



Value Chain Analysis of Pig (*Sus scrota*) in a Highland, Indigenous Community: The Case of Sablan, Benguet, Philippines

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Abstract

Swine production is a booming industry in the Philippines, albeit majority are into backyard raising. Experts recommended the enhancement of the marketing aspect to parallel the development in production, thus, the need for baseline studies like value chain analysis. Few value chain studies have been conducted on lowland communities but none in highland indigenous communities. This study analyzed the value chain of swine production in Sablan, Benguet using Micheal Porter's generic value chain model and field observations. Results showed that the value chain of swine in Sablan consists of small scale holders. The important chain actors are the pig producers, traders, meat vendors, meat processors and consumers. The traders had the highest value added per unit while the pig raisers were the least efficient. The value chain in the area is distinct from other value chain studies in the country in lacking lechon actors. Sablan has potential to supply the market demand of pork in its neighbouring city and municipalities. With proper management and wider market outlet, it can result to a better profit efficiency and economic growth in the future. Moreover, the key actors should be given more opportunity and knowledge on their own operation to maximize the potential and opportunity of the pig market.

KEYWORDS

Value chain

Key actors

Sus scrota philippinensis

indigenous community

Introduction

In Asian countries particularly Cambodia, Laos, Philippines, and Vietnam, animal production has been increasing rapidly. Pig production shares 2.0% to 2.8% of the total value of the national Gross Domestic Product (GDP) and this expected to rise. In the Philippines, the swine industry is the second largest contributor to the country's agriculture next to rice. Swine production is a Php191-billion industry and is the largest

among the livestock and poultry industries of the country. It plays a major role in ensuring the country's food security by providing about 60% of the total animal meat consumption of Filipinos. However, majority or about 65% of the pigs in the Philippines are kept by small household backyard pig raisers.

In low income countries, the pig herds form part of the complex mixed farming system managed by backyard raisers. This is mainly due

to the many advantages that swine production offers—being more efficient in converting feed to meat than cattle or chicken, being prolific in reproduction, and being excellent in yielding usable carcass compared to other animals that produce red meat (Descallar, 2008). Also culturally, swine production is staple in many indigenous communities. In Benguet, Philippines for example, pig is part of the culture as residents would butcher one or several to celebrate, to commemorate the passing of a loved one or when a family member is not feeling well, and when one had a bad dream or simply to feed several people in a gathering or meeting (Agoot, 2019). Moreover, hog raising in Benguet is an important livelihood as it sustain the education of the many children and as an additional income for the thousands of farmers with unstable means of income.

With the economic and cultural importance of pig, there is a great incentive to increase swine production. However, the local pig industry is still confronted with inefficient production due to low sow productivity, high mortality due to inefficient diagnostic tool, and lack of native pig genetic resource conservation, improvement and utilization initiative (Livestock Research Division-DOST-PCAARRD, 2016). In response to these, the Department of Science and Technology - Philippine Council for Agriculture, Aquatic and Natural Resources Research Development (DOST-PCAARRD) is implementing a multi-million research program to improve the technical aspect of swine production from breeding to disease and feeding management. However, the marketing aspect is still very traditional particularly to backyard hog raisers. For swine production programs to be successful, the developments in the production side must be accompanied by parallel developments in the marketing side (Rola-Rubzen et al., 2002).

The marketing of livestock, meat or meat products in developing countries like the Philippines are fragmented due to the presence of at least one agent between the primary producer and the end processor (Bueno, 2009). This caused livestock injury and hassle as the animal was transferred from one intermediary to another resulting to decreased quality and quantity of meat products along the production chain. Another reason cited for the prevalence of the considerable amount of loss in the

marketing system of a developing country like the Philippines was the absence of 'economic incentive' to reduce losses, in which quantity was given more priority over quality (Manipol et al., 2014). These show the need to improve the marketing system, particularly of the backyard-raised pigs in the country.

Improvement in swine marketing would require first the understanding of the existing marketing systems and this is usually done thru value chain analysis. In the case of agricultural commodities, the value chain can also be termed as an agricultural marketing system which is defined as the set of players integrated in a sequence of value-adding activities starting from the production until the commodity reaches the final consumers. It is a complex system within which various subsystems interact with each other and with different marketing environments (Piadozo, 2001). There have been few studies on value-chain analyses of swine in the country such as the works of Rola-Rubzen et al. (2002), Merin (2011) and Manipol et al. (2014). However, these works are site-specific, usually in the lowland communities, and the country has several socio-cultural context. Thus, more studies on value chain are needed to have a clearer grasp on the marketing system of swine in the country.

This study documented the value-adding activities undergone by pigs (*Sus scrofa*) in Sablan, Benguet. The area is a highland indigenous community with a potential to become a major swine producer due to its proximity to the highly urbanized Baguio City and La Trinidad, Benguet. Specifically, the study aimed to identify and characterize the key actors in the chain and map out the swine marketing system; determine the value-adding activities involved in each level of the chain and their value contribution to the final product; determine the profitability of the major activities done by the key actors; and, identify the possible future market of swine and its market potential. The study hopes to present the marketing system of swine production in a highland indigenous community that was not available in literature prior to this. Also, the study hoped that the results would be an important baseline information for further improvement of the marketing system of swine and for policy making.



