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# **Comparative Analysis of Factors Affecting Income of Fish Farmers in Situbondo District**

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**ABSTRACT:** This study aims to determine the effect of capital, number of hours of work, experience, area of production, education on the income of freshwater fish cultivators in Situbondo Regency. Also, this study aims to see the differences in income and the effect of capital between fish farmers who receive the PUMP program and those who do not receive PUMP from the local government. Multiple linear regression analysis methods are used to determine the purpose of this study with primary data and secondary data. Primary data were obtained from respondents related to freshwater fish cultivators while secondary data were obtained from the Central Statistics Agency of Situbondo Regency and the Office of Marine Affairs and Fisheries. The results of the analysis show that capital, working hours, and experience have a significant positive effect on the income of freshwater fish cultivators in Situbondo Regency. Meanwhile, the variables of land area and education did not show a significant effect on the income of freshwater fish cultivators in Situbondo Regency. However, there is a difference in income between cultivators who receive the PUMP program and cultivators who are not PUMP where the program recipients tend to have a large income compared to those who are not. From the capital side, there are also differences in income for cultivators who receive PUMP and non-recipients of PUMP. Based on these results, it can be recommended that the government should pay attention to more innovative programs to boost productivity and increase the incomes of freshwater fish cultivators.

**KEYWORDS:** income, capital, multiple linear regression

## **I. INTRODUCTION**

The fisheries sector plays an important role in the development and socio-economic development of coastal areas. This is because the fisheries sector can create various labor-intensive jobs for residents of coastal areas starting from the fishing process, cultivation, processing, to fish marketing (FAO, 2016). Therefore, the fisheries sector also has a sizeable contribution to the macroeconomy. Although the fisheries sector has a significant role and opportunity in the economy of coastal communities, most of the economic level of coastal communities are still classified as a lower-income economy (Indonesia Investment Coordinating Board (BKPM), 2018). This is due to the low capital owned by the community to develop their business and the high activity of illegal fishing in Indonesia. Therefore, the government through the Ministry of Marine Affairs and Fisheries (KKP) created a program that aims to improve the welfare of coastal communities. Several studies such as those conducted by (El-Naggar, Nasr-Alla, & Kareem., 2008; Rahman, 2011) show that the fisheries sector has contributed to an increase in the income of fish farmers in coastal areas, but this depends on the amount of capital owned by fish cultivators. What is meant by capital in this case is not only in the form of capital in the form of money invested but also in the area of land used and the quality of the trades used.

The Ministry of Marine Affairs and Fisheries (KKP) in 2011 issued a fisheries industrialization program, one of which aims to increase production, productivity and added value of highly competitive marine and fishery products. This program is following the KKP's vision of making Indonesia the largest producer of marine and fisheries products by 2015 (Ministry of Marine Affairs and Fisheries, 2012). In line with the Ministry of Marine Affairs and Fisheries policy which targets Indonesia to become the largest producer of fishery products by 2015, the Directorate General of Aquaculture has launched a program to increase production from 4.7 million tons in 2009 to 16.8 million tons in 2014 or an increase of 353% over the years. period of five years. This is following the mission of the Ministry of Marine Affairs and Fisheries, which is to improve the welfare of its people, especially fish cultivators, so in 2011 the activity of Mina Rural Business Development (PUMP) was launched for Aquaculture. The Aquaculture PUMP Program is an assistance program that encourages fish farmers to change their old way of thinking and way of life in a new way, through the process of disseminating information such as training, courses, visits related to changes and improvements



to fish farming methods, efforts to increase the productivity of farmers' income and improve the welfare of fish cultivator families (Large, Social, & Marine, 2017). This activity was carried out because it was based on the background that the socio-economic conditions of the fish cultivator community were still poor, where poverty reduction efforts were part of the implementation of the Long-Term Development Plan (RPJP) (Hikmayani&Yulisti, 2016).

Situbondo Regency with a coastline of 150 km has an area of 1,638.50 km<sup>2</sup> which has enormous marine and fisheries potential. Marine and fisheries potential includes aquaculture, capture fisheries, and fishery product processing.

