

Income Contribution of Pig Livestock toward Poverty Reduction and Factors Influencing Pig Farming in Mimika Papua

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Abstract: Pig livestock is one of the superior livestock among people in Papua, thus it is expected that this livestock could become one alternative to alleviate poverty and improve domestic food security where pig livestock has important value in social, cultural, religious and economy manner. Lembaga Pengembangan Masyarakat Amugmedan Kamoro (LPMAK) is community institution in Mimika Papua that has social responsibility to improve their people well-being, particularly for pig farmer in seven ethnics in Mimika, that are in Dani, Damal, Amungme, Moni, Nduga, Kamoro and Mee. Objectives of this study is to found out contribution of pig livestock for well-being improvement among pig farmer in Mimika through companion program done by LPMAK and factors that influence pig livestock in Mimika, Papua. Data analysis was done with tabulation to discover income contribution of pig livestock toward total household income, poverty criteria was using criteria suggest by Sayogya (2010), and to discover scale determining factors for pig livestock we used Eviews 5.0 and Amos 18 software. Result of this study showed that pig livestock has positive effect toward household income of farmer's and reduce poverty of pig farmer in Mimika, Papua in minimum criteria. For seven ethnic under companion program of LPMAK, factors that influencing pig livestock were age, experience, amount of income source, and amount of family member, along with its education level.

Keywords: Income Contribution of Pig Farmer, Poverty, Factors Influencing Pig Livestock and Mimika, Papua

I. Introduction

Animal husbandry development in Papua could become strategic if it was done based on local demand and needs whereas local strategic commodity such as pig should become the regional priority program and being developed to support local specific animal feed availability that has high economy value. Current condition of pig livestock in Papua according to Iyai (2008), Awam (2010) and Marani (2007) still lies in subsystem community phase. Therefore, improvement in all aspect for good sustainability should be supported by all parties (stakeholder and shareholder). Lembaga Pengembangan Masyarakat Amugme and Kamoro (LPMAK) is a non profit institution, conduct companion program for the people as its *Corporate Social Responsibility* (CSR) particularly toward seven local ethnic groups in Mimika Papua such are Dani, Damal, Amungme, Moni, Nduga, Kamoro and Mee. One of the companion program is dedicated for pig farmers, this effort was expected to increase family income in order to terminate poverty and improve people's food resistance.

Economy value of pig livestock in Mimika Papua is quite high. Price for off-age cow (1-6 month old) it could be sold between Rp. 1.000.000.00 – 5.000.000.00, while age for slaughter (about 8-12 month) tagged about 6.000.000.00 – 10.000.000.00 while for 1,5-2,5 years old, selling would be appropriated with its weight, and sold with price between Rp. 12.500.000.00 – 13.500.000.00. It means that pig livestock with good management could bring solution in an effort to terminate poverty, particularly in Kabupaten Mimika of Papua Province. Besides pig livestock has a very important social cultural value.

II. Study Method

1. To discover contribution of pig livestock toward poverty level using Sayogyo criterion formulation.
 - a. Urban Poverty 320 kg/kap/thn
 - b. Rural Poverty 240 kg/kap/thn
2. To discover contribution of pig livestock toward total household income. using formulation:

Table.1. General Summary

Contribution	Formulation	Description
LPMAK	Income Source Ratio of Farmer = $\sum P.Petke-isukuke-z$ TPK	Proportion of domestic income and total domestic income of farmer

3. To discover factors influencing pig livestock in Mimika Papua by using Multiple Regression.
$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + e$$

III. Result And Discussion

1. Farmer's Identity

Pig farmer's identity would consist of age, experience, effort in farming, purpose for raising pigs. These would act as assessment indicator in pig livestock development under Economy Bureau for 7 Ethnic Group LPMAK Mimika, Papua. According to Suratiyah (2006), internal factor which affect farming effort would be age, education level, and experience. Other than that, this farming effort could be viewed from its purpose as the main occupation or as side line job. Dissemination of pig farmer in Mimika based on ethnic group Amungme, Dani, Damal, Mee, Moni, Nduga and Kamoro as partner of LPMAK according to age, experience in farming, education level, experience in farming also purpose of farming in Mimika, Papua was given in Table 2 below.