Methodology

The value-adding activities in each level of the value chain of swine production in Sablan, Benguet were determined and analyzed using Michael Porter's generic value chain model (Porter, 1985). Primary data were obtained from the major swine producers, traders, meat vendors, processors and consumers in Sablan, Benguet. Sablan was selected purposively due to its proximity to the neighbouring urbanized market outlets such as Baguio City and La Trinidad. To meet the target of supplying the pork demand in these localities, it is much better to assess and study an area where the market potential, road accessibility and production are efficient.

The study interviewed 40 pig raisers, five traders, three meat vendors, three meat processors and several consumers. Information gathered include their personal background, business profile, and the market structure, conduct and performance about pigs. In addition, representatives of the identified participating institutions or service providers in the swine value chain in the area were also interviewed.

The description of the activities and

contribution of the key actors in the value chain led to the analysis of their interaction with each other in relevance to the whole value chain. Cost and return analyses of the monthly operations of the every players in the value chain were also derived. These analyses led to the computation of cost per unit, selling and buying prices, value-added or margin and marketing margins. Value-added or margin is an implication of realized profit of a certain value chain actor (Recklies, 2001).

Description of the Study Site

Sablan is one of the 13 municipalities of Benguet, located in the northwestern part. It is a hilly but a fertile municipality of 8,640 hectares (Figure 1). The municipality is bounded on the north by the Municipality of Kapangan; on the east by the Municipality of La Trinidad; on the south by the Municipality of Tuba and on the west by Aringay, La Union. About half of the area is used mainly for farming and the rest is covered with forest and for other commercial purposes. Sablan is composed of eight (8) barangays namely: Poblacion, Kamog, Bagong, Banengbeng, Banangan, Bayabas and Pappa. Majority of the inhabitants of this municipality are Ibalois.

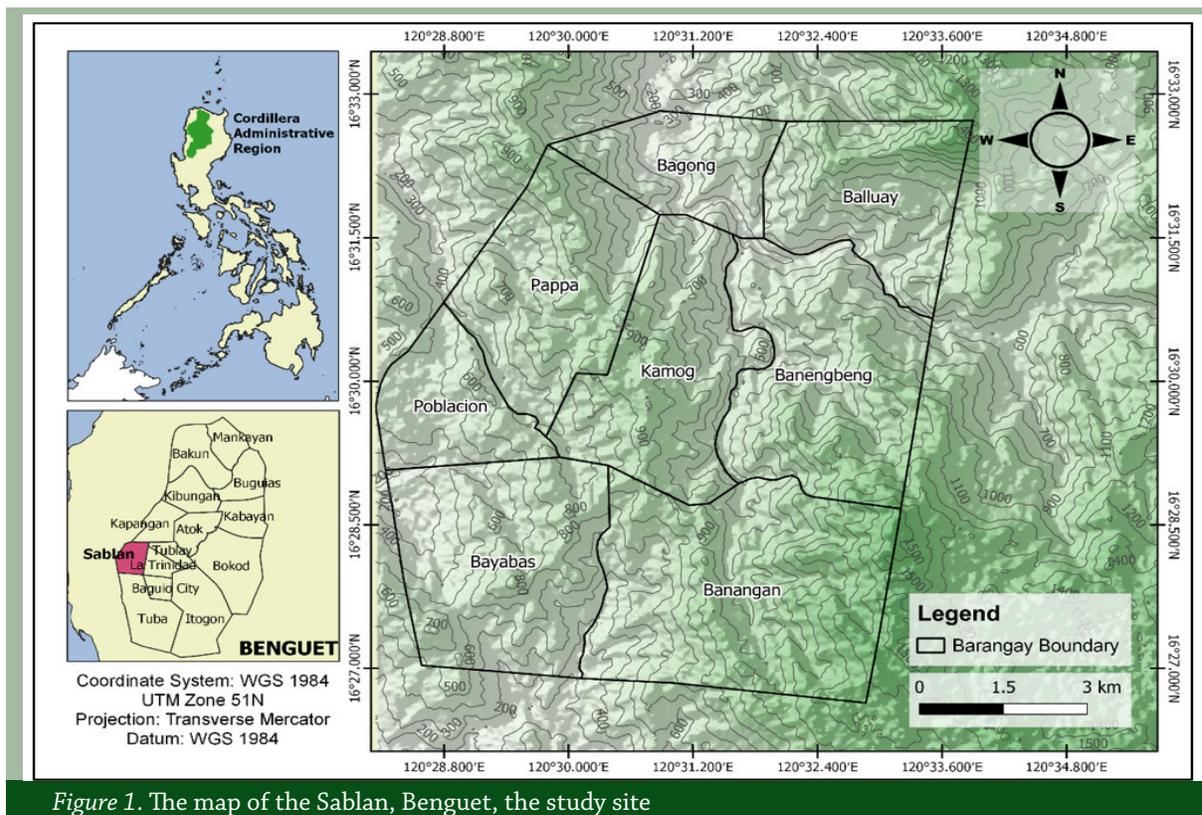


Figure 1. The map of the Sablan, Benguet, the study site



Results and Discussion

General Characteristics of the Value Chain Actors

Hog Raisers. A total of 40 pig producers were interviewed from the eight barangays of Sablan, Benguet. Thirty-seven of the hog raisers are into backyard operation while three (3) are commercial-scale. The average age of the hog raisers is 42, with 21 as the youngest and 68 as the oldest. The respondents are predominantly at 51 to 60 years old (32.5%). This difference in age of pig producer is an indication that pig raising is a dominant activity in the area, which can be practiced by anyone from the family regardless of age.

