

Role of Cooperative in Improving Accessibility to Production Resources and Household Economy of Backyard Pig Raisers in Batangas, Philippines

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1. Introduction

Backyard pig operation is characterized by the main use of available household resources. The size of animal holding per farm is relatively small and usually accounts for only 2-4 % of the commercial farm. The ownership of household labor at low opportunity cost is one of their comparative advantages with those commercial operators that require more hired labor to run their enterprise. However, being a resource poor and non-organized, they are unlikely to get, on their own, access to the limited resources relating to high quality genetic stocks, animal nutrition and health services and premium markets for output. Backyard pig raisers have been shown to be a heterogeneous entity. Nevertheless, it has been regarded as forefront of the country's agricultural growth by contributing the highest and consistent average annual growth of 4.6% in gross value-added in agriculture from 1990-2000 despite the financial crisis which struck Philippines and other Asian countries in the latter part of this decade. For years, this sector dominates the country's pig industry by producing 70% of the total domestic pork supply; comprising 80% of the aggregate pig inventory and providing livelihood to 3.8 million dependents that rely on this livestock activity as their substantial source of income (Tibayan, 2003).

Costales' (2002) study on backyard pig raisers' production and market characteristics in Southern Luzon revealed that access to scarce production resources necessary for expanded smallholder participation is not a sole working of the market force and is unevenly distributed across locations (provinces). It is found greater in areas with institutions like cooperatives where members are encouraged and taught to pool together their available scarce resources to benefit

everyone in the group. As everyone gains access to these resources, they are enabled to expand their operation, which consequently empowers them to gain more revenue, better profit, and greater income for the household. Thus, the challenge to assemble these backyard pig raisers into institution like cooperatives, which adheres to principles of cooperation, is viewed as a potential measure to directly link them with the whole spectrum of market chain ranging from the acquisition of available production resources and services to the efficient marketing of their differentiated final products. Based on a field survey¹, this paper aims to highlight the role of the cooperatives in improving the backyard pig raisers' access to various production resources and their household economy.

2. Sampling Procedure

The case study conducted in 3 *barangays* had a total of 1,353 registered households. Sampling of households was done by sequentially using (1) stratified purposive sampling, (2) maximum variation sampling and (3) purposive random sampling, to capture the various socio-economic information of cooperative and non-cooperative backyard pig raisers according to their production activities like farrow-to-wean, farrow-to-finish, grow-to-finish, and their combinations. A total of 165 (10 from each production activity of cooperative and non-cooperative and 25 from their combinations, together) backyard pig raisers having close representation from each type of production activities were randomly selected in the three study

¹ The field survey was conducted on September 2004 and March 2005 in Batangas province based on the area's highly developed backyard pig farming, active operation of agricultural cooperatives and pronounced involvement of backyard pig raisers to diversified production activities. It is composed of 4 political (congressional) districts, 31 municipalities, 3 cities and 1,078 *barangays* that constitute the basic administrative units in Philippines. It is a major supplier of livestock and poultry products. Pig raisers in Batangas province supply 70% of their local produce to Metro Manila while the remaining 30% are supplied predominantly in two major cities --Batangas and Lipa-- of the province. Respondents from three *barangays* (Brgy)— Brgy. Rizal (with 447 registered households and a combination of cooperative and non-cooperative backyard pig raisers) in Lipa City; Brgy. Sorosoro (483 registered households and purely cooperative backyard pig raisers) and Brgy. Dumuclay (423 registered households and purely non-cooperative backyard pig raisers), both in Batangas City, were purposively chosen for the case study because of the areas' high pig inventory and number of households engaged in backyard raising. Each Barangay has an average of 70-80% of registered households engaged in backyard pig raising.

areas. Structured questionnaires related to the objective of the study were used to obtain primary data while secondary materials were also used in order to support the survey findings.

