

Study on Entrepreneurship Spirit and Production Factors Affecting Sail Income of Madura Strait Fishermen

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Abstract-- This study purpose is to examine process of entrepreneurship spirit in Madura Strait fishermen, and factors that affecting sailing fishermen income. Method used in this research is descriptive qualitative and quantitative descriptive analysis by linear regression. Data was collected by interview, observation, documentation, (group discussion forum) FGD and questionnaire. Determination of sample (respondents) is purposive sampling with 104 respondents. This studi result demonstrate fishermen entrepreneurship spirit is obtained early with starting his career as boat nurse as much as 9.62 %, Boat crew as much as 15.38 %, helmsman as much as 8.65 %, and boat owner as much as 28.85 %. Business development on land as trader, fish processing is 23.08 % agents, and other businesses is 14.42 %. Amount of capital assets and turnover by Act No.20 Th.2008 on SMEs included in small and medium businesses category with asset between 500 million - 10 billion is 66.7 %, while for the turnover of 2.5 billion - 50 billion is 60 %. Factors that statistically significant affect total amount of fishermen income at Mayangan is education, sailing experience and sea asset. If these factors increased will increase total revenue of Mayangan entrepreneur.

Index Term-- entrepreneurship, production factors, sailing revenue, fishermen, Madura strait. ¹ : Lecturer at Fisheries and Marine Sciences Faculty of Brawijaya University. ² : Lecturer at Agriculture Faculty of Brawijaya University.

1. INTRODUCTION

Most studies of fishermen community focus on social and economic aspects. It shows that fishermen community is one of social groups in our society with very suffer in poverty, which economically can do negative behavior towards environment (Mimit P. et al, 2010). Poverty is caused by complex factors that interrelated and constitute a major weakness source of community ability to build their region and improve social welfare. Therefore, poverty is one of main issues in coastal region development (Kusnadi et al. 2007).

Poverty problem is still a major problem in coastal, fisheries and fishermen development, especially in Madura Strait. This problem is multi-dimensional. Poverty is characterized by underdevelopment and unemployment to trigger higher income inequality between population groups (Zainal, A. 2005). Poor people have lowest ability. They are concentrated in pockets of poverty, such as in the coastal villages and islands or tidal areas. Due to economic vulnerability, poor households are dynamic. More than 90 %

of small-scale fishing often behaves to destroy destructive fishery environment resources in order to meet daily needs of their household. Such conditions have spurred food security vulnerability based ecological sustainability from fisheries and marine resource use, while entrepreneurship ability of fishermen households is limited. (Muhammad. S. et al. 2012).

Entrepreneurship is most important factors even in process of economic growth and development. Therefore, people who implement the function and role of entrepreneurship can accelerate the process of economic growth and development (Widodo, M. Saleh 1989)

Madura Strait fishermen, particularly in Mayangan village, have structure of economic resources that depend entirely on production of marine fisheries that are exploitative, and promising employment opportunities. Therefore, entrepreneurship behavior of Mayangan society must pay more attention to long term impact to protect environment because it will have an impact on income. Entrepreneurship should look at business sector in addition to fishing and non-fishing business, in order to increase income of fishermen. (Muhammad, S. et al. 2012)

This study purpose are (1) to determine how process to develop entrepreneurship spirit of Madura Strait fishermen, to survive and continue live until to day. (2) How far entrepreneurship scale is applied by fishermen in Madura Strait in their development efforts, and (3) what factors affecting total income of Madura Strait fishermen in business world that they do now.

2. METHODOLOGY

The method used in this research is qualitative and quantitative descriptive. Qualitative descriptive analysis is used to describe process of respondent's entrepreneurship and to know Madura Strait fishermen business scale based on Law No. 20 year 2008 on SMEs. Quantitative descriptive analysis is used to determine factors that affecting total income of Madura Strait fishermen using multiple linear regression. Sample selected by purposive sampling method, with 104 fishermen of cantrang skipper who also have business in land.

