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FOOD SOVEREIGNTY AND SUSTAINABLE AGRICULTURE

BUILDING OF FOOD SOVEREIGNTY THROUGH A SUSTAINABLE AGRICULTURE

Challenges toward Climate Change and Global Economic Community

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PROCEEDING OF THE INTERNATIONAL CONFERENCE OF FOOD SOVEREIGNTY AND SUSTAINABLE AGRICULTURE (FoSSA 2017) : BUILDING OF FOOD SOVEREIGNTY THROUGH A SUSTAINABLE AGRICULTURE, CHALLENGES TOWARD CLIMATE CHANGE AND GLOBAL ECONOMIC COMMUNITY

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WELCOMING SPEECH

Rector of University of Jember: Drs. Moh. Hasan, M.Sc., Ph.D.

One of the numerous challenges we face today to overcome the problem of uncontrolled human population growth is the imbalance between supply and demand for food and energy. These would impact in general to the environment and the quality of life. To respond these global challenges, the development of technologies for food and natural resources aiming to create sustainable agriculture will play a strategic role.

Efforts have been made by many researchers focusing on the development of technologies and management natural resources, which will lead to the application and improvement of agriculture systems to better provide human needs – especially in the context of food security. Producing adequate food becomes a common goal. However, such efforts to achieve food security have mainly focused on large scale corporate farming and industries. This can have regrettable impacts on small scale food producers as well as on the environment.

Hence, food sovereignty, a relatively new concept which refers to the rights of communities to choose their own policies regarding agricultural development and food production, is no less important than food security. Agricultural development therefore no longer exclusively focuses on producing enough amount of food for the human population. It now also aims to provide larger freedom for small producers and farmers.

We believe that achieving sustainable agriculture is essential in order to achieve food sovereignty. In line with the efforts to develop agricultural innovations, University of Jember has established many facilities and research centers, such as the Agrotechnopark and the Center for Development of Advanced Science and Technology (CDAST). Furthermore, University of Jember fully supports this conference as a medium for researchers to share their research results including technological innovations, and to engage research collaborations in the area of agriculture for the quality and welfare of mankind.

Lastly, I would like to give my warmest greeting to all presenters and participants of this conference. I appreciate your commitment for the successfull of this conference. Thank you.

Jember, August 1st, 2017
Rector,

Moh.Hasan

Dean of Faculty of Agriculture-University of Jember: Ir. Sigit Soeparjono, MS, Ph.D.

Assalamualaikum Wr. Wb.

Praise goes to the most merciful God Allah SWT for the blessings of life and knowledge for us to gather in this meaningful occasion.

To start with, I would like to warmly welcome the heads of both Indonesian and foreign universities to the Faculty of Agriculture, University of Jember, Indonesia. It is a great pleasure to have you with us today.

This event is a reflection of our faculty'scommitment to always improve the quality of our education and to accommodate more and more opportunities in academic collaborations. We have been working hard to refine our agricultural research facilities and to offer students increasingly more comprehensive and extensive methods of learning in the world of agriculture.

Today, the development of modern agricultural systems and techniques has brought us many benefits. However, these benefits have often come at a certain costs, such asnegative ecological impacts andthe decreasing quality of working conditions for farmers. Such negative consequences have made us realize that agriculture must also take into account the preservation of the environment and the rights and welfare of food producers themselves. This is what we know as sustainable agriculture.

Therefore I believe this international conference will be able to present an interesting discussion on the aforementioned topic, with prominent speakers from Indonesia, Australia, Japan, Sri Lanka, Malaysia, Taiwan, and Philippines, giving a contribution to the development of science, and hopefully encouraging more research on this area.

I would also like to congratulate the Faculty of Agriculture, University of Jemberas the main host of this international conference, along with four other co-hosts which include Brawijaya University, Andalas University, Warmadewa University and UPN Jatim. May it support efforts to become world-class universities in the near future.

I also wish to thank all the sponsors who have provided financial support for this event, and to everyone else who has helped make this event possible.

Finally, I would like to convey a warmest welcome to all the distinguished guests and participants of this international conference.We are truly grateful for your presence today. May we have a fruitful discussion and may we all gain new and valuable knowledge.

Wassalamuallaikum Wr. Wb.

Jember, August 1st 2017.

Dean,

Sigit Soeparjono

Message from Chairman: Prof. Dr. Ir. Yuli Hariyati, MS

Assalamualaikum Wr. Wb.

Ladies and gentlemen ...
First of all, I would like to expressed my gratitude to all of you .. for being present and participate in this FoSSA 2017 International Conference. This conference addresses all experts in food sovereignty from many different countries with the main theme of : "**Building of Food Sovereignty through a Sustainable Agriculture: Challenge of Climate Change and Global Economic Community**".
Lately, the concept of food-sovereignty and sustainable agriculture are still very attractive among government-officers ... activist ... academician and also grassroot-elements.
Food sovereignty is defined as the right of every person ... every society ... and every country in the world ... to determine its own food policy by prioritizing local food products for their own needs, and forbidding the practice of food trade by means of dumping.
In principle .... each country has their own right to determine and control its own food-production, distribution and consumption systems ... in accordance with local ecological, social, economic, and cultural conditions, as well as its own sovereignty.. no intervention of others.
Food Sovereignty term was first introduced by the international peasant organization La Via Campesina at the World Food Summit (WFS), in November 1996 in Rome, Italy.
Moreover.. Food Sovereignty has even been declared by 400 delegates of farmer organizations, indigenous-peoples, fishermen, NGOs, social activists, academician and researchers from 60 countries at the World Forum on Food Sovereignty in Havana ... September 2001.
Therefore ... currently ... collective bargaining for food sovereignty is a global issue.
FoSSA 2017 International Conference activities will cover four main activities, namely :

- FoSSA2017 International Seminar
- FoSSA Meeting and SAFE Workshop
- FoSSA Cultural-Event
- Bromo Tengger FoSSA-FieldTrip

The seminar covers 5 sub-topics ...
(1) Food Sovereignty dimensions in sustainable agriculture production systems, current situation, challenges and opportunities;
(2) Recent advances on the climate change information and mitigation systems in agriculture and its practical implications on small-scale mixed-farming operations;
(3) Sustainable agriculture production system on food, strategic-products and energy diversifications: policies and lesson learnt;
(4) Fostering / Building a global action for cooperation and policy development towards sustainable agriculture;
(5) The local resources utilization and the local-wisdom on sustainable agricultural production systems : with special emphasis on the global economic community.

At this moment ... we are now 258 participants from Myanmar, Japan, Thailand, Sri Lanka, Germany, VietNam, Bhutan, UK, Phillippine, Australia, Korea, Malaysia, and Indonesia... 205 oral presentations and 28 poster presentations and other would be performed..
FoSSA2017 seminar will present 15 speakers ... this morning we have Dr. Nur Masripatin (Director of PPI) ... Dr. Nick Rose (Executive Director of SUSTAIN: The Australian Food Network) ..... and also 13 speakers from Japan, Taiwan, Malaysia, Philippines, Sri Lanka, Australia, and Indonesia.

We would like to thank to The Directorate General of PPI, PTPN X, BRIA-Germany, and The **Research Institute** – University of Jember for sponsorships.
And also to UPN University .. Warmadewa University ... and Andalas University ... and The **Asia-Pacific SAFE Network** .. for collaborative-hosting this FoSSA2017 Conference..

Wassalamualaikum WRB

Jember, August 1st, 2017
Chairperson of FoSSA International Conference

Yuli Hariyati

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❖ FOOD SOVEREIGNTY DIMENSIONS IN SUSTAINABLE AGRICULTURE SYSTEMS, CURRENT SITUATION, CHALLENGES, AND OPPORTUNITIES (FSD)

ACCURATION OF INDONESIAN RICE SUPPLY AND DEMAND FORECASTING FOR FOOD AVAILABILITY

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Abstract

Accuration of forecasting is very usefull as a base for policy making in the future. This study aimed to test accuration of Indonesian rice supply and demand forecasting in 2015 which was made in 2006. Study was done on national scale used secondary data between 1970-2004 which was obtain from legitimate institution publication. Forecasting was done through these steps : (a) model equation arranging, (b) model identifying, (c) model estimating and parameter testing by two stage least square methode using SAS program analysis software, (d) model validation test, and (e) exogenous variable forecasting using exponential smoothing methode. Forecasting result was compared with official data in 2015 published by Center for Agriculture Data and Information System, Ministry of Agriculture Republik of Indonesia (2016). Accuration was based on % deviation between official source and forecasting result, the more deviation the more non accurate. The results were: (a) There was a big deviation (109.16%) between official source and forecasting calculation on Indonesian food avaiability in 2015. Based on official source, Indonesian rice supply was 44,710,528 tonnes, demand was 32,388,271 tonnes and availability was surplus 12,322,257 tonnes. The main cause of surplus was over estimate of harvested area. On the contrary according to forecasting, supply was 40,894,521 tonnes, demand 42,023,699 tonnes, and Indonesian food availability was deficit 1,129,178 tonnes. The main cause of deficit was using of previous estimate of consumption/capita/year which was larger than official source so demand became larger too. None of these calculation was matching with actual condition; (b) Simulation using forecasting data which was calculated by official source way found out that food availability which more close to real condition, that domestic production plus 861,630 tonnes amount of imported rice could fulfil demand and without calculating national stock Indonesian food availability still surplus 1,164,574 tonnes in 2015.

Keywords: accuration, forecasting, supply, demand, food availability.

BACKGROUND

Food availability is a condition which food is available fulfilled by domestic production, national stock and import if two main sources could not meet a demand (Undang-Undang Republik Indonesia Nomor 18 Tentang Pangan Tahun 2012/Law of Republik of Indonesia Number 18 about Food, 2012). Main food of the most Indonesian people is rice, so food availability means rice availability. Food avaiability is difference between supply and demand. Rice supply is consist of domestic production, national stok and import minus export, while rice demand is consist of direct and indirect comsumption, seed, loss and waste, and others.

Since 1986 Indonesia has been being a rice net importer country which showed that domestic production could not fulfill demand. Effort for increasing production has been being done over and over, but demand has not fufill yet, so import is still needed. Importing rice should be determined exactly for assuring availability and protecting domestic producer. Lack of import would not meet demand, otherwise too much import would make over supply

which cause declining of price that could make farmer and producer loss, so determining ...ity import need to know condition of supply and demand.

Process of production and import need time, so prediction is needed for making plan ...policy which would be suitable in the future. Prediction of rice supply and demand in ...the next view years must be based on certain forecasting methode. According to the ...casting will be found: (1) estimation of need and domestic production to predict import; ...estimation of rice supply and demand as a base to make policy for better food availability ...tion.

This study was proposed to test accuration of Indonesian rice supply and demand in ...which was made in 2006 by Prayuginingsih (2007). Accuration was based on ...tion between official source and forecasting, the more deviation the more non accurate. ...source was published by Pusdatin (Pusat Data dan Sistem Informasi Pertanian/ ...for Data and Agriculture Information System) Ministry of Agriculture, Republik of ...esia.

METHODS

Study Field

Study field covered national scale for knowing and describing rice supply and demand ...at domestic market. Domestic market was choosen because this study was focused ...availability at domestic field.

Method of Study

Study used descriptive and comparative method. Descriptive method was used made ...systematic description, factual and accurate about the facts. While comparative ...was used for comparing some conditions.

Method for Collecting Data

This study used secondary data which was collected in 1970 – 2004 period from rice ...institution publication such as Ministry of Agriculture Republik of Indonesia, BPS ...Pusat Statistik/ Center for Statistic Agency), Perum Bulog (Logistic Affairs Company), ...Indonesia, IRRI , FAO dan PT Pusri (Fertilizer Producer) .

