

# Value Chain and Policy Studies in Support of Native Pig Production in Eastern Visayas, Philippines

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## ABSTRACT

There are ongoing efforts to improve the native pig industry in Asia and the Philippines. This study investigated the flow of native pigs from the raisers to the final consumers and examined public legislation that impacts on the functioning of the chain. This descriptive study utilized a cross-sectional design

of data collection obtained from a total of 80 respondents from Eastern Samar and Leyte using a survey questionnaire. Data were analyzed using descriptive statistics such as frequency, percent, mean, and range. Results showed that a farmer earns a margin of Php 500 (9.59 USD) per head for 6-7 months raising at a selling price of Php 100 (1.92 USD) per kg live. Slaughtering pigs and selling the meat by kilos give a margin of Php 1,400 (26.86 USD) per head. Processors earn a margin of Php 1,700 (32.61 USD) per head from selling *lechon*. Traders buy native pigs from raisers at Php 100/kilogram, live weight and earn a profit of Php 94.32 (1.81 USD) per kilogram. There are no known policies of LGUs which are focused solely on native pigs raising and their products. The lack of awareness of LGUs on native pigs' potential seems to be the reason why there are no ordinances that are supportive solely of native pig production and marketing.

**Keywords** – Agricultural marketing, native pig, value chain, policy study, descriptive design, Eastern Visayas, Philippines

## INTRODUCTION

Pig production is one of the major sources of family income for farmers in some developing countries in Asia. As these countries grow, their share of world meat production is said to increase to about 60% by the year 2020 from a modest 31% in 1980. Southeast Asia alone is projected to produce a share of 13.2% of the total of 60% (Huynh, Aarnink, Drucker & Versteegen 2007).

However, pig production in Southeast Asia does not only talk about the mixed breed and commercial pigs; it also includes native pigs. A native pig, as described by Baguio (2017) is a product of indiscriminate crossbreeding between domesticated wild pigs and introduced breeds of pigs." Its adaptability to local environmental conditions, resistance to diseases, and unique texture and taste of meat make it different from the commercial pigs. There is an existing demand for native pigs in Southeast Asia, particularly during cultural celebrations and ceremonies.

There are ongoing efforts to improve the native pig industry in Asia and the Philippines. An example would be the works and efforts of the International Livestock Research Institute (ILRI) which "works to improve food security and reduce poverty in developing countries through research for better and more sustainable use of livestock." ILRI is a part of the global research partnership for a food-secure future of the Consortium of International Agricultural Research

Centers (CGIAR). Among the two offices of ILRI in Southeast Asia (China and Vietnam), Vietnam houses its regional hub. Activities in this region are divided into two categories. The first category is associated with sustainable intensification of crop-livestock systems; exploitation of market and production system opportunities. The second category is focused on threats associated with livestock and the mitigation of risks in changing agricultural systems. Under the first category are researches related to conservation and utilization of animal genetic diversity in the region and value chain and market development for smallholder participation and productivity. With this, ILRI and partners in Southeast Asia initiated a series of market research and value chain improvements in Vietnam and the Philippines. The proposed project will focus on improving the production of native pigs (International Livestock Research Institute, Asia).

In the Philippines, there are several milestones in terms of policies supportive of native pigs raising. The Philippine government passed Republic Act No. 10068 or the Organic Agriculture Act of 2010. In that same year, the Department of Agriculture ordered the establishment of a program for the conservation, development, and utilization of native animals such as chickens, pigs, and ducks which are normally domesticated by Filipinos for food. The program was designed to respond to the impact of climate change aimed at enabling native animals to survive in adverse weather conditions. The Committee on Food and Agriculture in the House of Representatives approved last December 2014 the bill that will pave the way for greater government support for Philippine native animal breeders.

