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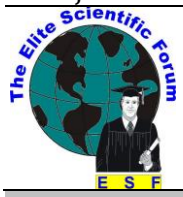

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RESEARCH ARTICLE

Exploring Farmers' Motivation and Perceived Cohesion: Considerations for Sustainable Dairy Goat Farming in Farmers' Group at the Slope Area of Merapi Volcano, Indonesia

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ABSTRACT

Dairy goat farming is an alternative livelihood activity for small-holder farmers who lived at the mountain area. The farmers' group approach through the setting of some behavioral intervention is an effective strategy to empower the small-holder farmers in creating sustainable farming system. The study was aimed to analyze some motives as components of sustainable farming motivation encouraging the farmers to raise dairy goats at the slope area of Merapi volcano and to analyze the relationship between individual group member's perceptions about cohesion with dairy goat farmers group and sustainable farming motivation. All the members of the dairy goat farmers group, at Turgo Sub-village participated in the research. Data were collected by interviewing the farmers using a questionnaire which already tested its validity and reliability. The descriptive analysis was made and data were analyzed by using Rank-spearman correlation. Most of the farmers (83.3%) had high category levels of sustainable dairy goat farming motivation. The social motives were at the highest level (73.3%) for farmers in exerting dairy goat farming at the slope area of Merapi volcano, followed by environmental motives (66.7%) and economic motives (63.3%). The group members' perception of cohesion, including sense of belonging and feeling of morale, to the group (73.3%) was also in high category level. There was a positively significant relationship ($P<0.010$) between perceived cohesion and farmers' motivation for sustainable dairy goat farming. In conclusion, there were same behavioral types based on the farmers' motivation for being in sustainable dairy goat farming. Higher the individuals' perception of their own cohesion to the dairy goat farmers group, motivation for being in sustainable dairy goat farming was also higher.

INTRODUCTION

The slope area of Merapi volcano is the place potentially developed for dairy farming. Most of the farmers in this area established dairy farming, especially dairy cows, as the favorable animal farming activities (Nofrita and Krol, 2014). But, on the other hand, the slope area of Merapi volcano is also a hazard prone area having the activity of the Merapi volcano when the eruption happens. One of the big eruption happened in 2010, when the farmers got the high loss in income, especially in dairy cow which caused the death of cows (43.0%) and the decrease of milk production (Ilham and Priyanti, 2011). But, Nofrita and Krol (2014) found that the farmers in the slope area of the volcano did not consider Merapi volcano as a threat. Dove (2008), exploring the perception of Merapi volcanic eruption, found that villagers of Turgo on southern slope of Merapi believed that it would not harm their life and assumed Merapi as living thing.

In response to the effect of the eruption and to avoid the possibilities of higher losses in one of the main income source i.e. dairy farming, some farmers have changed part or all of their commodities in dairy farm by rearing dairy goats. This decision to change into dairy goat farming was based on some considerations and particularly motives of the farmers to sustain their favorable livelihoods. Dairy goats are potentially

developed in this area as mentioned by Kustantinah et al. (2013) that dairy goats in Indonesia are generally kept in hilly areas, where feeds available are suitable for goats, although some people have a negative perception regarding the environmental issue that rearing dairy goats would damage environment grazing of grasses through uncontrolled grazing and cause the erosion of the land at slope area of the Merapi volcano (Sutama, 2007).

Gold (1999) stated that the principle of sustainable agriculture that underlie organic farming call for economic viability of farms along with social justice and environmental stewardship. This principle means that profit maximization alone may be inapplicable (Lichtenberg, 2004). The agriculture producers are allowed to have preferences for profits (self-interest) and/or environmental effects. Furthermore, Peterson et al. (2012) stated that farmers may temper their profit motives with a small amount of self-sacrifice to meet social and/or environmental goals.

Most of farmers in Indonesia developed dairy goats in small-scale business with 8-10 goats each family (Kustantinah et al., 2013). These small farms provide vital economic, social, and environmental benefit to society through practice and promote sustainable farming. The government tried to strengthen and defend the interests of small farmers by fostering a farmer organization as a farmers group which is formed on the basis of share interests, similarity social-economical, commodities, and familiarity to enhance as well as expand the business of its members. One of strategies for the empowerment of small farmers was implemented through the strengthening of farmers group. To describe the essential qualities associated with farmers group, group cohesiveness has been an active part of research in almost every domain of psychology that deals with group behavior. Cohesion reflects an individual's appraisal of it is suitable relationship to the group. The members of highly cohesive group could be perceived to be more motivated to develop and maintain social relationship within the group and to participate in its activities as well as to be more co-operative towards one another.

