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Allocative Efficiency of pig farmers in the Manzini region of Swaziland

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Abstract

The increase in the number of farmers venturing in the pig agribusiness has not resulted in improvement of production and marketing of pigs to meet the ever increasing demand for pork. The main objective of the study was to determine the factors affecting both allocative and marketing efficiency of pig farmers in Swaziland. The study used primary data collected randomly from 84 pig farmers sampled from a population of 444 pig farmers in the study area. A structured questionnaire that was validated and pre-tested was used for data collection. Data were analysed using descriptive statistics, Data Envelopment Analysis (DEA), Shepherds formula, Tobit and multiple regressions. The findings of the study show that the majority of the pig farmers were males and their average age was 44.6 years. Factors affecting allocative efficiency of pig farmers were found to be feed costs, labour cost, farm size, sex and education level of farmers. Factors affecting marketing efficiency of pig farmers were found to be number of pigs raised, labour costs for slaughter, abattoir charges, communication costs, costs of chopping, age, sex, market proximity and transport to market. Furthermore, findings show that high feed costs was the major challenge faced by pig farmers. It is therefore recommended that farmers should form groups when buying inputs so that they get discount and free transport from the input suppliers. This might help minimize production costs. Government should also set up input subsidy policies to lower input costs.

Keywords: Allocative efficiency, Data Envelopment Analysis

1. Introduction

Agriculture is known as the traditional backbone and key driver of Swaziland's economy. A considerable proportion of the manufacturing sector is value-added through processing of agricultural products, such as sugar and timber. Agriculture is the major source of employment for rural households, with about 70% of the population dependent on agriculture for their incomes (Thompson, 2017). The diverse activities include sugar cane production, citrus fruit, maize and other cereal crops, cotton, forestry, livestock and poultry. The commercialisation of pigs is promoted under the Livestock Policy to create employment in the rural areas. This involves persuading farmers to extend beyond rearing livestock and expand to the processing stage. However, the tradition of keeping pigs until they are beyond their commercial value age still persists (Thompson, 2017).

Nevertheless, through regular promotions done by the Swazi government, piggery production has become one of the fast growing sectors in the country. The government has made attempts to provide farmers with breeding stock through a breeding facility at Mpisi Government Farm which was established in 1999 (Vilakati, 2012).One of the objectives of the programme was to raise the quality of smallholder livestock in order to meet both local and international demand. Another objective was also to promote smallholder livestock enterprise and a spirit of entrepreneurship among livestock farmers in Swaziland (Nkwanyana, 2003).

Since the initiation of the programme, there have been an increasing number of farmers in the Middleveld venturing into piggery agribusiness. Before the establishment of the pig breeding centre, the farmers had been growing field crops. The increase in the number of farmers venturing in the piggery agribusiness has not resulted in improvement of the production of the pigs (Nkwanyana, 2003). This may be caused by the increase in the demand for the breeding stock. To get boar or gilt a farmer has to register with the piggery extension officer and the officer has to inspect the piggery house of the farmer and approve it first before issuing a breeding stock. Mpisi farm practices pure breeding and crossbreeding and there are ten parent stock sows and 5 boars. A guilt costs E 1210.00 and a boar E 3300.00. This breeding stock cannot meet the nation demand of pig breeding stock (Zwane, 2017).

The country has large scale piggeries that are managed intensively and a number of smaller producers that are trying to compete with the bigger units. At the same time the country is importing low cost processed pork products from South Africa. The number of pigs slaughter ready for pork in municipal abattoirs and butcheries increased from 14 838 in the year 2011 to 16 366 in 2012 However, there is currently a shortfall in the domestic supply of pork to the

market which counts on the import of pork products to satisfy the market demand (MoA, 2013).