The Philippine native pig has been and is still a source of additional income to financially challenged farmers particularly in rural areas. This economic function of the native pig has been made possible because it is able to survive and reproduce even with minimal material and management inputs. Moreover, being a product of natural selection, native pigs possess characteristics that enhance their adaptability to local environments and resilience to climatic perturbations. According to Food and Agriculture Organization (FAO) of the United Nations, “there is an urgent need to respond to the pressing problems of continuously declining genetic diversity and loss of genetic resources through indiscriminate crossbreeding, changing market conditions or simply neglect to conserve the indigenous animal genetic resources.” In fact, in a study of Monleon (2011), on the local conservation efforts for the Philippine native pig in Marinduque highlighted the need to conserve the native pigs in the community. He further suggests that the effort involves policy formulation, dissemination of conservation

strategies, the participation of local communities, and understanding the market and non-market value of the native pig to the community's economy. Moreover, according to a study implemented in the Bondoc Peninsula, the current marketing channels and pricing systems for native pigs are generally considered inefficient. This conclusion is based on the fact that traders or middlemen are reaping larger proportions of the income from native pigs than the producers.

Therefore, the Department of Science and Technology-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development, Bureau of Animal Industry and some State Colleges and Universities, including Eastern Samar State University, are implementing a program called conservation, development and profitable utilization of native pigs in Eastern Visayas. The project was divided into three studies. This paper is about the value chain and policy studies in support of native pig production in Eastern Visayas.

## FRAMEWORK

There are various subsystems that are interacting within a marketing system that needs to be considered: (1) Producer/raiser subsystem consists of the initiators of production (i.e., small hold native pig farmers). The goal of the producer is to minimize marketing obstacles and achieve a fair price for his produce and ultimately be able to equalize supply and demand and promote stable price and income. (2) Flow subsystem facilitates products financial and information flows. The ultimate goal of this subsystem is to attain maximum long-term profit; (3) Functional subsystem consists of marketing functions or services related to the creation of place, time, and form utilities. The aim is to increase marketing efficiency and ultimately achieve a reasonable return to investment; (4) Channel subsystem consists of market participant or intermediaries who are directly responsible for making the native pig products available to the user at the right place, time, and form. They are considered the "actors" in the system that performs vital functions, but sometimes they get the ire of the producers, consumers, and the government. These intermediaries include two types of institutions; the middlemen and the various facilitating organizations that provide needed services to complete exchange between buyers and sellers usually called "channel of distributions." In addition to these intermediaries are the government and private institutions and associations, which are involved in moving the products from the production sites to consumption centers. The goal of the intermediaries is to minimize short-term risk and ultimately attain stable supply, and maximum long-term profit as possible; (5) Consumer subsystem which is positioned at the

end of the marketing system refers to the final repository of products produced by farmers. The goal of consumers is to obtain the product at reasonable prices and with greater satisfaction relative to cost; (6) Environmental subsystem which facilitates market performance encompasses four factors that affect the entire marketing system: climatic/physical, socio-cultural, economic/technological, and legal/political factors. This subsystem aims to minimize market imperfection. Overall, the end of the marketing system is consumer satisfied with the product. In return, the consumer provides feedback that is input to improve the entire marketing system.

## **OBJECTIVES OF THE STUDY**

Improving the earning capacity of native pig raisers requires that their activities be studied from production, processing, as well as marketing. Hence, this study aimed to (1) determine the socio-demographic profile of native pig raisers, traders, and processors; (2) to find out the production, processes, and marketing systems of native pigs; and (3) to assess current local government policies related to native pig production in Eastern Visayas, Philippines.

## **METHODOLOGY**

### **Research Design**

This study used the descriptive survey with a cross-sectional design of data collection administered on the native pig raisers, traders, and processors, through key informant interviews using the questionnaire developed by Nueva Viscaya State University (NVSU) research team conducting a similar study in their respective region. Purposive/snowball sampling was used in Eastern Samar based on data provided by the Office of the Provincial Agricultural Services (OPAS). The Department of Agriculture-Regional Field Office (DA-RFO) identified three towns in Leyte to have native pig farmers: (1) Ormoc City; (2) Kananga; and (3) Alang-alang.

To analyze, the data gathered, descriptive statistics such as frequency, percent, mean and range were used. Value chain analysis was used to assess the flow of native pigs from the raisers to the final consumers. Costs and returns of native pig production were also done. Moreover, compilation and review of existing policies related to native pig production in the target areas of the project were also conducted. The information gathered from the policies reviewed was enhanced by the primary data gathered through key informant interviews.