3. Role of Backyard Pig Industry in the Agricultural Economy of the Philippines

3.1. Overview of the Philippine Pig Industry

Philippines is predominantly agricultural as far as its area, population and employment distribution is concerned. Records reveal that 47% of its total land area is allotted for various agricultural activities while two-thirds of its rural-based population depends on agriculture for livelihood. In terms of employment distribution, 45% of the labor force is employed in the agriculture sector while the remaining 40% and 15% is absorbed by the service and industrial sectors, respectively. It is diverse and consists of crop, poultry, livestock, forestry, and fisheries sectors, each with its own contribution to the development of the national agriculture. Agriculture has also been regarded as one of the major contributors of economic growth in recent years due to structural reforms. In 2000, the agricultural sector accounted for almost 20% of the P3.3 trillion GDP (one US \$ is 56 pesos, denoted as P) and registered a 3.59%-growth from the previous year (Bureau of Agricultural Statistics, 2003).

Among the components of agriculture, livestock sector is the most significant driver of development in the last decade by contributing the highest average growth rate of 4.9%. Pig raising has turned to be the most important economic activity among various livestock producers. The continuous advancement of the pig industry has been observed nationwide but it is more pronounced in Southern Luzon, Central Luzon and Southern Mindanao where 45% of the country's aggregate inventories are concentrated. Due to its substantial contribution in the agricultural economy, the national government outlined its development plan to further advance the pig industry.

The backyard pig raisers have dominated the nationwide phenomenal growth of the pig industry in Philippines for nearly two decades. This is indicative of their substantial participation in the growth process that transpired in the pig industry during these periods. Based on the aggregate shares of pig inventories according to scale of operation and animal types, backyard pig raisers are shown to play a key role in the national pig industry. However, this aggregate view is somehow deceptive and misleading when changes in the market structure in the main consumer demand centers caused by “Livestock Revolution” are taken into consideration. This phenomenon conveys a great deal of implications for the commercial and backyard pig operators in the national, regional and local levels.

In the national level, the reduction of share from 80.3% in 1995 to only 76.5% in 2003 of the backyard pig inventory, and the subsequent increase from 19.7% to 23.5% (BAS, 2004) of the commercial pig inventory in the same period is a trend indicative of the rising dominance of the commercial pig raisers and gradual displacement of the backyard operators. For the commercial pig raisers who possess and can readily acquire the essential production resources, the “Livestock Revolution”, which requires an expanded farm operation to meet the increased pork requirement of the consuming public, is a favorable opportunity that will surely work for their own benefit. However, for backyard pig raisers who generally lack these scarce production resources, this phenomenon may seem to be unfavorable as it will potentially decrease their market share and will consequently reduce their revenue and profit. Given that millions of marginalized smallholders in the Philippines are dependent on pig raising as an economically important livelihood activity, it is necessary to support and protect the backyard pig raisers in order to prevent them from market displacement and losing a substantial source of living.

Various institutions are conducting a number of programs in order to support the backyard pig industry. Tibayan (2003) reported that a collective effort among a number of government agencies, local government units and private livestock organization has been directed in order to boost the backyard pig sector. For instance, the National Federation of Hog Farmers Inc., a nationwide association of commercial pig farm owners in the Philippines, conceived and proposed a project designed to improve the backyard pig raisers production coefficients, through road shows, technical seminars and market information.

One of the most evident supports of the national government to these backyard pig raisers is its encouragement for the latter, as an entrepreneurial entity in the private sector, to organize them into a cooperative. According to the Cooperative Code of the Philippines, which was approved by the Philippine government in 1990, the welfare of the smallholder farmers in general and backyard pig raisers in particular can be secured by being protected from the threats of unemployment.

3.2. Role of Cooperative's Contract Growing Arrangement in Backyard Pig Raising

In the local context of pig raising, a contract growing arrangement or *paiwi* is generally a contract between an integrator, who supplies the intermediate inputs (weanlings, feeds, veterinary supplies and services) and procures the output, and a grower, who provides the primary inputs (space and facilities, equipment, utilities, labor and farm management) in the production process. There are two main types of contract growing arrangements—fee or wage contracts and forward price or profit-sharing contract.