Pig farming plays a major role in the enhancement of the livelihood of small-scale farmers. The role of pig-keeping might play for a farmer especially when referring to small-scale and backyard farming systems goes far beyond pork production and income generation. Pigs are from an economic perspective an asset representing a store of wealth or safety net for times of economic crisis while from a sociological perspective, traditional ceremonies and beliefs in some places centre on the pig as an asset to their belief (FAO, 2012). One of the major advantages of pigs is the ability to convert different kinds of feeds even kitchen waste to meat. Considering general feed conversion, pig is by far the most efficient among animals in the conversion of feed energy to body energy. According to Mokoele, Spencer, Van Leengoed, and Fasina (2014) pigs are of high economic importance, especially among the poor. They contribute to human nutrition, food security, poverty alleviation, enhanced livelihood and creation of employment for the rural community. In addition, pigs provide an affordable source of animal protein for the urban diets compared with cattle, sheep, and goats. Pigs are highly productive with an average litter size of 9.3 live piglets per sow and farrowing twice a year. The average litter size per sow is 16.9 piglets per year which makes it advantageous over ruminants like cattle whose maximum are two young ones within such period. Whilst pig farming as part of animal agriculture, is central to the development of rural farmers. The real contribution of smallholder pig farmers to the rural economy is not well assessed and somewhat doubtful (Mokoele et al., 2014).

According to MoA (2012) estimated total pork carcass yield remain low where local production was reported to be 900 130 kg compared to the domestic demand of pork carcass yield estimated at 1 328 004.84 kg, hence creating a gap of 427 875 kg of pork carcass imported from South Africa in 2012.On the other hand, local pig producers are faced with a lot of challenges including high feed prices, which account for 80% of the operational costs, escalating transport costs due to the ever increasing fuel prices. One way of improving productivity is through efficient use of resources allocatively. Lack of local markets is another challenge faced by farmers (Zwane, 2017). Poor knowledge about markets and other structural imperfections lead to inefficiency in markets. The purpose of the study was to analyse the allocative and marketing efficiency of pig farmers in the Manzini region of Swaziland. Specifically the study sought to determine the factors affecting both allocative and marketing efficiency of pig farmers.

2. Literature Review

2.1 Pig Production in Swaziland

Commercialisation of smallholder pig production in Swaziland was launched in April 1998. According to Nkwanyana (2003), one of the objectives of the programme was to raise the quality of smallholder livestock on Swazi Nation Land (SNL) and Title Deed Land (TDL) in order to meet both local and international demand as well as to promote smallholder livestock enterprises and a spirit of entrepreneurship among livestock farmers in Swaziland. Community women and youth group schemes were viewed as the key players in the development of pig production in Swaziland. In 1999 a new pig breeding centre was built by government at Mpisi farm. The Ministry of Agriculture was tasked to run the pig breeding centre and thereby support the emerging pig farmers in Swaziland to support. A total of US$380 000.00 was donated by the government of the Republic of China. Since 1999 an increasing number of farmers in the Middleveld on Swazi Nation Land (SNL) were venturing into the piggery agribusiness. Before the establishment of the pig breeding centre, the farmers had been growing field crops. One of the reasons for changing from field crops to pig production is the severe recurrent droughts, which resulted in poor performance by field crops (Nkwanyana, 2003).

Table 1 illustrates the number of both farmers and pigs; categories and geographic distribution of pig producing farmers in the country as at August 2014 (MoA, 2015). This table also shows the number of exotic and indigenous pigs found under Title Deed Land (TDL) and Swazi Nation Land (SNL).

Table1. *Number and Distribution of Pigs and of Pig Producers in 2014*

Region	**Tenure**	**Indigenous Pigs**	**Number of Farmers**	**Exotic Pigs**	**Number of Farmers**	**Total Pigs**
Hhohho	**SNL**	6626	1886	5273	408	11899
	TDL	120	1	0	0	120
Lubombo	**SNL**	3820	995	6072	205	9892
	TDL	121	7	183	12	304
Manzini	**SNL**	**3779**	**1009**	**4243**	**496**	**8022**

	TDL	**222**	**27**	**833**	**21**	**1055**
Shiselweni	**SNL**	8127	3125	3439	444	11566
	TDL	267	95	423	13	690
Totals		**23082**	**7145**	**20466**	**1599**	**43548**