### Research Site

Study sites were selected to include four (4) municipalities of Eastern Samar that are raising native pigs such as Lorente, Balangkayan, San Julian, and the City of Borongan as shown in Figure 1.

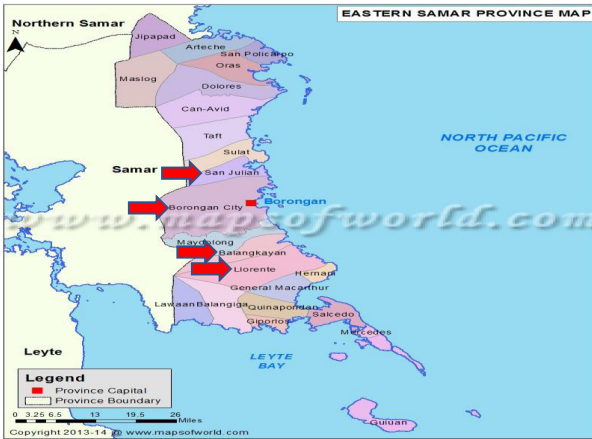


Figure 1. Eastern Samar Province Map

For the province of Leyte, the three towns identified by the Department of Agriculture – Regional Field Office to have native pig farmers are (1) Ormoc City; (2) Kananga; and (3) Alang-alang as can be seen in Figure 2.

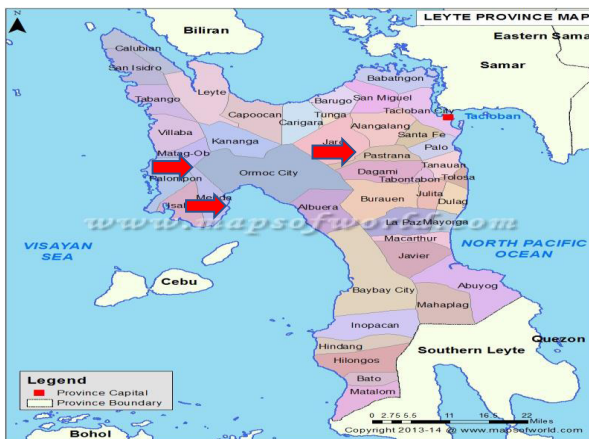


Figure 2. Leyte Province Map

## Participants

Three survey questionnaires were used and administered on: native pig raisers, traders, and processors. A total of 58 respondents from identified research sites in Eastern Samar and Leyte were interviewed: 44 native pig raisers, 10 traders, and 4 processors.

## RESULTS AND DISCUSSION

Results showed that there is high involvement of women in the native pig raising and marketing with 57% and 60% raisers and traders respectively. On the other hand, 75% of the processors are male. Majority of the respondents are married. This shows that more married respondents engage in native pig raising and marketing. The mean age of native pig raiser is 44. Native pig traders are 39 years old while most of the processors are 52 years old.

Native pig value chain (Figure 3) involves native pig raisers in the study sites who obtain their initial native pig stocks from friends, neighbors, relatives or other community members at Php1,500 each piglet. They also get credit from friends, neighbors or relatives as they usually do not have access from formal credit sources. Some of the activities involved in the production of native pigs are providing housing facility, feeding, vaccination and deworming, breeding, and weaning.

Native pig raisers either practice free-range or provide semi-permanent housing for native pigs. They depend on available local feeds such as rice bran, camote leaves, *Schismatoglottis calyptrate* (Roxb.) and banana stalks to name a few. On the other hand, the supply of commercial feeds, vaccines, and dewormers are obtained from the local veterinary and feed supply stores. Inbreeding is practiced by most of the raisers and weaning period is usually from 45 to 60 days, at 1 kg weight. Piglets can then be sold at Php 1,000 to Php 1,500 each while finisher is at Php 2,500 to Php 3,000 at 25 to 30 kg weight.

