The Role of Gender on Biosecurity Practices in Beef Cattle Supply Chain Farms in Bone Regency, South Sulawesi

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Abstract. The aim of this study was to know the role of gender on biosecurity practices in beef cattle farms in Bone Regency, South Sulawesi. Total sample was 51 beef cattle farmers which was chosen through purposive sampling. Data were collected through observation and depth interview by using questionnaire. There was 22 questions which were divided into 5 sub variables: participation, isolation, sanitation, traffic control and other activities. Guttman scale was used to know whether beef cattle farmers take a part on those activities or not. The score was 1 if they DO, and the score was 0 if they DO NOT DO. Data were calculated by using SPSS version 23.0 and were analyzed descriptively by using percentage table. The results showed that the highest percentage was sanitation (69.02%), and the lowest percentage of the role of gender on biosecurity practices in beef cattle farms was participation (13.07%) which consisted of training, seminar and looking for information. On average, the role of men were greater than the role of women on biosecurity practices in beef cattle farms in Bone Regency, South Sulawesi: 54.70% and 45.30% respectively.

Keywords: *Biosecurity, role, gender, beef cattle, supply chain*

1. Introduction

In [1] defines gender as the relation between men and women, both perceptual and material. Gender is not determined biologically as a result of sexual characteristics of either women or men, but it is constructed socially. It is a central organizing principle of societies, and often governs the processes of production and reproduction, consumption and distribution. Gender roles are considered as the social definition of women and men in a society. So, these roles can vary among different societies with regard to religious, culture, classes, values and beliefs. Gender relations are the ways in which a society defines rights, responsibilities, and the identities of men and women in relation to one another [2]. Hence, the definition of gender should not be misunderstood only as being the promotion of women. Gender aspects are to be understood as "practical needs" (access to technologies) on one hand and as "strategic needs" (revised rules and regulation, long term improvement of women's position) on the other hand [3].

According to [4], the function of women in the agricultural sub-sector is more frequently trapped in phrases of the physical undertaking of observational material. Problems associated to women in the livestock sub-sector consist of the balance of roles as labor, authority in the family, socialization processes and get right of entry to information and technological bias. Factors limiting productiveness related to female sex encompass social status, acquiring employment, employment status, and the simultaneous burden of female compared to the sequential function in men.

[5] argued that although it is recognized that female are quite large, their status in the cattle commercial enterprise is still now not regarded a working partner. Cooperative things to do and counseling on male domination are additionally still very large. Household things to do are still agreed to by women. In [6] added that women are concentrated in lower-paid employment and in some cases are in a less favourable position.

The livestock species play very essential financial and socio-cultural roles for the wellbeing of rural households, such as meals supply, supply of income, asset saving, source of employment, soil fertility, livelihoods, transport, agricultural traction, agricultural diversification and sustainable agricultural production [7, 8].

According to [9], the feature of cattle for the quite a number household individuals desires to be understood and fully taken into account. Measures to improve productiveness and manufacturing will solely succeed if additional income can be generated by way of selling products outside the home. Women's get entry to markets, mobility, and manipulate over the proceeds of the sale are essential issues in this respect. To increase livestock production, women must obtain unique coaching that is tailor-made to their unique desires and constraints (i.e. the content of training, timing and social restrictions).

Biosecurity is one way to prevent transmission of the disease through isolation, sanitation and traffic control. Whether or not there are cases of disease should be applied biosecurity. Based on the results of several studies conducted by [10] showed that the rate of adoption of biosecurity in beef cattle farms in Barru regency, Soppeng and Takalar Regency was categorized as partial adoption. This means that beef cattle farmers apply the principles of biosecurity not yet comprehensive. The barriers to adoption of biosecurity in beef cattle farms are shortage of extension workers, lack of veterinerians, lack of knowledge and lack of capital [11].

According to data from South Sulawesi Statistical Bureau, Bone Regency was the most populous of beef cattle amounted 470,000 head in 2018. Although Bone Regency has the largest number beef cattle in the province of South Sulawesi, in 2017 it occurred in cases of Anthrax disease. Therefore, the local Animal Husbandry Service has carried out vaccinations to break the chain of spread of the disease and burn and bury the positively improved beef cattle.

