
Farmer	6	18	10	12	37	45	4	5
Trader	11	4	8	25	2	10	7	8
Labor	21	25	37	21	10	5	0	3
Others	38	15	24	17	22	5	33	38

Sources : Field research (1989)

sector in both urban and rural areas relatively have a potential to pull the new comers from the other profession, particularly from the agricultural sector. There are many cases that the farmers pushed out from the agricultural sector move to the fisheries sector due to the population pressures in agricultural communities and as causalities from introduction of new rice production technology which limits employment opportunities²⁰⁾. In other cases they move to the fisheries sector through marriage to a fishermen's daughter.

5) Occupation of family members

Occupational background of the respondents can be seen from the occupation of their father and father-in-law. Table 5 shows that main jobs of the father side both in urban and in rural areas are dominated by the fisherman. Occupation of their father in urban areas is relatively is more various than that of in rural areas, except the father of FOH in Puncel

which is more various than the father of FOH in Bender.

The main jobs of the father-in-law are relatively more various than that of the father. These are still dominated by the fishermen in Bender and Pacangaan, but in Puncel was dominated by the farmers, and in Sambiroto it was the most varied of all.

The main jobs of the respondent's relative and the wife's relative represented the occupational structure of the new generation in the study areas. Relatively the occupation of the new generation is more various than that of the previous generation. It shows that the young generation have alternative source of income more than the previous generation. This is related to the increasing communication facilities and improving economic from the other sectors.

In the study areas there are no special ties for son or daughter to inherit the parent's occupation. If the son or son-in-law want to involve in fishing activities they must start from fishing crew. Even though the parent has many fishing units usually the son or the son-in-law cannot inherit to the own parent automatically. It depends on several factors including the subjective factors such as attitude, responsibility and capability of the son or the son in law. In many cases if the son or the son-in-law become an owner, their parent or the parent in law subsidizes as much as possible or they can borrow the money with guarantee from the parents. When the parents die without a special message to their children, all of the parent's property are divided for all their children. If they are muslim, usually the son receives 2 times of the daughter's share.

6. Economic Potential of the Household Members

1) Household income

To analyze the potential of the household members are limited, because it is difficult to quantify all of real potential of the household members, particularly their function as a unit of production and consumption simultaneously. In term of household income, the household members also receive part of their income in noncash form through consumption of their own production, through barter exchange, or noncash payment for hired laborers²¹). Therefore, analysis of the potential of the household members in this study are limited to the analysis of the dependency of the household head to the fishing sector, contribution of income from the household head side, wife side, and also from the children and additional household members to the total household income.

(1) Dependency on the fisheries sector

The dependency to the fisheries sector by household head of FOH and FLH as a source of income varies, both in urban and in rural areas. Table 6 shows that the old generation of fishermen generally have higher dependence on fisheries than that of the young generation, except for FLH in urban areas. The percentage of full time fisherman of FLH in urban areas from the young generation was about 42%, while for the old generation was 30%.

Table 6. Source of Income and Income Contributors of the Member of Fishing Owner Household (FOH) and Fishing Labor Household (FLH)

Items	Urban areas				Rural areas			
	Bendar		Sambiroto		Puncel		Pecangaan	
	FOH	FLH	FOH	FLH	FOH	FLH	FOH	FLH
Income from fishing operation :								
– OG : Full-time								
Part-time major	2	2	6	1	7	4	4	2
Part-time minor	15	4	10	3	6	2	6	6
– YG : Full-time	0	0	0	0	0	0	1	0
Part-time major	4	10	5	5	6	4	10	7
Part-time minor	20	8	22	8	13	12	9	9
	3	2	1	3	2	0	0	0
Income contributors :								
from husband side :								
– OG : > 75%	4	2	3	1	4	2	4	4
50 – 75%	10	3	11	2	9	4	6	4
< 50%	3	1	2	1	0	0	1	0
– YG : > 75%	12	8	11	6	10	9	12	11
50 – 75%	11	10	16	7	11	7	7	
< 50%	4	2	1	3	0	0	0	0
from wife side :								
– OG : > 50%	4	2	0	1	0	0	3	0
25 – 50%	11	3	7	3	2	2	4	5
< 25%	2	1	9	0	11	4	4	3
– YG : > 50%	4	2	4	2	0	0	2	0
25 – 50%	10	10	16	8	8	4	4	4
< 25%	13	8	1	6	13	12	13	12
from children and additional members side :								
– OG : > 25%	0	0	0	0	4	0	0	0
10 – 25%	6	4	7	4	3	2	3	3
< 10%	11	2	9	0	6	4	8	5
– YG : > 25%	0	0	2	0	2	3	0	0
10 – 25%	6	11	6	4	7	6	9	7
< 10%	21	9	20	12	12	7	10	9