Fee (wage) contracts are mostly undertaken by large multi-national or national integrators whose scale of operations is generally around the “commercial” scale. In fee contracts, the

integrator typically bears all the cost of growing stocks, feeds and veterinary supplies and services. Generally, the integrator bears both the market and production risks. Therefore, the grower does not share in the benefits of increasing output prices and in the losses due to falling output prices. For the part of the contract growers, they receive a guaranteed fix fee for each live animal that is successfully harvested in a condition that conforms to the integrator's guidelines. To ensure the contract growers' active participation, fee contracts typically have built-in incentives and penalties to meet the integrator's set of minimum performance standards. Some of these standards include the animals' feed conversion ration, average daily gain, and harvest recovery.

Forward-price and profit-sharing contracts are generally undertaken by relatively small local feed millers with contract growers that they know well. Generally, this system is widely practiced in Batangas province where a considerable number of cooperatives are involved in local feed milling and engage their own members as the contracted growers. In forward-price contracts, the cooperative, oftentimes the integrator, advances the cost of growing stocks, feeds and veterinary supplies and services and later charge in full to the contract growers at the time of harvest and sale before compensation is paid. In essence, growing stocks and feeds are provided by the integrator on credit and are evaluated at prevailing market prices upon the sale of the final output. Similar to fee (wage) contracts, market risk is borne by the integrator but the production risks like mortality are borne by the contract growers instead. For forward-price contracts, the integrator must find ways to deal with the incentive that growers have to default when output market prices rise. To resolve this issue, equal sharing of profit is undertaken to compensate the participation of both the integrator and growers in the production process. Both types enhance the growth of small farmer in pig raising sector.

4. Impacts of Cooperative to Backyard Pig Raisers in Batangas Province

4.1. Access to Animal Stocks

Table 1 shows the low incident (14.5%) of obtaining animal stocks by credit from external sources. Breeder stocks like sows and boars are not readily obtainable on credit thus, backyard pig raisers especially those engaging in Type 1 activity must obtain capital from other external sources (not from suppliers of breeding stocks) or to generate from their own sources. On the other hand, grower stocks like weanlings are obtainable by credit under a contract growing arrangement (*paiwi*) with an integrator. Raisers who obtain grower stocks by credit are prompted either by their lack of own financial resources or their own discretion in engaging in Type 3 activity under a contract growing arrangement with an integrator (cooperative). On the other hand, majority of the backyard raisers who do not apply for credit for grower stocks can procure needed capital from their own financial means.

Cooperative raisers constitute the bulk (87.5%) of sampled backyard pig raisers (24 raisers) who obtain their grower stocks by credit from their sources. Cooperative raisers' access to credit for grower stocks enables them to raise more animals than their non-cooperative counterparts in all the production activities in the area (**Table 2**). Cooperative raisers mainly use their organization as an integrator from which they can obtain their grower stocks under the cooperative's contract growing arrangement system (95.2%) while few (4.8%) of them obtain their growers by credit from other individuals. On the other hand, non-cooperative raisers obtain their growers from any of their known pig raisers in their area.

4.2. Access to Feeds and Veterinary Supplies

Feeds and veterinary supplies constitute the bulk of the total cost of pig production and

Table 1. Access of backyard raisers to credit for growing stocks

Production resource and sources	Cooperative		Non-cooperative		Coop Total (n=85)	Non-coop Total (n=80)	Grand Total (n=165)
	Sorosoro (n=45)	Rizal (n=40)	(n=40)	Dumuclay (n=40)			
Pig raisers who obtain animal stocks by credit	15 (33.3)	6 (15.0)	1 (2.5)	2 (5.0)	21 (87.5)	3 (12.5)	24 (100.0)
<i>Sources of Credit</i>							
Cooperative	15	5	1	--	20	1	21
Other farms/people	--	1	--	2	--1	2	3
Total	15	6	1	2	21	3	24

Source: Field Survey, 2005. Note: () indicate percent equivalence.