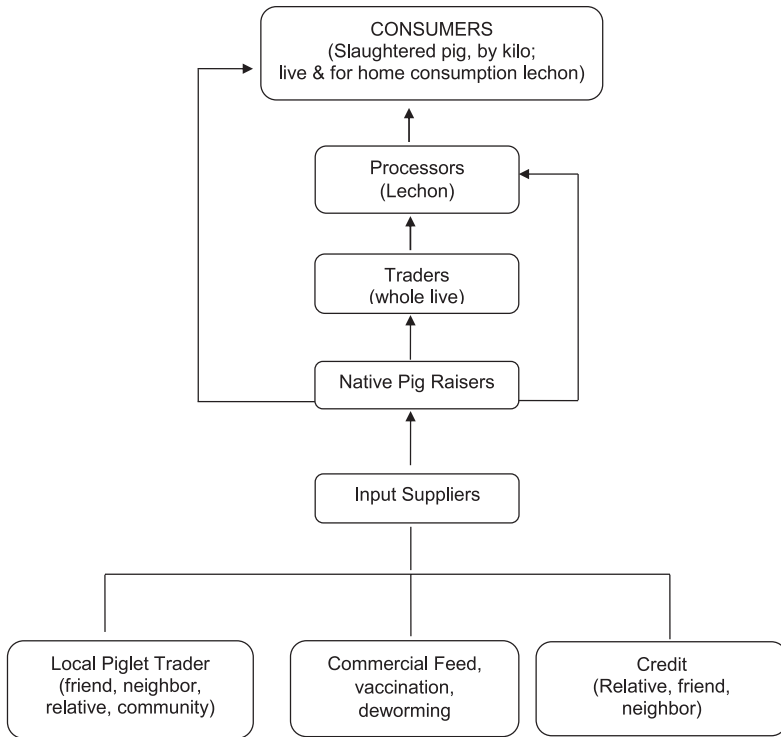


Figure 3. Native Pig Value Chain Analysis

These raisers sell whole live native pigs to traders or the processors of roasted native pigs (lechon). At times, they also slaughter their native pigs and sell the meat per kilo in their respective barangays. Hence, the native pig consumers include those who buy whole native pigs for lechon purposes or those who buy pork meat by the kilo when the raisers slaughter their pigs. These value-adding activities (slaughtering, roasting) will help improve the overall value of native pigs, its marketability and price in the region at the same time creating jobs for local people.

In Eastern Samar, processors go to native pig raisers' location using chartered tricycles to buy native pigs at Php 100/kilogram live weight. These processors, in turn, sell processed *lechon* at Php 800.00/kilogram. Whole lechon pricing is based on size which starts at Php 4,500 to Php 6,000. Moreover, processed/*lechon paksiw* is at P200 per order.



In Alang- Alang, Leyte, most traders are in motorcycles, scouting for native pigs. Native pig raisers sell native pigs at no specific period to traders, processors, and consumers. There can be a barter of a 20-kilogram native pig with 10 sacks of *palay*. If they slaughter native pigs, they can sell it on credit at Php 200-Php 250 per kilogram payable after four months. Whole lechon pricing also starts from Php 4,500 to Php 6,000.

Both Eastern Samar and Leyte lack ordinances on raising and selling native pigs. To date, ordinances at the municipalities and barangays were limited to the prohibition of stray pigs raising. This is not only for native pigs but commercial breeds as well. In Alang-Alang, Leyte, no person is allowed to have their domestic animals like pigs, goats, chicken, large cattle, horses go astray in any public or private places. This regulation is for the protection of the environment. It was observed that there is a weak implementation of stray animals, especially in the interior barangays. The distance of raising pigs from residential areas is rather unclear. This can also be attributed to the weak implementation of municipal zoning ordinances as well as with the issuances of location clearances.

All towns and cities covered under the project lack ordinance on movement/ selling of native pigs. The ordinances dealt with price control of commercial meats along with aquatic products. To promote native pigs, Borongan conducts a yearly *Lechon* Festival as part of its fiesta celebration. Ormoc City has promulgated ordinances that cover food safety and healthcare issues such as “An Ordinance Prohibiting the Peddling or Selling of “Hot Meat” at the Public Market and Elsewhere within the City of Ormoc, and the Slaughtering of Animals and/or Fowls for Sale, Outside the Abattoir or Slaughterhouse and Providing Penalties for Violation”. It also has an updated Market and Slaughterhouse Code. It has also initiated policy support on conservation and specialty ethnic products development such as the following ordinances:

- An Ordinance Enacting the Ormoc City Organic Agriculture of 2014
- An Organic Agriculture Project where there is Provision of Inputs for Organic Vegetable Production and Raising of Small Ruminants
- An Ordinance Accrediting Sustainable Organic Farmers Association in Ormoc City (SOFAOC)
- An Ordinance Establishing the Organic Fertilizer Production (Vermicast for Upland Rice Farming System)
- An Ordinance to Offer Brown Rice as Part of Regular Meal

### Gross Margin Analysis

Native pig raisers in Region VIII has plenty of raw materials that could be used as ingredients for animal feed. With the high price of commercial feeds, native pig raisers have low production costs by using other materials available in their barangays to feed pigs such as rice bran, *kangkong*, *Schismatoglottis calyprate* (Roxb.) back yard vegetables, etc. Gross margin analysis has been useful in analyzing the profit of pig farmers (Choeun and Sros, 2008).

### Native Pig Raisers

Cost calculations are based on native pig raisers using rice bran for their pig production and selling whole native pigs. The gross margin is around Php 500/head. This can vary according to two main factors: 1) increasing prices of rice bran and; 2) price fluctuations at the time of selling. Based on the figure of Php 1,500 gross margin for three heads, native pig raisers can earn Php 500 per head within 6-7 months of native pig raising (Table 1).

Table 1. Cost of Native Pig Production Using 100% Rice Bran and Selling Whole Live Native Pigs

Feed	Unit	Amount	Price (Php)	Total Price (Php)
<i>Expenses</i>				
Piglet (3 heads)	Piglet	1,500	4,500	4,500
Rice Bran	Kilogram	300	10	3,000
<i>Total Expenses</i>				<i>7,500</i>
<i>Income</i>				
Sold Pig (3 heads)	Pig	3,000	9,000	9,000
<i>Gross Margin (Income-Cost)</i>				<i>1,500</i>
<i>Net Profit Per Head</i>				<i>500</i>

Table 2. Gross Margin Analysis for Native Pig Raisers and Selling Slaughtered Pigs

Feed	Unit	Amount	Price (Php)	Total Price (Php)
<i>Expenses</i>				
Piglet (3 heads)	Piglet	1,500	4,500	4,500
Rice Bran	Kilogram	300	10	3,000
<i>Total Expenses</i>				<i>7,500</i>

<i>Income</i>				
Sold (Meat)	Kilogram	58.5	200	11,700
			<i>Gross Margin (Income-Cost)</i>	4,200
			<i>Net Profit Per Head</i>	1,400
			<i>Net Profit Per Kilogram</i>	72.79

When slaughtered, pigs are converted to pork at a rate of 78%, meaning, out of 25 kilograms of the live pig they only get 19.5 kilograms of pork from the carcass. The cost of a live pig is Php 1,500. Raisers earn Php 1,400 per head or Php 72.79 per kilogram of pork (Table 2). In Borongan, some native pig raisers use commercial feed mixed with rice bran. The production cost is around Php 3,700 per pig (Table 3). Income is Php 4,000 and the gross margin is Php 300 per pig.

Table 3. Cost of Native Pig Production Using 50% Commercial Feeds and Rice Bran

Feed	Unit	Amount	Price (Php)	Total Price (Php)
<i>Expenses</i>				
Piglet	Piglet	1,500	1,500	1,500
Rice Bran	Kilogram	100	10	1,000
Feed	Bag	1	1,200	1,200
			<i>Total Expenses</i>	3,700
<i>Income</i>				
Sold Pig	kilogram	40	100	4,000
			<i>Gross Margin (Income-Cost)</i>	300
			<i>Net Profit Per Kilogram</i>	7.5

This cost does not include labor, pig pens and other materials. With the present price of a live native pig at Php 100 per kilogram at the farm gate, the raiser gets Php 300 per pig if he uses a mix of commercial feed with rice bran (Table 3). Rice bran and other available resources are available around their houses/communities.