Method for Analizing Data

There were some steps for forecasting Indonesian rice supply and demand at domestic ...:

1. **Arranging model equation :**
   a. **Indonesian Rice Demand at Domestic Market**

   IRD = $a_o + a_1 POP + a_{2H}A$

   Explaination:

   IRD = Indonesia Rice Demand (tonne)
   POP = Population (person)
   HA = Harvested Area (ha)

   Expected coefficient

   a_1 dan $a_2 > 0$

   b. **Harvested Area**

   HA = $b_o + b_1 PFP + b_2 LPPD + b_3 LROD + b_4 LHA$

   Explaination:

   HA = Harvested area (ha)
   PFP = Paddy floor price (Rp/kg)
   LPFP = PFP last year (Rp/kg)
   PROD = produktivity (tonne/ha)

LPROD = PROD last year (tonne/ha)
LHA = HA last year (ha)
Expected Coefficient
$b_1, b_2, b_3, b_4 > 0$

c. Produktivity

PROD = $co + c_1$ PFUr + c_2 PFSP + c_3 LPFP + c_4 LPROD
Explainnation:
PFUr = Price of urea fertilizer (Rp/kg)
PFSP = Price of TSP fertilizer (Rp/kg)
Expected coefficient
c_1 dan $c_2 < 0$
c_3 dan $c_4 > 0$

d. Imported Rice

QIMP = $do + d_1$IRD + d_2QSTOCK + d_3 B + d_4C+ d_5TIMP
Explainantion:
B = Ratio of self sufficiency (%)
C = Ratio of PIR and PIMB
QSTOCK = early year stock at BULOG warehouse(tonne)
TIMP = tariff of imported rice (Rp/kg)
Expected coefficient
d_1, d_2, d_4 dan $d_5 > 0$
$d_3 < 0$

e. Price of Imported Rice

PIMP = $eo + e_1$ ER + e_2 WPR + e_3LPBIMP
Explaination:
PIMP = Price of Imported Rice
ER = Exchange Rate Rupiah on US dolar
WPR = World Price of Rice ($)
LPIMP = Harga beras impor tahun lalu
Expected coefficient
e_1, e_2 dan $c_3 > 0$

f. Price of Rice at Domestic Market

PRI = $fo + f_1$ PPI + f_2IRD + f_3 IRS +f_4 TIMP +f_5 LPRI
Explaination:
PRI = Price of Rice (Rp/kg)
PPI = Price of Paddy (Rp/kg)
IRS = Indonesian Rice Supply (tonne)
LPRI = Price of Rice last year (Rp/kg)
Expected coefficient
f_1, f_2, f_4 and $f_5 > 0$
$f_3 < 0$

g. Price of Paddy at Domestic Market

PPI = $g_0 + g_1$ PRI + g_2 PFP + g_3 LPPI
Expected coefficient
g_1, g_2, and $g_3 > 0$

h. Indonesian Rice Supply at Domestic Market :

IRS = QDRP + QIMP +Q STOCK – QBEXP
Explaination:
QDRP = Domestic Rice Production (tonne)
QEXP = Exported Rice(tonne)

i. Domestic Rice Production

DRP = k * DPP
K = rendemen of rice

= 0,632 (Hariyati, 2003; Mulyana, 2004; Puspoyo,2004;)

DPP = domestic paddy production
= harvested area x productivity
= HA * PROD

i. **Foof Availability**

FA = IRS –IRD

2. **Model Identification**

Model identification was needed because if a equation (or a whole model) was *under identified*, non of econometric technique could be done for estimating all parameter.

Equation was identified if amount of variable which did not include in a equation but include in another equations, at least equal with amount of equation wich was exist in model (equation system) minus 1 (one) , or formulated by Koutsoyiannis in Hariyati (2003) such as : (K – M) > (G – 1). Explanation :

K = amount of total variables in model (endogen and predetermined}
M = amount of variable (endogen and eksogen) in identified equation
G = amount of total equations (amount of total endogen variable)

Criteria of decision making :

If (K – M) < (G – 1), equation was *under identified*
If (K – M) = (G – 1), equation was *exactly identified*
If (K – M) > (G – 1), equaition was *over identified*

3. **Model Estimation and Parameter Test**

Estimating model was done by Two Stage Leasrt Square analysis methode using SAS analysis progarm software. Effects of variables in model was tested by evaluating R^2. Compability model or effect of aggregate independent variable on dependent variable was judged by F test, while to know effect of each independent variable on dependent variable was used t- test

4. **Test of Validation Model**

Validation test was needed to know did the predicted model had good ability to forecast by tracing some values such as: Mean Percent Error (MPE), Root Mean Square Percent Error (RMSPE), coeffisient U-Theil and decomposition of coeffisient U-Theil to be biased (U^M), varian proportion (U^S) and covarian propotion (U^C).

Decision making criteria:

a. Fewer MPE and RMSPE meaned better predicted model , because forecasting result closed to actual condition
b. U^M dan U^S showed good ability to forecast if closed to 0, because bias and varian were small
c. U^C showed good ability to forecast if close to 1

5. **Forecasting**

Exsogenous variables in 2005 - 2020 period were forecasted by using exponential smoothing method and combined with constant trend , linear trend and quadratic trend mode

6. **Accuration of Forecasting**

Accuration of forecasting was based on deviation between data from official source and forecasting .

$$\text{Deviation} = \frac{\text{Official source - forecasting}}{\text{Official source}} \times 100\ \%$$

RESULT AND DISCUSSION

Indonesian supply and demand based on Pusdatin (2016) showed that there was surplus of food availability in 2015, but on the contrary based on forecasting which was made in 2006 showed that there was deficit. It meaned that there was so big deviation of food avaibility between official source and forecasting (Table 1).

Supply Side

According to offcial source, Indonesian rice supply was 44,710,528 tonnes while forecasting was lower (40,894,521 tonnes). There was only a few deviation (8.53%) of rice supply between official and forecasting data, but there was a substantial defference. Supply based on official source consist of domestic production, import and eksport of rice. Domestic rice production was equal with yield minus loss and waste, feed, seed and any need for industry and then was converted into rice by 62,74% rendemen.

Based on forecasting data, supply consist of paddy which was converted into rice by 63,2% rendemen plus national stock and so big forecasting import (until 2,835,460.00 tonnes) minus export, but there was no calculation of loss and waste, feed, seed or even industry. Forecasting national stock was 2,835,460 tonnes which was close to commonly stock about 1,5 until 2 million tonnes per year (Sawit, 2004), but import was very far from actual data (861,630 tonnes). Paddy was produced from more narrow harvested area and lower productivity compared with official source.

Table 1. Camparison Indonesian Rice Supply and Demand in 2015 between Official Source and Forecasting.

Official Data		Forecasting		Deviation (%)
Supply Component		**Supply Component**		
Harvested area (ha)	14,116,638.00	Harvested area (ha)	11,637,550.00	17.56
Productivity (tonne/ha)	5.34	Productivity (tonne/ha)	4.90	8.26
Yield tonne paddy)	75,369,964.00	Yield (tonne paddy)	57,023,995.00	24.37
Loss and waste (5.40%)	4,071,436.00	National Stock (tonne)	2,111,844.00	
Feed (0.44%)	331,747.00			
Seed (0.90%)	678,573,00			
Other industry (0.56%)	422,223.00			
Net Paddy (tonne)	69,892,985.00			
Rice (62.74% net paddy)	43,850,859.00	Rice (63.2% net paddy)	36,039,165.00	17.81
Import (tonne)	861,630.00	Import (tonne)	2,835,460.00	
Export (tonne)	1,961.00	Export (tonne)	91,948.00	
Supply (tonne)	**44,710,528.00**	**Supply**	**40,894,521.00**	**8.53**
Demad Component				
Population (person)	247,572,000.00	Population (person)	255,363,000.00	-3.15
Consumption (kg/cap/year)	124.89	Harvested Area (ha)	11,637,550.00	
Food (tonne)	30,919,267.00			
Feed (0.17% Rice)	74,546,00			
Loss and Waste (2.5% Rice)	1,096,271.00			
Other industry (0.68% Rice)	298,186.00			
Demand (tonne)	**32,388,271.00**	**Demand (tonne)**	**42,023,699.00**	**-29.75**
Food Availability (surplus)	**12,322,257.00**	**Food Availability (deficit)**	**1,129,178**	**109.16**

Source : Pusdatin (2016) and Processed secondary data (2006)

Demand Side

Based on official source, Indonesian rice demand was 32,388,271 tonnes, consist of direct and indirect consumption of total population minus loss and waste, feed, and industry. Population was 147,572,00 person, and consumption/capita/year was 124,89 kg which had been settled since 2015 based on calculation of SUSENAS 2010 (Sensus Ekonomi Nasional/National Economic Census). Before 2015 consumption/capita/year was settled more than 130 kg (Pusdatin, 2016).

Based on forecasting, Indonesian rice demand was affected by population and harvested area which need seed. Population was forecasted 255,363,000 person and consumption/capita/year settled bigger than 130 kg, so the demand was 42,023,699 tonnes, much bigger than official source and deviation was 29.75%. Actually, predicted population closed to population projection published by BPS (Badan Pusat Statistik/ Center of Statistic Agency) that was 255,461,700 person while actual data from SUSENAS 2015 was 254,9 million (BPS in Hidayatullah, 2017).

Food Availability

Food avaibility was resulted from supply minus demand, so Indonesian food availability in 2015 based on official source was surplus 12,322,257 tonnes while based on forecasting was deficit 1,129,178 tonnes, that's why the deviation was very-very big (1091,16%).

According to some experts (Anjak, 2015; Ariani, 2015; Erwidodo and Pribadi, 2014) found surplus in Indonesia was doubted, because it did not match with actual condition. Surplus 12 million was a big amount, about six times compared with national stock. If it was true it didn't make sense for importing rice over and over every year. As a comparison, Thailand and Vietnam as rice net importir continously in the world just had surplus 10,447 and 6,499 million tonnes in 2010 (Diu, 2014).

The main cause of big surplus was overestimate harvested area. Those experts guess that harvested area which was published by BPS and Pusdatin was wider than real condition. Actually wet land in Java had been decreasing year to year for another using such as residence, office, industry etc while forming at out of Java was lack. According to Malian (2004) harvested area in 2003 was 11,46 million ha, growth harvested area rate in 1997-2003 was about 0,51% per year. Based on this statement, it guess that harvested area in 2020 will grow 10% and become 12,49 million ha, so harvested area in 2015 must be more narrow. Furthermore Malian (2004) said that produktivity in 2003 was 4,48 tonnes/ha. Assumptioning the condition as same as condition before moneter crisis, growth productivity rate was equal with 1990-1996 period that was 0,44%, so productivity in 2020 was predicted 4,84 tonnes/ha. This prediction is almost same as Maulana said (2004) that in 1995-2001 periode, wet land in Indonesia had negative growth rate because of land function changing from agriculture to non agriculture using. Negative growth rate of wet land could cause decreasing of paddy production. Pusdatin (2014) also showed that in 2009-2013 of wet land in Indonesia had negatif growth rate (-0,25%).

It could be made simulation about Indonesian food avaibility in this way: data about harvested area, productivity and population used forecasting data in 2006, while consumption/capita/year and component of supply and demand used official source way. Result of simulation was showed in Table 2.

Based on result of simulation in Table 2, Indonesian rice supply was 34,175,970 tonnes and demand was 33,011,396 tonnes, so food avaibility in 2015 was surplus 1,164,574 tonnes without calculating national stock. Surplus 1,164,574 tonnes relatively was not big enough for national scale like Indonesia which has big population, but food available will be saver by adding national stock. This simulation seemed more reasonable and fit to actual condition that Indonesian rice demand could be fulfilled by domestic production plus national stock and 361,630 tonnes of imported rice in 2015.