Table 2. Average animal holding according to production activity of each household

Production Activities	Coop		Non Coop		Coop (n=85)	Non Coop (n=85)	T-test
	Sorosoro (n=45)	Rizal (n=40)	(n=40)	Dumuclay (n=40)			
Type 1	52.2	14.0	13.2	10.6	33.1	11.9	t(2.1)** ,p<0.05
Type 2	77.6	20.1	15.8	13.1	48.9	14.5	t(2.8)*** ,p<0.01
Type 3	91.3	16.6	14.6	15.4	54.0	15.0	t(3.9)*** ,p<0.01
Type 4	33.3	55.2	25.4	18.5	44.3	22.0	t(1.5)* ,p<0.1
Type 5	97.2	-	-	-	97.2	-	
Average	73.4	26.5	17.3	14.4	50.0	15.9	t(5.6)*** ,p<0.01

Source: Field Survey, 2005. Note: T-test is done for coop and non-coop only, not village-wise, also true for other tables, unless mentioned. ***, ** and * mean significantly different at 99% level, 95% level and 90% level, respectively. ns = not significant.

are obtainable by credit from various sources (**Table 3**). Majorities (72.6%) who obtain them by credit are cooperative raisers and are prompted by their financial constraints or by the benefits of the contract growing arrangement offered by their cooperative. Others do not apply for credit due to their financial capabilities to procure and sustain their animals' feed and veterinary requirements throughout their growing period. Cooperative and non-cooperative raisers can obtain feeds and veterinary supplies by credit to various sources like cooperatives, private dealers/salesman and other individuals. Cooperative raisers can obtain their feeds and veterinary supplies by credit principally from their own organization (83.6%) under the terms and conditions of *paiwi* system. However, there are also some non-cooperative raisers (21.7%) who illegally obtain them by credit from cooperative.

Table 3. Access of backyard raisers to feeds and veterinary supplies

Production resource and sources	Cooperative		Non-cooperative		Coop Total (n=85)	Non-coop Total (n=80)	Grand Total (n=165)
	Sorosoro (n=45)	Rizal (n=80)		Dumuclay (n=40)			
		(n=40)	(n=40)				
Number of pig raisers who obtain feeds and veterinary supplies by credit	34 (75.6)	27 (67.5)	10 (25.0)	13 (32.5)	61 (72.6)	23 (27.4)	84 (100.0)
<i>Sources of Credit</i>							
Cooperative	29	22	4	1	51	5	56
Dealers/Salesman	5	3	6	11	8	17	25
Other people	--	2	--	1	2	1	3
Total	34	27	10	13	61	23	84

Source: Field Survey, 2005. Note: () indicate percent equivalence.

Dealers/salesmen of feeds and veterinary supplies are the main source of credit of non-cooperative raisers (52.1%) among others. They are the immediate market channels used by private feed and veterinary manufacturers to direct their products to the end-users. The transaction with a dealer/salesman is also relational and can be negotiated depending on the degree of closeness of relationships between them and the raisers.

4.3 Access to Market Assistance

Table 4 shows the cooperative and non-cooperative backyard raisers' access to and sources of the market and other marketing-related assistance. The most dominant source of market information for cooperative raisers is their own organization (57.6%) followed by other people (30.6%) and *viajeros* (16.5%). Member-raisers are given substantial information concerning the production input and output prices and the demand of the market on products they supply. This information enables them to determine the right quantity and schedule of their production necessary to have the best selling prices of their products. Member-raisers are also given market information up to certain extent by the *viajeros*, who buy slaughter pigs directly from member raisers, and by other people and friends.

On the other hand, non-cooperative raisers mainly rely on other people (71.3%) including their neighboring backyard raises and friends. Majority of them are selling their output through the aid of other people, including friends, neighboring raisers and *viajeros* (middlemen). They ultimately rely on these other people and *viajeros* to obtain the necessary market information and assistance in marketing their products. However, these sources, especially *viajeros*, are not reliable because they give some misleading information about the selling price of live pigs for their own favor. Since *viajeros* are truly aware of the prevailing market prices of pigs in various localities, they can manipulate the information they have access to in their own favor. The existence of middlemen in the transaction is one of the inevitable negative consequences of the non-cooperative raisers' marketing of products.