Source: *MoA 2015*

2.2 Pig Marketing in Swaziland

The increase in the number of farmers venturing in the pig agribusiness has not resulted in improvement of the marketing of the pigs. Currently, farmers sell their pigs either on cash basis or on both cash and credit basis. The main customers in the pig agribusiness are Swaziland Meat Industries, Shamrock butcheries, Swaziland Meat Wholesalers, butcheries and restaurants. Considerable effort has been put by the Swaziland government to encourage and commercialize pig production and an increasing majority of the Swazi farmers are venturing into the piggery agribusiness (MoA, 2013). According to Thompson (2017) the pork abattoir and processing plant at Simunye is owned by Swaziland Meat Industries (SMI) and, together with other smaller producers, supplies the bulk of Swaziland's requirements. Pork production is encouraged and in conjunction with Simunye Pork, Government runs smallholder pig production schemes. Farmers are educated and assisted in all aspects of piggery farming, including the ideal breeding stock to purchase, and the abattoir will purchase pigs for slaughter from these producers. This sub-sector is still growing due to market and small areas of land required, making pig farming profitable and viable. The ministry of Agriculture has established a pig quarantine unit in an effort to ensure that meat is safe for consumption and to address the shortage of local breeding stock. Commercial slaughters increased up to 26 576 compared to 13 176 animals previously the pig population was 38 513 against the previous 39 808 (Thompson, 2017).

2.3 Factors Affecting Allocative Efficiency

Xabanisa (2017) studied the factors affecting allocative efficiency of piggery produced by farmers sponsored by World Vision in the Shiselweni region of Swaziland. The Cobb-Douglas production function was used to estimate the allocative efficiency scores of the farmers. Findings show that the mean allocative efficiency of the pig farmers was 95%. The factors found to affect allocative efficiency were education and household size. According to Rebecca (2011) education potentially enhances farm efficiency and knowledge with regard to agricultural production. Farmers with a higher level of education apply better farming methods. They are also better placed to try newer methods of farming. Mignouna (2012)

found that household size has an ambiguous effect on farmers' efficiency. It is associated with the availability of timely labour and in this case, larger families are likely to be more efficient. Contrary to that a larger family with more dependents decreases efficiency in farming due to low supply of farming labour. According to Rebecca (2011) older farmers are more experienced in farming activities, and are better to assess the risks involved in farming as compared to younger farmers. As a result, age of the household head contributes positively to economic efficiency. This implies that the age of the decision maker increases with increase in economic efficiency. Khan and Saeed (2011) revealed that receiving credit contribute positively to the farmers' efficiency. Access to credit may enable farmers to purchase productive inputs on time. It may also lead to higher productive efficiencies. According to Zwane (2017) farmers' contact with extension officer is positively related to efficiency. This is because, farmers that have frequent contact with extension workers will have better access to information and new technology that could be productively used on their farm. Furthermore, Farmers who have received training on pig production are hypothesized to be more efficient than those who did not receive training. Training is an important tool in building the managerial capacity of the farmer

3. Methodology

3.1 Research Design

The study used a descriptive and quantitative research design related to determining the allocative efficiency of pig farmers in the Manzini region of Swaziland.

3.2 Sampling Procedure

The target population were farmers rearing pigs in the Manzini region of Swaziland. These farmers were operating on a commercial basis and have been registered with Swaziland Nation Agricultural Union (SNAU), a formal entity confirming commercialised operations. Purposive and snowballing sampling techniques were used to draw a sample of 84 farmers from a population of 444 pig farmers from the Manzini region. The Slovian formula was used when determining the sample size.

3.3 Data Collection

A structured questionnaire was used for data collection. It was divided into four sections according to the specific objectives of the study. It consisted of both open and close ended questions. It was reviewed for content and face validity by a panel of experts from the Department of Agricultural Economics and Management in the Faculty of Agriculture. The

questionnaires were further pre-test using farmers who were not part of the study. Cross-sectional data were collected from the sampled farmers rearing pigs through face to face interviews. The data collected were based on the specific objectives of the study through the use of structured questionnaires. Four enumerators trained by the researcher were used for data collection. The purpose of the training was to avoid misunderstanding of the questionnaire and biasedness of the data due to too much influence from the enumerators during the interviews.

3.4 Data Analysis

Data analysis was carried out through the use descriptive statistics e.g. means, percentages, and frequencies. Data Envelopment Analysis was used to determine allocative efficiency scores. The Tobit regression and multiple regression models were used to determine the factors influencing allocative efficiency of the piggery farmers respectively.

3.5 Analytic Framework and Empirical Models

Estimation of allocative efficiency

In the study allocative efficiency was estimated using Data Envelopment Analysis (DEA) nonparametric approach (Charnes et al., 1978; Fare et al., 1985; 1994). The model measures the allocative efficiency of each Decision Making Unit (DMU). The allocative efficiency measure is calculated residually from the technical efficiency (TE) measure and economic efficiency (EE) measure through linear programming. The technical efficiency measure was estimated in the technical efficiency equation 11, and economic efficiency measure estimated from the cost minimizing DEA model using input prices. The input-oriented DEA approach was used.