Table 1. Data on the Number of Fishery and Marine Cultivators and Production in Situbondo Regency in 2014

No	Fishery Cultivation	Number of Cultivators	Production (kg)
1.	Freshwater Cultivation	329	289,501 kg
2.	Marine Aquaculture	42	73,550 kg
3.	Brackish Water Culture	74	4,783,660 kg

Source: DKP data, 2014

Based on data from the Department of Marine Affairs and Fisheries in 2014, aquaculture production increased from 2013. The potential for aquaculture in Situbondo includes freshwater cultivation, brackish water cultivation, and marine cultivation. Judging from the number of existing cultivator business actors, freshwater cultivators have a fairly large number of business actors compared to brackish water and seawater cultivators. However, the production produced by brackish water cultivation is very high compared to freshwater. Therefore, it is necessary to increase the production of freshwater aquaculture by taking into account the factors that support the success of freshwater cultivation so that the product can increase.

One of the programs run by the Situbondo Regency Government to boost aquaculture production is by running the PUMP program. It is hoped that the implementation of PUMP-PB activities will contribute significantly to the achievement of aquaculture production targets and increase the income and welfare of fish cultivator communities. Besides, the PUMP Aquaculture assistance program aims to optimize the utilization of the existing land potential for aquaculture, absorb labor and expand business opportunities, develop an entrepreneurial culture through fish farming activities to increase income and community welfare. Given the importance of achieving economic development in the fisheries sector, especially aquaculture, this study tries to analyze the factors that affect the income of freshwater fish cultivators in Situbondo, including capital, labor, experience, land area and education among recipients of the PUMP program (Business Development). Mina Rural) and not a PUMP recipient.

## II. LITERATURE REVIEW

According to Law No. 45 of 2009 concerning Amendments to Law No. 31 of 2004 concerning Fisheries, all activities related to the management and utilization of fish resources and their environment, from reproduction, production, processing to marketing are carried out in a fisheries business system. The Ministry of Marine Affairs and Fisheries, starting in 2009, has implemented the PNPM Mandiri Marine and Fisheries Development program under the coordination of the National Independent Community Empowerment Program (PNPM-Mandiri) and is in the community empowerment program group. Efforts to alleviate poverty in the marine and fisheries sector are further planned to be carried out through the implementation of the 2011 Mina Rural Business Development (PUMP) Aquaculture in the context of poverty alleviation through increasing production and productivity of micro-scale fisheries businesses.

Business productivity is also related to the quality of human resources. human capital as a result of one's skills, knowledge, and training, including accumulated investment including educational activities, job training, and migration (Jan, Petkovicová, &Blatná, 2014; Pelinescu, 2015). On the other hand, it is seen that workers with half the time will get less human capital, this is due to less working hours and work experience (Eskander&Barbier, 2017; Muda, Ridhuan, & Abdul, 2016). Thus increasing experience and working days will increase acceptance in the future.

Sujarno (2008) explains in the results of his research that the variables that significantly influence the income of fishermen in Langkat Regency are working capital and labor at the level of  $\alpha = 5$  percent, while the independent variables, namely experience and distance traveled at sea, have no statistically significant effect on fishermen's income Langkat Regency. Besides, capital, working hours, age, work experience, price, and catch (F test) simultaneously affect the income of fishermen in Klampis Village (Jamal, 2014). The results of the research by Prakoso (2013) and Akbar

(2014) also show that the variables of labor, capital, and technology can jointly explain the variable income of fishermen. Regarding the system for obtaining and analyzing fishermen's income, Mubarok (2011) found a phenomenon in Jepara Regency that the sharing system for income from fishing is for tools, skippers, and laborers. fishermen are the last party in obtaining income after financing the equipment and returning the skipper fishermen's capital. Fishermen families do “scrape” or make salted fish, open stalls, and trade to make ends meet for fishermen families.

The current study aims to analyze the factors that affect the income of freshwater fish cultivators in Situbondo Regency. The thing that distinguishes it from previous research is that this study wants to know what factors influence the freshwater fish cultivation business, by looking at the income earned by the cultivators and knowing the effect of giving the PUMP program on the income of freshwater fish cultivators. Therefore, the analysis tool used in this study is the multiple linear regression analysis. By knowing the dominant factors influencing the freshwater fish farming business, it is hoped that the cultivators will understand well the dominant components so that farmers can carry out cultivation business properly and become input for the Government to create programs and policies to increase the income of freshwater fish cultivators.