Majority of the hog raisers are females (80%) while 20% are males. This result is consistent with the report of Villar et al. (2002) that hog raising in the smallholders' perspective is not a regular business endeavor and is managed by housewives. Usually, hog raising is practiced when the need arose or when there were available capital resources. Of the hog raiser respondents, most (98.5%) were married and living with own family and majority (77.5%) have hog raising as their major livelihood. Sixty-two (62.5%) were raising crossbred pigs while fifteen (37.5%) of the respondents were raising native pigs (*Sus scrofa philippinensis*).

Traders. The pig traders are the bulk-buyers of pigs in the area that had the logistical capacity to deliver these pigs to the demand area and other neighbor municipalities and city. The youngest is 26 years old while the oldest is 52 years old. The average age is 39 years old. All are male and married, with an average household size of five (5). They are at least high school graduates.

Meat vendors. The meat vendors are the two wholesalers and three retailers of pork cuts in the public market of Sablan, which opens only once a week. Three are from the Sablan Public Market who also had own meat store in their barangay while the remaining two were selling meat in their own meat shop in the barangay. The average age of the meat vendors is 46 years old, the youngest is 32 and the oldest is 49. Three of them are female while two are male. In case of the

male vendors, either they contact a trader to deliver pig or they will be the ones to travel and collect pigs from the traders.

Meat Processor. In the study area, the meat processors are making 'longanisa'. Three were interviewed, two female and one male. Their average age is 36 and are all married, with an average household size of three (3). These meat processors usually bought pork from the meat vendors. One meat processor is selling 'longanisa' in the public market every Wednesday and supplies the store in their barangay and neighboring barangay. Another one is selling it house to house or by orders. They only operate as 'longanisa' makers as part time.

Consumers. Consumers are the end value chain actors in the study who buy either processed meat or the pork meat. According to the consumers interviewed, they consume pork and processed meat (longanisa), on the average, at least twice a week. They usually buy 4 kilos of pork and 2 dozens longanisa in a week. The bulk of these meat are mostly consume during Sundays, birthdays and holidays.

The chain actors in Sablan, Benguet is distinct for lacking lechon actors that were reported in other value chain studies in the country (Rola-Rubzen et al., 2002; Manipol et al., 2014). This shows one major difference between lowland and highland communities in the Philippines. Lechon has been reported a traditional delicacy in Filipino dining but not in highland communities, as our study shows.

Value Chain Analysis (Inter-firm relationship)

This section analyzes the relationships between value chain players and tagged based on information sharing, price, competition trust and presence of value added services.

Hog Raisers to Traders. The relationship of this two chain actors were intact. Pigs were raised for about 5 to 6 month on the average. When the pigs reached the marketable weight, they are ready to be collected by the traders. The hog raisers and traders contact each other through cellphones. Most of them know each other for a long time. Others were relatives wherein the consignment basis of payment is prevalent. For traders who are not related to the hog raisers,



cash payment is the norm. Direct interaction is the usual means of transaction. Sometimes, the hog raisers contact the traders to collect their pigs, which had already reached the marketable weight. Sometimes, it's the traders who travel to the barangays to buy pig.

Because the hog raisers had different cycles of production, there is minimal competition. The hog raisers do not even perceive any competition among them. The traders are willing to collect from whoever as long as the pigs have reached the marketable weight. Regarding the price, the hog raisers said that the price is set by the traders. As Mr. Walang disclosed,

“Nu panggep iti presyo, ada ti tungtungan nga nu umabot iti 90 kilos o nasurrok jay baboy nga alan da ada dagdagna nga lima kada kilo liveweight ngem nu 80 laeng ket jay napagtungtungan nga presyo isu't masurot” (Regarding the price, there is an agreement that if the pig reached 90 kg then there will be an additional Php5 per kilo. However, if it is only 80 kg then the agreed price will be followed).

Some hog raisers also articulated that they are the one who set the price of their pig which could range from Php9,500 to Php12,000 depending on the estimated body weight of the pig. They sometimes follow the farm gate liveweight price, which range from Php105 to 115 per kilo.

This result is comparable with the study of Manipol et al. (2014) where hog raisers are predominantly dealing with traders or retailers. However, our result differs with Rola-Rubzen et al. (2002) where hog raisers in Western Leyte can sell their pig to traders, to processors or directly to consumers.