If there are k=1, 2…k DMU, which in the context of our empirical application are pig farmers, each DMU produces m = 1, 2…k outputs using inputs that are both under and beyond a farmer's control. There are data available on K inputs and M outputs for each of N exploitations. The K x N input matrix X and the K x N output matrix Y represents the data for all the farmers. An intuitive way to introduce the DEA is via the ratio form. For each farmer, a measure of the ratio of all inputs and overall inputs was obtained. According to Charnes et al. (1978) the optimal weights are obtained by solving a mathematically duality linear programming problem.

$$Min_{\theta,\lambda}\Theta$$

Subject to

$$-y + Y\lambda \geq 0$$

$$\Theta_{xi} - X\lambda \geq 0$$

$$\lambda \geq 0$$

Where Θ is a scalar and provides a measure of technical efficiency of each farmer, and λ is a vector of constants, xi and yi, are column vector weights with the input and output data for the i-th farmer. X is a K by N matrix and Y is a M by N matrix with respectively all input and output data for all N farmers in the sample. The value of Θ is a score always lying between zero and one, with a value indicating that the farmer lies on the frontier and is efficient.

Economic efficiency was calculated using the costs minimizing vector of inputs quantities given the input prices is determined using:

$$Min_{xi,\lambda} w' x_i$$

Subject to

$$-y_i + Y\lambda > 0$$

$$\lambda \geq 1$$

Where w_i is a vector of input prices for the i-th farmer and x_i (which is calculated by using linear programming) is the cost- minimizing vector of input quantities for the input prices w_i and the output level yi. The economic efficiency (EE) measure is the estimated as the of minimum cost to the observed cost. Thus:

$$EE = \frac{w_i x *_i}{w_i x_i}$$

The allocative efficiency index was derived from economic efficiency and technical efficiency indices through linear programming.

$$AEi = \frac{EEi}{TEi} = \frac{EEi}{\theta i^{crs}} = \frac{W_t^1 W_i^*}{W_i^1 (\theta i^{crs} Xi)}$$

Where:

AEi = Allocative efficiency of the i-th DMU

EEi = Economic Efficiency of the i-th DMU

TEi = Technical Efficiency of the i-th DMU

From the equation above Xi is the cost–minimizing or economically efficient input vector for the i-th DMU, given its input price vector, W_i, and the output level Y_i. Where $TE_{CRS} = \theta i^{crs}$ and $W_i^1(\theta i^{crs} Xi) = W_t^1 TE$. If $AE_{crs} = 1$, the farmer is allocative efficient. While if the farmer is allocatively inefficient $AE_{crs}<1$, meaning that the farmer is not on the cost frontier.

The input prices used in the model were feed costs, labour costs, transportation costs and veterinary costs.

Determining Factors of Allocative Efficiency

To estimate the factors affecting of allocative efficiency, a Tobit regression analysis model was used. The Tobit Regression model was estimated as;

$$Yi^* = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + U$$

Where Y^* = level Allocative Efficiency;

Xi is a vector of explanatory variables that include

X_1 = labour costs (E)

X_2 = feed costs (E)

X_3= education level (in years of study)

X_4= sex (1 = male; 0 = female),

X_5 =Farm size

U = error term

4. Results and Discussions

4.1 Socioeconomic characteristics of the farmers

The socioeconomic characteristics of the pig farmers that were studied include age, sex, marital status, education level, household size farm size, and experience in pig farming. The

majority of the sampled farmers in the study were males (59%) and females were 41%. The results of the study were in line with Ogunniyi and Omoteso (2011) where males dominated the pig farming business. Although this results reveal that pig farming is mainly done by males probably because of the stressful nature of raising pigs, but it does not imply that women were not highly involved in the study area. Females in the study area were involved as family labour that helped with the feeding of the animals and cleaning the piggery.