The study tried to explore some motives as components of sustainable dairy goat farming motivation which encouraged the farmers to raise dairy goats at the slope area of Merapi volcano. This study also measured dairy goat farmers group members' perception of their cohesion based on dimensions of sense of belonging and feelings of morale.

MATERIALS AND METHODS

The research was a case study at Turgo Sub-village in the southern part of the slope area of Merapi volcano, Indonesia. The respondents were all dairy goat farmers (60 farmers) who were the member of the dairy goat farmers group, at Turgo Sub-village. Data regarding sustainable dairy goats farming motivation and perceived cohesion were collected by interviewing using an especially designed questionnaire which had been tested its validity ($r>0.300$) and reliability (Cronbach's Alpha >0.600). The level of sustainable dairy goat farming motivation and perceived cohesion were measured using 5-point Likert Scales ranging from strongly agree to strongly disagree. The most useful framework for measuring the sustainable dairy goat farming motivation was created by separation of motivation into: economic, social, and environmental motives (Bennet et al., 2012). To capture perceived cohesion in dairy goat farmers group, the study divided into two dimensions of perceived cohesion: sense of belonging and feelings of morale (Bollen and Hoyle, 1990; Chin et al., 1999; Nisa and Juneman, 2012). Perceived cohesion encompasses an individual's sense of belonging to dairy goat farmers group and his or her feelings of morale associated with membership in the group. Descriptive quantitative and Rank Spearman correlation was used to analyze the data.

RESULTS AND DISCUSSION

Profile of the farmers

The average age of farmers (40.0 years) was still in a productive age category (Table 1). At this age, hopefully they still had the capability to develop their dairy goat farming in the future. The level of formal education for most of farmers (40.0%) was still in low category (elementary school), but some of them (33.3%) had finished their Senior High School (Table 1). The farmers cultivated their land (5,453 m^2) for farming activities. The farmers were relatively new (2.17 years) in joining the group of dairy goat farmers. It was found that the group had been established just three years ago. The farmers group managed the meeting once a month. Most of the members of farmers group (80.0%) were always attending that meeting, but only 23.3% of farmers were giving any suggestions actively at the farmers group meeting (Table 1). The meeting of farmers group and the field activities at the location of communal dairy goats farming were the facilities that were used by the most farmers (36.7%) to make interaction intensively with other members of the group.

Sustainable motivation in dairy goats farming

Most of the farmers (83.3%) had high category levels of sustainable motivation in dairy goat farming at the slope area of Merapi volcano. Based on the components of sustainable motivation, social motives were at highest level (73.3%) for farmers in exerting dairy goat farming at the slope area of Merapi volcano, followed

Table 1: Characteristics of farmers of the dairy goat farmers groups at Turgo Sub-village. (n=60 farmers)

Characteristics	Value
Average age (years)	40.0±9.79
Formal education (%):	
No School	3.33
Elementary School	40.0
Junior High School	23.3
Senior High School	33.3
Average cultivated land (m2)	5,453±6,381
Average number of dairy goats ownership (head):	
Buck	1.70±1.72
Doe	7.53±6.86
Young female goat	2.00±3.08
Kid	3.93±3.71
Average length of being a member of the dairy goat farmers group (years)	2.17±0.93
Frequency for attending at the routine farmers group meeting (%):	
Always	80.0
Sometimes	16.7
Seldom	3.3
The activity in giving any suggestions at the farmers group meeting (%):	
Always	23.3
Sometimes	60.0
Never	16.7
Time for interacting intensively with the other members of the group (%):	
Only at the group meeting	33.3
Every field activities at the location of communal dairy goat farming (%)	30.0
Both above	36.7

Table 2: Percentage distribution of sustainable motivation and its components categories levels

Components of Variable	High	Middle	Low
Economic Motives	63.3	36.7	-
Social Motives	73.3	26.7	-
Environmental Motives	66.7	33.3	-
Variable of Sustainable Motivation	83.3	16.7	-

by environmental motives (66.7%) and economic motives (63.3%) (Table 2). The high category levels for all of the components of sustainable farming indicated that there were same behavioral types based on the farmers' motivation for being in sustainable dairy goat farming at slope area of Merapi volcano.