Data type in this study are primary data and secondary. Primary data were collected by recording, documenting observations and focus group interviews (group discussion forum) with paying fishermen community in Madura Strait, particularly in Mayangan village. Secondary

data were obtained from a dataset of Fishermen Village Mayangan, Probolinggo KKP, and Mayangan PPP.

Qualitative data analysis is "the efforts to process data, to organize data, to sort through a unit that can be managed, syntheses, to seek and find patterns, to discover what is important and what is learned and decide what can be told to others" (Lexy J Moleong, 2004). The ways are (1) data reduction, (2) Presentation of data, (3) Draw conclusions and verification. Data will be analyzed as follows:

a. Knowing the fishermen entrepreneurship process of respondents.

- Characteristics of respondents, society response, and entrepreneurship participation of Mayangan fisherman communities
- Age, level of general education, and entrepreneurship education.

b. Knowledge scale of entrepreneurship business according with Act No. 20 year 2008 on SMEs, including :

- Business scale criteria of Madura Strait fishermen in terms of asset
- Business scale criteria of Madura Strait fishermen in terms of turnover

Multiple linear regression models examine the factors affecting total revenue of fishermen respondents from fishing and non-fishing sector. Multiple linear regression model equation is follows :

- Fishermen Revenue

$$FRSE = \beta_0 + \beta_1 ED + \beta_2 SE + \beta_3 NSE + \beta_4 SA + \beta_5 NSA + \beta_6 Tr + e^u$$

Description :

- FRSE : Fishermen Revenue with Spirit of Entrepreneurship (IDR/Month)
 ED : Education (Year)
 SE : Sailing experience (Year)
 NSE : Non sailing experience (Year)
 SA : Sailing asset (IDR/Month)
 NSA : Non sailing asset (IDR/Month)
 Tr : Training (Year)

The two models are tested by classic assumption to meet BLUE (Best Linear Unbiased Estimator) and using the t test to show partial description.

3. RESULTS

Overview of entrepreneurship spirit is obtained from fishermen fishing Madura Strait, particularly in Mayangan Village, District Mayangan, and Probolinggo. Fish vessels port at Mayangan is classified in category of beach fishing port at Probolinggo city. Probolinggo fishing port has possibility to become National Nusantara Fishery Port. At this time, amount of fish at Probolinggo city fishing port is about 18,000 tons per year.

Based on environmental condition of "urban" society, variables that alleged affect on "fisherman entrepreneurship spirit" based on fishermen accessibility to successful to develop fishing fishermen entrepreneurship are :

- a) Characteristics of fisherman respondents, highest age range composition at 50-60 are 50 %. In relation to productive age group, the average age of fishermen respondents is included in productive age (between 15-64 years of productive life) in accordance with Law no. 13 of 2003 Section I of Article 1 paragraph 2 of working age limit in Indonesia. Then it can be concluded that majority of respondents is entered into a productive working age.
- b) Educational structure of fishermen respondents, biggest percentage of 30% at junior level, followed by elementary school at 26.7 %, university student at 23.33%, and Senior High School at 20 %. Therefore, fishermen respondents understand education importance to improve quality of human resources, thus greatly affect " entrepreneurship mental " in developing its business (Romario, S. et al. 2013).
- c) Education (internship) of fishermen family to develop entrepreneurship household members can be described as follows :
 - 1) First level: As a boat nurse (*pengolok*), which is used for " educational work " of fishing household members is conducted from a "small " age. Incentives *pengolok* is ½ parts.
 - 2) Second level : ABK become introduction of "labor" as Leader (*Pandega*) at sea. It is the most basic work structure of fishing skills. Incentives of *pandega* (ABK) 1 part.
 - 3) Third level: as a helmsman or skipper, a skill level as a "leader or master of ship or *Tekong* or specific expertise interpreter to go to sea.
 - 4) Fourth Level : fishermen who have had experience and capital, they then entered the stage as a ship investment as " the owner of ship " (skipper ashore).
 - 5) Fifth Level : skipper fishermen who " proficient " tend to develop " further business" as a merchant or processing fish on land to accommodate the fish catch and market them through development of " quality and durability " product.
 - 6) Sixth level : at the next level, "proficient" skipper fishermen will build "relationships or market" in fishing business as "agency". Achievement levels as "agent" indicate "entrepreneurship success" in rural coastal fishermen.