The results of the study revealed that the mean age of the pig farmers was 44.6 years with a standard deviation of 13.75. This implies that that on average the pig farmers are above 35 years which is the youthful age. About 60% of the farmers are above 35 years which affect the farmers' productivity since young farmers are more active as compared to their older counterparts. Having less young farmers in the study area may be due to the fact that they migrate to urban areas in search of jobs. It is shown in the table that 21.5% of the respondent farmers were single, 63.4% were married whereas 12.9 were widowed. Having a higher percentage of married farmers in the study area, is in line with the finding of Jibowo (1992) study which revealed that majority of the adult population in the society consists of married people. Marriage in African context is regarded to be more responsible and important in decision making, particularly when planning and implementing ideas as compared to a single farmer who may depend in his own ideas during decision making (Khumalo, 2017). According to the results on household size, 57.1% of the farmers studied had a household size of 6 to 10 members, 27.4% of the farmers had a household size of 1 to 5 members while 15.5% of the sampled farmers had a household size of 11 to 20 members.

According to Kibirige (2013) farming experience and education are the fundamental factors in enhancing human capital. The average farming experience of the pig farmers was found to be 5 years. The maximum farming experience was found to be 28 years. Eighty nine percent (89.3) of the pig farmers had a farming experience of 1 to 10 years and 1.2 % of the farmers had a farming experience of 21 to 30 years. It is said that farmers with more years of experience can better reduce the chances of risks. The results on the education level of the farmers show that 1.2% of the pig farmers had primary education, 10.7% of them had secondary education, and 35.7% of the pig farmers had tertiary education. About 98% of the respondent farmers had attained secondary education which is considered the elementary education necessary for business management skills (Kumar, 2010). The average number of years spent in school was found to be 13.6 years.

Table 6. *Socio-economic characteristics of pig farmers*

Variable	Category	Frequency	Percentage	Mean	Std. dev.
Age	20-30	14	16.7		
	31-40	23	27.4		
	41-50	30	35.7		
	>50	17	20.2		
		84	**100**	**44.6**	**13.75**
Experience in pig farming	1-10	75	89.3		
	11-20	8	9.5		
	21-30	1	1.2		
		84	**100**		
Family size	1-5	23	27.4		
	6-10	48	57.1		
	11-20	13	15.5		
		84	**100**	**7.76**	**4.00**
Farm size	1-1.9	34	40.5		
	2-2.9	29	34.5		
	3-5	21	25.0		
		84	**100**	**5.05**	**4.60**
Sex	Male	50	59.5		
	Female	34	40.5		
		84	**100**		
Marital Status	Single	19	22.6		
	Married	54	64.3		
	Widowed	11	13.1		

		84	**100**
Education	Primary	1	1.2
	Secondary	9	10.7
	High school	44	52.4
	Tertiary	30	35.7
		84	**100**

Source: Own data survey 2017

The results on Table 7 show that the average number of pigs kept was 15 pigs per farmer. A higher number of pigs kept mean more revenues made after selling. Also the average number of hired workers was one labourer. This indicates that the majority of the pig farmers had no hired labour instead they were benefiting from free family labour.

Table 7. *Average description of farmers' characteristics*

Variable	**Mean**	**Std. dev.**
Number of years in school	13.61	3.08
Number of hired workers	1.0	0.61
Number of pigs kept	15.0	16.45

Source: Own survey data 2017

4.2 Allocative Efficiency Analysis

The allocative efficiency of the piggery farmers was obtained using the Data Envelopment Analysis (DEA) model. Allocative efficiency was computed for each farmer and then grouped into frequency distribution classes in terms of percentages. The minimum efficiency score was 48% and the maximum was 100%. The mean allocative efficiency level for the piggery farmers in the Manzini region was found to be 77.66%.

Table 8. *Estimated Allocative Efficiency Frequency Distribution*

Distribution Classes	**Frequency**	**Percentage**
90-100	25	29.76
80-89	10	11.90
70-79	18	21.44
60-69	21	25.00
50-59	9	10.71
40-49	1	1.19
Total	**84**	**100.00**

Source: Own data survey 2017

Table 8 shows the allocative efficiency frequency distribution of pig farmers in the study area. The results show that 29.76% of the pig farmers were operating between 90-100%, while 25% were operating between 60-69%, 21.44% between 70-79%, 11.90% between 80-89%, 10.71% between 50-59%, 1.19% was operating between the ranges of 40-49%. The mean allocative efficiency level for the pig farmers in the Manzini region was found to be 77.66% which means that the farmers can still improve their allocative efficiency by 22.34%.