### III. METHODOLOGY

This research is descriptive quantitative and multiple linear regression analysis. This study aims to analyze the relationship between the factors that influence the income of freshwater fish cultivators in Situbondo Regency. Factors consist of capital, the number of hours worked, experience, area of production land, and education. The analytical tool used in this research is multiple linear regression analysis. Data were collected by filling out questionnaires, observations, interviews, and information from related parties.

The population of this study was freshwater fish cultivators in Situbondo District, Besuki District, Kendit District, Panarukan District, Situbondo District, Panji District, Kapongan District, Arjasa District, Jangkar District, Asembagus District, and Banyuputih District, totaling 270 people. While the sample of cultivators receiving PUMP was freshwater fish cultivators who received the PUMP program, namely in Besuki District, Kendit District, Panarukan District, Panji District, Kapongan District, Arjasa District, Asembagus District. Proportional determination of samples in each district that is, a sampling method that has members or elements that represent the total population of each population element sampled and the sampling is carried out randomly. The number of research samples is determined based on the Slovin criteria (Umar, 2000):

$$n = \frac{N}{1 + Ne^2} = \frac{270}{1 + 270(0.0)^2} = 161 \tag{1}$$

Where

- n :size *sample*
- N : population size
- e : the amount of deviation that can be tolerated is 5%

Table 1 Data of Freshwater Cultivators

No	District	Population	Sample
1	Besuki	22	22/270 * 161 = 13
2	Kendit	13	13/270 * 161 = 8
3	Panarukan	30	30/270 * 161 = 18
4	Situbondo	23	23/270 * 161 = 14
5	Panji	15	15/270 * 161 = 9
6	Kapongan	82	82/270 * 161 = 49
7	Arjasa	17	17/270 * 161 = 10
8	Anchors	17	17/270 * 161 = 10
9	Asembagus	20	20/270 * 161 = 12
10	Banyuputih	31	31/270 * 161 = 18
	<b>Total</b>	<b>270</b>	<b>161 The</b>

The number of samples in this study was 161 people. This number consists of freshwater fish cultivators, both those who received the PUMP program and those who did not. The number of PUMP recipients in the Situbondo Regency is

96 people. So that it can be seen that the number of non-recipient population of PUMP can be calculated in the following way:

$$N_{non\ PUMP} = N - N_{PUMP} = 270 - 96 = 174 \tag{2}$$

Where:

- N : The population of freshwater fish cultivators
- $N_{nonPUMP}$  : The population of freshwater fish cultivators who do not receive PUMP
- $N_{PUMP}$  : The population of freshwater fish cultivators who receive PUMP

To find out the number of samples of cultivators who do not receive PUMP can be calculated using a ratio scale with the calculation:

$$n_{non\ PUMP} = \frac{N_{non\ PUMP}}{N} * n = \frac{174}{270} * 161 = 103.75 = 104 \tag{3}$$

Meanwhile, to calculate the number of samples of cultivators receiving PUMP, it can be found by calculation:

$$n_{PUMP} = \frac{N_{PUMP}}{N} * n = \frac{96}{270} * 161 = 57.4 = 57 \tag{4}$$

Cultivators receiving the program PUMP is found in 7 (seven) sub-districts, namely in Besuki District, Kendit District, Panarukan District, Panji District, Kapongan District, Arjasa District, Asembagus District, with 8 (eight) groups of recipients and 12 cultivators each. So that with the total sample of PUMP recipients of 57 people, with proportional calculations, each research location has 7 cultivators who become the research sample. In the following table the sample numbers for cultivators receiving PUMP and not receiving PUMP are presented:

Table 2 Freshwater Cultivator Samples

no	Subdistrict	Population	Sample	PUMP	Non PUMP
1	Besuki	22	13	7	6
2	Kendit	13	8	7	1
3	Panarukan	30	18	7	11
4	Situbondo	23	14	-	14
5	Panji	15	9	7	2
6	Kapongan	82	49	15	34
7	Arjasa	17	10	7	3
8	Anchor	17	10	-	10
9	Asembagus	20	12	7	5
10	Banyuputih	31	18	-	18
	Total	270	161	57	104
			Total	161.	

Data collection techniques were carried out by observation, interviews, and questionnaires. The three data collection techniques can be described as follows:

- a. Observation (observation), is carried out on various phenomena that occur in the research location related to internal and external factors that influence.
- b. Interviews (*interviews*) were conducted with informants (freshwater fish cultivators, community leaders, and others), who knew broadly and deeply about the research variables (*in-depth interview*), with interview guidelines that had been prepared.
- c. The questionnaire, namely data collection, was carried out by asking written questions to sample respondents, namely freshwater fish cultivators.