Table.2. Pig Farmer Identity in Mimika Papua

Farmer Identity	Ethnic Groups						
	Am	Da	Dn	Ka	Me	Nd	Mo
• Age of farmer (%)							
a. 20-35 year old	75.00	46.66	20.00	73.33	73.33	66.66	60.00
b. 36-45 year old	33.33	40.00	73.34	26.66	20.00	26.67	26.66
c. 46-55 year old	6.67	13.33	6.67	0	6.67	6.66	13.33
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Experience (%)							
a. 1 -7 years	46.66	66.66	0	100.00	33.33	40.00	26.66
b. 8-14 years	53.33	33.33	93.33	0	66.66	53.33	53.33
c. 15 - 20 years	0	0	6.67	0	0	6.67	0
d. more than 25 years	0	0	0	0	0	0	20.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Education Level (%)							
a. Illiterate – Primary	40.00	46.66	20.00	20.00	26.67	20.00	26.67
b. Junior High	40.00	33.33	46.67	20.00	26.67	33.34	26.67
c. Senior High	13.33	20.00	33.34	30.00	46.67	33.34	40.00
d. Higher Education	13.33	-	-	-	-	13.34	6.67
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
4. Purpose in Raising Pigs (%)							
a. Main Income	40.00	53.55	60.00	66.66	60.00	53.33	53.33
b. As side-line	13.33	6.67	6.68	0	0	13.33	0
c. Cultural value	46.66	40.00	33.33	33.33	40.00	33.33	46.67
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Description:

Am: Amungme, Da: Damal, Dn : Dani Ka : Kamoro Me : MeeNd: Nduga Mo: Moni.

Source: Primary Data Processing, 2015

Based on Table 2, it was discovered that farmer's age in Kabupaten Mimika was within productive range (15-64 years old), whereas productive age would clustered between 20-35 years old that were coming from Amungme by 75.00%, Dani 46%, Nduga 66.55%, Mee 73.33%, Moni 60.00% and Kamoro 73.33%. Meanwhile, age range of 36-45% was mostly hold by Damal ethnic group. This indicate that there was productive labors in farming, thus able to create larger opportunity in improving livestock productivity. Farmer's experience as suggested above showed that Kamoro ethnic has lowest experience in pig raising with 1-7 years, this was due to Kamoro generally work as fisherman and hunter. Pig farming was done recently due to better prospect thus Kamoro ethnic start to raise pigs, while farmers from other 6 ethnic has more experience with most experience was 8-14 years and hold by Amungme 53.33%, Damal 66.66%, Dani 93.33%, Mee 66.66%, Moni 53.33% and Nduga 53.33%. Experience in pig farming was obtained from parents and inherited to the next generation. Purpose of farming in all 7 ethnic group of Kabupaten Mimika was mostly done as its main income, based on its ethnic and utilization, Amungme 40.00%, Damal 53.55%, Dani 60.00%, Kamoro 60.00%, Mee 66.66%, Nduga 53.33% and Moni 53.33%, while for social cultural interest, Amungme 46.66%, Damal 40.00%, Dani 33.33%, Kamoro 33.33%, Mee 33.33%, Nduga 40% and Moni 46.67%. Sidelines job for those who works in Freeport Ltd or Government has prioritize it as side lines since livestock has its role in social cultural aspect of 7 ethnic group in Mimika. Price of pig livestock in Mimika is very promising as market opportunity where piglet after weaning about 2-6 month per pig tagged with price between Rp 2.000.000.00 – 5.000.000.00; young livestock of 6-12 month (Rp. 6.000.000.00-10.000.000.00) per pig, adult pig between 1-5 year old (Rp. 8.000.000.00-15.000.000.00). Those prices is very promising, thus 6 ethnic group above has more than 60% that would raise pigs as their main income source. Based on Table 2 above, it showed that some people did not go to school or graduate from elementary school thus comprehension character concerning this efforts (pig farming) was still underestimated and become impeding factors in receiving new innovation through many source of extension companion program of Economy Bureau of LPMAK. Self support group of LPMAK who

graduate from junior high was about 13.33%-46.67% for all ethnic group was still low thus briefing and training to receive new innovation still hard to realized. Farmer from 7 ethnic group who graduate from senior high school was 46.67% from Mee, 40.00% of Mee, and less than 30% for Amungme, Dani, Damal, Kamoro and Nduga. This might affect Pig Livestock Impact toward Alleviation of Poverty through sustainable aid of LPMAK. This was due to those graduate from Senior High School would be easier to accept new innovation in extension effort, companionship, training and literature.

Based on Table 2 above, it showed that from 7 ethnic group, 6 ethnic group that are Amungme, Dani, Damal, Mee, Moni, Nduga has average occupation as pig farmer from their parents. Most farms are traditional and to developed it into bigger business scale would need diligence, special guidance through companionship, either from government extension officer or LPMAK to be able to meet the need for family, to improve farmer's income, and consumer's needs. Kamoro ethnic group has 53.33% works as fisherman and only 26.66% raise pigs while other works in other sector.