Economic motives

According to Meena and Fulzele (2008), economic motive refers to the occupational success in terms of profit maximization and relative value on economic ends placed by dairy farmers. The farmers who agreed that dairy goats farming had higher economic value than the asset value which had already invested in their dairy goat farming were 40%, even most of the farmers (46.7%) strongly agreed to this statement. Majority farmers (46.7%) disagreed even 36.7% strongly disagreed, if the farmers did not consider the value of capital which had already been invested in dairy goat farming. It may be said that the farmers should calculate value added from the investment of their dairy goat farming. The farmers (50.0%) agreed that by raising dairy goats, they could get the cash income, and they could use the cash for meeting their family needs. This finding was supported by Kustantinah et al. (2013) that one of the goals of raising dairy goat is the possibility of the milk production so that the milk can be sold and it can generate regular cash income for the farmers.

Social motives

Table 4 showed that most of farmers agreed with all of the items in social motives, even some of the items were responded with strong agreement. Eighty percent of the farmers agreed that by raising dairy goats they had already showed that they were responsible to support the goals of the dairy goat farmers group.

This indicated that the dairy goat farmers, as a social system, had a good cooperation among the members of the group to achieve shared goals. Moreover, the farmers had a good social network and relationship among the people in the village, as showed that most farmers (60.0%) agreed, even some farmers (16.7%) strongly agreed to the item that by raising dairy goats, they do really care about social welfare in their village (Table 4). It seems that socio cultural aspects are very important in building resilient community of dairy goat farmers at the slope area of Merapi volcano.

Environmental motives

Although the slope area of Merapi volcano is hazard prone, but there is pull factor regarding the environment,

Table 3: Percentage distribution of the farmers' response to the items of economic motives

Items	SA	A	U	DA	SDA
I was rearing dairy goats because they always gave economics values higher than the capital that I've already invested in the farm	46.7	40.0	10.0	3.30	-
I did not consider the value of capital that I've already invested in my dairy goat farms	-	-	16.7	46.7	36.7
I was rearing dairy goats because I could get the cash income from this farm which could guarantee my family life	13.3	50.0	30.0	6.70	-

SA: Strongly Agree, A: Agree, U: Uncertain, DA: Disagree, SDA: Strongly Disagree.

Table 4: Percentage distribution of the farmers' response to the items of social motives

Items	SA	A	U	DA	SDA
I need to exert dairy goats farming for my future life	23.3	63.3	10.0	3.30	-
I was rearing dairy goats because the people would respect my family	6.70	46.7	30.0	13.30	3.30
I was rearing dairy goats because as a member of the farmers group I had to be responsible to support the goals of the group	16.7	80.0	3.30	-	-
I was rearing dairy goats because I want to get my business chance that could be done by everyone in this village	26.7	70.0	-	3.30	-
I was rearing dairy goats because I do really care about social welfare in this village	16.7	60.0	10.0	13.3	-

SA: Strongly Agree, A: Agree, U: Uncertain, DA: Disagree, SDA: Strongly Disagree.

Table 5: Percentage distribution of the farmers' response to the items of environmental motives

Items	SA	A	U	DA	SDA
By rearing dairy goat, It could be more effect to improve soil fertility	31.7	58.3	6.70	3.30	-
By rearing dairy goat, It could protect the environment around the slope area of Merapi volcano	25.0	53.3	16.7	5.00	-
By rearing dairy goat, It could guarantee the health of environment	13.3	53.3	21.7	11.7	-
By rearing dairy goat, It could not be a destructive farming to natural resources around the slope area of Merapi volcano	13.3	66.7	13.3	6.70	-
By rearing dairy goat, it could protect availability of local breed of dairy goat at the slope area of Merapi volcano	11.7	61.7	23.3	3.30	-
By rearing dairy goat, It could use the waste of agricultural in the slope area of Merapi volcano	8.30	78.3	10.0	3.30	-

SA: Strongly Agree, A: Agree, U: Uncertain, DA: Disagree, SDA: Strongly Disagree.

Table 6: Percentage distribution of perceived cohesion based on the categories level

Categories level	Value
Low	-
Medium	26.7
High	73.3

for farmers to live and to do some activities at this area. According to Sagala et al. (2012), while a disaster normally brings negative impacts, there are positive impacts from disaster that can be used for livelihood development such as livestock farming.