Traders to meat vendors. The traders and meat vendors have strong relationships with each other, but just like the hog raiser-traders relationship, they do not have formal contracts that bound them legally. They rely heavily on verbal agreement. The mode of communication is through personal contact or through cellphones. Direct interaction is the usual means of transaction.

Consignment type of payment is also prevalent at this chain level. The price set by the

traders is fixed at Php12,500 per head, which the vendors will pay after the meat is sold. But when in cash basis, the price is set at Php12,250 pesos per head. The price is based on their agreement since some meat vendors pay installment to the traders. According to the traders, they have no strict policy regarding the pricing unlike when they buy it to the hog raiser. The price is determined through the negotiation between traders and meat vendors. Also, minimal competition is observed at this level. As meat vendor 1 articulated,

“Nu panngep ti panaglako iti baboy ditoy market awan met ketdi ti competition ta manmanu kami lang santo tunggal Wednesday lang met nga ag-op-open gamin ti public market ditoy Poblacion. Isu nga ti ikasta mi metlang ket itawag o nu itext mi jay agideliver ti baboy ti nasapsapa, Sabado kasjay tapos dependi metlng gamin nu ipapartim talaga nga nasapsapa ngem nu sika ti mangparti karkaro manen nga dapat rabii ti martes adan jay baboy” (In terms of selling the meat, there is minimal competition between us meat vendors or traders since we are just few and the public market is only open on Wednesday. We have to contact the traders to deliver the pigs as early as possible so we would be able to prepare and have the meat ready by Tuesday night).

Traders to consumers. Some areas of Sablan has a strong relationship between the traders directly to the consumers. This link is observed in the barangays where meat orders are collected from the households before butchering the pig. In this link, the traders is also the butcher and meat vendor. Either the consumers collect their meat orders or the trader delivers it to them. This link is observed specifically in barangays Banengbeng, Balluay and Bagong. These three barangays are farthest from the city and it is not easy to be going to the nearest city just to buy pork. The trader, incorporating the payment for labor of the butcher and delivery, sets the price at Php220 per kilo.

The traders collect pigs from within Sablan and transport these to the demand areas. Table 1 shows the major sources and destinations of pig. It is interesting to note that some barangays are supplying their neighboring barangay. Barangay Banangan is supplying the most number of barangays while Barangay Poblacion is the most



supplied by other barangays since it is the business center of the municipality.

Table 1
Major Source and Destination of Pigs in Sablan by Barangay.

Source	Destination
Poblacion	Poblacion, Burgos
Banangan	Banangan, Kamog, Pappa and Poblacion
Bayabas	Bayabas, Poblacion and Irisan
Kamog	Kamog, Poblacion
Pappa	Pappa
Bagong	Banengbeng, Balluay and Bagong, Sablan
Balluay	Banengbeng, Balluay and Bagong, Sablan
Banengbeng	Banengbeng, Balluay and Bagong, Sablan

Meat vendor to consumers. The relationship between this links is tight. It was observed that most of the meat vendors have their own 'suki' which automatically have their own meat orders that the consumers would just pick up. In this link, bargaining is very frequent but the average price is Php210. The price could go as low as Php190 depending on the cuts and parts of pork.

Meat Processors to consumers. The relationship between these actors is very tight since the processors chose to sell the process meat ('longanisa') house to house. The processor deliver it personally to its consumer. Majority of the consumers said that sometimes they directly order 'longanisa' from the meat processor. This product comes by dozen with price ranged at Php110-130 or Php220-250 per kilo depending on the flavor.

Figure 2 shows the common relationship dynamics flow of key actors identified in Sablan. It shows how the main commodity (pig) moves through the key actors as it reach its end point.

Figure 3, on the other hand, details the product and market flow among the players of pig value-chain in Sablan, Benguet. This shows the link between the players and how much they pay from link to link. The prices indicated were based from the comments of the key actors about the selling and buying price. It also shows how the product flows from the production up to the final consumer of the pig within the municipality of Sablan. It also shows the facilitating institutions that help the key actors.

Cost and Return Analysis

Producers. Producers normally buy a weanlings at the age of 45 days. The estimated weight average was 10kgs and the average price is Php2,647 per piglet. According to the respondents, the average marketable weight is at 90 kilograms. To reach this weight, the pig must have an average daily gain of 533g for