The aim of this research was to know the role of gender on biosecurity practices on beef cattle farms in Bone Regency, South Sulawesi.

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2. Materials and Methods

This study was conducted in Bone Regency, South Sulawesi. Total sample was 51 cattle farmers which was chosen purposively. Data were collected through observation and depth interview by using questionnaire. The questionnaire was adopted and modified from Checklist of Biosecurity and Good Management Practices, University of Nebraska – Lincoln. There were 22 questions which consisted of five variables: participation, isolation, sanitation, traffic control and other activities. Guttman scale was used to score the answers. The score was 1 if cattle farmers DO biosecurity practices and the score was 0 if cattle farmers DO NOT DO biosecurity practices. Data were calculated using SPSS version 23.0 and were analyzed descriptively using mean and percentage table.

3. Results and Discussions

Characteristics of Respondents

Table 1 showed that respondents were in productive age with the average 46.51 years. The youngest was 19 years while the oldest was 75.00 years old. To manage beef cattle farms need a lot of power, so it was a good condition if beef cattle farmers were still in productive age. Looking at the gender of respondents, mayority was female (56.86%) rather than male (43.14%). This research in contra with that [12] who found that mayority of beef cattle breeders in Grobogan Regency, Central Java Province were men (94%). Studies [13-17] found that demographic factors (sex and age) affect individual's adoption of technological innovation.

Table 1 Characteristic of Respondents

No	Variables	%	Minimum	Maximum	Average	SD
1	Age (years)		19.00	75.00	46.51	13.54
2	Sex					
	a. Male	43.14				
	b. Female	56.86				
3	Education level		6.00	16.00	9.18	3.12
	a. Elementary school	37.25				
	b. Junior High School	13.73				
	c. Senior High School	45.09				
	d. Bachelor	3.93				
4	Number of family (person)		1.00	7.00	3.47	1.78
	a. 1 - 2 (small)	33.33				
	b. 3 - 4 (medium)	43.14				
	c. 5 – 7 (large)	23.53				
5	Farm experiences (years)		2.00	25.00	9.75	7.01
	a. < 10	54.90				
	b. ≥ 10	45.10				
5	Number of beef cattle (head)		1.00	10.00	4.33	2.43
	a. < 5					
	b. ≥ 5	56.86				
		43.14				

Based on the education level, mayority of respondents graduated from Senior High School (45.09%). Respondents with higher level of education were more welcome to innovation of technology. Mayority of respondents came from medium scale family (43.14%). Family can be used as human resources to maintenance their beef cattle farms. Based on beef cattle farm experiences, mayority of respondents have less than 10 years (54.90%). Looking at number of cattle, respondents mostly have less than 5 heads (56.86%).

The role of gender on biosecurity practices

a. Participation: Based on Table 2. participation of beef cattle farmers in the form of training, seminar and looking for information was still low (13.07%) and mostly done by men (67.33%). Women were only participate 28.57%. It was clear that women were lack of access to participate on training, seminar and looking for information (32.67%). This result agree with that of [8], who found that when viewed from the aspect of access, many more men were given access to information and institutions than a woman.

Table 2. Participation of Gender on Biosecurity Practices

No	Activities	Number		Men		Women	
		Person	%	person	%	person	%
1	Participate on training in animal husbandry	7.00	13.73	5.00	71.43	2.00	28.57
2	Participate on seminar in animal husbandry	4.00	7.84	3.00	75.0	1.00	25.00
3	Looking for information about beef cattle farms	9.00	17.65	5.00	55.56	4.00	44.44
	Average		13.07		67.33		32.67

b. Vaccination: Based on Table 3, on average vaccination was 68.89% and it was dominated by women (60.25%) rather than men (39.75%). Buying medicine has the highest percentage (78.43%) and it was done by women (60.00%). Curing the sick beef cattle was also dominated by women (56.41%) rather than men (43.59%). It can be concluded that in this vaccination activities, women take a more participation than men. This was in contra with [9] who argued that women were found to face more constraints than men in accessing vet services, information on diseases, and animal medicines.