4.3 Factors Affecting Allocative Efficiency

Table 9 shows that labour costs, feed costs, and education level were found to positively affect allocative efficiency and were statistically significant. Farm size and sex were found to

negatively affect allocative efficiency and were statistically significant. Feed costs and education level were found to be significant at 1% level. Labour costs were found to be significant at 5% level. While sex and farm size were found to be significant at 10%.This means that a one Lilangeni increase in feed costs increases allocative efficiency by 0.0000001112 percent. A one Lilangeni increase in labour costs would results to a 0.0000005743 percent increase in allocative efficiency. A one year increase in the level of education increases allocative efficiency by 0.001568 percent. A one hectare increase in farm size decreases allocative efficiency by 0.001624 percent. When a farmer is a female, the allocative efficiency is lower by -1.854 percent compared to that of a male.

Table 9. *Factors affecting Allocative efficiency*

Allocative Efficiency				
Independent variables	Coefficients	Estimated standard errors	t- ratio	P- value
Feed costs	1.112e-06***	2.776e-07	4.005	0.000134
Labour costs	5.743e-06**	2.348e-06	2.447	0.016535
Education level (yrs)	1.568e-02***	5.633e-03	2.784	0.006643
Farm size	-1.624e-02*	9.525e-03	-1.705	0.092014
Factor (Sex) 2	-5.485-02*	2.958e-02	-1.854	0.067250
Constant	5.81812***			
R^2= 0.878 Adj R^2 = 0.873				

Source: Own survey data 2017

Note: *** Significant at 1%, ** Significant at 5% * Significant at 10%

4.7 Challenges faced by pig farmers

When determining challenges faced by farmers in pig production, a likert scale was used. The farmers were required to give their levels of agreement against each item and it was scaled from 1 to 5 against strongly disagree (1), disagree (2), Uncertain (3), Agree (4), strongly agree (5). The sum total of each score was 1+2+3+4+5 = 15. The average mean was 15/5 = 3. Items with a mean value of less than 3 were not considered as challenges while items of a

mean value of more than 3 were considered challenges. A standard deviation above 1.00 indicated that the difference in the level of agreement varied much from the mean. A standard deviation of less than 1.00 indicated that the level of agreement of the respondents did not vary much from the mean.

Table 13. *Challenges faced by pig farmers*

Challenge in Pig Production	**Mean**	**Std. dev.**
1. High feed prices	4.52	0.74
2. Shortage of capital	3.86	4.22
3. Diseases	3.86	1.03
4. Lack of Markets	3.73	1.20
5. Lack of Market information	3.71	1.21
6. High Piglet Mortality	3.70	1.34
7. Lack of slaughter facilities	3.69	1.20
8. Lack of Transport	3.65	1.11
9. Lack of knowledge in pig production	3.21	6.20
10. Lack of breeding stock	2.89	1.49
11. Expensive pig breeds for commercial purposes	2.66	1.73
12. Lack of extension services	2.57	1.48
13. Shortage of labour	2.66	1.57
14. Difficulty in acquiring pig breeding stock	2.85	1.56
Overall	**3.40**	**1.86**

Source: Own survey data 2017

Table 13 shows results on the challenges faced by pig farmers in the study area. According to the results the major challenge faced by pig farmers is high feed prices. Chabo et al. (2000) found that feed costs account for approximately 88% of the cost of production. Other challenges faced by pig farmers were shortage of capital, diseases, lack of markets, lack of market information, high piglet mortality, lack of slaughter facilities, lack of transport, and

lack of knowledge in pig production. The findings of the study also concur with the findings of Ogunniyi and Omoteso (2011) who also found that pig farmers were also faced with a problem of diseases, high infant mortality, and high feed prices.

5. Conclusions and Recommendations

The study examined the factors affecting both allocative efficiency of pig farmers in the Manzini region of Swaziland. These pig farmers are allocatively efficient. Factors affecting allocative efficiency of pig farmers were: feed costs, labour costs, education level, farm size and sex. The study revealed that pig farmers experience high feed costs. Farmers should form groups when buying inputs so that they get discount and free transport from the input suppliers. This might help minimize production cost. Furthermore, farmers should also grow yellow maize because it constitutes the largest part of the feed in order to produce formulated feed which could help reduce their feed costs. Government should set proper policies for the price regulation of pork in the country due to the variations of price per kilogram among farmers. Input subsidy policies should be set up to lower on input costs since farmers are faced with high feed costs as a major challenge. Government should also establish facilities nearby to help the pig farmers reduce on the abattoir charges, communication costs, transport costs and processing costs.

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