Table 2. Simulation of Indonesian Rice Supply and Demand Using Official and Forecasting Data in 2015

Variables		Total (ton)
Supply		
Harvested area**	(ha)	11,637,550.00
Productivity**	(tonne/ha)	4.90
Yield**	(tonne paddy)	57,023,995.00
Loss and waste *	(5.40%)	3,079,296.00
Feed *	(0.44%)	250,906.00
Seed *	(0.90%)	513,216.00
Other industry*	(0.56%)	322,528.00
Net Paddy *	(ton)	52,858,050.00
Rice*	(62.74% net paddy)	33,406,288.00
Import *	(ton)	861,630.00
Export*	(ton)	1,961.00
Supply	**(ton)**	**34,175,970.00**
Demad Component		
Population **	(person)	255,363,000.00
Consumption*	(kg/capita/year)	124.89
Food *	(ton)	31,892,285.00
Feed *	(0.17% Rice)	56,791,00
Loss and Waste *	(2.5% Rice)	835,157.00
Other industry *	(0.68% Rice)	227,163.00
Demand	**(ton)**	**33,011,396.00**
Food Availability (surplus)		**1,164,574.00**

Source: * Pusdatin (2016) and ** Processed secondary data (2006)

CONCLUSION

There was a big deviation (109.16%) between official source and forecasting calculation on Indonesian food avaiability in 2015. Based on official source, Indonesian rice supply was 44,710,528 tonnes, demand was 32,388,271 tonnes and availability was surplus 12,322,257 tonnes. The main cause of surplus was over estimate of harvested area. On the contrary according to forecasting Indonesian food availability was deficit 1,129,178 tonnes because supply was 40,894,521 tonnes and demand 42,023,699 tonnes. The main cause of deficit was using of previous estimate of consumption/capita/year which was larger than official source so demand became larger too. None of these calculation was matching with actual condition.

Simulation using forecasting data which was calculated by official source way found out that food availability was more close to real condition, that domestic production plus 861,630 tonnes amount of imported rice could fulfil demand and without calculating national stock Indonesian food availability still surplus 1,164,574 tonnes in 2015.

Suggestion

Data of paddy harvested area in Indonesia need to revise so that appropriate with actual condition.

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SOCIO-ECONOMIC FACTORS CAUSE OF OPERATING PROFIT ANIMAL FALLING RATE OF AFRICAN CATFISH (*Clarias Gariepinus*) TARPS SWIMMING IN CANGKRING VILLAGE, SUB- DISTRICT OF JENGGAWAH, DISTRICT OF JEMBER

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Abstract

The purpose of this study is included: Analyzing the socioeconomic factors that caused the decrease in livestock farming profits tarp African catfish ponds in the study area; Knowing the profit rate of African catfish farming pond tarp in the study area, and analyze the level of efficiency of African catfish pond fish farming sheeting in the area of research both allocative efficiency technical and economical. Furthermore, to achieve the three objectives referred to, then usedquantitative descriptive method with survey techniques The population in this study were African catfish pond fish farmers in the village tarp Cangkring Jember District of Jenggawah efforts that have experienced a declining rate of profit. The data analysis technique used is the analysis of Cobb - Douglass function of profit , and the frontier production function analysis of profit. The results of this study concluded : 1) socio-economic factors are thought to influence the profit decline in fish farming catfish pond tarp at the sites run significantly at 5 % significance level α with the level of determination of 0,618; 2) The average rates of profit breeders catfish in the study site is IDR 1.255.000,85 per business scale or as much as IDR 484.556,31 per 1,000 fry the profitability of 42.38 %, and 3) average use of all inputs in the production of African catfish farming has a pool tarp technical efficiency of 2,11, at 6,36 allocative efficiency and economic efficiency level of 13,43.

Keywords: Eficiency , Profit , Frontier , Swimming Sheeting, and Organic.

BACKGROUND

Basically catfish with a model pool tarp relatively low cost, only with approximately less than IDR 500,000 for the creation of a pool tarp with tarp size of 5 x 4 m below lelenya fingerlings, catfish peteni already will be able to enjoy the benefits of his efforts with abundant. Cultivation process with this pattern actually has a value of economic empowerment of village communities, namely from the manufacture of pool community involving some villages, such as for cutting bamboo, leveling the ground, transporting organic fertilizer, and so forth. Selanjutya no fertilization process to grow the microorganisms that will become food catfish, catfish farming is done because using techniques largely inorganic and organic as well as some others do as well liming to neutralize the pH of pool water.

Since the beginning of african catfish farming in the village Cangkring of Jenggawah Caounty Jember District of went as expected, but in its development during the last 2 years, these fish tend to lethargy. Yet on the other hand catfish demand continues to increase over time, but the phenomenon is contrary to the logic of the law of demand - supply. The higher the demand for a goods and services, then the price of the goods goes up due to the amount of goods on offer tend to be a little (Soediyono, 1995). African catfish prices at the consumer

level in Jember in 2014 reached IDR 15,000, - per kg, but in 2013 only reached IDR 9,000, - per kg. According to the results of the analysis of farming, that BEV African catfish is IDR 11,500, - per kg, the price of feed manufacturers and even then with a steady (constant). But the longer, the more catfish feed prices surged, while for alternative solutions such as snails, slugs and dead chickens, its existence does not guarantee to meet the needs of animal feed catfish.

Catfish farmers in the village have not had Cangkring initiation and innovation strategies in solving problems. The absence of a group of farmers, causing bargaining power and access to information and technology and capital are quite weak. They are very dependent on the strength of her each sharp without being able to think of the potential outside himself. Therefore, Hernanto (1996) states that what is revealed is not actually the presence of other factors on the farm itself and which is beyond the farmers' efforts. Which should be of concern to an established farming, keter¬batasan that exist in itself to be overcome by digging to opportunity outside environment. In fact not just dig, even more should be able to express the force push and overcome the factors outside. The scope of this study is limited only issue african catfish (Clarias gariepinus) through the media pool tarp. The object of research is the variety of African catfish farmer who manages his farm in Cangkring Village of Jenggawah County of Jember District.

Based on the above description, it is a problem in this study plan can be formulated as follows: what are the socioeconomic factors that caused the decline in the profit rate of African catfish farm animals in the study area pool tarp ?; What degree of business profits teknak African catfish rehabilitated and reconstructed media pool tarp in the study area?, And How the level of efficiency of African catfish pond fish farming in the study area tarp ?. Therefore, it is the goal of this research is: Analyze the socioeconomic factors that caused the decline in the rate of profit animal breeding African catfish pond tarp in the study area, knowing the level of business profits through media teknak African catfish pond tarp in the study area; and analyze the level of efficiency of African catfish pond fish farming in the study area well tarp allocative efficiency, technical and economical.

METHODS

Location Research

This research has been conducted in Cangkring Village of Jenggawah County of Jember District. Determination of the location of this research was determined by purposive sampling on the following considerations (Jember Statistics Office, 2014) that the number of African catfish pond fish farmers in Jember tarp in the village of Cangkring District of Jenggawah them there in the village. Another consideration is the livestock farmers in the sub district Jenggawah catfish hardest hit and many have gone out of business due to the cost of production exceeds the total income.

Sampling Techniques and Data Collection

This research is a descriptive study, the research aims to describe the events (phenomena) as a systematic, factual and accurate information on the facts, properties and relationships between phenomena that occur in the present. Meanwhile, the method used in this study is a survey method. Furthermore, the method of determining the sample taken by simple random sampling of at least 10% of the population and sources of data collected in this research plan includes primary data and secondary data.

Data Analysis (Model Specifications)

Answering the First Goal (Gain Function Cobb-Douglass)

To answer the first goal of socio-economic factors causing the decline in the profit rate of African catfish farming used analysis tool Function Cobb-Douglass advantage. Gains of African catfish farmers received were analyzed by a simple mathematical formula can be formulated as follows (Soekartawi, 2003): □ = TR - TC. Furthermore Frontier Production

Function is used to describe the relationship between inputs and outputs in the production process to determine the level of production efficiency (Battese dan Corra (1977 in Coelli, et al., 1996) as follows: Ln Y = b0 + b1LnX1 b2LnX2 + b3LnX3 + b4LnX4 + b5LnX5 + (Vi – Ui). Frontier production function is estimated using a stochastic frontier production function method (Stochactic Frontier Production Function), which is obtained using a Maximum Likelihood Method. Efficiency is a concept that is relative. A situation that is economically efficient, may be inefficient when faced with different sizes (Zen, 2002). There are three concepts of efficiency, ie the efficiency of the technique (ET), economic efficiency (EE), the efficiency of the price (EP). Economic efficiency will be achieved when the technique has achieved efficiency and price efficiency. If the value of the efficiency of > 1 means the use of inputs needs to be improved, if the value of efficiency = 1 means that the optimal input allocation, if the value of the efficiency of <1 means the use of inputs need to be reduced (Soekartawi, 2003). To test this hypothesis, if the value of efficiency (technical, price, and economic) average is not equal to one, then the hypothesis is accepted.

Simply put, according Nopirin (1997), the efficiency can mean the absence of waste. Efficiency price / allocative efficiency by Soekartawi (2008), used when the production function is Cobb-Douglas function, then: Y = AXB or Ln Y = A + bLnX Ln, then the marginal production conditions are: $\partial Y / \partial X = b$ (The coefficient of elasticity parameters). In the Cobb-Douglas production function, then b is called the regression coefficient which also illustrates the elasticity of production. Thus, the marginal production value (MPV) production factor X, can be written as follows: MPV = bYPy / X, where: b = elasticity of production, Y = the production, Py = price of production, and X = the number of production factor X. According to Nicholson (1995), the efficiency achieved when the price comparison between the marginal productivity of each input (MPV xi) at a price of inputs (Vi) or "Ki" = 1. this condition requires MPVxi the same as the price of a factor X or can be written as follows: MPV = Px, bYPx / X = Px, or bYPy / XPx = 1 where: Px = price of a factor X. In practice the value of Y, Py, X and Px is taken the average value, so that the equation becomes: bYPy/ẋPx = 1, Technical efficiency is done through an approach using the approach of the ratio of the variance as developed by Battese and Corra (1977) in Coelli (1996): $\gamma = (\zeta u2) / (\zeta v2 + \zeta u2)$, if γ close to 1, $\zeta v2$ near zero and Ui is the error rate in the equation shows inefficiency. In this study, the differences between the management and the results of efficiency is the most important part because kekhusussan management. Furthermore, this analysis to identify the impact of differences in several factors.

Jondrow et all in Zen et al, (2002) shows the average conditions in Ui and εi in the following equation: $E (Ui \mid \varepsilon i) = (\zeta u \, \zeta v / \zeta) \{[F (\varepsilon i \, \lambda \, \zeta\text{-}1) / (1\text{-}F (\varepsilon i \, \lambda \, \zeta\text{-}1))] - (\varepsilon i \, \lambda \, \zeta\text{-}1)$, where: εi = is the sum of V1 and Ui, ζ = is the equation for $(\zeta v2 + \zeta u2)$ 1/2, λ = is the ratio of ζu and ζv, f and F is the standard normal density and distribution functions εi evaluation of $\lambda \, \zeta\text{-}1$. To get technical efficiency (TE) of catfish farming can be done with the following calculation: TEI = exp [E (Ui I εi)], where: $0 \leq TEI \leq 1$, TE is the efficiency of the technique and Exp is the exponent. Meanwhile, according to Wardani, Musofie and Harwono, (1997) that economic efficiency is the product of the entire technical efficiency and allocative efficiency of the entire price or input factors. Efficiency catfish farming can be expressed as follows: EE = TER. AER, Where: EE = Economic Efficiency, TER = Tehnical Efficiency Rate, and AER = allocative efficiency Rate.