## Native Pig Traders

Table 4. Gross Margin Analysis of Native Pig Traders

Description	Unit	No. of Units	Price/Unit	Total (Php)
<b>Income-Sell to Market</b>				
Traders sell pigs to consumers (3 pigs, 25 kg/head)	Kg	75	200	15,000
		<i>Total Income (A)</i>	<i>15,000</i>	
<b>Cost</b>				
<b>Farm Gate Price</b>				
Traders buy pigs from raisers (3 pigs, 25 kg/head)	Kg	75	100	7,500
<b>Other Expenses</b>				
Fuel	Liter	3	42	126
Meals	Lumpsum	1	300	300
		<i>Total Cost (B)</i>	<i>7,926</i>	
		<i>Gross Margin (Income-Cost)</i>	<i>7,074</i>	
		<i>Net Profit Per Kg</i>	<i>94.32</i>	

Normally, at the barangay level, some traders buy and sell native pigs. Typically, traders buy three pigs at a time, each weighing between 25 kilograms. They buy native pigs from raisers at Php 100/kilogram, live weight and can earn a profit of Php 94.32 per kilogram (Table 4).

## Native Pig Processors

The Lechon processors expressed that the cost of a live pig for lechon is Php 3,000 and they can sell it for Php 6,000. Processors can earn Php 1,700 per head or Php 68 per kilogram (Table 5). This cost and profit margin is calculated based on trade behavior at the barangays. There may be a difference in price compared to the market in different areas.

Table 5. Gross Margin Analysis for Processors (Lechon)

Description	Unit	No. of Units	Price/Unit	Total (Php)
<i>Income</i>				
Sales from Lechon	Whole Body	1	Php 6,000	6,000
				<i>Total Income (A)</i>
				<i>6,000</i>
<i>Cost: Farm Gate Price</i>				
Buying Pig	Whole Body	1	Php 3,000	3,000
Transportation	1 chartered		1,000	1,000
Meals	1	300	300	300
				<i>Total Cost (B)</i>
				<i>4,300</i>
				<i>Gross Margin (Income-Cost)</i>
				<i>1,700</i>
				<i>Net Income Per Kg</i>
				<i>68</i>

### Summary of profit margin

Table 6. Profit Margins per Pig/Head and Time Spent

Value Chain Actors	Expenses	Margins	Time Spent
Native Pig Raisers	2,500	500	6-7 months
Native Pigs Raisers Selling Slaughtered Pigs	2,500	1,400	6-7 months
Native Pig Traders	2,642	2,358	Per Day
Native Pig Processors (Lechon)	4,300	1,700	Per Day

## CONCLUSION

The value chain involves native pig actors (raisers, traders, and processors), local feed resources, and local markets, showing that even without the needed support systems, native pig raising, trading, and processing could sustain livelihoods especially to women who emerged as the dominant actors in native pig raising and trading. Aside from providing nutritious food for the family, raising native pigs can become an additional source of income for small scale farmers especially in rural areas. With leaner and tastier meat, alongside healthy benefits, native pig production can draw higher demand and command a better price in the market.

It can be observed, however, that raisers are getting lower profit margins compared to other supply chain actors. In six to seven months of production, he earns a margin of Php 500 per head at a selling price of Php 100 live weight per kilo. However, slaughtering pigs and selling the meat by the kilos gives a margin of Php 1,400. Most raisers lose the opportunity in earning a margin of Php 1,700 per head from processing and selling lechon (roasted pig), which are enjoyed by processors. Raisers will have better profits if they raise or start with ten or more pigs so that the costs for labor and pens are optimized.

Moreover, there are no known policies of Local Government Units (LGUs) which are focused solely on native pig raising and their products. The seeming lack of awareness of LGUs on native pigs' potential seems to be the reason why there no ordinances that are supportive solely of native pig production and marketing. While organic farming is being promoted in Ormoc City, this is limited to vegetables, rice, and small ruminants. Also, an Ordinance has been formulated to encourage the serving of brown rice in meal offering. Most barangays prohibit native pigs raised astray, especially in *Poblacion* and barangay proper/center.

## TRANSLATIONAL RESEARCH

The findings of this study may be best translated through benchmarking and implementing best practices from other successful native pig raisers, traders, and processors of Southeast Asia. To improve the earning capacity of native pig actors in the chain, specifically, raisers, operating on a larger scale is worth considering.

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