Table 4. Access and sources of market information of backyard pig raisers

Sources	Coop		Non-Coop		Coop (n=85)	Non-Coop (n=80)
	Sorosoro (n=45)	Rizal (n=80)		Dumuclay (n=40)		
		(n=40)	(n=40)			
Other raisers	7(15.6)	19(47.5)	28(70.0)	29(72.5)	26(30.6)	57(71.3)
Cooperative	33(73)	16(40.0)	--	--	49(57.6)	--
Salesman	1(2.2)	1(2.5)	4(10.0)	1(2.5)	2(2.4)	5(6.3)
Public market	--	1(2.5)	1(2.5)	3(7.5)	1(1.2)	4(5.0)
Viajeros/middlemen	3(6.7)	13(32.5)	10(22.5)	3(25.0)	16(18.9)	13(16.3)
Veterinarian	--	1(2.5)	3(7.5)	2 (5.0)	1(1.2)	5(6.3)

Source: Field Survey, 2005. Note: Figures inside () indicate percentage. Multiple choices allowed.

Table 5 shows that in spite of the insignificant difference in the selling price of the piglet's succeeding weight after its first 10kgs, the selling price of cooperative and non cooperative raisers' for the piglets' first 10kgs ($p < 0.05$) and for the finishers ($p < 0.01$) are significantly different.

Table 6 shows the average number of animals sold by cooperative and non-cooperative raisers according to various production activities. Cooperative raisers generally have significant

Table 5. Average selling price of live pigs according to animal type

Average Selling Price	Coop		Non Coop		Coop (n=85)	Non Coop (n=85)	T-test
	Sorosoro (n=45)	Rizal (n=80) (n=40)	Dumuclay (n=40)				
Piglet's 1 st 10kgs (Pesos/10kg)	157.9	167.3	164.0	154.5	162.6	159.3	t(2.4) ^{**} , p<0.05
Piglet's Succeeding kgs (Pesos/kg)	70.2	68.9	70.0	66.0	69.6	68.0	t(0.7) ^{ns} , p>0.1
Finisher (Pesos/kg)	85.9	84.3	82.5	84.3	85.1	83.4	t(2.4) ^{***} , p<0.01

Source: Field Survey, 2005. Note: ***, ** and * mean significantly different at 99% level, 95% level and 90% level, respectively. ns = not significant. 1USD=56Pesos denoted by P.

Table 6. Average quantity of animals sold according to production activities of household

Parameters	Coop		Non Coop		Coop (n=85)	Non Coop (n=85)	T-test
	Sorosoro (n=45)	Rizal (n=80) (n=40)	Dumuclay (n=40)				
Type 1	19.7	17.5	13.0	18.3	18.6	15.65	t(0.6) ^{ns} , p>0.1
Type 2	19.1	11.7	9.6	8.8	15.4	9.2	t(2.3) ^{**} , p<0.05
Type 3	92.6	14.7	14.1	13.9	53.7	14.0	t(4.0) ^{***} , p<0.01
Type 4	48.0	23.3	22.4	19.9	35.7	21.2	t (1.8) ^{**} , p<0.05
Type 5		61.2	--	--	61.2		na

Source: Field Survey, 2005. Note: ***, ** and * mean significantly different at 99% level, 95% level and 90% level, respectively. ns = not significant; na=not applicable

greater number of animals sold from each production activities except for farrow-to-wean (Type 1 operation). The far greater number of animals sold by cooperative raisers is pronounced in Type 3 operation where the cooperative gives in advance a considerable number of animals to its members and bears all the responsibility of marketing the animals through *paiwi* system. The higher selling price and greater number of sold live pigs makes the cooperative raisers gain more income than the non-cooperative raisers.

5. Impacts of Cooperative on Backyard Pig Raisers' Household Economy in Batangas

Cooperative raisers' gross production cost per growing cycle is found to be significantly greater (p<0.01) at P80,308 than the non-cooperative raisers' expenditure level at (P31,336) (Table 7). No significant differences in the expenditure level of cooperative and non-cooperative raisers are noted for those who practice Type 1 operation. However, there are significant

differences in the expenditure level of the two groups who practice Types 2, 3, 4. This is due to the cooperative's explicit support for their members who practice the above-mentioned activities in which greater access to main production inputs such as feeds, weanlings, veterinary supplies and capital for facilities and equipment are provided by the cooperative. The cooperative enables its member-raisers to obtain their production requirements through the various programs that it conduct to facilitate the efficient operation of their members who raises slaughter pigs.