RESULT AND DISCUSSION

Profile of Respondents

The description of the profile of respondents to be covered include: aspects of age, education level, and the long experience of trying and business scale is measured from the broad aspects of the pool and the number of African catfish fingerlings. The average age of the respondent farmers in the traditional market research sample was 42,97 years, which means

all respondents were in the productive age (15-64 years). Age of a person in the group is physically and mentally able to work and strive optimally. It found that the majority (76,67%) of respondents have adequate physical strength and mental stable so inclined can run the business well. The average level of formal education of respondents breeders known to work only 9,97 years or have graduated from junior high school and even some have been mengeyam up to high school. Meanwhile, the average length of experience of trying to trade the respondent farmers in the African catfish location is still ongoing research is conducted within a period of 3,5 years. The results of the study revealed that most (80%) of respondents have experience cultivating farmers catfish in the pond tarp is still less than 5 years and only 3,33% of respondents classified as having high-flying craft fishing in running this business. Furthermore, the average production capacity of African catfish pond fish farmers just tarp totaled approximately 3000 fingerlings of the tail, with the range between 1000 sd. 5000 Tails on large scale pool tarp average of 23,67 m2 ranging from size 4 to 54 m2.

Socio-Economic Factors Cause of decline in rate of return

To answer the first goal of socio-economic factors causing the decline in the profit rate of African catfish pond fish farming tarp then used analysis tool Function Cobb-Douglass advantage.

Table 3.1 Results of Regression Analysis of Economic Factors Cause of decline in social, Livestock Business Advantage Swimming Sheeting Dumbo Catfish in the Cangkring Village of Jenggawah County District of Jember 2015

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1763.443	816.159		2.161**	.042
Quantity	1.196	0.570	0.529	2.097*	.048
Price_Output	68.350	56.014	0.278	1.220*	.096
Price_Nutritions	-3.390	0.150	-0.482	-2.601***	.017
Educations	2.665	14.881	0.038	0.179 ns	.860
Long experience	29.306	20.463	0.266	1.432 ns	.167
Frequency extension workers visit	23.234s	26.529	0.162	0.876 ns	.391
Market information	171.997	92.899	0.317	1.851*	.078

Remarks :
Dependent Variable : Profit
F-tabel(α5%/2) : 2.04, Adjusted-R Square : 0.618, R-Square : 0.719
*** = Significant at α1%, ** = signifkan on α5%, * = Significant at α10%, ns = non-significant
Source: Primary Data Processed

Table 3.1 above shows that the results of the simultaneous regression of all independent variables significantly influence the dependent variable at 5% significance level α. This is demonstrated by the results of the analysis where the value of the F-count > F-table, so the conclusion is to accept Hi or reject H0. If the results of the regression analysis if the equation is written, it will wake up the model equations profit function as follows:

Y = 888.99 X11.196X268.35X3-3.39X42.66 X529.31 X623.2 X7-8.81D171.99.

The test results of determination or closeness relationship between the variables analyzed, also shows that all the socioeconomic factors that are supposed to influence the dependent variable is quite high at 0,719 R2 or with Adj-R2 0,618. This means that the decline in African catfish farmers profit pool tarp at the study sites is affected by all the independent variables were estimated at 71,9%, the rest is influenced by other factors outside the model. Furthermore, each of the independent variables were regressed against the dependent variable to determine partially the keberartiannya. Proven results of t-test that the variable education level of respondents, farming experience and the frequency of

visits to the site workers visit catfish farming in the study site had no significant effect on the falling rate of profit breeders at 10% significance level α. The length of experience raising African catfish also empirically at the study site was not much take effect to business management resulting in higher profits. In addition, the success factor of the workers visit field visits also did not affect the level of benefit farmers, ranchers already visited because without innovation and the creation of a self-taught without any coaching or mentoring. Therefore, the three independent variables can be compiled into a single independent variable is the variable that management influence on the dependent variable can be significant.

Total production of African catfish fairly significant influence on the level of farm profit, it is supported by the results of a simple regression analysis where t count> t-table at the 10% significance level α. In this economic logic is appropriate karen if the amount of production increased by 1%, then the farmer will profit also rose by 1,196% with cateris paribus assumption. Similarly, the sale price in the African catfish farmer level significantly affected the rate of profit breeder shown by the results of t-test with a value of t count> t-table at the level of 10% and a coefficient value of 1,196. This means that if the selling price was up 1%, then the rate of profit increases by 1,19%. Market information variables also significantly affect the increase farmer profits on real and often aloof sphere α 10% with a value of 171,99 koefieisn regression. Various information regarding the price of feed, the price of the product, market demand, technological innovation development outside and relevant government policy strongly encourages farmers to better manage their business premises, so that the output value of animal husbandry of African catfish tend to be higher than without receiving information from the outside. The above explanation is strongly supported by the fact, as shown in table 3.2 below.

Table 3.2 Supporting Data in Regression Analysis of Economic Factors Cause of decline in social, Livestock Business Advantage Swimming Sheeting Dumbo Catfish in the Cangkring Village of Jenggawah County District of Jember 2015

No	Social economic factor	description reason	number of Respondents (people)	%
1	The cost of feed is too high	Manufacturing type PF 800, 781 -1, 781-2 and 781-3, P 1000 and Hibrofit	14	47
		Non Manufacturing (Chicken Tiren, leaves, conch,, worms, Apmas know, Lemuru, bran / bran, anchovies Pabriotik and anchovy	11	37
		Mixture (Manufacturing and Non-Manufacturing	5	17
2	The portion of the cost of inputs for very high feed allocation	The portion of 50%	5	17
		The portion of 60%	13	43
		The portion of 70%	6	20
		The portion of 90%	1	3
3	Production rates are relatively low	Under Rp 10,000 /kg	3	10
		Between Rp 10,000 - 13,000/Kg	18	60
		Above Rp13,000/Kg	9	30
4	Motivation Breeders in African catfish pond tarp	Looking for high profit	7	23
		On their own initiative	7	23
		Try affected friend	12	40
		Filling the void time	1	3
		Following the suggestion extension workers	3	10
5	Frequency of visits to the field officer field	No visit yet nev	17	57
		've Been only 1 time	6	20
		've Been between 2-3 times	3	10
		've Been more than 3 times	4	13

Source: Primary Data Processed

In Table 3.2 above gives an example on its significant variable input prices significantly affect the rate of profit in the African catfish farming livestock research sites on the real level of 1%. Regression coefficient value implies that the rise of prices of production inputs by 1%, then the rate of profit will decline by 3,39% assuming cateris paribus. This condition is supported by the fact that as many as 47% of farmers use feed ingredients manufacturers and most of the others (17%) using a mixture of feed materials (manufacturers and non-manufacturers) and the rest (37%) using a non feedstuff manufacturer. It is known that the price of feed manufacturers from time to time is up so make kendalan serious for farmers. Even the use of feed manufacturers with a portion of 90% of all types of feed available, done by 3% of farmers and the lower portion (50%) is only done by 17% of farmers alone.

On the other hand, the price of production of the African catfish lowest is IDR 10.000,- / kg only accepted by 10% of respondents, the highest price of IDR 13.000,- / kg only 60% of respondents who received the selling price of IDR 12.000,- / kg. Though the price of the product on the market at the same time generally prevailing price of between IDR 14.550, - Rp 16.000,- / kg. These conditions have implications for the declining rate of profit breeders so analsisi simple regression results indicate that these variables are very significant effect on the rate of profit to the African catfish farming livestock to be proportionate reversed pattern of influence.

Gain levels African Catfish Farming Livestock Pool Tarp

Average farm production of African catfish pond tarp in the study site reached 248,83 kg per production process per 2.590 fry fish or fish seed per 1.000 the average number of production as much as 96,07 kg per production process. This production is done on an area of the tarpaulin 31 m3 with an average stocking of fish as many as 827 individuals per 357 m3 by spreading the tail - tail 2.083,33. According to the recommendation that the per cubic meter pools, the amount of fish seed to be stocked between 350-500 tails to create comfort for fish habitat. But the facts on the ground proved to be very varied, there is sow the seeds of fish between 1000 - 3000 individuals per cubic meter. Learn more about the state of the profit rate of African catfish pond uahatani tarps are presented in Table 3.3.

Table 3.3 Results Analysis of Livestock Farming Gains Swimming Sheeting Dumbo catfish in the Cangkring Village of Jenggawah County District of Jember 2015

No	Descriptions	Total	Production Cost Structure (%)
1	Productions (Kg)	248,83	
2	Price of Output (IDR /Kg)	12.191,67	
3	Total Cost of Product :	1.706.632,48	
	a. Variable Cost (IDR)	1.345.709,48	78,85
	b. Fixed Cost (IDR)	360.922,95	21,15
4	*Revenue (*IDR*)*	2.961.633,33	
5	*Profit (*IDR*)*	1,.255.000,85	

Source: Primary Data Processed

Average profit rate of catfish farmers in the study sites is IDR 1.255.000,85 per scale enterprises or as much as IDR 484.556,31 per 1.000 fry. These advantages are relatively high because of profitability of 42,38% when compared to the results of research AZ-Zarnuji and Hendarto (2011) in Boyolali in 2010 where rentabilitasnya reached 37,02%. According to the theory that every African catfish stocking of 1.000 fish tail, it will produce 100 kg of fish ready for harvest, but the results of the study revealed that on average each stocking 1000 fish tail meat produce ready to harvest as much as 116,23 kg weight ratio of 1: 1,16.

The above conditions are true average quantity of production that farmers already produce a fairly high compared with the general average in other areas. If viewed from the aspect of R/C ratio that catfish farming also has a value of R/C ratio than the condition of the research results in Boyolali, which in the study area has a R/C ratio is 1,74 and sebasar in

Boyolali as big as 1,59. That is to say with an average price of only IDR 12.000 per kg, cattle farm of African catfish pond tarp at the study site has a potential prospect, because it gives a high enough profit to farmers.

Economic Efficiency of Livestock Raising African catfish Swimming Sheeting

Based on the analysis of the rate of profit in the previous sub, it is necessary also analyzed the level of efficiency by using the approach of cobb-douglas production function. In this analysis will be revealed about how the attainment of economic efficiency, technical and allocative. Selengkapkanya the results of the efficiency analysis is presented in Table 3.4 can be the following.

Table 3.4 Efficiency Analysis of Farm Animal Swimming Sheeting African catfish in the Cangkring Village of Jenggawah County District of Jember 2015

No	Variable	Technical efficiency (bi)	allocative efficiency	Economical efficiency (ET x EA)
1	wide pool	3.15	3.17	10.00
2	fingerlings	2.568	6.99	17.95
3	Nutrients	-0.176	0.19	(0.03)
4	additional nutrients	-2.128	1.89	(4.02)
5	Suplement	5.706	6.72	38.34
6	Labor	3.531	5.19	18.33

Specification:
Dependent Variable: Number of African Catfish Production
Source: Primary Data Processed

The average utilization of all production inputs on African catfish farming pool tarp in the study site reached a level of technical efficiency of 2,11, but when viewed as an input of production is known that the use of production inputs and livestock feed supplement inefficient because Ep < 0 Breeders grossly over dose in food nutrition in fish. Generally provide 3 meals a day, but the average farmer in most study sites provide meals up to 5 times a day. As a result, the cost to feed only up 80% in the cost structure some respondents even reach 90% of the cost of the other. The use of production inputs of seeds / seedlings fish, large pool tarp, supplements, medications, vitamins and labor are still not efficient. That is perternak still can develop longer use in order to increase production.