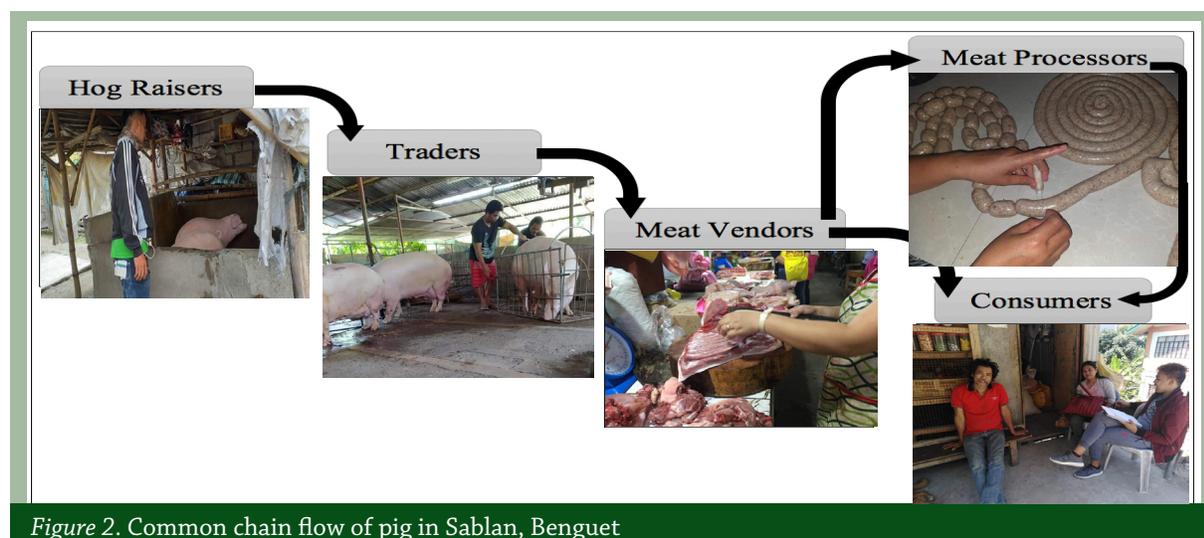


Figure 2. Common chain flow of pig in Sablan, Benguet



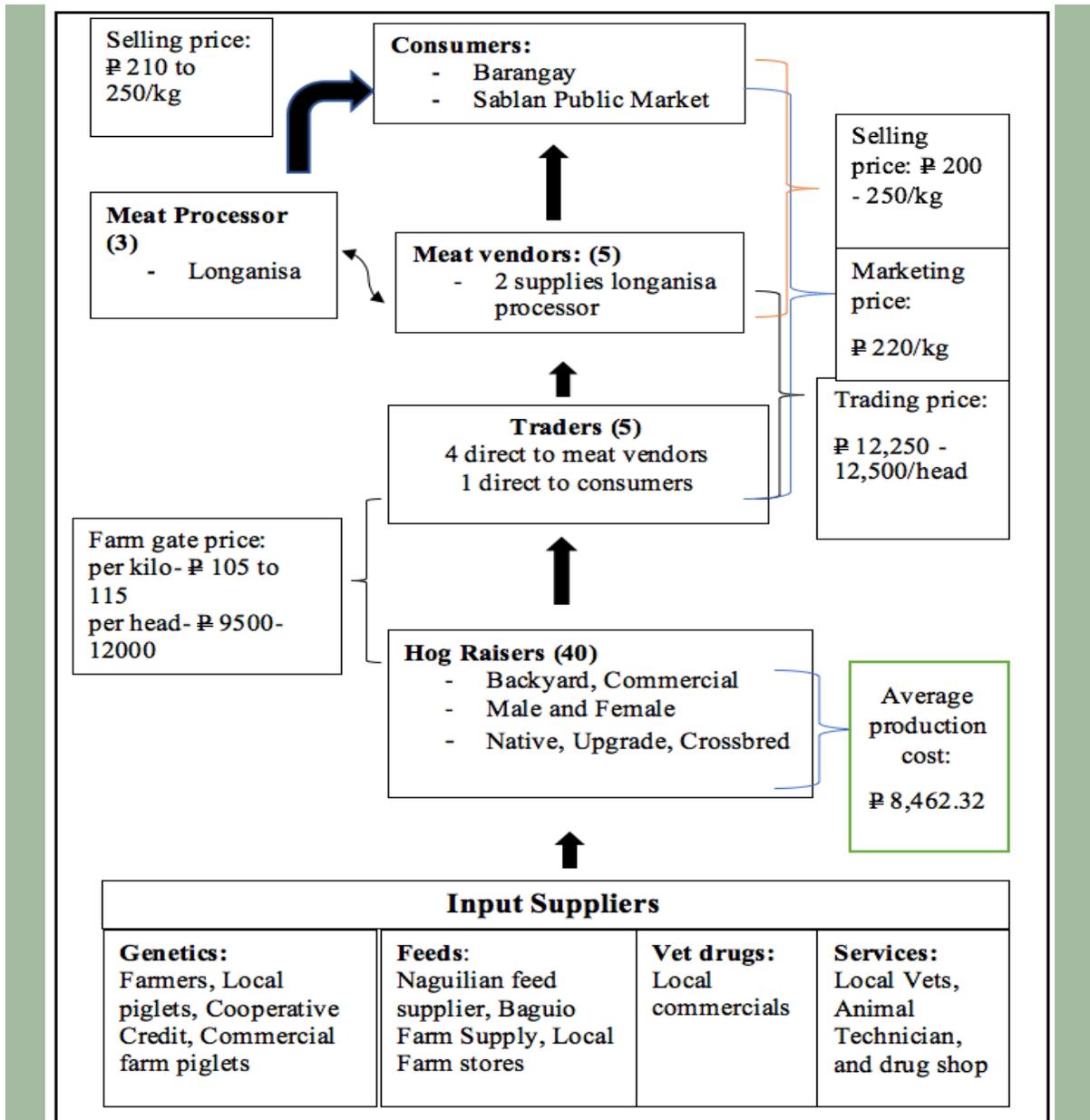


Figure 3. Summary of the production and marketing players in pig

150 days or 5 months. As shown in the Table 2, the estimated unit cost of production per head is Php8,462 and the average selling price is Php9,720 per head. This price is within the suggested price by the Philippine Statistics Authority (2018). Computing for the margin or value addition of the producers, it would be $\text{Php}9,720 - \text{Php}8,462 = \text{Php}1,258$. The major cost came from the major stocks.