In fact, the development of fishing business "is not always" follow "entrepreneurship education" informally. Under certain conditions, they can make a breakthrough to start fishing business as shown in table below.

Table I
Experience of 104 fishermen in various professions when starting a fishing business in Madura Strait (especially in village Mayangan)

Choice to start fishing business	Entrepreneur Level *)	Experience	
		People	%
Vessel nurse	Level Zero - Unemploye	10	9.62
Vessel crew	Level 1 – Employee (Little Risk)	16	15.38
Helmsman	Level 2 – Self Business or (Self Employee)	9	8.65
Vessel owner	Level 3 – Self Businessman or (Business Owner)	30	28.85
Merchant		13	12.50
Fish Processor	Level 4 – Investor or (Truly Businessman	7	6.73
Agent		4	3.85
Other business		15	14.42
Total		104	100

Sources: Primary data 2013 (processed)

Note: *) Leveling entrepreneurship is by Hendro (2005)

Table I shows that respondents in Madura Strait fishermen, particularly in Mayangan village (Probolinggo), have level as follows:

- 1) Level Zero - Unemployed or Nurse boat as much as 9.62 %. Fisherman job is family business and continued by his son to be developed.
- 2) Level 1 - Employee (Little Risk) or vessel crew as much as 15:38 %. In this position, fishermen have started to learn about the skills as vessel leader (*Pandega*).
- 3) Level 2 - Self Business or (Self-employed) or at Helmsman level is 8.65 % as helmsman. This position requires more skill to become helmsman because it will have a significant effect on income earned. Captain position is starting to learn organizations leadership at sea, and generally become model for the crew that followed.
- 4) Level 3 - Self Businessman or (Business Owner) or the level land Skipper, boat owners as much as 28.85 %. Most communities of Mayangan become fishermen. In this position, thinking patterns of Madura Strait fishermen are how to develop a large business or a way to make better business management and increase vessel investment in order to increase its income (Zainal. A and H. Nuddin , 2010).

- 5) Level 4 - Investor or (Truly Businessman or entrepreneur) who have a business at land beside at sea like Fish Processing, Merchant, Agents, Textile, Furniture, as much as 23:08 %, and other businesses as much as 14:42 %. In this condition, fishermen have started to expand their business in addition to fishing because they can analyze opportunities to make money at land. Stronger capital from fishing is invested in business at land, but does not leave sea business as a pedestal to raise revenues even capital (Mimit. P. et al, 2013 a)

Kiyasoki, (2005) stated that entrepreneur that unemployed, employee, self-employee self is categorized as workers or labor, while Business owner and Investors is categorized into entrepreneurship level.

Referring to Act No.20, 2008 about SMEs, business classification standard according with amount of investment in fishery business at Mayangan is included at scale of IDR 200 million - IDR 1 billion per year. This falls into category of small and medium class, although number of crew employed is classified as medium -scale. Therefore, management of fishing business in Madura Strait, especially in Mayangan village, requires more professional business skills. Fisheries business owners tend to act as marketers to industry. In certain season, purse seine fishery can produce 20 tons of fish per trip. This condition certainly encourages owners

(entrepreneurs) to become "professional traders", as shown by H. Jufri from Mayangan village. This is a hallmark of fishermen who oriented to market demand (Zainal, A. et al, 2012)

Volume value of fisheries at Mayangan fishermen reached IDR 200 million to IDR 3.5 billion per year. This means that business environment at Mayangan fishermen are at greater turnover levels, and classified in category of medium scale. Most Mayangan fishermen household has asset/wealth average of IDR 1 billion. The "self-employed

fisheries" of small and medium enterprises (SMEs) in fishing business at "urban" tend "to separate functions of skippers and owners" and open up the ongoing "professional business opportunities" for non-fishing capital holders. Therefore, strengthening fisheries business in Mayangan with greater business investment (SMEs) require a "level of professionalism" and educational support of "mental entrepreneurship"

Fishing business development using sea assets with large capital is shown by Table II.