In allocative, use of production inputs in livestock farming of African catfish pond tarp in the average study site has not efficient, except for the use of fish feed is no longer efficient. So inefficient allocation still can add inputs and the need for a reduction in the use of production inputs that are no longer efficient. Therefore, the average of a use of production inputs have a level of economic efficiency of 13,43 where the use of animal feed and food additives from the snail, tiren, and lemuru have negarif level of economic efficiency. If dikomparasikan research AZ-Zarnuji and Hendarto (2011) on the analysis of the efficiency of catfish farming in Boyolali concluded that: 1) catfish farming in the study area are not technically efficient use of inputs that must be coupled with the output destination must be increased. When viewed from the efficiency of the price (EH) and economic efficiency (EE), the catfish farming is inefficient with efficiency value of 4.96 and a price of economic efficiency by 4,66.

CONCLUSION

1 The results of the simultaneous regression of the entire socio-economic factors are supposed to influence the profit decline in African catfish farming fish pond tarp significant effect at 5% significance level α. This is demonstrated by the results of the

analysis where the value of the F-statc. > F-table, so the conclusion is to accept Hi or reject H0. The test results of determination or keeeratan relationship between the variables analyzed, also shows that all the socioeconomic factors that are supposed to influence the dependent variable is quite high at R2 = 0,719 or with Adj-R2 = 0,618. This means that the decline in African catfish farmers profit pool tarp at the study sites is affected by all the independent variables were estimated at 71,9%, the rest is influenced by other factors outside the model.

2. Average profit rate of catfish farmers in the study sites is IDR 1.255.000,85 per business scale or as much as IDR 484.556,31 per 1.000 fry. These advantages are relatively high because of profitability (profitability) of 42,38%. According to the theory that every African catfish stocking of 1.000 fish tail, it will produce 100 kg of fish ready for harvest, but the results of the study revealed that on average each stocking 1000 fish tail meat produce ready to harvest as much as 116,23 kg weight ratio of 1: 1,16.
3. Average use of all inputs to the production of African catfish farming pool tarp at the study site reached a level of technical efficiency of 2,11, but when viewed as an input of production is known that the use of production inputs and livestock feed supplement inefficient because Ep < 0 The use of production inputs of seed / seedling fish, large pool tarp, supplements, medications, vitamins and labor are still not efficient. In allocative, use of production inputs in livestock farming of African catfish pond tarp in the average study site has not efficient, except for the use of fish feed is no longer efficient. The average use of production inputs have a level of economic efficiency of 13,43 where the use of animal feed and food additives from the snail, tiren, and lemuru have negarif level of economic efficiency.

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IMPLEMENTATION OF HYGIENIC FISH MARKET MODEL AND ITS IMPLICATION ON MARKET STRUCTURE AND MARKETING EFFICIENCY OF SEA FISH IN JEMBER REGENCY

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Abstract

The increasing trend of fishery business development in Jember Regency, in fact not accompanied by a decent Fishermen's (proportional) Exchange Rate. This is due to the limited fishermen to access market opportunities, technology, and easy capital, so that the fishermen have not enjoyed much real results. This condition is caused by the production of the catch is still low, the quality of the fish has not met the standard, the price of fish is low and the lack of support from the business world as well as the prerequisite condition of the fish market facilities and infrastructure are clean, so less attract consumers to come buy. The purpose of this research is to analyze the impact of the implementation of marketing strategy model of marine fish marketing through hygienic fish market to new market structure, marketing channel pattern, and marketing efficiency of marine fish in Jember Regency. In order to achieve the purpose of this research, it is used descriptive quantitative and qualitative research methods through survey technique of acidental sampling and snowbolling sampling. Types of population in this study are Fishermen, Traders including groups who are members of Poklaksar, and Consumers. The data collection techniques used FGD, Indepth Interview and observation. Data analysis used included descriptive analysis, and marketing margin. The results of the research conclude: 1) Market structure in Hygienic Fish Market model in Jember Regency is classified as Monopolistic Market which is more aimed at oligopoly market, 2) Pattern of marine fish marketing channel that occur in hygienic fish market model is covering three kinds of marketing channel pattern, and 3) Hygienic Fish Market Model can provide a fairly high share of Fisher (Farmer's share) margin (58.95%), meaning that the marketing of marine fish model has been achieved Efficiency.

Keywords: Market Structure, Marketing Channel Pattern and Marketing Efficiency

BACKGROUND

The increasing trend of economic development of central fisheries in Indonesia and East Java has not been followed by perkembangnnya in Jember regency. Even according to East Java BPS that the Fisherman Exchange Rate (FER) of East Java in March 2014 decreased by 0.31 percent, from 105.31 in February 2014 to 104.99 in March 2014. This is because the price index received by fishermen experienced An increase of 0.04 percent while the price index paid by fishermen increased by 0.34 percent. The ten major commodities that experienced an increase in the price indexes received by fishermen are mackerel, snapper, swordfish, swallow / swada fish, swanggi fish, crabs, grouper fish, goldfish, and skipjack. While the ten major commodities that experienced a decrease in the price indexes received

by fishermen were lemuru fish, squid, fish, tembang, kuwe / bebara, peperek, pomfret, shrimp, lotung fish and stingrays.

The above conditions are caused by the low yield of fish, the quality of the fish has not met the standard, the price of fish is low and the lack of support from the business world as well as the condition of fish market facilities and infrastruc- ture that less attract consumers come to buy. The existence of Fish Auction Place (FAP) as a glossary market that local governments are expected to be able to use as a fish trading center is not optimally utilized by fish market participants. Several facts on the ground show that in general the society's appreciation of the traditional marketing model of marine fish tends to be negative, that is, for example, seems slums, smelly and less hygiene. This condition implies the lack of maximum market role in an effort to encourage economic activity in coastal areas that lead to the dependence of fishermen fate economically.

The utilization of marine resources in Jember Regency is still around 22%, while the potential is wide open because the consumption level of fish population in Jember regency is 19.2 kg / capita / year which is expected to reach ideal condition that is 31,4 kg / capita / year (DG Fishery , 2007). In order to improve the marketing aspect so that the fishermen can enjoy the results and the consumers are guaranteed the level of satisfaction, it is necessary to develop an integrative marketing strategy. Several facts on the ground show that in general the appreciation of the community toward conventional managed marine fish marketing model tends to be negative, that is, for example, seems slums, smelly and less hygiene. Inefficient marketing system encourages less maximally the role of the market in an effort to drive economic activity in coastal areas. Economic growth in this region will be faster, if all stakeholders including local institutions can perform their functions and roles optimally in a conceptual framework model of integrated strategy of fish marketing holistically.

The results of research Hadi et al. (2015) reveals that: 1) The market structure of marine fish marketing in Jember Regency is Monopolistic Competition Market that leads to negative cover (monopoly market), marketing channel aspect (there are 6 marketing chain patterns); Market behavior Fish prices are determined by traders and Pengambek, and there is no significant institutional role; 2) As many as 58.33% of economic actors stated that FAP managers did not do a good market management model, so as many as 45% of respondents stated that they are not satisfied. The condition is further aggravated by the absence of government efforts to facilitate the involvement of local institutions such as financial institutions and partnerships with related institutions that support the marine fish enlargement system in the study area. The phenomenon in this research area also occurs in other coastal areas as revealed by the results of research Kurniawan et al. 2013 in Kecamatan Kelok Pasuruan that the weakness of the implementation of programs and activities of the agency is an element of institutional strengthening and strengthening partnerships with financial institutions have not been met.

The development of hygienic fish market (HFM) model in Jember District is very urgent to be implemented because considering the fishery result in Jember Regency still not served its needs maximally. This is because the fish marketing model in Jember is still scattered in different places. Similarly, technical standards of quality and hygienic fishery products have not been optimally applied, especially in traditional markets. Whereas the future development of the demands of the application of quality and hygienic technical standards is an absolute necessity for consumer protection. Based on these matters, in Jember Regency should be built facilities and marketing infrastructure of fishery products centered on several areas of hygienic fish market. Therefore, the objectives of this study are as follows: to analyze the impact of the implementation of marketing strategy model of marine fish marketing through hygienic fish market (HFM) to new market structure, marketing channel pattern and marketing efficiency of fishery.

METHODS

Methods, Time and Location Research

This type of research is descriptive quantitative and qualitative research, namely research that aims to find facts with appropriate interpretation. Meanwhile, the method used in this research is survey method, descriptive method of continuity (continuity descriptive) with panel technique, Snowbolling Sampling (Nazir, 1985) and other methods as needed both Probability Sampling and Non Probability Sampling.

Determination of Time and Location Research

This follow-up study was conducted in 2016 and the location of this research was conducted in FAP Puger area of Puger Sub-district of Jember Regency by purposive sampling on the consideration that HFM development was placed in FAP Puger kasawan as pilot project. In addition, the institutional research sites are conducted at the Livestock, Fisheries and Marine Service Office of Jember Regency, local FAP office and other literature studies.

Resources, Types and Data Collection Techniques

Based on the source that the data collected in this study includes primary data and secondary data. Primary data were obtained from Fishermen, Merchants (Marketing Institutions), Consumers, and FAP Managers collected by combining several complementary data collection techniques that include: FGD, Indepth Interview and observation. While for secondary data collected from institution related to this research. The determination of population and sample of respondents is done by data collection technique is done by accidental sampling and Snowbolling sampling, and purposive sampling (Singarimbun and Effendi, 1987).

Data analysis

In order to know the impact of the application of integrative marketing model of marine fish marketing through development of HFM Model to new market structure and marketing channel pattern, the quantitative and qualitative descriptive analysis is used. As for knowing the level of marketing efficiency of fish at HFM on each pattern of channel that was built, then used marketing margin analysis.

RESULTS AND DISCUSSION

Market Structure of Sea Fish on HFM Model

Before discussing the structure of PIH, the following is disclosed the condition of HFM model in this research, ie there are restaurant (restaurant) culinary at HFM business is a small part that is at UD Kerapu Jaya (model that already operated first) and Restaurant Ikan Bakar Seefood (HFM model engineering results). Freezerbox equipment, cool boxes, motor boxes, toilets, musholla, bulk ice equipment and parking lots as well as electrical installation equipment of some traders have been built (available) and others have not. The other facilities such as fish storage pond, sorting room, quality test room, office space, waste disposal and live fish aquarium equipment, processed fish case show, sorting, waste processing, and water installation have not been built most of the traders are not yet available.

Nevertheless, the shape of the building looks modern equipped with open culinary restaurants and exhibition halls as well as open spaces to play for children's customers (consumers). Because of the modernity of the form and building facilities are always clean it is clear hygiene and place the product offered. In addition, hygiene is seen in the trades culture where traders always group and mark the fish that have been sorted to be more organized and every morning, afternoon and afternoon always clean and spray water on the streets of the market with Go Fresh Spray like Free Biolet made From the coconut shell so as

not to smell fishy. In addition, to keep it looking clean, dry and hygienic, the kitchen and bathroom should be designed open to optimize air circulation. Therefore, the need for building materials with water absorbent material (coral and con blocks) to keep it dry or not easy to moist. The design of the PIH building is done through the approach of local cultural characteristics of how to trade coastal communities in the research area. Because with this approach HFM building will be more interact or accepted by the surrounding community which also become an icon that characterizes the local culture of Jember community.

The results revealed that the market structure in the hygienic fish market model (semi-modern) in Jember District is aiming at the Monopolistic Competition Market that leads to positive kutup or oligopoly market. This condition is in accordance with the opinion of Teguh and Muhammad (2010) that the market of monopolistic competition is basically a market that lies between two types of extreme market, namely perfect competition market and monopoly market. There is also a mention that the monopolistic market is a combination of a perfectly competitive market with a monopoly market. Therefore, its properties contain elements of the nature of the monopoly market and the elements of the perfect market of competition. Monopolistic competition market can be defined as a market where there are many producers that produce differentiated products.