Majority of the pig raisers revealed,

“Haan kami nga agilislista nu anya ti magasgastos mi, kasla pag alakansyaan mi

lang. Nu met ilako mi jay baboy basta ada naawat mi nga kwarta ken nailako mi jay baboy amin kuna mi nu kinmita kamin ta naragsak kami met ngarud nga nakalako kami, ket ni kasta met gayam nga awan met gayam kita mi balik galantia laeng”. (We do not make a list of expenses we incurred in pig production. We consider it like saving money in a coin bank. If ever we sold the pig, we are already happy. We do not care much if we gain profit as long as we regain our investment).



Table 2

Cost and Return Analysis for Hog Raisers in One Swine Production Cycle

Particulars/item	Qty	Unit cost	Total Cost	Total
Sales (12 heads x 9720)				116,640.00
Production Cost				
Piglet	12 Heads	2,636.00	31,632.00	
Labor	1 pax (5 months)	3,600.00	18,000.00	
Feeds	12 heads	3,776.00	45,312.00	
Vet drugs	12 heads	15.00	180.00	
Supplement			2,800.00	
Miscellaneous			2,000.00	
Light	5 months	112.00	560.00	
Water	5 months	60.00	300.00	
Depreciation			763.38	
Total Production				101,547.15
Net Income				15,092.15
Return on Expense		.15		15%

Assumptions

A. Labor

- 3 hrs devoted/family member per day (feeding and cleaning)
- 1 family members work in the farm
- Php 320/day is the existing wage rate
- 8 working hours/ day

Total Cost of labor/ month

- (3 hours x 1 person x 30 days) Php320/8 hours
- (3 man hour x 30 days)40
- Php 3,600

B. Depreciation

Housing and equipment= (27,500/15) = 152.77 a month

C. Technical Starting points

- Number of Finishers Per Batch- 12 heads
- Price of weanlings- 2,636 average (2500-3000)

- Starting weight of weaner (kg)- 10

- Market Weight (kg)- 90- Fattening days (includes cleaning and disinfection)- 150
- Average Daily Gain (g)- 533 g -FCR- 1.72

D. Feeds and supplements

- Starter feeds (40 days)= 54 kg x Php 24.00 = 1,296
- Grower feeds (60 days)= 60 kg x Php 25.00 = 1,500
- Finisher feeds (14 days)= 39.2 x Php 25.00 = 980
- Dewormers- 15 per head
- Supplements- 2,800

E. Other Expenses

- Miscellaneous- 2,000
- Light- 112/month x 5= 560
- Water- 60/month x 5= 300

Traders. Two kinds of traders exist in Sablan – the traders who delivered to the meat vendors and traders that direct meat to consumers.

Traders usually deliver nine pigs per month to meat vendors. The average selling price set by the traders is Php12,250 per head, with

a unit cost of Php10,532.88 and generating a value addition of Php1,717.11 (Table 3). The major cost incurred by the trader was in the acquisition in the live pigs from the hog raisers.

On the other hand, Table 4 shows the cost-benefit analyses for trader who directs meat to



the consumers. Profit is higher since the trader sells the meat directly to the consumer with a base price of Php220. According to the traders, this kind of linking is more efficient but more laborious since they have to slaughter and deliver the meat. They do not need vehicle for delivering since the meat is hand-carried to the consumers. Having a unit cost of Php10,920 and a selling price of Php14,833.33 gives the trader a value

added of Php3,913.33. This is Php2,196.11 higher than trading to meat vendors. As Trader 3 articulated,

“Maymayat ti kastoy nga klase nga negosyo ta dakkal ti kita ken han launay nga mabannug, isu met ti kaalaan gamin ti bagi kaysa nu agtaraken nabayag samu mabalin ilako o nu iapaparti ngem nu gamin sika en ti agdeliver,

Table 3

Cost and Return Analysis for Traders Who Delivers to Meat Vendors in a Month

Particulars/item	Qty	Unit cost	Total Cost	Total
Sales (9 heads x 12,500)				110,250.00
Delivery Cost				
Vehicle Depreciation			2,916.66	
Fuel	4	500.00	2,000.00	
Labor (4)	2x4	400.00	2,400.00	
Total Delivery Cost				94,796.00
Net Income				15,453.34
Return on Expense		.16		16%

Table 4

Cost and Return Analysis of the Traders Direct to Consumers in a Month

Particulars/item	Qty	Unit cost	Total Cost	Total
Sales (3x(67.5 dress weight)220)				44,500.00
Cost				
Pigs	3	9,720.00	29,160.00	
Labor	2x3	600.00	3,600.00	
Total Cost				32,760.00
Net Income				11,740.00
Return on Expense		.359		36%

Assumptions:

A. Labor
Php 400 pesos (contract fixed labor according to the respondents)

Additional 200 for butcher service
No. of service in a month= 4 Laborer= 2

B. Depreciation
Cost of Elf Truck= (350,000/10)/12 = 2,916.66
Fuel= 500 per trip

C. Cost of sales

Number of Pig= 12

Price of Pig= 9,720

D. Selling price

Per head- 9 heads x 12,250-12,500.