Table II
Entrepreneurship process scale in Madura Strait fishing scale based on assets and turnover.

a.)Scale of <i>entrepreneur</i> *	Sea Asset	Qty	(%)
Micro	≤50 million	-	-
Small	50– 500 million	10	33.3
Medium	>500 million – 10 billion	20	66.7

a.)Scale of <i>entrepreneur</i> *)	Sea Asset	Qty	(%)
Micro	≤300 million	1	3.3
Small	300 million – 2.5 Billion	11	36.7
Medium	2.5 M – 50 Billion	18	60

Sources: Primary data 2013 (processed)

Note: *) Law No. 20, 2008 wrote SME criteria.

Therefore, this study focuses on process to create entrepreneurship spirit in Madura Strait fishermen based on business scale. Criteria for SMEs they replaced with fishermen entrepreneurship scale

Table 2 shows that scale of capital assets owned by fishermen of Madura Strait show with largest value is 66.7 %, namely medium scale, biggest turnover is 60 % with asset between IDR 2.5 - 50 billion. It can be concluded Madura Strait fishermen scale is categorized into medium scale accordance with Law No. 20, Chapter IV, article 6, paragraph 1, 2 and 3 in 2008, about Micro, Small and Medium Enterprises (MSMEs).

Based on existing data, "Entrepreneurship fisheries" at household scale is turned into a medium-scale (investment is greater than IDR 500, - million) that grown naturally, because "management" on such scale (Small - Medium) apply "professional management" where there is straight separation between "sailing management that managed by skipper at sea" and "marketing management that managed by skipper/Owner/Investor". This development more explicit given the proficiency requirements for a sea captain should have a certificate of ANKAPIN I - III that set by Ministry of Maritime Affairs and Fisheries. This encourages boat owners to implement the provisions "Intermediate minimum education "to be accepted for captain selection, as well as sea Fishing Skills. Thus entrepreneurship development and professionalism in fishing business has grown naturally. This

condition more explicit because emphasis given by informant (Mukhlas, has 5 units of fishing fleets, 20013), that operations at sea is still show a much larger income than income of other businesses in non-fisheries (Mimit P. et al, 2013 b)

Test results of multiple linear regressions are follows:

Table III
Testing results of multiple linear regression

Model	Coef. Reg	SE	B	T	Sig
Constant	-7.748	2.385		-3.248	.004
ED	1.387	6.448	.417	2.138	.043
SE	1.642	6.936	.460	2.367	.027
NSE	6.055	4.006	.112	1.512	.144
SA	.121	.044	.261	2.783	.011
NSA	.011	.036	.031	.314	.757
Tr	3.22	2.886	.111	1.118	.275

Dependent variable : Income
R = .944
R² = .892
Adjusted R² = .864
F = 31.613 .000

Sources: Primary data 2013 (processed)

Regression analysis results indicate that constant value is -7.748 with regression coefficient ($\hat{\alpha}$) were 1.387 for

Education (ED), 1.642 for sailing experience (SE), 6.055 for Non sailing experience (NSE), 0.12 for Sailing Asset (SA), 0.01 for Non Sailing Asset (NSA) and 3.22 for training (Tr) variables. Models obtained from the regression equation for factors affecting entrepreneurship total fishing revenue is follows:

$$FRSE = -7.75 + 1.38ED + 1.64SE + 6.06NSE + 0.12SA + 0.01ANSA + 3.22Tr + e^u$$

The model has met classical assumption of normality, multicollinearity, and heteroscedasticity test. Results of statistical tests are follows:

➤ R^2 test (Coefficient of Determination) □

R^2 value that obtained from regression analysis is shown at Table 4 below.