After the introduction of the HFM model into the traditional fish market system into a semi-modern marine fish market despite its small scale, the monopolistic market shifts in the direction of oligopoly and oligopsoni rivalries although it is unlikely to lead to a perfectly finalized (parietal) competition market, at least not to A powerful monopoly market. Nevertheless the implications of applying this model will at least improve the marine fish marketing system that is proving to run less efficiently. So that in the future it will become more efficient where all market participants will receive a share of proportional and rational profit levels. Especially if the commitment of the local institutional role is stronger to support the integration of marketing of marine fish to marketing systems that the level of efficiency is more massive. The condition is in accordance with the results of research conducted by Prihatmaji in 2012 that PIH Design in Rembang through Coastal Culture Characteristics Approach is intended for marine fish marketing can run more efficiently.

In terms of market structure, the characteristics of the product can be illustrated that the perishabelity of fish catch is tentative, which leads to absolute, since the characteristics of fishery products are easily damaged but in HFM there has been hygienic treatment and has remained fresh since from sea catch (ship), landing, And retail merchant displays can last at least 2 weeks after fishing. Nevertheless, the results of the study revealed that the perishabelity can be reduced even though there is not necessarily any hygienic treatment, because a small percentage of skipper/pengambek/pemodal treats the fish catch from the capitalized fishermen, ie coldstorage process, Or distributed directly to traders, retailers and collectors in the form of fresh fish, especially the type of lemuru fish, squid, layur and shrimp. Thus it is expected to create a level of maximum satisfaction as the results of research Sibghatallah in 2006 on Consumer Satisfaction at Hygienic Fish Market Pejompongan - Jakarta where the level of consumer increases more than 35%.

It is also illustrated by the characteristics of market structure in the barrier aspects of entry and exit in the traditional marine fish market in Jember Regency where the barriers are relatively easy. Fishermen who will sell their fish catch are very easy to sell to traders in FAP or outside FAP including HFM, especially most fishermen have skipper or investor to sell their catch. It's just that for new traders who will enter and run business in this market will not get much convenience, except coordinate with the pengambek and at the same time the FAP management does not determine the conditions. Therefore, the TPI managers who have two assisted groups (@ 20 fishermen) are trying to empower the marine fish business slowly. Some of its members formed a Forum called Marketing Executive Group and through this forum, fishermen, wholesalers / wholesalers / wholesalers and retailers based on hygiene are trying to engineer HFM slowly starting on a small scale.

The technological aspects of market structure prevailing in the traditional and semi-modern market of marine fish in Jember Regency can also be revealed that the capital intensity of financial institutions at the local level tends to be positively responded. There are only two cooperative fishermen namely Nusa Barong Cooperative and Sumber Jaya Cooperative that can provide business capital for fishermen, but the results of research in this second year revealed that 66.66% will strengthen will help in capital and the rest helps in marketing. Although the traditional marine fish marketing system in the research area, some conventional financial institutions such as BRI, BPD Jatim and others have provided a blacklist for fishermen not to provide capital loans due to the very poor repayment rate that is below 25%. Or with others that the level of lending collectability in the study area is low. This condition is in line with the results of Kholifah, Hadi and Herlambang research on the Restoration of Collectability of Revolving PNPM Mandiri Urban Program Loans in Situbondo District in 2011 which revealed that most (60%) have a degree of collectability (K-5). This means that the Repayment Rate is very low and the return congestion rate is very bad (high risk). This phenomenon is relatively similar to the phenomenon that occurs in the research area because most of the research areas are located in coastal areas and with the same cultural background.

Meanwhile, the specialization of catch fish is almost non-existent, but there are several types of fish that are characteristic in each FAP, such as FAP Payangan - Ambulu type of lopter fish or shrimp and tuna, tuna species, lemuru, tengiri, and anchovy in FAP Puger, a type of squid fish from Gettem Gumukmas and Cakalang in Paseban Kencong. Meanwhile, deversification of fish that must be sold there are no binding rules because basically the types of fish that can be caught by fishermen occur naturally based on the fish season in the waters where fishermen go to sea. But in processed products, shrimp paste is characteristic of FAP Puger.

Furthermore if it may be categorized as a specialization or product differentiation according to aspects of product characteristics according to fish species, then in the study area divided into the fish class inferior - normal (middle to lower) is the result of tangkaoan fish the middle of the sea by collected such as species of tuna, banyar, Putian, solop and others. While the upper-middle-class category is a fish species whose presence in the seabed section is captured by means of lures such as tengiri fish specialist, rock grouper, red grouper, dorang, snapper and others. The more specialist, especially in the lonely fish months in the coastal area Payangan Ambulu, then it is a large shrimp specialist fish (lopter) much hunted by local fishermen through diving or fishing. In the lonely months of fish with big wave waves like today, many fishermen go to sea to lure nener (seed/lopter seed) is divided into three categories, namely: the type of stone, pearl and white where the price per tail can reach IDR 75.000, - at the fisherman level.

Channel Marketing Patterns

In the marketing channel of marine fish in Jember Regency before the HFM model was built there were five kinds of marketing channel pattern. After the HFM model is applied, although on a small scale, the marketing pattern of marine fish still forms one marketing channel pattern. Fish trade is conducted directly between traders and buyers along with bargaining systems for price agreements. This is to suit the cultural trades of coastal communities in general. Fishermen or fish traders can rent or buy space (retail) in special in FAP or its surroundings with PIH facility to sell their fish. Retail-retail is grouped and segregated by type of fish to facilitate visitors to choose fish. With this simple engineered HFM, the fishermen have the opportunity to sell their fish not only to middlemen, fishermen group / traders and retailers, but directly to individual consumers (retail) so that HFM is expected to stand but FAP will still operate. In this simple HFM engineering group of fishermen (Forum Poklaksar) has a major role as the main marketing agency for hygienic fish marketing because it is still newly conditioned deliberately. The following illustrates the marketing channel pattern with both the old (FAP) and semi-modern (HFM) systems in the research area as presented in Figure 3.1.

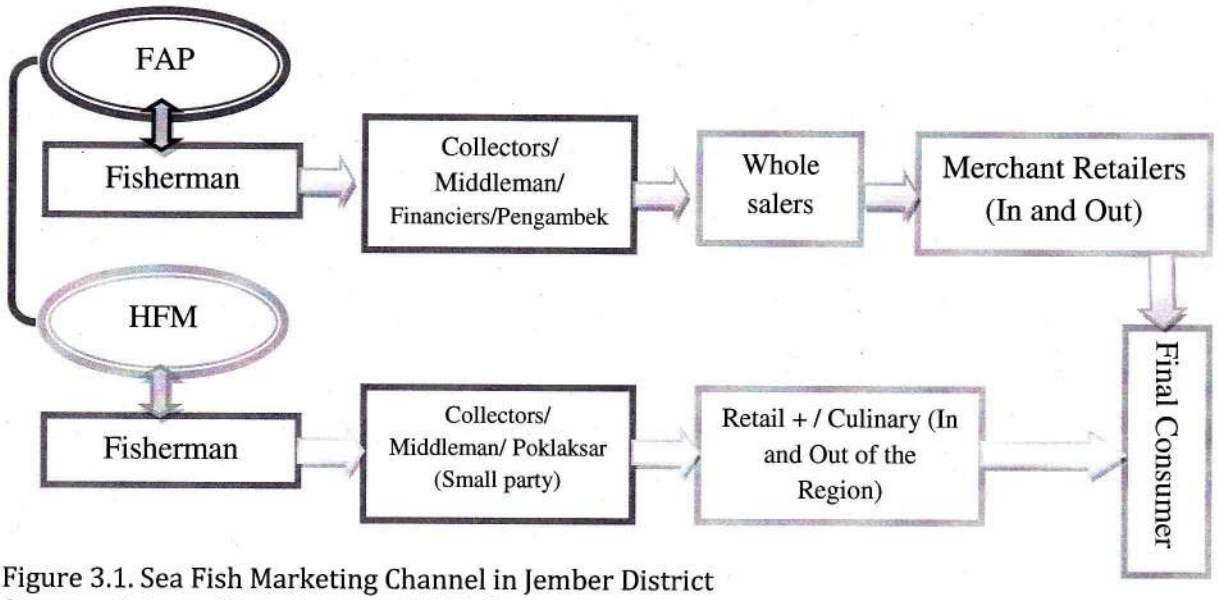

Figure 3.1. Sea Fish Marketing Channel in Jember District
(Source: Primary Data Processed, 2016)

Sea Fish Marketing Efficiency After Implementation of HFM Model

Discussion of marine marketing marine marketing margin of HFM in the research area is described based on the marketing channel pattern that was developed along with the discussion about marketing efficiency to answer the proposed hypothesis. In table 3.3 it is revealed that the pattern of marketing channels that occur in HFM can give the share of fishermen's margin (Farmer's share) is quite high, ie 58.95%. This means that marketing of marine fish based on hygiene in the research area runs efficiently. Based on the opinion of Gultom (1996) in Son Bisuk (2009) that in general a system of trading for (some) agricultural products can be said to be efficient if the share of farmers' margin is above 50%. Furthermore, in the opinion of Gultom (1996) based on the calculation of Marketing Efficiency (Em) with the formulation of mathematical formula: Em = (Marketing Cost/Selling Price) x 100% each (IDR/Kg) then the smaller the value of Em, the marketing of agricultural commodities more efficient and vice versa. To find out which channels are most efficient, each marketing channel compares Em's value to the number of marketing agencies involved.

The results of the second year study show as shown in Table 3.1 that the hygienic fish marketing institutes such as the Collector/Poklasar (Small Party) have Em = 4.8, while the marketing institutions such as Retail + / Culinary (In and Out of the Region) 3.58. This means that the marketing efficiency experienced by HFM Collectors/Poklaksar/Medlemen (Small Party) is no more efficient than that experienced by Retailers+ / Culinary (In and Out Area). This is due to the marketing costs incurred by the Collector/Poklaksar/ Medlemen than others despite having a higher margin share (20%). The marketing costs incurred by the Collectors/Poklaksar/ middlemen include: the cost of hygienic treatment, labor costs, and transportation. However, proportionately the profit gained by each marketing agency involved is fairly fair, since the profit rate of collectors/Poklaksar/Medlemen is higher (4,28) than at the retail level (4,00).

Table 3.1. Results of Marine Marketing Margin Analysis on Hygienic Fish Market In Jember Regency Year 2016

NO	Type of Marketing Institute of Sea Hygienic Fish	Buying Price (Seasonal Fee) (IDR / Kg)	Selling Price (IDR / Kg)	Marketing Costs with Hygienic Treatment (IDR/ Kg)	Profit /(IDR/Kg)	Fisherman's Share (%)
1	Average Prices of all types of fish Fisherman's level (Pf)	3.500	28.000	1.500	23.000	58,95
2	Collectors/Poklaksar/ Medlemen (Small Party)	28.000	37.500	1.800	7.700	20,00
3	Retail+/ Kuliner (Inside and Outdoors) (Pr)	39.000	47.500	1.700	6.800	17,89
Share Margin of Market (%)				**10,53**	**30,53**	
Marketing Margin (MP)		**19.500**	**Total Share Margin**			**100,00**

Source: Primary Data Processed

CONCLUSION

1. The market structure of marine fish marketing in Jember Regency is Monopolistic Competition Market and more aimed at perfect competition market,
2. The pattern of marketing channels formed after the implementation of HFM is still one kind of marketing channel pattern: Fisherman → Collectors / Poklaksar/Small Wholesaler → Retailer + / Culinary (In and Out of Area) → Final Consumer
3. Share of fisherman's margin (Farmer's share) is high enough that is equal to 58,95%, meaning that marketing system in HFM model run efficiently. Because the system for trading (part) of agricultural products can be said to be efficient if the share of farmers' margins are above 50%. Furthermore, hygienic fish marketing institutes such as Pengepul / Poklaksar (Small Party) have Em = 4.8, while marketing institutions such as Retail + / Culinary (In and Out) have Em = 3.58.