Table 7. Average gross production cost per growing cycle of each household according to production activity and study area (Unit: Pesos)

Production activities	Coop		Non Coop		Coop (n=85)	Non Coop (n=85)	T-test
	Sorosoro (n=45)	Rizal (n=80)		Dumclay (n=40)			
		(n=40)	(n=40)				
Type 1	19285.6	11513.0	13146.8	12527.5	15399.3	12837.2	t(0.6) ^{ns} , p>0.1
Type 2	40235.6	34294.6	19815.8	23439.2	37265.1	21627.5	t(2.5) ^{**} , p<0.05
Type 3	250888.3	57607.4	52919.0	53884.8	154247.9	53401.9	t(3.9) ^{***} , p<0.01
Type 4	127108.1	41334.5	37677.4	37275.5	84221.3	37476.5	t(2.1) [*] , P<0.1
Type 5	121038.8	--	--	--	121038.8		na
Average	124428.2	36187.4	30889.8	31781.7	80307.8	31335.8	t(4.2) ^{***} , p<0.01

Source: Field Survey, 2005. Note: ***, ** and * mean significantly different at 99% level, 95% level and 90% level, respectively. ns = not significant; na=not applicable

The high expenditure level of the cooperative raisers is accompanied by greater net income (**Table 8**). Cooperative raisers have P83,139 which is significantly greater (p<0.01) than the P41,544 income of the non-cooperative raisers. The former's greater income per growing cycle can be traced from their significantly higher selling price of output and significantly greater number of animals produced and sold in the market than the latter group. There are no significant differences in the net income of Type 1-cooperative and non-cooperative raisers. However, significant difference in the net income per cycle is observed to favor those cooperative raisers who practice Types 2, 3, 4, and 5 operations.

Table 9 shows the contribution of income from pig raising to the household economy of cooperative and non-cooperative raisers. Cooperative's monthly net income of P17,321 from pig raising is significantly greater (p<0.01) than the non-cooperative raisers at P8,655. The

cooperative and non-cooperative cooperative raisers' monthly net income from pig raising constitutes 82.3% and 64.3%, respectively, of their aggregate monthly income for their respective household.

Table 8. Income per growing cycle according to production activity and study area (Unit: Pesos)

Production Activities	Coop		Non Coop		Coop (n=85)	Non Coop (n=85)	T-test
	Sorosoro (n=45)	Rizal (n=80)		Dumuclay (n=40)			
		(n=40)	(n=40)				
Type 1	50792.5 (31506.9)	39227.5 (27714.5)	28676 (15529.2)	40302.5 (27775)	45010 (29610.7)	34489.3 (21652.1)	t(0.9) ^{ns} , p>0.1
Type 2	143001.8 (102766.2)	81955.6 (47661)	71763.3 (51947.4)	66097 (42657.8)	112478.7 (75213.6)	68930.2 (47302.6)	t(1.9) ^{**} , p<0.05
Type 3	674725.4 (211918.6)	103311.2 (22851.9)	101831.5 (48912.5)	102249.5 (48364.7)	389018.3 (136292)	102040.5 (47302.6)	t(3.2) ^{***} , p<0.01
Type 4	281967.5 (154859.4)	97707.9 (56373.4)	87401.4 (49724)	84713.5 (47438)	189837.7 (89202.1)	86057.5 (48581)	t(2.2) ^{**} , p<0.05
Type 5	300004 (89482.6)	--	--	--	300004 (89482.6)	--	na
Average	332637.4 (127627.1)	80550.6 (38650.2)	72418 (41528.3)	73340.6 (41558.9)	206594 (83138.7)	72879.3 (41543.6)	t(4.1) ^{***} , p<0.01

Source: Field Survey, 2005. Note: ***, ** and * mean significantly different at 99% level, 95% level and 90% level, respectively. ns = not significant; na=not applicable. Figures inside () indicate net income, otherwise gross income. Gross income per cycle= (Total live weight sold) (Selling price per kilogram of pig's live weight). Net income per cycle= Gross income per cycle- Production cost per cycle. Net income per cycle of a cooperative raiser under 'paiwi' system (Type 3) is calculated by dividing the profit equally between him and integrator.

