

THE IMPACT OF SOCIAL FACTORS ON PARTNERSHIP PATTERNS BETWEEN GOAT FARMERS AND BULUNGAN MANDIRI FARM: A STRUCTURAL EQUATION MODELING (SEM) APPROACH

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ABSTRACT

This study aims to analyze the influence of social factors on the partnership patterns between goat farmers and Bulungan Mandiri Farm. As the livestock sector grows, effective partnership models become crucial in ensuring sustainability, especially in regions with emerging agricultural economies. Social factors such as trust, communication, social norms, and farmer participation are hypothesized to play a significant role in shaping partnership dynamics. The research employs Structural Equation Modeling (SEM) to examine the relationships among variables using data collected from selected goat farmers engaged in partnerships with Bulungan Mandiri Farm. The findings indicate that social factors significantly influence the quality and sustainability of partnerships. Enhanced social interaction and trust between stakeholders are shown to contribute to more effective and mutually beneficial collaboration. The study provides insights for policymakers and practitioners to design more inclusive and sustainable livestock partnership frameworks.

Keywords: Goat farming, social factors, partnership model, Bulungan Mandiri Farm, Structural Equation Modeling (SEM), agricultural collaboration, rural development

INTRODUCTION

According to data from the Central Bureau of Statistics (Badan Pusat Statistik) of Bulungan Regency, the goat population increased from 7,460 in 2020 to 7,686 in 2021. This growth occurred in four districts: Tanjung Palas, Tanjung Selor, Central Tanjung Palas, and North Tanjung Palas. The highest populations were recorded in Tanjung Selor (2,225 goats), North Tanjung Palas (2,110 goats), and Tanjung Palas (1,360 goats) [1].

Goat farming is one of the prominent livestock commodities developed by the community, aside from cattle, due to its promising economic potential. This is attributed to the relatively simple farming system in terms of feed, care, and housing, as well as the ease of marketing. Goats have several advantages and economic potentials: their relatively small size, early maturity, ease of maintenance, and suitability for small-scale farming. Goat farming requires limited land, low capital investment, and offers fast capital turnover with readily available market opportunities [2].

In social partnerships, companies are expected to assist and guide farmers as their partners. Ideally, such partnerships enable large or medium-sized enterprises to support farmers in achieving shared profits and well-being. A business partnership is essentially a collaborative effort between companies and farmers, built on mutual need and benefit [3]. Socially, the relationship between partner companies and farmers can improve farmers' capabilities in livestock management through training, mentoring, and extension activities, resulting in better outcomes for both parties.

Although relatively newly established, Bulungan Mandiri Farm has already partnered with 34 goat farmers across various districts in Bulungan Regency, and the number continues to grow. These

partner farmers were formerly traditional goat breeders using basic facilities and lacking structured feed management. Common problems in the partnership scheme stem from internal factors such as company consistency, human resource management, and insufficient training and extension services. External issues include broker (middleman) interference and poor financial management among farmers [4].

According to [5], social capital consists of obligations, expectations, trust within society, information channels, and effective norms and sanctions. Social capital is believed to influence the development of human capital in the future. [6] categorizes social capital into three components: networks, norms, and trust. Meanwhile, [7] defines social capital as informal norms that promote cooperation among individuals within a group. These norms foster trust and networks within the community. Social capital – through norms, trust, and social networks – facilitates reciprocal relationships within social cohesion, categorized as bonding, bridging, and linking [8]. Bonding and bridging social capital occur within communities, whereas linking social capital involves external networks. Bonding social capital reinforces group exclusivity and homogeneity, while collective actions based on bonding can be used to establish linking capital with external actors for group benefit [8]. According to [9], social capital is utilized by individuals or groups within a community to achieve mutual benefits, which can be enjoyed individually or collectively. Affinity groups, such as livestock assistance recipients, who effectively mobilize social capital, can experience improved welfare outcomes [10]. This context underpins the present study, which aims to examine the influence of social factors driving farmers to engage in partnerships with Bulungan Mandiri Farm.

MATERIALS AND METHODS

Research sites

The research was conducted at 34 locations where the partner goat farmers are located, as well as at the Bulungan Mandiri Farm facility in Apung Village, Tanjung Selor District, Bulungan Regency. The study was carried out over a period of eight months, from February 2023 to September 2023.