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SOCIO-ECONOMIC FACTORS CAUSE OF OPERATING PROFIT ANIMAL FALLING RATE OF AFRICAN CATFISH (*Clarias Gariepinus*) TARPS SWIMMING IN CANGKRING VILLAGE, SUB- DISTRICT OF JENGGAWAH, DISTRICT OF JEMBER

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Abstract

The purpose of this study is included: Analyzing the socioeconomic factors that caused the decrease in livestock farming profits tarp African catfish ponds in the study area; Knowing the profit rate of African catfish farming pond tarp in the study area, and analyze the level of efficiency of African catfish pond fish farming sheeting in the area of research both allocative efficiency technical and economical. Furthermore, to achieve the three objectives referred to, then usedquantitative descriptive method with survey techniques The population in this study were African catfish pond fish farmers in the village tarp Cangkring Jember District of Jenggawah efforts that have experienced a declining rate of profit. The data analysis technique used is the analysis of Cobb - Douglass function of profit , and the frontier production function analysis of profit. The results of this study concluded : 1) socio-economic factors are thought to influence the profit decline in fish farming catfish pond tarp at the sites run significantly at 5 % significance level α with the level of determination of 0,618; 2) The average rates of profit breeders catfish in the study site is IDR 1.255.000,85 per business scale or as much as IDR 484.556,31 per 1,000 fry the profitability of 42.38 %, and 3) average use of all inputs in the production of African catfish farming has a pool tarp technical efficiency of 2,11, at 6,36 allocative efficiency and economic efficiency level of 13,43.

Keywords: Eficiency , Profit , Frontier , Swimming Sheeting, and Organic.

BACKGROUND

Basically catfish with a model pool tarp relatively low cost, only with approximately less than IDR 500,000 for the creation of a pool tarp with tarp size of 5 x 4 m below lelenya fingerlings, catfish peteni already will be able to enjoy the benefits of his efforts with abundant. Cultivation process with this pattern actually has a value of economic empowerment of village communities, namely from the manufacture of pool community involving some villages, such as for cutting bamboo, leveling the ground, transporting organic fertilizer, and so forth. Selanjutya no fertilization process to grow the microorganisms that will become food catfish, catfish farming is done because using techniques largely inorganic and organic as well as some others do as well liming to neutralize the pH of pool water.

Since the beginning of african catfish farming in the village Cangkring of Jenggawah Caounty Jember District of went as expected, but in its development during the last 2 years, these fish tend to lethargy. Yet on the other hand catfish demand continues to increase over time, but the phenomenon is contrary to the logic of the law of demand - supply. The higher the demand for a goods and services, then the price of the goods goes up due to the amount of goods on offer tend to be a little (Soediyono, 1995). African catfish prices at the consumer

level in Jember in 2014 reached IDR 15,000, - per kg, but in 2013 only reached IDR 9,000, - per kg. According to the results of the analysis of farming, that BEV African catfish is IDR 11,500, - per kg, the price of feed manufacturers and even then with a steady (constant). But the longer, the more catfish feed prices surged, while for alternative solutions such as snails, slugs and dead chickens, its existence does not guarantee to meet the needs of animal feed catfish.

Catfish farmers in the village have not had Cangkring initiation and innovation strategies in solving problems. The absence of a group of farmers, causing bargaining power and access to information and technology and capital are quite weak. They are very dependent on the strength of her each sharp without being able to think of the potential outside himself. Therefore, Hernanto (1996) states that what is revealed is not actually the presence of other factors on the farm itself and which is beyond the farmers' efforts. Which should be of concern to an established farming, keter¬batasan that exist in itself to be overcome by digging to opportunity outside environment. In fact not just dig, even more should be able to express the force push and overcome the factors outside. The scope of this study is limited only issue african catfish (Clarias gariepinus) through the media pool tarp. The object of research is the variety of African catfish farmer who manages his farm in Cangkring Village of Jenggawah County of Jember District.

Based on the above description, it is a problem in this study plan can be formulated as follows: what are the socioeconomic factors that caused the decline in the profit rate of African catfish farm animals in the study area pool tarp ?; What degree of business profits teknak African catfish rehabilitated and reconstructed media pool tarp in the study area?, And How the level of efficiency of African catfish pond fish farming in the study area tarp ?. Therefore, it is the goal of this research is: Analyze the socioeconomic factors that caused the decline in the rate of profit animal breeding African catfish pond tarp in the study area, knowing the level of business profits through media teknak African catfish pond tarp in the study area; and analyze the level of efficiency of African catfish pond fish farming in the study area well tarp allocative efficiency, technical and economical.

METHODS

Location Research

This research has been conducted in Cangkring Village of Jenggawah County of Jember District. Determination of the location of this research was determined by purposive sampling on the following considerations (Jember Statistics Office, 2014) that the number of African catfish pond fish farmers in Jember tarp in the village of Cangkring District of Jenggawah them there in the village. Another consideration is the livestock farmers in the sub district Jenggawah catfish hardest hit and many have gone out of business due to the cost of production exceeds the total income.

Sampling Techniques and Data Collection

This research is a descriptive study, the research aims to describe the events (phenomena) as a systematic, factual and accurate information on the facts, properties and relationships between phenomena that occur in the present. Meanwhile, the method used in this study is a survey method. Furthermore, the method of determining the sample taken by simple random sampling of at least 10% of the population and sources of data collected in this research plan includes primary data and secondary data.

Data Analysis (Model Specifications)

Answering the First Goal (Gain Function Cobb-Douglass)

To answer the first goal of socio-economic factors causing the decline in the profit rate of African catfish farming used analysis tool Function Cobb-Douglass advantage. Gains of African catfish farmers received were analyzed by a simple mathematical formula can be formulated as follows (Soekartawi, 2003): □ = TR - TC. Furthermore Frontier Production

Function is used to describe the relationship between inputs and outputs in the production process to determine the level of production efficiency (Battese dan Corra (1977 in Coelli, et al., 1996) as follows: Ln Y = b0 + b1LnX1 b2LnX2 + b3LnX3 + b4LnX4 + b5LnX5 + (Vi – Ui). Frontier production function is estimated using a stochastic frontier production function method (Stochactic Frontier Production Function), which is obtained using a Maximum Likelihood Method. Efficiency is a concept that is relative. A situation that is economically efficient, may be inefficient when faced with different sizes (Zen, 2002). There are three concepts of efficiency, ie the efficiency of the technique (ET), economic efficiency (EE), the efficiency of the price (EP). Economic efficiency will be achieved when the technique has achieved efficiency and price efficiency. If the value of the efficiency of > 1 means the use of inputs needs to be improved, if the value of efficiency = 1 means that the optimal input allocation, if the value of the efficiency of <1 means the use of inputs need to be reduced (Soekartawi, 2003). To test this hypothesis, if the value of efficiency (technical, price, and economic) average is not equal to one, then the hypothesis is accepted.

Simply put, according Nopirin (1997), the efficiency can mean the absence of waste. Efficiency price / allocative efficiency by Soekartawi (2008), used when the production function is Cobb-Douglas function, then: Y = AXB or Ln Y = A + bLnX Ln, then the marginal production conditions are: ∂Y / ∂X = b (The coefficient of elasticity parameters). In the Cobb-Douglas production function, then b is called the regression coefficient which also illustrates the elasticity of production. Thus, the marginal production value (MPV) production factor X, can be written as follows: MPV = bYPy / X, where: b = elasticity of production, Y = the production, Py = price of production, and X = the number of production factor X. According to Nicholson (1995), the efficiency achieved when the price comparison between the marginal productivity of each input (MPV xi) at a price of inputs (Vi) or "Ki" = 1. this condition requires MPVxi the same as the price of a factor X or can be written as follows: MPV = Px, bYPx / X = Px, or bYPy / XPx = 1 where: Px = price of a factor X. In practice the value of Y, Py, X and Px is taken the average value, so that the equation becomes: bYPy/ẋPx = 1, Technical efficiency is done through an approach using the approach of the ratio of the variance as developed by Battese and Corra (1977) in Coelli (1996): γ = (ζu2) / (ζv2 + ζu2), if γ close to 1, ζv2 near zero and Ui is the error rate in the equation shows inefficiency. In this study, the differences between the management and the results of efficiency is the most important part because kekhusussan management. Furthermore, this analysis to identify the impact of differences in several factors.

Jondrow et all in Zen et al, (2002) shows the average conditions in Ui and εi in the following equation: E (Ui I εi) = (ζu ζv / ζ) {[F (εi λ ζ-1) / (1-F (εi λ ζ-1))] - (εi λ ζ-1), where: εi = is the sum of V1 and Ui, ζ = is the equation for (ζv2 + ζu2) 1/2, λ = is the ratio of ζu and ζv, f and F is the standard normal density and distribution functions εi evaluation of λ ζ-1. To get technical efficiency (TE) of catfish farming can be done with the following calculation: TEI = exp [E (Ui I εi)], where: 0 ≤ TEI ≤ 1, TE is the efficiency of the technique and Exp is the exponent. Meanwhile, according to Wardani, Musofie and Harwono, (1997) that economic efficiency is the product of the entire technical efficiency and allocative efficiency of the entire price or input factors. Efficiency catfish farming can be expressed as follows: EE = TER. AER, Where: EE = Economic Efficiency, TER = Tehnical Efficiency Rate, and AER = allocative efficiency Rate.

RESULT AND DISCUSSION

Profile of Respondents

The description of the profile of respondents to be covered include: aspects of age, education level, and the long experience of trying and business scale is measured from the broad aspects of the pool and the number of African catfish fingerlings. The average age of the respondent farmers in the traditional market research sample was 42,97 years, which means

all respondents were in the productive age (15-64 years). Age of a person in the group is physically and mentally able to work and strive optimally. It found that the majority (76,67%) of respondents have adequate physical strength and mental stable so inclined can run the business well. The average level of formal education of respondents breeders known to work only 9,97 years or have graduated from junior high school and even some have been mengeyam up to high school. Meanwhile, the average length of experience of trying to trade the respondent farmers in the African catfish location is still ongoing research is conducted within a period of 3,5 years. The results of the study revealed that most (80%) of respondents have experience cultivating farmers catfish in the pond tarp is still less than 5 years and only 3,33% of respondents classified as having high-flying craft fishing in running this business. Furthermore, the average production capacity of African catfish pond fish farmers just tarp totaled approximately 3000 fingerlings of the tail, with the range between 1000 sd. 5000 Tails on large scale pool tarp average of 23,67 m2 ranging from size 4 to 54 m2.

Socio-Economic Factors Cause of decline in rate of return

To answer the first goal of socio-economic factors causing the decline in the profit rate of African catfish pond fish farming tarp then used analysis tool Function Cobb-Douglass advantage.

Table 3.1 Results of Regression Analysis of Economic Factors Cause of decline in social, Livestock Business Advantage Swimming Sheeting Dumbo Catfish in the Cangkring Village of Jenggawah County District of Jember 2015

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1763.443	816.159		2.161**	.042
Quantity	1.196	0.570	0.529	2.097*	.048
Price_Output	68.350	56.014	0.278	1.220*	.096
Price_Nutritions	-3.390	0.150	-0.482	-2.601***	.017
Educations	2.665	14.881	0.038	0.179 ns	.860
Olong experience	29.306	20.463	0.266	1.432 ns	.167
Frequency extension workers visit	23.234s	26.529	0.162	0.876 ns	.391
Market information	171.997	92.899	0.317	1.851*	.078

Remarks :
Dependent Variable : Profit
F-tabel(α5%/2) : 2.04, Adjusted-R Square : 0.618, R-Square : 0.719
*** = Significant at α1%, ** = signifkan on α5%, * = Significant at α10%, ns = non-significant
Source: Primary Data Processed

Table 3.1 above shows that the results of the simultaneous regression of all independent variables significantly influence the dependent variable at 5% significance level α. This is demonstrated by the results of the analysis where the value of the F-count > F-table, so the conclusion is to accept Hi or reject H0. If the results of the regression analysis if the equation is written, it will wake up the model equations profit function as follows:

Y = 888.99 X11.196X268.35X3-3.39X42.66 X529.31 X623.2 X7-8.81D171.99.