2. Pig Farming To Alleviate Farmer's Poverty

Impact of Pig Farming toward Poverty of 7 ethnic as partner of Economy Bureau of LPMAK in Mimika. In order to found out urban poverty criterion based on Sayogyo Criterion 2010, poverty alleviation target according to poverty criteria was given below.

Table.3 .Poverty Criteria according to Sayogyo, 2010

Sayogyo Criterion	Description
a. Urban Poverty 320 kg/kap/thn (3.156 kkal/kap/thn)	Rice (Kg)
b. Rural Poverty 240 kg/kap/thn (2.367.12)	Rice(Kg)

Source: Sayogyo Criterion, 2010

Urban poverty criterion to found out impact of pig farming toward poverty alleviation for 7 ethnic group in partner of Economy Bureau of LPMAK through pig livestock empowerment has carrying impact of sustainable aid for pig farm. Pig farm development is highly potential to alleviate poverty with strategy and planning based on demand, where local livestock need could become priority program of Regional Government and LPMAK to support poverty alleviation, since through pig farming it could reduce unemployment, alleviate poverty along with more expensive price on livestock it would create an employment for farmer and his family. Poverty alleviation through pig farming involved in community empowerment program for 7 ethnic group has low number of poor farmer, where poor farmer was known when their income only able to meet their basic needs and unable to meet other needs. According to Tambunan (2015:81-82), he suggest that there was two poverty concept that are relative and absolute poverty. Relative poverty concept was measure concerning gap within income distribution, which generally defined in its relation with average level of distribution being measured as proportion of average income per capita as its relative measurement. While absolute poverty means that minimum needs to survive was not met with fix measurement in the form of minimum calorie added with non food component which also highly needed to survive. Absolute poverty was also known as extreme poverty. Based on those concept, poverty level for local farmer in Mimika, as partner of Economy Bureau of LPMAK was categorized as relative poverty since farmers from 7 ethnic group in Mimika can be measured using average income level of farmer per capita/year. Impact of sustainable aid of LPMAK could alleviate poverty for household. In order to measure amount of rice needs per capita per year based on non pig livestock income and its impact was given below.

Table.4.Domestic Poverty Level of Pig Farmer in Mimika Papua

Poverty Criteria	Amount of rice need/capita/year based on income (Pig and Non Pig) A	Amount of rice need/capita/year based on income (non pig) B	Impact of Pig Livestock % (selisihantara A dan B x 100%)
Ethnic Group			
Dani	Kg	Kg	Kg
Minimum	497	150	69.81
Max	1229	700	43.04
Average	750	403	46.26
Damal			
Minimum	500	249	50.2
Max	1228	600	51.16
Average	865	481	44.39
Amungme			
Minimum	379	201	46.96
Max	1372	900	54.40
Average	921	474	48.53
Moni			
Minimum	497	178	64.18

Max	1416	600	57.62
Average	707	337	52.33
Nduga			
Minimum	471	186	60.50
Max	1221	500	59.04
Average	842	352	58.19
Kamoro			
Minimum	425	204	52
Max	843	480	43.06
Average	632	350	44.62
Mee			
Minimum	390	192	50.76
Max	1230	600	51.21
Average	650	325	50

Source: Primary Data Processing, 2015

Description: Min: Minimum, Max: Maximum, Average: Average

Based on Table 4 above, it showed that poverty for pig farmer as partners of LPMAK Economy Bureau from 7 ethnic group has brought positive impact. Income from pig farming and non pig farming has able to alleviate poverty for 46.26% Dani people, whereas most of them has been able to alleviate poverty by utilizing capital aid from LPMAK Economy Bureau in maximum for 69.81%. Success rate in Dani people was due to farmer's awareness to give their best effort through capital aid from LPMAK. Benefit of pig farming in order to alleviate poverty among Damal people is not significantly different between success and unsuccessful in alleviating poverty. Success rate for pig farming among these people is 44.39%. Although they have also used the same capital aid from LPMAK, they were unsuccessful due to several constraints such as conflict vulnerable, farmer's skill constraint, limited extension officer from LPMAK Economy Bureau. Poverty alleviation among Amungme people has reach 54.40%, which means that most pig farmer has able to reduce their household poverty through their effort, using capital aid from LPMAK minimumly 46.96% and maximumly 48.53%. Several obstacles faced by Amungme people were their vast territory thus contain conflict vulnerable, pig livestock contain more social cultural value on it, pig farming still traditional, farmer has low education thus it is hard to alleviate poverty, particularly among local people in Mimika.

