

Farmers' Individual Potential in Different Sizes of Local Beef Cattle Farming in Kebumen, Indonesia

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ABSTRACT

The increasing size of beef cattle breeding farming pattern encourages farmers to have higher individual potential. This study aims (1) identify the farmers' individual potential in different farming sizes and (2) analyze factors which influence the farmers' individual potential in different farming sizes. 100 respondents from 6 sub-districts known as Kebumen PO beef cattle development centers are selected using a purposive sampling method based on the available breeding records. The results of Kruskal Wallis Test shows that the increasing size of Kebumen PO beef cattle farming requires higher farmers' individual potential ($P < 0.01$). Based on the Spearman rank correlation, the availability of technological potential and the provision of production input potential are considered as the important elements regarding to the farming size differences ($P < 0.01$). The increasing size of beef cattle breeding farming patterns should be followed by the increasing availability of technology and provision of production inputs.

Keywords: farmers' potential, farming size, technology

INTRODUCTION

One local commodity with highly technical, economic, and strategic potential should be developed in Kebumen Regency is Ongole Crossbred (PO) Cattle. Kebumen Community-based PO cattle breeding farming are still highly limited, such as still in small-scale business, simple management, utilizing simple technology, non-concentrated location and no application of agribusiness system.

In regards to Kebumen community-based PO cattle breeding business, farmers' roles and the quality of resources are important factors for the successful breeding business. Djomo (2012) states that farmers' basic potential, including education and experience, influences the development of farming business productivity. Business scale improvement obviously increases the farmers' income and business competitiveness. Thus, business scale improvement should be supported with the development of farmers' ability and human resources. The improvement in business scale requires farmer to have more adequate potential. Farmers' individual potential is their own ability and the family to develop their own business. Human resource potential is the accumulation of competence, knowledge, and manner related to the ability in developing the economic values (Crook *et al.*, 2011). Efforts to identify farmers' individual potential may have the farmers of Kebumen PO cattle prepare to improve their business productivity and sustainability. This study aims at (1) identifying farmers' individual potential in various business scales and (2) analyzing factors which influence the individual potential differences in various business scales.

MATERIALS AND METHODS

The study on Farmers' Individual Potential in Different Sizes of Local Beef Cattle Farming in Kebumen, Indonesia, involves 100 respondents who are selected using a multistage sampling method. First, the research areas are purposively selected within only 6 sub-districts, which are classified as Kebumen PO cattle development centers. Second, 20 percent of the farmer groups from each district are randomly selected. 20 percent of the respondents from Kebumen PO cattle development centers are also randomly selected from each selected farmer group.

The primary data are directly collected from the respondents through observation and interview using questionnaires. The variables observed are (1) farming size, (2) basic potential (education, farming experience, social interaction, and non-formal education), (3) availability of man power potential, (4) provision of production input potential, and (5) technological mastery potential. All these variables are measured using structured questionnaire referring to the Guideline for Analyzing Farmers' Potential (Directorate General for the Livestock Production, 2003). Analysis of the descriptive statistics is used to describe the degree of farmers' individual potential. Farmers' potential is measured by accumulating score of basic potential, provision of production input potential, provision of manpower potential, and technological mastery potential. Kruskal Wallis Test is employed to analyze the farmers' individual potential in different farming sizes. A Spearman Correlation Rank Test is conducted to identify elements of the farmers' individual potential related to different farming sizes.

RESULTS AND DISCUSSIONS

The Profile of Respondents

Kebumen PO cattle farming business is a combination of business orientation and culture of the people. Beef cattle farming has become a part of people's life and economically intended to earn living for the family.

Table 1. Characteristics of respondents

Variable	Mean	Deviation Standard
Age (years)	47.14	8.80
Educational attainment (years)	9.85	3.07
Farming experience (years)	23.65	12.31
Number of cattle (Animal Units)	1.58	0.84

Based on Table 1, the business pattern on Kebumen PO beef cattle breeding performed by the farmers in their productive years at the average of 47.14 years old. Otieno *et al.* (2014) state that farmers' age positively influences the business efficiency of beef cattle breeding pattern. The involvement of younger farmers within the average productive age improves the business efficiency. Younger farmers have more access in technological knowledge and mastery.

Kebumen PO Cattle farmers have completed the 9-years compulsory education meeting the Government education program (52 percent) and are literate. Formal education influences their access to knowledge and farming innovation adoption. Ibrahim *et al.* (2013) state the more educated the farmers, the easier the access to information, knowledge and skills, and this may stimulate more income. Farmers' lower educational background is not actually a significant matter due to their long farming experience. Nwigwe *et al.* (2016) state that the more the experience, the farmers may improve their efficiency in utilizing technology and the production outputs.