The analytical method used in this study, namely multiple linear regression, is a regression analysis that explains the relationship between response variables (*dependent variable*) and factors that affect more than one predictor (*independent variable*). Multiple Linear Regression Analysis is used to measure the effect of more than one predictor variable (independent variable) on the dependent variable (Damodar N. Gujarati, 2012). The dependent variable (Y) in this study is income, while the independent variable (X) is capital, the number of hours worked, experience, land area, and education. The form of regression of this research is:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6D + b_7X_1D + e \tag{5}$$

Description:

$X_1$  is a capital;  $X_2$  is the number of hours worked;  $X_3$  represents Experience;  $X_4$  is the area of production land;  $X_5$  represents Education; Dis a recipient of the PUMP program and not a recipient of the PUMP program; Y represents Income;  $b_1, b_2, b_3, b_4, b_5, b_6, b_7$  are the regression coefficients; e is an error/ residue The

use of multiple linear regression analysis methods requires [a classical assumption test](#) which must be met statistically. The classical assumption tests that will be carried out are normality test, multicollinearity, heteroscedasticity, autocorrelation.

The t-test is used to determine the influence of each variable *independent* individually (partially) on the variable *dependent* (Damodar N. Gujarati, 2012). The testing criteria are:

- a. If sig > 0.05 means that  $H_{0is}$  is accepted and  $H_{ais}$  is rejected. So the independent variable partially has no real effect on the dependent variable.
- b. If sig < 0.05 means that  $H_{0is}$  is rejected and  $H_{ais}$  is accepted. So all independent variables partially have a significant effect on the dependent variable.

#### IV. DISCUSSION

Multiple linear regression analysis is an approach used to define the mathematical relationship between the dependent variable and several independent variables. This mathematical relationship is used to predict or predict the output value (Y) based on the input value (X), so it can be seen which independent variables have a significant effect on the dependent variable. The regression analysis in this study is intended to determine the influence of the capital factor ( $x_1$ ), the number of hours worked ( $x_2$ ), experience ( $x_3$ ), land area ( $x_4$ ), and education ( $x_5$ ) affect the income of fish cultivators in the district. Situbondo. The results of this multiple regression analysis were processed using SPSS 16.0. The results of multiple linear regression analysis can be seen in Table 1.

Table 3 Multiple Linear Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-1.351E6	340731,494		-3,964	.000
Capital	1,704	.042	.934	40,538	.000
Total Working Hours	151342,499	34562,294	.085	4,379	.000
Experience	175	952,741	.066	3,642	.000
Land Area	6640,297	3843,162	.031	1,728	.085
Education	-29811,263	26632,171	-.015	-1,119	.265
PUMP	696170,706	353090,123	.103	1,972	.050
capital+ PUMP	-.148	.058	-.136	-2,538	.012



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## International Journal of Advanced Research in Science, Engineering and Technology

Vol. 7, Issue 8, August 2020

There is an effect of capital on the income of freshwater cultivators. The result is a sig. for the capital factor of 0,000 where the sig value of 0,000 < 0.05 means that there is an effect of capital on fish cultivator income. The capital variable (X1) has a b1 coefficient of 1.704. This means that if the variable number of working hours (x2), experience (x3), land area (x4), and education (x5) is fixed, then if there is an increase in capital by 1 unit, it will increase the cultivator's income by 1.704.

The greater the capital owned by the cultivator, the greater the amount of product produced so that it will increase income. So that the amount of capital will encourage an increase in fish farming production which is balanced by knowledge and efficiency in the use of capital. In line with the opinion of Suadi, (2006), increasing the efficiency of the use of capital and effective management of resources can increase income. According to Samuji (2012), the greater the capital or production factors, the higher the income they receive. With the capital owned by the cultivators, they can add the desired production capacity.

There is an effect of the number of working hours on the income of freshwater cultivators. The result is a sig. for the variable the number of hours worked is 0.000 where if the sig value is 0.000 < 0.05. This means that the variable number of hours worked affects the income variable. The variable number of hours worked (X2) has a bcoefficient2 of 151342,499. This means that if the variables of capital (x1), experience (x3), land area (x4), and education (x5) are fixed, then if there is an increase in the number of hours worked by 1 unit, it will increase the farmer's income by 151342,499.