Note : – OG (Old generation) = 40 years old and more

– YG (Young generation) = less than 40 years old

Sources : Field research (1989)

Almost all of the household head of FOH and FLH from both the old and young generations are dominated by part-time major fisherman, except those of FOH from the old generation in Puncel and FOH from the young generation in Pecangaan, which are dominated by the full-time fishermen. While for the young generation there are many household heads of part-time minor fishermen, particularly in urban areas.

Generally, the dependency of FLH in urban areas are higher than that of FOH. The number of full time FOH in urban areas was 24% for the old generation and 17% for the young

generation. While FLH accounts for 30% for the old generation and 42% for the young generation. On the contrary in rural areas dependency of FOH is relatively higher than FLH. The number of full time FOH in rural areas was 46% for the old generation and 40% for the young generation, while FLH was 43% for the old generation and 34% for the young generation.

(2) Income contribution of the household head

Contribution of household head to the total household income varies both for the old generation and the young generation. The old generation both in urban and rural areas contributes between 50 to 75% of the total household income. While the young generation in rural areas contributes more than 75%, except for FOH in Puncel. In urban areas, however, the household head who contributes between 50 to 75% is relatively dominant, except for FOH in Bender which contributes more than 75% of the total income.

The household head of FOH from the old generation who contributes more than 75% accounts for 26% as compared with the young generation of 47%, while who contributes less than 50% accounts for 11% against the young generation of 6%. The similar goes to FLH from the old generation who contributes more than 75% accounts for 38% as compared with the young generation of 50%, while from the old generation less than 50% accounts for 8% and from the young generation is 7%.

(3) Income contribution of the wife.

The wife who contribute more than 50% of the total income in urban areas is relatively higher than in rural areas, and also the wife side contribution from the old generation are higher than that of the young generation. In urban areas both the old and young generations are dominated by the wife who has income between 25 to 50% of the household income. While in rural areas it was dominated by the wife side who contributes less than 25%. Contribution of the wife side from FLH in urban areas are relatively higher than that from FOH, except for the young generation in Sambiroto. While FLH in Puncel is higher than that of FOH. On the contrary, FOH in Pecangaan is higher than that of FLH. The higher income contribution from the wife in urban areas generally shows that the opportunity for jobs as a source of income in urban areas is higher than in rural areas.

More than 50% of a wife's contribution to the household income of the old generation in urban areas was recorded at 16% as compared to 8% of that in rural areas. The contribution less than 25% was recorded as 28% in urban areas compared with that in rural areas of 58%. The similar manner of wife from the young generation contributing more than 50% was recorded as 13% in urban areas against 3% for that of in rural areas. While less than 25% in urban areas was 39% and in rural areas is 69%.

Fisheries activities in Java frequently offer wide opportunities for women to get money-earning jobs. Most of them prefer to become fish mongers or traders or contributing in fish processing such as smoked, salted, dried or steamed fish or by making paste and crisps²²⁾. Some of them are carrying small shop to sell foodstuffs or goods for the daily life.

(4) Income contribution of the children and additional members

Contribution of the children and additional household members from the old generation in urban areas is relatively higher than that of the young generation. On the contrary, in rural areas it is lower, particularly in Puncel, where contribution from the young generation is higher than that of the old generation. While contribution of FLH from the old generation in urban areas is higher than that of FOH. Inversely, in rural areas it is lower. For the young generation of FOH both in urban and rural areas it is relatively higher than that of FLH. It is true that the children of the old generation have the higher economic potential than that of the young generation, but almost of the children's income of the old generation, particularly in urban areas usually do not contribute to the household income, but to meet their own needs or is saved for their future.