Table 9. Net income, expenditures and savings of backyard pig raisers per month (Unit: pesos)

Parameters	Coop		Non Coop		Coop (n=85)	Non Coop (n=85)	T-test
	Sorosoro (n=45)	Rizal (n=80)		Dumuclay (n=40)			
		(n=40)	(n=40)				
Pig raising income	26589 (87.3)	8052 (69.2)	8652 (68.4)	8658 (60.7)	17321 (82.3)	8655 (64.3)	t(4.1) ^{***} , p<0.01
Non-pig income	3859 (12.7)	3586 (30.8)	4002 (31.6)	5601 (39.3)	3723 (17.7)	4801 (35.7)	t(-0.9) ^{ns} , p>0.1
Total income	30448 (100)	11638 (100)	1265 (100)	14259 (100)	21043 (100)	13456 (100)	t(3.2) ^{***} , p<0.01
Total expenditures	10531	6525	5971	5827	8528	5899	t(3.3) ^{***} , p<0.01
Total Savings	19917	5113	6682	8432	12515	7557	t(2.2) ^{**} , p<0.05

Source: Field Survey, 2005. Note: Figures inside () indicate percentage. ***, ** and * mean significantly different at 99% level, 95% level and 90% level, respectively. ns =not significant. Non-pig raising income comes from other agricultural activities (crop and poultry farming) and other non-farm livelihood like small scale entrepreneurship.

Cooperative raisers' total monthly income of P21,043 is significantly greater ($p < 0.01$) than the non-cooperative raisers P13,456-income. Cooperative raisers have significantly greater ($p < 0.05$) amount of monthly savings of P12,515 than the non-cooperative raisers' (P7,557). However, this general finding is not observed across the cooperative and non-cooperative respondents in the four sampled *barangays*.

On the average, cooperative raisers are found to incur significantly greater ($p < 0.01$) monthly living expenses amounting to P 8,528 than the non-cooperative raisers whose monthly living expenses average is P5,899. **Table 10** shows that food is the bulk of the living expenses of cooperative and non-cooperative households. Unlike the non-cooperative raisers who allot more than half (61.4%) of its monthly budget for food, cooperative raisers' budget share for food is relatively lower and allots some of the income for other basic needs. Cooperative raisers allot greater percentage of their budget to education because of the realization of its importance. In terms of medication, cooperative raisers have lower expenditure because of the cooperatives subsidized hospitalization and free medical check up among its members. Miscellaneous expenses, such as, electricity, water, gas, transportation and communication and others don't have much differences.

Table 10. Distribution of living expenses of backyard pig raiser household (Unit: %)

Income Sources	Coop		Non-Coop		Coop (n=85)	Non-Coop (n=80)
	Sorosoro (n=45)	Rizal (n=80)		Dumuclay (n=40)		
		(n=40)	(n=40)			
Food	43.8	55.6	62.6	60.1	49.7	61.4
Education	19.5	18.5	4.8	10.1	19.0	7.5
Medication	3.5	2.11	7.8	4.3	2.8	6.1
Clothings	1.7	0.8	0.2	1.3	1.3	0.8
Miscellaneous**	31.5	22.93	24.6	24.1	27.4	24.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Field Survey, 2005. Note: ** include water, electricity, gas, transportation and communication expenses.

6. Conclusion

This paper has shown that the cooperative is important in the development of backyard pig raising and their household economy in the Philippines. Through the programs and services extended by cooperatives among its members, they are enabled to gain greater degree of accessibility to various production resources (animal stocks, feeds and veterinary supplies) and services (marketing), which consequently improves their pig raising operation.

The study also shows that pig raising itself is an economically viable livelihood among backyard pig raisers by meeting their household expenses in a considerable period of time. The cooperative empowers its member-raisers to gain more income, thus giving them opportunities to have a considerable amount of savings on a regular basis and to have a stronger purchasing power in meeting their household basic needs like food, clothing, education, hospitalization and other utility services. The opportunities for greater income, purchasing power, and savings that a cooperative offers its members reinforce its importance in improving the backyard pig industry in general and the smallholders' socioeconomic status in particular.

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