In the freshwater fish farming business, the number of working hours can indicate how much time the fish cultivator business actor has time to run his business. According to Nicholson (2011), the willingness of workers to work long or short hours is an individual decision. Farmers have a flexible perspective in determining working hours according to their respective conditions. Raising fish requires special attention in daily activities because fish are living organisms that depend on their surrounding environment. Starting from maintaining the cleanliness of the cultivation container/pond, maintaining water quality, feeding, tapping, and grading. The results of Vera's (2012) study relating to the number of working hours, namely the variable number of working hours affect income, the higher the time given, the better the income. From observations in the field, cultivators who have several working hours of 8 hours per day are cultivators who are serious about paying attention to the success of their business. The time spent on fish farming is getting better, where there is a control function over all aspects related to cultivation activities. Meanwhile, business actors who have 2-4 hours of work per day only carry out the activity of feeding and occasionally changing the water until harvest time, so that the success of their business is not controlled, including the value of feed conversion (FCR) digested by fish, the number of fish that die due to cannibalism and disease.

There is an effect of experience on the income of freshwater cultivators. The result is a sig. for the experience, the variable is 0.000 if the sig value is 0.000 < 0.05. This means that the experience variable influences the income variable. The experience variable (X3) has a bcoefficient3 of 175952.741. This means that if the variable capital (x1), the number of hours worked (x2), land area (x4), and education (x5) are fixed, then if there is an increase in experience by 1 unit, it will increase the farmer's income by 175952,741.

As experience increases, cultivators' skills will increase so that their knowledge will increase as well. Experience can be said to provide benefits for cultivators in carrying out production activities so that farmers do not find it difficult to carry out their activities. This is reinforced by the opinion of Sastrohadiwiryo (2005) in Rofi, (2012) which states that experience is the main asset for a person to be involved in a certain field.

There is no influence of the area of production land on the income of freshwater cultivators. The result is a sig. for the variable land area is 0.086. The sig value is 0.086 > 0.05. This means that the variable land area does not affect the income variable. The variable of land area (X4) has a coefficient of b4 of 6640.297. This means that if the variable capital (x1), number of hours of work (x2), experience (x3), and education (x5) is constant, then if there is an increase in land area by 1 unit, it will increase the cultivator's income by 6640,297.

Cultivation business means a land area not on how wide or narrow the land is owned, but also on supporting factors of the land such as soil fertility, groundwater quality and supporting technology owned by cultivators in applying cultivation techniques in the field. At present, with existing technology, cultivation can be carried out on narrow land and can generate profits. As stated by Soekartawi, (2002), the importance of land production factors is not only seen from the aspect of land area or narrowness but also other aspects, such as aspects of soil fertility, types of land use, and topography.

There is no effect of education on the income of freshwater cultivators. The result is a sig. for the education, variable is 0.285. If the sig value is 0.285 > 0.05, then H0 is accepted and H5 is rejected. This means that the education variable does not affect the income variable. The education variable (X5) has a coefficient of b5 of -29811,263. This means that



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## International Journal of Advanced Research in Science, Engineering and Technology

Vol. 7, Issue 8, August 2020

if the variable capital ( $x_1$ ), number of hours worked ( $x_2$ ), experience ( $x_3$ ), and land area ( $x_4$ ) are fixed, then if there is an increase in education 1 unit will increase the cultivator's income by -29811,263.

It is known that the educational variable in this study does not affect the income of freshwater fish cultivators in Situbondo Regency. This can be explained that formal education does not affect the income of the cultivator because in doing business the experience factor has a very important effect on skills in production. Formal education does not affect income because farmers need more non-formal education such as training, field schools, and extension services. According to Moekijat, 1993: 3) training is a part of education that concerns the learning process to acquire and improve skills outside the existing education system, in a relatively short time and with methods that prioritize practice rather than theory. With this education, farmers will be more sensitive in capturing existing opportunities related to their business.

There is an effect of the PUMP program on the income of freshwater cultivators. The result is a sig.for the PUMP variable is 0.000. If the sig value is  $0.050 \leq 0.05$ . This means that the PUMP variable affects income. On the other hand, there is an effect of own capital and PUMP on the income of freshwater cultivators. The result is that the value of the sig variable equity + PUMP is 0.012. If the sig value is  $0.012 < 0.05$ . This means that the variable own capital with additional PUMP capital affects income.