Table IV

R^2 test result the Factor affecting Sailing Income of Madura Strait Fisherman

R	R ²	Adj R ²	Std. Error of the Estimate	Durbin-Watson
.944 _a	.892	.864	1.38211	1.989

Sources: Primary data 2013 (processed).

Table 4 shows the value of Adjusted R^2 is 0.864. It means that independent variables consisting of Education (X1), sailing experience (x2), Non-sailing experience (X3), Sailing Asset (X4), Non Sailing Asset (X5), and Training (X6) has effect to income at 86.4%. In other words, 86.4 % of income is affected by sea Education, sailing experience, Non sailing experience, Sailing Asset, Non Sailing Asset, and training while the remaining 13.6 % are affected by other variables outside the independent variable.

➤ **Test F**

F-count value that obtained from regression analysis is shown at Table V below.

Table V

Value of F test for factors that affecting Sailing Income at Madura Strait Fisherman

Model	Df	F	Sig.
Regression	6	31.613	.000 ^a
Residual	23		
Total	29		

Sources: Primary data 2013 (processed).

Table V shows that F-count is 31.613 with the sig F-count of 0000, whereas to obtain value of F-table is using a statistical table. Value of df is 6 and the residual value is 23. Therefore, F - table value is 2.55 where F-count (31.613) > F table value (2.55) or significant (0.00) < alpha (0.05). It can be said that education, sailing experience, Non sailing experience, Sailing Asset, Non Sailing Asset, and training simultaneously affect on Sailing Income of Madura Strait fisherman, especially in Mayangan village, Probolinggo. This means that regression model can be used to estimate the relationship between independent variables education, sailing experience, Non sailing experience, Sailing Asset, Non Sailing

Asset, and training on Sailing Income of Madura Strait fishermen, particularly in Mayangan village, Probolinggo. These factors can become a reference to determine pattern of fishing policy for the future, so that fishermen lives and stakeholders increasingly advanced and modern (Mimit, P. et al, 2013 d)

➤ **Test T**

Table VI

T-test Value the Factor of Sailing Income at Madura Strait fishermen

Variables	Coef. Regression	T-count	Sig
Education	1.378	2.138	.043
Sailing experience	1.642	2.367	.027
Non sailing experience	6.055	1.512	.144
Sailing asset	.121	2.783	.011
Non sailing asset	.011	.314	.757
Training	3.228	1.118	.275

Sources: Primary data 2013 (processed).

Partially, t-count of t test result shows the independent variables that affect on sailing income. In a more clear description of Table 6 is shown below.

1. Education

Fisherman fishing education significantly affect on Sailing Income. Significance value .043 is smaller than significance level ($\alpha = 5\%$). Fishing education variable has coefficient value of 1.38. It means that increasing fishing education by 1 % will makes Sailing Income will increase 1.38 %, ceteris paribus. It can be concluded that if education has increased, in this case formal education, fishermen will improve the knowledge so that it can expand entrepreneurship mind to develop business to earn income and increase fishermen income, because they can use information systems (Mimit P. et al, 2013 c)

The findings of some researchers like Swaminathan (1997), Lisa (2000), Bardegue et al (2001), Naude and Taylor (2001), and Mimit P. et al (2013d) suggest that education has an effect on income. The coefficient parameters are between 0.023 to 0.107. This means that education does have an affect on income. Higher education level will add knowledge about various business opportunities as well as better mastery of science and technology.

2. Sailing experience

Sailing experience significantly affect on fishermen Sailing Income. Probability value of 0.27 is not greater than confidence level ($\alpha = 5\%$), while coefficient result is 1.64. This means that increasing sailing experience 1 unit value (year) will increase Sailing Income by 1.64 %. Experience is very useful to determine sea fishing ground with lots of fish, and fishermen with longer experience will have more mature mindset to become entrepreneurs in managing business at sea because many sectors that must be utilized to increase Sailing Income of Madura Strait fishermen, especially in Mayangan village.