2) The standard of living

(1) Standardization

Frequently household fisheries in the developing countries come across as being the poorest of the poor rural areas²³⁾. Therefore to analyze their standard of living, it is measured by their distance from the "poverty line". Most of the studies on the "poverty line" is derived from an estimation of the level of income necessary to ensure a minimum diet. Although the case studies differ widely about the standard of minimum diet, however, food consumption is a common indicator of the level of poverty in rural Java. The survey on the economy and social conducted by the Indonesian government or "*Sosial Ekonomi Nasional*" (SUSENAS) which investigated the relation of food and income sufficiency, promulgate an assumption that the income equivalent to 240 kg of rice per person per year as the "poverty line"²⁴⁾. Because the price of rice is subsidized by the government, the "poverty line" has changed according to inflation. Martosubroto (1987) notes that the national poverty threshold is originally pegged at 320-480 kg of rice equivalent²⁵⁾. This national poverty threshold is more reasonable than the standard of "poverty line", because increasing price of other food and goods for daily life after 10 years is higher than that of increasing price of rice. In case of rice, The Indonesian government have commitment to subsidize its price, particularly to control the price both at the producers and consumers' levels.

The percentage of expenditure on food of the total household expenditure, known as the Angel's coefficient, is another important indicator of standard of living. An Angel's coefficient of 50% is sometimes regarded as a dividing line between developing and developed countries²⁶⁾. By using the standard of "poverty threshold" and Angel's coefficient, the living standard of household fisheries in the study areas are figured in Table 7.

(2) Income per capita

Table 7 shows that number of household fisheries, both of the old generation and of the young generation under the "poverty threshold" is relatively less than that in the above one, except for the old generation in rural areas where FOH and FLH under the line was 50%

Table 7. Income per Capita and Expenditure for Food Consumption in the Four Selected Fishing Villages

Items	Urban areas				Rural areas			
	Bendar		Sambiroto		Puncel		Pecangaan	
	FOH	FLH	FOH	FLH	FOH	FLH	FOH	FLH
Sample size : – OG :	17	6	16	4	13	6	11	8
– YG :	27	20	28	16	21	16	19	16
Income per capita *(kg)								
– OG : < 320	5	2	7	2	6	4	6	5
320 – 480	4	3	5	2	7	2	5	3
> 480	8	1	4	0	0	0	0	0
– YG : < 320	7	8	8	6	7	5	5	9
320 – 480	9	8	15	8	11	11	14	7
> 480	11	4	5	2	3	0	0	0
Angel's coefficient (%)								
– OG : > 75	6	4	7	1	7	6	6	5
50 – 75	8	2	8	3	6	0	5	3
< 50	3	0	1	0	0	0	0	0
– YG : > 75	10	11	8	6	10	7	8	9
50 – 75	15	8	19	10	11	9	11	7
< 50	2	1	1	0	0	0	0	0

Note : – OG (Old generation) = 40 years old and more

– YG (Young generation) = less than 40 years old

* The national poverty threshold was originally pegged at 320 – 480 kg of rice equivalent (Martosubroto, 1987).

Sources : Field research (1989)

and 64%, respectively. FOH from the old generation in urban areas who live in above the line and under the line were some as 36%. While FOH from the young generation in urban villages who live in above the line was 29% and under the line was 27%.

Generally standard of living of FOH both from the old and the young generations is relatively higher than that of FLH. FOH from the old generation who live in above the line was 21% as compared with FLH as 4%. While FOH under the line was 42%, FLH was 54%. The similar manner was FOH from the young generation who live in above the line about 20% against FLH at about 9%. While FOH from the young generation who was in under the line was about 28%, but for FLH it was 41%.

The household fisheries in urban areas have relatively higher standard of living than in rural areas. The old generation in urban areas in above the line was recorded as 30% compared with 0% for that of in rural areas. The old generation in urban villages who live under the line was accounted for 37% and in rural areas was 55%. The similar goes for the young generation who live in above the line in urban areas was accounted for 24% and in rural areas it was 4% only. The young generation in urban areas who lives under the “poverty threshold” was recorded as 32% and in rural areas it was 36%.