Per kilo- 3 (90x 75%) x 220.00



sika pay agpartí madoble ti gastos mo". (This type of trading is more profitable than hog raising. In trading directly to consumers, you will immediately see your gain as compared to hog raising that you have wait for 5 months).

Meat vendors. The average heads of pig butchered for the meat vendors is 7 per month since they only sell once a week in the public market. The remaining stocks are sold in the meat shops in the barangays. The average selling price of the meat vendors is Php200/kg x 67.5kgs (average dress weight) plus the offals for a total of Php15,008.33. The unit cost is Php12,750; thus, the net profit is Php2,258.33 per pig (Table 5). The profit of the meat vendors was not really high as Meat vendor 2 lamented,

"Nu ururayem lang nga talaga ti mapan mo pagalkuan ti baboy ijay market iti Sablan, bassit lang ti magalantiam ta maminsan lang ti panaglukat ti palengke makadomingo, sunga dakami jay mabati mi nga karne ilako mi balay balay or ilako mi metlng pwespwesto mi ijay barbaranggay." (If we would just be waiting for the once-a-week market day, our profit

would really be minimal. For the unsold meat, we do house to house selling or sell it in our own meat shop in our barangay.)

Longanisa Processors. 'Longanisa' is not an everyday dish for most of the households in Sablan. The average selling price of the 'longanisa' is Php230/kg and Php115/dozen. According to the respondents, a dozen of 'longanisa' can be made from every ½ kg of pork since lean meats with less or no bones are mostly used. Majority of cost incurred in making 'longanisa' is the cost of the pork meat. Accordingly, the conversion of the pork meat to 'longanisa' is 1:1 regardless of the condiments and ingredients used. With a unit cost of Php193.33 and average selling price of Php230, the value added in this link is Php36.67/kg (Table 6). As Mr. Bulayo explained, *"Kasla pandagdag kita lang met ketdi daytoy 'longanisa', bassit ti maararamid mi, manmanu lang agar-aramid haan met gamin masangu nga aggilling santo adu en agararamid ijay Baguio ngem atleast iman ta ada latta met mabagi."* (Making 'longanisa' is just for additional income, it cannot really become a full-time job due to competition but at least we can earn extra income).

Table 5
Cost and Return Analysis for the Meat Vendors in a Month

Particulars/item	Qty	Unit cost	Total Cost	Total
Sales				135,075.00
Production Cost				
Pigs	9	12,500.00	110,250.00	
Butcher	9	500.00	4,500.00	
Total Cost				114,750.00
Net Income				20,325.00
Return on Expense (ROE)		.15		15%
Assumptions:				
A. Labor				
Butcher (Fixed)= 500 per head				
B. Starting Cost				
Number of Pigs- 9				
Price- 12,250				
Dress weight= 67.5 (90 x .75(dressing percentage))				
C. Selling				
Pig = 190-250 depends on the cuts and parts of the pig (PSA SRP and in line with the respondents price)				
= 210(average) x 67.5 (average dress weight)				
D. Others				
Offals (heads, feet, internal organs and blood) = 7,500.00				



Table 6

Cost and Return Analysis of the 'Longanisa' Maker in a Month

Particulars/item	Qty	Unit cost	Total Cost	Total
Sales (230 x 300kgs)				69,000.00
Production Cost				
Meat	300kgs	190	57,000.00	
Ingredients & Materials			862.00	
Depreciation			143.72	
Total Cost				58,005.72
Net Income				10,994.28
Return on Expense (ROE)		.16		16%

Assumption:

Meat: 300kg Price: P 190 Total: P 57,000

Equipment (meat grinder) (5 year life) 1 Cost: P 8,623.00

Ingredients and materials= P 862.00

Selling price (Longanisa)= P 230/kg

*272 kilos per month is being sold but for computation, all bought and processed are sold

Value-addition, Marketing Margin and Profit Share

Table 7 summarizes the value-added by each of the chain actors. It can be readily gleaned in the table that the value addition or margin increases as the product moved from the supply area actors to the demand area actors, except for meat processor since it was in kilograms state. A large margin difference was observed between the hog raisers and the traders. However, from the meat vendors to the longanisa processors, the average number of the products unit decreases.

The traders has the highest market margin, followed by the meat vendor. In terms of profit share per peso investment, the traders also had the highest followed by the meat processors while the hog raisers and meat vendors have the same percent share. For every Php1 invested by the hog raiser, a profit of Php0.15 is earned. For traders, a profit of Php0.16 is earned for every Php1 invested but for traders directly selling to the consumers, the profit is Php0.36. A profit of Php0.15 and Php0.16 for every Php1 are earned by the meat vendors and 'longanisa' makers, respectively.