Kebumen PO Cattle Farmers' Individual Potential

Farmers' resources are important production factor which has a direct impact to the improvement of business competitiveness. The higher the capacity of human resources, the more the output is generated. Kebumen PO cattle competitiveness may be developed through, among others, by improving the business scale. Hadrich (2011) states that the development of farmers' resource quality may become very important due to the efforts in improving the business scale. Farmers' resource quality may be measured through age, education, and business experience approaches. Ward *et al.* (2008) add that the improved business scale may encourage farmers to adopt the technology. Farmers may find it easier with adequate age, education and experience to adopt the technology. Thus, improvement of business scale requires farmers with farming potential and capacity.

Table 2. Kebumen PO Cattle Farmers' Individual Potential (Score)

Farmers' potential variable	Category and score	Percentage (%)
Farmers' Basic Potential	Low (< 63.8)	1
	Moderate (63.08 – 100.92)	76
	High (> 100.92)	23
		100
Manpower Potential	Low (< 11.67)	77
	Moderate (11.67 – 18.34)	21
	High (> 18.34)	2
		100
Technological Mastery Potential	Low (< 8.75)	0
	Moderate (8.75 – 13.75)	3
	High (> 13.75)	97
		100
Provision of Production Input Potential	Low (< 30.33)	86
	Moderate (30.33 – 47.66)	4
	High (> 47.66)	10
		100
Farmers' Individual Potential	Low (< 436.91)	22
	Moderate (436.91 – 718.06)	69
	High (> 718.06)	9
		100

The Directorate General for the Livestock Production (2003) states that farmers' potential is one important indicator in developing the local cattle farming business. Kebumen PO cattle farmers have adequate farmers' individual potential which is indicated that majority of farmers (69 percent) has the moderate score of individual potential (436.91 – 718.06). In the provision of manpower and production input aspects, majority of Kebumen PO cattle farmers have relatively low potential. Non-optimized availability of family manpower and non-optimally available production input of Kebumen PO cattle farmers are expected to inhibit the development of Kebumen PO cattle. On the other hand, Kebumen PO cattle farmers have high basic potential and technological mastery potential which may encourage an improvement to Kebumen PO cattle breeding pattern. Suroto and Nurhasan (2014) state that farmers' basic potential and technological mastery potential may positively influence the development of beef cattle business. Sugiarto and Syarifuddin (2013) support the opinion that the development of farmers' individual potential may improve the efficiency of livestock business.

Farmers' Individual Potential in Various Kebumen PO Cattle Farm Size

The development of Kebumen PO cattle may be performed through adding the number of Kebumen PO cattle. However, increasing business scale requires improvement of farmers' ability. Small business scale of animal husbandry production does not require high financial, physical or human capitals. Developing the business scale, however, may influence the improvement of farmers' ability in providing input, manpower and technology. Rapsomanikis (2015) states that production process of small-scale farming requires limited land, financial and human capitals. Thus, the increasing business scale may influence the need for additional business capital and human capital.

Table 3. Comparison of Kebumen PO Cattle Farmers' Individual Potential of Various Farm Size

Business Scale (Farm Size)	Farmers Individual Potential	Kruskall Wallis Test
< 3 Animal Unit (AU)	498.25	0.00** (P<0.01)
2.5-4.2 Animal Unit (AU)	666.19	
> 4.2 Animal Unit (AU)	771.14	

** Significance at 0.01

Based on Kruskal Wallies Test, farmers' individual potential shows significant difference in various business scales (P<0.01). The more improved business scale of Kebumen PO cattle may result in the improved farmers' individual potential. The development of business scale of Kebumen PO cattle requires the improvement of technological mastery, provision of production input and provision of manpower abilities. On the other hand, we may conclude that improved farmers' individual potential can improve farmers' motivation to develop their business scale of Kebumen PO cattle. Akimowicz *et al.* (2013) state that age and experience as the farmers' individual potential variables influence the development of business scale.

Factors Related to Kebumen PO Cattle Farm Size

Basic potential, provision of production input potential, provision of manpower potential, and technological mastery potential are the primary variables of the farmers' individual potential. Based on spearman rank correlation analysis, it is identified that technology availability potential and provision of production input potential are important elements in causing differences in farm size (P <0.01).

Table 4. Factors Related to Kebumen PO Cattle Farm Size

Elements of Individual Potential	Coefficient Correlation
Farmers' Basic Potential	0.079
Manpower Potential	-0.195
Technological Mastery Potential	0.615**
Provision of Production Input Potential	0.566**

** Significance at 0.01

Increasing Kebumen PO cattle business scale should be followed with the improved farmers' potential in technological mastery and provision of production input. Akudugu *et al.* (2012) describe that farmers' expectation to gain higher benefit will be obtained through increasing business scale. The increasing business scale is motivated and encouraged by farmers' mastering of available technologies.

CONCLUSIONS

The increasing Kebumen PO cattle business farm size may be implemented effectively when farmers have adequate individual potential. Based on previous description and explanation, it can be concluded that Kebumen PO cattle farmers have adequate individual potential. The increasing Kebumen PO cattle business scale requires improvement in farmers' potential and resources quality. The mastery of farming technology and provision of adequate production input become the main key to be taken into consideration in increasing Kebumen PO cattle farm size.

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