Poverty alleviation development among Moni has reaching 64.18% which is quite good to alleviate poverty. This occurs due to farmer's awareness in using sustainable aid given by LPMAK through its Economy Bureau thus farmer could change their poverty status, therefore they could put their children in schools, and able to renovate their houses. However, some 36% Moni people has failed to do this and they were still poor. Thus there should be more companionship, and consistent sustainable aid for them. Average poverty level among Nduga people is 58.19% and creating a gap between those who succeed and those who still poor as impact of pig farming. Thus strategies should be developed such as more companionship program, extension from government or LPMAK, and business motivation regarding pig farming. Technical constraints concerning amount of aid given toward business group among Nduga people would affect the success rate since their aid nominal is lower due to lots of KSM Nduga which are about 850 groups and this number is the largest among other ethnic group. Success rate for poverty alleviation among Kamoro people has reach average 44.62% and then rise into 43.06% while the remain still has to deal with poverty in all its limitation. Some measure should be take such as to improve structure in Economy Bureau or conduct companionship performance evaluation since KSM as partner of Economy Bureau in this ethnic group is the smallest among other ethnic group. Amount of KSM in Kamoro is about 107 business group, either works in animal husbandry, agriculture, cooperatives and fishery. Impact of this pig farming among Mee is quite good where it success rate reached 51% while failed farmer reached 50.76% and in average those who succeed was about 50%, it means those who do succeed is quite many.

3. Analysis in Determining Factor for Business Scale

Multiple regression analysis toward determining factor for business scale in Mimika has several factors that influence its pig farming business scale. Moreover, it could be seen from multiple regression equation formulation below:

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + b_8 X_8 + b_9 X_9 + e$$

Description:

Y= Determining factors for pig farming business scale

X1= Farmer's age (year)

X2= Farmer's level of education

X3= Experience in raising pigs (year)

X4= Amount of pig farmer's income in household (Rp)

X5= Amount of labor in pig farming

- X6= Land owned by farmer
 X7= Farmer's family member
 X8= Time spent for pig farming
 X9= Days of extension

Table 5. Determining Factors for Business Scale of Pig Livestock

Variables	Symbol	Coefficient	Std. Error	T Statistic	Prob.	Significance
Age	X1	-0.39949	0.162719	-2.45509	0.0159	**
Education	X2	-0.01427	0.021953	-0.65024	0.5171	TS
Experience	X3	0.344098	0.05941	5.791963	0.000-	***
Total Income Source	X4	-0.21244	0.083031	-2.55857	0.0121	**
Total Labor	X5	-0.12532	0.23414	-0.53525	0.5938	TS
Amount of Land	X6	0.05956	0.079548	0.748728	0.4559	TS
Amount of Family Member	X7	-0.24756	0.122099	-2.02752	0.0455	**
Time Spent	X8	0.098009	0.208647	0.469738	0.6396	TS
Days in Extension	X9	-0.02491	0.038282	-0.65078	0.5168	TS
C	a	3.498408	0.605394	5.778726	0	
R-square		0.424938	F-statistic			
Adjusted R-squared		0.369286	Prob (F-statistic)			

Source: Primary Data Processing, 2015

From F statistic we obtain probability value 0,0000, it showed that all variable has been affecting pig farming in significant manner (confidence level 99%). T statistic test showed that farmer's age, amount of farmer's income, amount of farmer's family member has negative and significant effect toward pig farming business among 7 ethnic group in Mimika. Farmer's age has negative and significant effect toward business scale. Higher farmer's scale means lower business scale. This was due to as someone is getting older, his work productivity would decrease but this is different with unproductive age, thus time spent to take care of pig livestock will be lower. Farmer's experience in pig farming has negative and significant effect toward business scale. Longer ownership would enrich one's experience in pig farming. Source of farmer's household income would be influence by more family member involved in the business means that pig farming ownership is smaller since every member of the family also works as public servant or private employees thus their time spent to raise pigs would be limited, thus livestock ownership would be smaller. With lots of family member, its pig livestock ownership would be smaller. Pig livestock was raised on farm to prevent social cultural problems done by family member thus pig livestock is uncertain in its population number. Pig livestock also used for social cultural motives an not just for household economy activity.

IV. Conclusion And Suggestion

Conclusion

1. Pig farming has become one of the alternative to alleviate farmer's poverty in Mimika, Papua
2. Factors that influence pig farming is age, experience, amount of income source, and amount of family member.

Suggestions

1. Improve effectiveness of pig livestock for farmer's household economy.
2. There were lots of farmer's household without companionship program.

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