The test results of determination or closeness relationship between the variables analyzed, also shows that all the socioeconomic factors that are supposed to influence the dependent variable is quite high at 0,719 R2 or with Adj-R2 0,618. This means that the decline in African catfish farmers profit pool tarp at the study sites is affected by all the independent variables were estimated at 71,9%, the rest is influenced by other factors outside the model. Furthermore, each of the independent variables were regressed against the dependent variable to determine partially the keberartiannya. Proven results of t-test that the variable education level of respondents, farming experience and the frequency of

visits to the site workers visit catfish farming in the study site had no significant effect on the falling rate of profit breeders at 10% significance level α. The length of experience raising African catfish also empirically at the study site was not much take effect to business management resulting in higher profits. In addition, the success factor of the workers visit field visits also did not affect the level of benefit farmers, ranchers already visited because without innovation and the creation of a self-taught without any coaching or mentoring. Therefore, the three independent variables can be compiled into a single independent variable is the variable that management influence on the dependent variable can be significant.

Total production of African catfish fairly significant influence on the level of farm profit, it is supported by the results of a simple regression analysis where t count> t-table at the 10% significance level α. In this economic logic is appropriate karen if the amount of production increased by 1%, then the farmer will profit also rose by 1,196% with cateris paribus assumption. Similarly, the sale price in the African catfish farmer level significantly affected the rate of profit breeder shown by the results of t-test with a value of t count> t-table at the level of 10% and a coefficient value of 1,196. This means that if the selling price was up 1%, then the rate of profit increases by 1,19%. Market information variables also significantly affect the increase farmer profits on real and often aloof sphere α 10% with a value of 171,99 koefieisn regression. Various information regarding the price of feed, the price of the product, market demand, technological innovation development outside and relevant government policy strongly encourages farmers to better manage their business premises, so that the output value of animal husbandry of African catfish tend to be higher than without receiving information from the outside. The above explanation is strongly supported by the fact, as shown in table 3.2 below.

Table 3.2 Supporting Data in Regression Analysis of Economic Factors Cause of decline in social, Livestock Business Advantage Swimming Sheeting Dumbo Catfish in the Cangkring Village of Jenggawah County District of Jember 2015

No	Social economic factor	description reason	number of Respondents (people)	%
1	The cost of feed is too high	Manufacturing type PF 800, 781 -1, 781-2 and 781-3, P 1000 and Hibrofit	14	47
		Non Manufacturing (Chicken Tiren, leaves, conch,, worms, Apmas know, Lemuru, bran / bran, anchovies Pabriotik and anchovy	11	37
		Mixture (Manufacturing and Non-Manufacturing	5	17
2	The portion of the cost of inputs for very high feed allocation	The portion of 50%	5	17
		The portion of 60%	13	43
		The portion of 70%	6	20
		The portion of 90%	1	3
3	Production rates are relatively low	Under Rp 10,000 /kg	3	10
		Between Rp 10,000 - 13,000/Kg	18	60
		Above Rp13,000/Kg	9	30
4	Motivation Breeders in African catfish pond tarp	Looking for high profit	7	23
		On their own initiative	7	23
		Try affected friend	12	40
		Filling the void time	1	3
		Following the suggestion extension workers	3	10
5	Frequency of visits to the field officer field	No visit yet nev	17	57
		've Been only 1 time	6	20
		've Been between 2-3 times	3	10
		've Been more than 3 times	4	13

Source: Primary Data Processed

In Table 3.2 above gives an example on its significant variable input prices significantly affect the rate of profit in the African catfish farming livestock research sites on the real level of 1%. Regression coefficient value implies that the rise of prices of production inputs by 1%, then the rate of profit will decline by 3,39% assuming cateris paribus. This condition is supported by the fact that as many as 47% of farmers use feed ingredients manufacturers and most of the others (17%) using a mixture of feed materials (manufacturers and non-manufacturers) and the rest (37%) using a non feedstuff manufacturer. It is known that the price of feed manufacturers from time to time is up so make kendalan serious for farmers. Even the use of feed manufacturers with a portion of 90% of all types of feed available, done by 3% of farmers and the lower portion (50%) is only done by 17% of farmers alone.

On the other hand, the price of production of the African catfish lowest is IDR 10.000,- / kg only accepted by 10% of respondents, the highest price of IDR 13.000,- / kg only 60% of respondents who received the selling price of IDR 12.000,- / kg. Though the price of the product on the market at the same time generally prevailing price of between IDR 14.550, - Rp 16.000,- / kg. These conditions have implications for the declining rate of profit breeders so analsisi simple regression results indicate that these variables are very significant effect on the rate of profit to the African catfish farming livestock to be proportionate reversed pattern of influence.

Gain levels African Catfish Farming Livestock Pool Tarp

Average farm production of African catfish pond tarp in the study site reached 248,83 kg per production process per 2.590 fry fish or fish seed per 1.000 the average number of production as much as 96,07 kg per production process. This production is done on an area of the tarpaulin 31 m3 with an average stocking of fish as many as 827 individuals per 357 m3 by spreading the tail - tail 2.083,33. According to the recommendation that the per cubic meter pools, the amount of fish seed to be stocked between 350-500 tails to create comfort for fish habitat. But the facts on the ground proved to be very varied, there is sow the seeds of fish between 1000 - 3000 individuals per cubic meter. Learn more about the state of the profit rate of African catfish pond uahatani tarps are presented in Table 3.3.

Table 3.3 Results Analysis of Livestock Farming Gains Swimming Sheeting Dumbo catfish in the Cangkring Village of Jenggawah County District of Jember 2015

No	Descriptions	Total	Production Cost Structure (%)
1	Productions (Kg)	248,83	
2	Price of Output (IDR /Kg)	12.191,67	
3	Total Cost of Product :	1.706.632,48	
	a. Variable Cost (IDR)	1.345.709,48	78,85
	b. Fixed Cost (IDR)	360.922,95	21,15
4	*Revenue (*IDR*)*	2.961.633,33	
5	*Profit (*IDR*)*	1,.255.000,85	

Source: Primary Data Processed

Average profit rate of catfish farmers in the study sites is IDR 1.255.000,85 per scale enterprises or as much as IDR 484.556,31 per 1.000 fry. These advantages are relatively high because of profitability of 42,38% when compared to the results of research AZ-Zarnuji and Hendarto (2011) in Boyolali in 2010 where rentabilitasnya reached 37,02%. According to the theory that every African catfish stocking of 1.000 fish tail, it will produce 100 kg of fish ready for harvest, but the results of the study revealed that on average each stocking 1000 fish tail meat produce ready to harvest as much as 116,23 kg weight ratio of 1: 1,16.

The above conditions are true average quantity of production that farmers already produce a fairly high compared with the general average in other areas. If viewed from the aspect of R/C ratio that catfish farming also has a value of R/C ratio than the condition of the research results in Boyolali, which in the study area has a R/C ratio is 1,74 and sebasar in

Boyolali as big as 1,59. That is to say with an average price of only IDR 12.000 per kg, cattle farm of African catfish pond tarp at the study site has a potential prospect, because it gives a high enough profit to farmers.

Economic Efficiency of Livestock Raising African catfish Swimming Sheeting

Based on the analysis of the rate of profit in the previous sub, it is necessary also analyzed the level of efficiency by using the approach of cobb-douglas production function. In this analysis will be revealed about how the attainment of economic efficiency, technical and allocative. Selengkapkanya the results of the efficiency analysis is presented in Table 3.4 can be the following.

Table 3.4 Efficiency Analysis of Farm Animal Swimming Sheeting African catfish in the Cangkring Village of Jenggawah County District of Jember 2015

No	Variable	Technical efficiency (bi)	allocative efficiency	Economical efficiency (ET x EA)
1	wide pool	3.15	3.17	10.00
2	fingerlings	2.568	6.99	17.95
3	Nutrients	-0.176	0.19	(0.03)
4	additional nutrients	-2.128	1.89	(4.02)
5	Suplement	5.706	6.72	38.34
6	Labor	3.531	5.19	18.33

Specification:
Dependent Variable: Number of African Catfish Production
Source: Primary Data Processed

The average utilization of all production inputs on African catfish farming pool tarp in the study site reached a level of technical efficiency of 2,11, but when viewed as an input of production is known that the use of production inputs and livestock feed supplement inefficient because Ep < 0 Breeders grossly over dose in food nutrition in fish. Generally provide 3 meals a day, but the average farmer in most study sites provide meals up to 5 times a day. As a result, the cost to feed only up 80% in the cost structure some respondents even reach 90% of the cost of the other. The use of production inputs of seeds / seedlings fish, large pool tarp, supplements, medications, vitamins and labor are still not efficient. That is perternak still can develop longer use in order to increase production.

In allocative, use of production inputs in livestock farming of African catfish pond tarp in the average study site has not efficient, except for the use of fish feed is no longer efficient. So inefficient allocation still can add inputs and the need for a reduction in the use of production inputs that are no longer efficient. Therefore, the average of a use of production inputs have a level of economic efficiency of 13,43 where the use of animal feed and food additives from the snail, tiren, and lemuru have negarif level of economic efficiency. If dikomparasikan research AZ-Zarnuji and Hendarto (2011) on the analysis of the efficiency of catfish farming in Boyolali concluded that: 1) catfish farming in the study area are not technically efficient use of inputs that must be coupled with the output destination must be increased. When viewed from the efficiency of the price (EH) and economic efficiency (EE), the catfish farming is inefficient with efficiency value of 4.96 and a price of economic efficiency by 4,66.

CONCLUSION

1 The results of the simultaneous regression of the entire socio-economic factors are supposed to influence the profit decline in African catfish farming fish pond tarp significant effect at 5% significance level α. This is demonstrated by the results of the

analysis where the value of the F-statc. > F-table, so the conclusion is to accept Hi or reject H0. The test results of determination or keeeratan relationship between the variables analyzed, also shows that all the socioeconomic factors that are supposed to influence the dependent variable is quite high at R2 = 0,719 or with Adj-R2 = 0,618. This means that the decline in African catfish farmers profit pool tarp at the study sites is affected by all the independent variables were estimated at 71,9%, the rest is influenced by other factors outside the model.

2. Average profit rate of catfish farmers in the study sites is IDR 1.255.000,85 per business scale or as much as IDR 484.556,31 per 1.000 fry. These advantages are relatively high because of profitability (profitability) of 42,38%. According to the theory that every African catfish stocking of 1.000 fish tail, it will produce 100 kg of fish ready for harvest, but the results of the study revealed that on average each stocking 1000 fish tail meat produce ready to harvest as much as 116,23 kg weight ratio of 1: 1,16.
3. Average use of all inputs to the production of African catfish farming pool tarp at the study site reached a level of technical efficiency of 2,11, but when viewed as an input of production is known that the use of production inputs and livestock feed supplement inefficient because Ep < 0 The use of production inputs of seed / seedling fish, large pool tarp, supplements, medications, vitamins and labor are still not efficient. In allocative, use of production inputs in livestock farming of African catfish pond tarp in the average study site has not efficient, except for the use of fish feed is no longer efficient. The average use of production inputs have a level of economic efficiency of 13,43 where the use of animal feed and food additives from the snail, tiren, and lemuru have negarif level of economic efficiency.

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~as Oral Presenter~

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