(3) Expenditure for food consumption

Angel's coefficient in both of the old and the young generations was dominated by the 50-75% range, except for the old generation in rural areas who is more than 75%. FOH of the old generation in rural areas was accounted for 54% while FLH it was 75%. It might be related to the income per capita that of FLH of the old generation in rural areas which is relatively lower and poorer than that of other groups.

Almost all of FLH's expenditure for food are more than 50%. All of FOH and FLH in rural areas spend more than 50%, while in urban areas many FOH spend less than 50% of their income.

From these analyses it can be concluded that the standard of living of FOH is higher than FLH, the young generation is relatively higher than that of the old generation and who live in urban areas are higher than that of those who live in rural areas.

7. Familial Relationship

1) General principles

Since fishermen always face uncertainty during fishing, they need to enter into agreements among each others to minimize the risk of starvation. In the study areas these agreement are thriven as norms of social relationship which not elaborately plan beforehand, but thrives naturally. The norms of social relationship rise as a realization form of social obligation in fishing communities.

Fishing communities in Pati Regency are still in a stage of transition from a subsistence to an exchange economy. Under these conditions social obligations in the family in its widest sense, and in the community are relatively strong, but contractual obligations of a commercial type are unfamiliar. The moral principle of the social obligation in the study areas are generally based on the spirit of "*kekeluargaan*" (familial principle). In this spirit, all of members in the community such as the owner of household members, crew, neighbors and the others are qualified as a member of their big family or relatives. Therefore, one should help each others, the rich or the stronger should help the poor or the weaker. On the other hand, the poor or the weaker should help those who help him in the other form or in minimally not to injure them. Transactions among them frequently was carried out in the spirit of devoid of commerciality. Preferably consisting of sharing, and non-reciprocable giving, and inheriting from the closest relatives, or borrowing from more distantly related ones.

The spirit of "*kekeluargaan*" is moving in the motivating force of social justice and is controlled by the feeling of "*malu*" (shame) and "*hutang budi*" (to owe a favor). According to Mubyarto (1985) social justice concerns the problem of dividing up God's sustenance, ie., the distribution of income throughout the society²⁷⁾. There are three basic guidelines which society may regulate the distribution of income in accordance with the principle of justice: 1) rights and responsibilities, 2) reciprocity, and 3) satisfaction of needs²⁸⁾. With regards to

the rights and responsibilities, justice will be safeguarded when the rights of the individuals are protected through the rules made by the society itself. In a tradition of reciprocity, people feel they have committed an injustice, when they do not make every efforts to reciprocate one good turn with another. In satisfaction of needs the society and even the state may be preferred to a macro-version of the family where satisfaction of needs for each member are needed, even though the needs of each person will be different.

Scott notes that the moral idea involved in the norm of reciprocity is that one should return "favors" out of gratitude and that, consequently, equal exchange defines a fair relationship. It means that a gift or service received creates, for the recipient, a reciprocal obligation to return a gift or service of at least comparable value at some future date²⁹). In addition, Sahlins points out that there are three types of reciprocity namely:

- a. Generalized reciprocity: the transaction is at least putatively altruistic, such as among parent and children.
- b. Balanced reciprocity: the return is made straight off and is equivalent in value to the goods received. It is less personal than generalized reciprocity, but more economically.
- c. Negative reciprocity: transactions opened and conducted toward net utilitarian advantage.³⁰).

2) Relationship within household members

Social relationship which thrive among household members in their economic lives usually arise in the form of informal jobs descriptions within household member. All cases in the study areas shows that fishing at the sea is monopolized by men, while women monopolizes domestic tasks such as cooking, weaving, and rearing their children. The women also are able to participate in the secondary process of the production in the shore. While their children, depend on their capacity, can participate on men's or women's works. Boys usually help in fishing, while the girls help in secondary process such as in fish handling, processing or marketing.

In many cases women work harder than anybody else in the family. For her, there is no more important thing than the security of her family. She have to see that her children are properly trained to do their share toward the building up of the economy in the family. Furthermore, she should also to get involved in direct money-yielding jobs. Most of them prefer to become a fish monger, fish trader or selling foodstuff or the needs of daily life in the small shop. Due to higher competition and availability of the jobs opportunity, the women in urban areas seem to work harder than those who live in rural areas.