Table 3. The Role of Gender on Vaccination

No	Activities	Number		Men		Women	
		person	%	person	%	person	%
1	Give vaccine	42.00	77.78	16.00	38.09	26.00	61.91
2	Buy medicine	40.00	78.43	16.00	40.00	24.00	60.00
3	Cure sick cattle	39.00	76.47	17.00	43.59	22.00	56.41
4	Check cow health	29.00	56.86	12.00	41.38	17.00	58.62
5	Call veterinerian	28.00	54.90	10.00	35.71	18.00	64.29
	Average		68.89		39.75		60.25

c. Sanitation: As can be seen in Table 4, on average 69.02% of beef cattle farmers in Bone Regency have done sanitation. Mayority of sanitation was done by women (54.21%) rather than men (45.79%). The highest percentage for sanitation was dispose of dead cow, followed by clean cowshed and clean the feed containers, these were 82.35%, 78.43% and 76.47% respectively which mostly done by women (57.14%, 57.50% and 54.85%). Based on sanitation activities, women have a major role than men. This agree with that of [2] who argued that women could take a part on health care in animal farming activities.

Table 4 The Role of Gender on Isolation

No	Activities	Number		Men		Women	
		person	%	person	%	person	%
1	Separate the mother and calf	24.00	47.06	11.00	45.83	13.00	54.17
2	Dispose of a dead beef cattle	42.00	82.35	18.00	42.86	24.00	57.14
	Average		64.71		44.35		55.66

e. Control: Table 5 showed that control for people and other animals entered the cowshed only 27.44%, and it was done mayority by men (67.71%). Control for people and other animals such as chickens, ducks, birds and mouse enter cowshed was important to be done, because the aimed was to prevent diseases which can affect to beef cattle inside. The owner should strict that people not allowed to enter their cowshed. To prevent other animals enter to the cowshed, it could be used safety wire or fences. The percentage of this activities could be increased by giving extension and information to beef cattle farmers. The results of this research was supported by [16, 13] who said that there was still gender inequality at control over resources.

Table 5. The Role of Gender on Sanitation

No	Activities	Number		Men		Women	
		person	%	person	%	person	%
1	Clean the feed containers	39.00	76.47	18.00	46.15	21.00	53.85
2	Clean the shed	40.00	78.43	17.00	42.50	23.00	57.50
3	Disinfect pest spray	31.00	60.78	16.00	51.61	15.00	48.39
	Average		71.89		46.75		53.25

5. Other activities: Based on Table 6, on average the percentage for other activites was 62.47% and moyority was done by men (52.91%) rather than women (47.09%). The highest percentage for other activities were took water and selling beef cattle (92.16%). Buying bran and slaughtering cows were the major activites done by men (75.00% and 66.67%) respectively. Take water was the most activity done by women (65.96%). This result agree with that of [3] who found that the animal farming activity can be done by women was watering. On average, men dominated in other activities than women.

Table 6. The Role of Gender on Traffic Control

No	Activities	Number		Men		Women	
		person	%	person	%	person	%
1	Control people visiting the sheds	12.00	23.53	8.00	66.67	4.00	33.33
2	Control other animals that enter the	16.00	31.35	11.00	68.75	5.00	31.25
	Average		27.44		67.71		32.29

Table 7. The Role of Gender on Other Activities

No	Activities	Number		Men		Women	
		person	%	person	%	person	%
1	Gathering grass / forage	46.00	90.20	19.00	41.30	27.00	58.70
2	Buy bran	20.00	39.22	15.00	75.00	5.00	25.00
3	Help the cow give birth	22.00	43.14	11.00	50.00	11.00	50.00
4	Buy enclosure equipment	38.00	74.51	15.00	39.47	23.00	60.53
5	Take water	47.00	92.16	16.00	34.04	31.00	65.96
6	Doing slaughtering beef cattle	3.00	5.88	2.00	66.67	1.00	33.33
7	Selling beef cattle	47.00	92.16	30.00	63.83	17.00	36.17
	Average		62.47		52.91		47.09

4. Conclusion

Based on the results and discussion, it can be concluded that the role of gender on biosecurity practices on beef cattle farms in Bone Regency, South Sulawesi was dominated by men. It can be suggested to give more access for women to get training and information on biosecurity practices.

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