Our result is consistent with Manipol et al. (2014) showing that the pig raiser has the lowest market efficiency among the chain actors. However, our study differ in having the traders with the highest market efficiency while lechon processors in Manipol et al. (2014).

The ratio of the absolute constant margin vis-à-vis the length of production measures the market efficiency of each chain actor. The traders are the clear winner having a profit of Php0.16-0.36 centavo within a month, particularly the traders that sell directly to consumers. The least efficient were the hog raisers earning Php0.15 for 5 months of labor. Being enlighten on this, one of the hog raisers Mrs. Capuyan exclaimed, "*kasla binagi met ti agdeldeliver jay kitaen kuma, di pay maymayat gayam nu kuma sika en ti mapan mang ideliver, ngem ti problema ket awan met gamin ti lugan*" (It seems that the trader get the bulk of the profit. If that is the case then it would be great to be a trader, however, we do not have a vehicle to transport the pigs.)

Indeed, there would be a great incentive for pig raisers to trade their own pigs. Table 8 shows the possible market efficiency and margin of the pig raisers when they will trade their



Table 7

Summary of Selling, Buying, Market Margin and Percent Share of the Chain Actors.

Chain Actors	Selling Price (Php)*	Cost (Php)*	Market Margin	ROE (%)
Hog raisers	9,720.00	8,462.00	1,258.00	15
Traders 1 (to meat vendors)	12,250.00	10,532.88	1,717.22	16
Traders 2 (to consumer)	14,833.33	10,920.00	3,913.33	36
Meat Vendor	15,008.33	12,750.00	2,258.33	15
Processor	230.00	193.33	36.67	16

Table 8

Possible Market Efficiency and Margin of Pig Raisers in Sablan, Benguet

Actor	Selling Price (Php)*	Cost (Php)*	Market Margin	ROE (%)
Hog raisers to meat vendors	12,250.00	8,462.00	3,788.00	44.70
Hog raisers to consumers	14,850.00	8,462.00	6,388.00	75.49

own commodity to the vendors or directly to consumers. This would be a much desirable scenario since the pig raisers have done all the work for raising the pigs but ironically has the least income. To invest in this kind of production, it is much better to see the wider market, strategies in innovative way to improve the profit rate of each players especially the pig raisers.

The Market Potential of Swine Production in Sablan, Benguet

It was observed that the demand of pork in Baguio-La Trinidad area is very high. La Trinidad alone had an estimated per capita consumption of pork at 15.528 kg (Bureau of Agricultural Statistics [BAS], 2013). However, the major sources of the pork supplied in Baguio-Benguet area were from lowlands (PSA, 2016). One reason for this is that the traders and meat vendors may not be aware of the many pig raised in Sablan.

Based on the study, swine production in Sablan can reach around 800 heads but only 12 heads are sold in a month. The production is high but the sales is too low. This shows that Sablan can be a potential supplier of pork in Baguio-Benguet area. Also, according to Doc Liza, the regional manager of a feed company, there is no problem on the genetic stocks of pigs in Sablan and could be source of good breeding line.

For Sablan to be supplier of pork in Baguio-Benguet area, supports from the government to

the hog industry need to be strengthened. However, majority of the key actors perceive that the government services on swine production are limited and minimal particularly in terms of extension works and trainings. They are only aware of the pig vaccination by the veterinary office.

There is huge incentive to invest in hog industry in Sablan. Benguet province and Baguio City could benefit a lot if its source of pork would from within to ensure its safety particularly with the outbreak of African Swine Fever (ASF) virus. Also, this would strengthen the food security in these areas lessening its dependence from the lowland for pork.

Conclusions

Five key actors were documented in the value-chain analyses of swine production in Sablan, Benguet namely the hog raisers, traders, meat vendors, 'longanisa' makers and consumers. The value chain in the area is distinct from other value chain studies in the country in lacking lechon actors. Among these chain actors, the traders have the most efficient market and profit shares while the pig raisers are the least efficient. It was also found that the hog industry in Sablan could be major livelihood in the municipality and a potential source of pork for its highly urbanized neighboring area of Baguio City and La Trinidad.



Recommendations

Based on the findings, pig raisers of Sablan should form an organization. With this, it will be easier for the government to provide necessary services if the beneficiaries are centralized. The pig raisers should also try to expand their marketing operation in terms of frequency of slaughter and outlet. The pig raisers should also keep records of their transactions for them to determine whether they are earning or losing. Alternative feeding should also be explored such as integrating crops to feeds to lessen the expenses on the commercial feeds. It is also strongly recommended that the chain actors be empowered to have better technical skills through seminars or trainings and field exposure activities which at the moment are lacking due to the lack support from the government.

Lastly, the market of pigs should be extended outside the municipality. It is now necessary to build working relationships with market players from the neighboring city and municipalities for market expansion and improvement of hog industry in Sablan.

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