There is no commitment to the children, particularly to the son or the son-in-law to continue their father's fishing, both in urban and in rural fishing communities. Nevertheless, in the rural fishing community, usually the parents hope that their sons or the son-in-law involved in fishing. It is particularly when the parents became older and the father could not fish any more by alone. They still have chance to participate in the secondary process of their son or son in-law's fishing activity. In urban areas, however, usually the parents hope their son or son in-law engages in other jobs. They feel that the fishing is too risky and un-

certainty, and they could not reach the better life in the future. Therefore, some of them are ambitious to enroll their son in higher education to get other jobs. In case of Bendar, however, there are many young men who have high educational level involving in fishing activities, particularly the owner's son or son in-law.

Although the parents could not oblige their children to take care their old age and they could not longer involved in the economic activity, however, the children mostly aware that they have an obligation to take care of their parent, resemble as when their parents took care of them when they still young.

3) Relationship between owners and crew

In case of household fisheries in the study areas, the fishing is carried out by the small boats with out-board engine, and operated by two or three men. Generally the crew are organized around a core of the family, particularly by the sea-going ownership. For the non-sea-going ownership the crew are organized around a core of neighborhood, friends or others. Reciprocity between owners and crew bases on two types of relationships. Generalized reciprocity, if the owners are the own household members or close relative. Balanced reciprocity if crew are far relatives, friends or neighbor.

A partron-client relationship arises a typical balanced reciprocity which is merely a convenient shorthand for a vertical exchange relationship. In this relationship both owner and crew have rights and responsibilities. It was characterized by a substantial reciprocity and provides wide ranges of economic and social protection to dependents in return for their labors and supports. Owners as a patron, in addition has certain right over his crew as client, also responsible to his crew for providing them aid for their needs, protection from physical harm and other troubles.

4) Relationship within the community

In many cases transactions between two individuals or within a group takes place without professional intermediaries. It is generally embedded in more or less traditional relationships³¹⁾. The transactions between two individuals may range from rather unspecified, such as the provision of labor to the neighbor in case of sick on the "*tenggang rasa*" (mutual understanding) relationship, where the neighbor will reciprocate in the future if required, to write an agreement in which the amount of loan and repayment date, for example, are stipulated. In these cases "*unsur kepercayaan*" (on trust factor) is more important than that of written agreement.

In a sort of way, there are many types of social relationship in fishing communities involved in the collection of savings to be spent on specific purposes, such as "*arisan*" (lottery by neighborhood wives) and the provision of loans in case of emergencies, the payment of expenses relating to birth, marriage or death, and the costs of religious festivals, etc. The "*gotong-royong*" is the most popular form of mutual assistance in Java. In the tradition of reciprocity within the fishing community, every service received, solicited or not, demands a

return, with feeling of “*malu*” and “*hutang budi*” providing the motivating force. General reciprocity in the four fishing villages in this study is described in Figure 3.

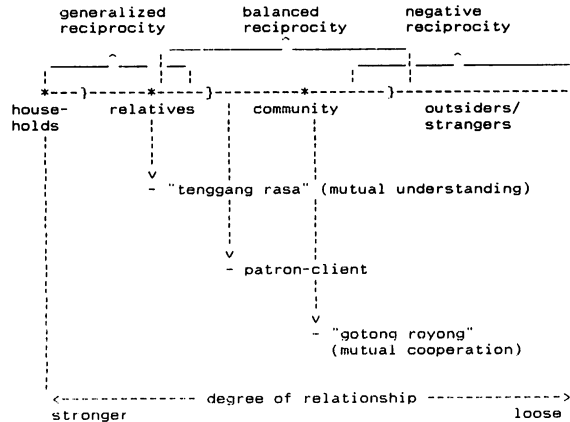


Fig. 3. General Reciprocity in Fishing Village based on the Spirit of “Kekeluargaan”

8. Conclusion

This study has focused on the investigation of the socio-economic characteristics of household fisheries in the four fishing villages of Pati Regency of the northeastern coast of Central Java, Indonesia. Based on the sociodemographic profile, economic potential and familial relationship of the fishing household, a description of the characteristics of household fisheries was described.