In this study, the results showed that the farmers who received additional capital from the PUMP program (rural mina business development) had a significant effect on the cultivator's income. Based on the regression results, the equation  $Y = 696170,706 D$ . This means that the income of freshwater fish cultivators who do not get the PUMP program (0), then the regression equation is income equal to 0 ( $Y = 0$ ), and the income of farmers who get the PUMP program ( 1) then the regression equation is  $Y = 696170,706$ .

This shows that the capital received by farmers from the PUMP can motivate farmers to manage their capital better than farmers who do not receive the PUMP program. Cultivators who receive the PUMP program receive assistance and guidance from field officers in this case fisheries extension. Fishery instructors provide direction and supervision of production businesses so that they run well and cultivators can carry out their business cultivation processes according to the expected targets. The role of assistants in the implementation of the PUMP program is very large for the success of cultivators in terms of increasing knowledge, skills, and behavior. This pattern of interaction creates a bond between fishery extension agents and cultivators to be able to work together to make the PUMP program successful so that farmers feel continuously accompanied and motivated to do their business well.

It is hoped that the provision of PUMP program stimulants will be able to increase the productivity of cultivators and be able to develop their businesses. This needs to be supported by technical skills on fish farming, a lot of experience, and the need for cultivators to develop knowledge through training held by the government and non-governmental organizations. In fish farming, it is known that the cost of feed is the largest and heaviest cost in the production process so that the capital that is owned is much absorbed in the purchase of feed. Therefore, to maximize productivity and meet the desired production target, the skills of cultivators are needed in managing their capital. For example, farmers can reduce the cost of purchasing feed by making feed independently. This can save production costs and control the development of the number of cultivated fish. This is following the statement of Mubyarto (1998) which states that capital is goods or money which together production factors, land and labor produce new goods. The importance of the role of capital because it can help generate productivity, increase workers' skills and skills as well as increase production productivity.

Fish cultivators who do not receive the PUMP program in conducting their cultivation business also receive guidance and counseling from fishery extension workers. This is done so that the main players, especially the assisted fish cultivators, are willing and able to carry out cultivation businesses following the CBIB (Good Fish Cultivation Method) and can apply the technology as recommended. The characteristics of fish cultivators in Situbondo Regency in receiving guidance from fishery extension agents are very diverse. This is influenced by the level of knowledge they have. Cultivators who have succeeded in conducting production businesses usually have their techniques in their business so that sometimes these techniques become closed information for other cultivators. These cultivators believe that the knowledge they have is the best way in their cultivation efforts so that in receiving guidance from fisheries instructors, it will usually be difficult to receive input and direction given. In this condition, the fishery extension worker cannot force the cultivator to follow the recommendations given. The guidance received by the cultivators is not enough to motivate them to carry out the cultivation business according to the recommended technology or technique.

Capital is classified as a form of wealth either in the form of money or goods that are used to produce something either directly or indirectly in a production process (Soekartawi, 2002). Thus, capital formation has the following objectives: a) to support further capital formation, and b) to increase production and farm income. According to Suadi (2006), increasing the efficiency of the use of capital and effective management of resources can increase income. In essence,



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# International Journal of Advanced Research in Science, Engineering and Technology

Vol. 7, Issue 8, August 2020

capital is the amount that continues to exist in supporting the business (Kamaruddin, 1997). Existing capital must be able to finance daily business expenses because with sufficient capital it will generate profits in the business.

## V.CONCLUSION

Based on the results of the analysis and discussion of the research, several conclusions can be drawn. First, the variables that affect the income of fish cultivators in Situbondo Regency are the variables of capital, working hours, and work experience, while the other two variables, namely land area and workers' education, do not affect. Second, there is a difference in the amount of income of 2,000,000 / two million rupiah between fish cultivators in Situbondo District who receive PUMP and Non-PUMP. And third, there are differences in the effect of capital on income between cultivators who receive PUMP and Non PUMP. Therefore, suggestions based on the results and discussion in this study are for the Situbondo Regency Government to create innovative programs to increase business opportunities for the main players, especially freshwater fish cultivators as well as continuous guidance and assistance for the success of fish cultivators in Situbondo Regency.

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