Mardin (2009) showed that Experience (x3) with significance value of 0.01 is smaller significance level ($\alpha = 5\%$), with $\hat{\alpha}$ value = 0.21. It means sailing experience has significant effect of 0.21 % towards independence demersal fishermen fishing in the Wangi-Wangi Selatan Subdistrict, Wakatobi District, and Southeast Sulawesi

3. Non sailing experience

Non sailing experience significantly does not affect on Sailing Income of fishermen. Probability value obtained of 0.14 is greater than confidence level ($\alpha = 5\%$), while coefficient result is 6.05. It means that increasing non sailing experience 1 unit value (year) will increase Sailing Income of 6.05 %. Low non sailing experience is caused by more time is directed to sea business. Sea business can be used by fishermen to increase their income. Therefore they then spent almost all time at sea. Non sailing experience it is only used as a sideline to develop the business. When capital from sea is very much, fishermen will look at business at land ground (Mimit P, 2012)

4. Sailing asset

Sailing assets partially has significant effect on Sailing Income. Probability value of 0.11 is smaller than significance level ($\alpha = 5\%$). Coefficient of sailing assets is 0.12. This means that increasing numbers sailing assets 1 unit (IDR) will increase income of 0.12 %. It can be said that the more vessels assets (number and capacity of vessels, fishing gear), the more income derived sea.

According Ranthy Pancasasti (2008) that vessel asset variable has positive and significant effect on fishing production. IT means more assets fishing boat makes then higher production. Boat is a capital asset which is used by fishermen to catch fish or shrimp in sea.

5. Non Sailing Asset

Non sailing asset partially does not shave significant effect on Sailing Income. Probability value of 0.76 is higher than significance level ($\alpha = 5\%$). Coefficient value is 12.11. This means that increasing number non sailing 1 unit (IDR) will increase income 0.11 %. In other words, the more amount asset at land (the number of businesses that run), it will increase fishermen income. Most land assets acquired is from sea that invested in land, but business applicability on ground still not maximum, so it not contribute great income

6. Training

Training significantly does not affect on Sailing Income. The probability value of 0.27 is greater than the significance level ($\alpha = 5\%$). Fishermen training coefficient is 3.22. This means that increasing amount of training 1 unit (year) will increase fishing income by 3.22 %. It can be mentioned that more training (workshop machinery, entrepreneurship, making nets,) progressively will add fishermen skills, so that soft skills that are not held will reduce income but everything related to sailing business can be done

himself, so they do not need to hire a mechanic or technician that can subtract income.

4. ACKNOWLEDGEMENT

Authors would like to thank to all those who have helped and actively participate, either directly or indirectly, in the writing of this article.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusion

1. Entrepreneurship development process at Madura Strait fishermen is beginning with business family lineage. In their development, fisherman in getting entrepreneurship is beginning from: boat nurse as much as 9.62 %, vessel crew of 15.38 %, helmsman as much as 8.65 %, and owner of boat as much as 28.85 %. Business developments as merchant, fish processing, agent are 23.08 %, and other businesses are 14.42 %.
2. Based on amount of capital owned or asset and turnover, Madura Strait fishermen belonging Micro, Small and Medium Enterprises (MSME) category are 33.3 %, Small and Medium Enterprise (SMEs) category are 66.7 %. For assets owned, about 60 % is included into Intermediate level and 36.7 % is included into Small Business Enterprise and remaining 3.3 % is included into micro -scale businesses.
3. Factors that statistically have significant effect on Sailing Income of Madura Strait Fishermen are Education, Experience and Sailing Asset. If these factors increased will increase total Sailing Income of Mayangan fishermen entrepreneur.

5.2. Suggestion

1. Government needs to create a policy to hold training and mentoring based on development of entrepreneurship spirit in Madura Strait fishermen within fishing business with professional and friendly environment.
2. Mayangan fishermen communities should develop small-medium scale enterprises (SMES) that focused on professionalism by improving human resources, such as Improve Education, sailing experience, and sailing assets.
3. Expand the fishing operation area at offshore fishing areas and EEZ by strengthening entrepreneurship spirit and fishermen transmigration.

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