Relatively, the income of FOH and FLH using the trammel nets are influenced by the size of boat and engine, operation time, price of shrimp, location and condition of river which must be passed through from fishing ground to the landing place. Due to these factors fishing conditions in Bendar is better than the other villages, and the average income of each crew in Bendar is higher than that of the other villages. In August 1989, average income of each crew per unit effort in Bendar was about 5 times higher than that of the other villages. If all of the depreciation and interest cost and profit are saved, the time needed to reinvest in the same fishing unit, FOH in Sambiroto is about 6 years, while in Bendar and Puncel are less than 6 years, and in Pacangaan more than 6 years.

Household fisheries is characterized by the household size of FOH both from the old and the young generation are larger than that of FLH. Generally, it was because the household income of FOH are relatively higher than that of FLH. Therefore, they are able to provide a haven for their members, children and extended families. In other cases, it was shown that some of the family members of FLH migrate to try to look for other jobs in urban areas, particularly in Semarang, Surabaya or Jakarta. The program of family planning from the government also play an important role to control the size of household, especially for the

young generation in urban areas.

Frequently before involving in fishing activities the young generation tried to involve in other jobs, except for FLH in Pecangaan. Both the old and the young generation of FLH in Pecangaan have no experience with other jobs. It indicates that in Pecangaan alternative jobs for FLH is limited. Even though Bender and Sambiroto are in urban areas, the old generation of FOH also had no experience with other jobs. Some of them have an opinion that to be a fisherman is better than to do the other jobs. Because they have already familiar with the fishing activities, and fishermen in Bender believe that the fishing can provide the better daily income, even though it was risky and uncertainty.

The fisheries sector in both urban and rural areas relatively has a potential to pull the new comers from the other profession, particularly from the agricultural sector. There are many cases where farmers are pushed out from the agricultural sector and move to the fisheries sector due to the population pressures in agricultural communities and as causalities from introduction of new rice production technology which limits employment opportunities.

Generally income dependency of FLH in urban areas is higher than that of FOH. On the contrary in the rural areas dependency of FOH is relatively higher than that of FLH. While dependency of both FOH and FLH from the old generation is relatively higher than the young generation. The dependency of household members to the head of FLH both in urban and in rural areas are relatively higher than that of FOH. Both FOH and FLH from the young generation have higher dependency on the head of household than the old generation.

Household fisheries in Pati Regency are still in a stage of transition from a subsistence to an exchange economy. In these conditions social obligations within the family in its widest sense, and within the community are strong, but contractual obligations of a commercial type are unfamiliar. Their communities are also characterized by a high degree of cooperativeness and cohesion. The egalitarianism of fishing crew has been attributed to the share system. They believe that social justice concerns the problem to equate the God's sustenance, ie., the distribution of income throughout society. These belief existing in their spirit of "*kekeluargaan*" which is moved by the motivating force of social justice and controlled by the feeling of "*malu*" and "*hutang budi*". Therefore, their group or organization has a great potential power for the promotion of self-reliance and participation in the development process.

Pollnac point outs that the most effective means for promoting and sustaining people participation in the development process is through the use of some kinds of fishermen's group or community organizations. For many individuals, the fishermen's cooperative is selected³²⁾. In addition Jentoft notes that the cooperative is often regarded as an ideal organizational model for fisheries development³³⁾. Theoretically, the cooperative fulfill most criteria for sound development. It provide economies of scale and economic leverage both in production and marketing, and it operates according to the participatory decision-making principles, and it is effective in promoting education and technology transfer. Involvement of fisheries cooperative in fisheries management is relatively inexpensive and effective³⁴⁾.

In spite of these advantages, however, fisheries cooperative have more frequently failed

than succeeded. This is true because fisheries cooperatives generally are dominated by government agencies. Through its influence the community loses their autonomy and the power of cultural rules may be weakened. In fact, however, there are very few of the fisheries cooperatives in developing countries which were succeeded without involvement from the government. Therefore, the next question is how to establish viable fishermen's groups or organizations in fishing communities.

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