More than 50.0% of farmers agreed to all items of environmental motives (Table 5). These findings indicated that negative environmental issues regarding dairy goat farming at the slope area of Merapi volcano were not proven. By raising dairy goats, there was a mutualism relationship with the environmental condition at the slope area of Merapi volcano.

Group members' perception of cohesion

Table 6 showed that most of the dairy goat farmer group members' perception of their cohesion was in high category (73.3%). This result indicated that the farmers tended to be part of dairy goat farmers group. The farmers felt that working in their group could be more fruitful than a single contribution of an individual. It was supported by Suhartini et al. (2014) that the basis of life in Turgo was harmony in mutual cooperation (gotong royong). Based on the total positive responses to the items of perceived cohesion (Table 7), it is clear that majority of the farmers (>50.0%) were resistant to leaving their dairy goat farmers group. It means that majority of the farmers (>50.0%) had a strong sense of belonging to their dairy goat farmers group. These findings supported that people with shared interest as a group had a natural tendency to act together (Oliver, 1993) and to engage in collective action (Etzioni, 1996) in pursuit of their interest. Based on the dimension of feeling morale, most of the farmers (>50.0%) also positively responsed with the items related with the feelings, reflected the individuals' appraisal of their experience with the group and group members. Majority of the farmers (>50.0%) who responded

Table 7: Percentage distribution of the farmers' response to the items of perceived cohesion

Items	SA	A	U	DA	SDA
I feel that I am really a part of my dairy goat farmers group that cannot be separated from the group	50.0	46.7	3.30	-	-
I feel that I am really a part of my dairy goat farmers group that always be useful for the group	6.70	60.0	30.0	3.30	-
I feel that I have not been involved yet in my dairy goat farmers group fully.	-	13.3	26.7	56.7	3.30
I am really happy to be a part of my dairy goats farmers group	20.0	76.7	3.3	-	-
The dairy goat farmers group, of which I am a member, is the best among the other groups in my village	26.7	66.7	6.70	-	-
I am not satisfied yet to be a member of my dairy goat farmers group	-	-	13.3	70.0	16.7
I think that all the members of my dairy goat farmers group are the best people as a family member	33.3	53.3	6.70	6.70	-
I always think about the progress of my dairy goat farmers group	16.7	56.7	16.7	10.0	-

SA: Strongly Agree, A: Agree, U: Uncertain, DA: Disagree, SDA: Strongly Disagree.

Table 8: Relationship between sustainable motivation and perceived cohesion

Components of Variable	r	Probability
Economic Motives	0.197^{ns}	0.296
Social Motives	0.581^{*}	0.001
Environmental Motives	0.910^{*}	0.000
Variable of Sustainable Motivation	0.905^{*}	0.000

*P<0.01; ns = non-significant (P>0.01).

positively were happy to be part of dairy goat farmers group and assessed that their group was the best group among the other groups in their village (Table 7). This indicated that the group had a high degree of cooperation and harmony in their intra-group relations.

Relationship between sustainable farming motivation and perceived cohesion

There was a Positive significant relationship (P<0.01) between farmers motivation in sustainable dairy goat farming and group members' perception of their cohesion to dairy goat farmers group (Table 8). The degree of relationship was very strong with the value of coefficient correlation which was in the range of 0.800 – 1.00 (Sugiyono, 2006). It means that with the high perception of the cohesion to the group, the sustainable farming motivation was also high. Some behaviors intervention, created by the group of the dairy goat farmers as the goals of the group, should be implemented by all the members of the group as a consequence of being a member of the group. These behaviors included the adoption of dairy goat farming management to improve and maintain dairy goat farming in a comfortable environment where they live. The result was in accordance with Gesell et al. (2016) who found that many behavioral interventions occur in group settings could be promising to augment desired outcomes. Among the components of sustainable farming motivation, there were a positive significant relationship including social motives (P<0.010) and environmental motives (P<0.010) (Table 8).

The economic motives did not have a significant relationship (P>0.01). It was in accordance with Haryadi et al. (2014) that the function of farmers group, as a business unit, did not work optimally yet. The farmers group had not facilitated business potency of the members yet, hence the function of farmers group relating with the economic aspect did not work optimally.

Authors' contributions

FTH conceived the idea, designed the project and wrote the manuscript. BG did the statistical analysis and interpreted the results. SA participated in descriptive analysis and designed the tabulated results. ES helped in writing and revising the manuscript.

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