Procedures

Sampling Method

The sampling of goat farmers employed the **total sampling** method, based on the entire population of farmers participating in the Bulungan Mandiri Farm partnership program, which consists of 34 partner farmers distributed across several villages. Total sampling is a technique in which the sample size is equal to the population size. This method was chosen because the total population was fewer than 100 individuals, thus all members of the population were included as research respondents [11].

Sample Analysis Method

The analysis used in this study was a **structural model (inner model)** to examine the influence of social factors on farmers participating in the Bulungan Mandiri Farm Boer goat partnership program. Prior to conducting the analysis, assumption testing was carried out to fulfill the prerequisites of the model.

Table 1. Variables Used in the Structural Model (Inner Model)

No	Variabel Independen	Skor
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Social	X2.1	Farmer Age	Very Influential (5), Influential (4), Moderately Influential (3), Uncertain (2), and Less Influential (1)
	X2.2	Farmer Education	Very Influential (5), Influential (4), Moderately Influential (3), Uncertain (2), and Less Influential (1)
	X2.3	Farming Experience	Very Influential (5), Influential (4), Moderately Influential (3), Uncertain (2), and Less Influential (1)
	X2.4	Ability to Apply Science and Technology (IPTEK)	Very Good (5), Good (4), Fair (3), Uncertain (2), and Poor (1).
	X2.5	Labor Availability	Very Easy (5), Easy (4), Moderate (3), Uncertain (2), and Difficult (1).

RESULT AND DISCUSSION

In this study, a validity test was conducted to assess the accuracy of the instrument in measuring what the researcher intended. The validity test was performed on 34 respondents, who were farmers in partnership with Bulungan Mandiri Farm. An instrument is considered valid if the calculated correlation coefficient (r) is higher than the critical value of r from the table, with a significance level of 0.05 (5%), where degrees of freedom (df) = $n-2$, with n being the number of respondents (34). Thus, $df = 34-2 = 32$, and the r -table value obtained is 0.3388. Data analysis for this study was carried out using the SPSS application program (Statistical Program for Social Science).

The Social Variable (X_2) consists of 5 independent variables: farmer age ($X_{2.1}$), farmer education ($X_{2.2}$), farming experience ($X_{2.3}$), ability to apply science and technology ($X_{2.4}$), and labor availability ($X_{2.5}$), with 9 questionnaire items. The validity test was conducted by comparing the calculated r_{value} with the r_{table} value, yielding the following results:

Tabel 2. Results of Validity Test for Social Variable (X_2)

Question	r_{hitung}	r_{tabel}	note
X2.1	0,476	0,3388	Valid
X2.2	0,418	0,3388	Valid
X2.3	0,508	0,3388	Valid
X2.4.1	0,572	0,3388	Valid
X2.4.2	0,487	0,3388	Valid
X2.4.3	0,427	0,3388	Valid
X2.5.1	0,187	0,3388	not Valid
X2.5.2	0,343	0,3388	Valid
X2.5.3	0,615	0,3388	Valid

Note: The data presented is primary data that has been processed.

Based on the results of the validity test in Table 2, it can be observed that there is one item question for the social variable that has a calculated r value smaller than the r -table at the 5% significance level for $n = 34$, namely question X2.5.1 regarding the labor requirements in goat farming ($0.187 < 0.3388$). Therefore, this item question is considered invalid. All other items, except for X2.5.1, are valid in explaining the social variable. Consequently, the variable X2.5.1 will not be used in the subsequent analysis.

Before performing the Structural Equation Modeling (SEM) analysis, it is essential to ensure that the data used follows a normal distribution. The SEM model using Maximum Likelihood Estimation (MLE) assumes that the data are normally distributed, both univariately and multivariately.

To test whether the data are normally distributed, a critical ratio test for Skewness and Kurtosis is applied. The decision rule for determining whether a data distribution is normal is as follows: If the

critical value exceeds the range of +2.58, the distribution is considered non-normal. If the critical value is within the range of +2.58, the distribution is considered normal [12].

To describe the characteristics of a data distribution, the concepts of skewness and kurtosis are used. Kurtosis refers to the degree of peakness of a distribution, typically relative to the normal distribution, while skewness indicates the asymmetry of the data, and kurtosis represents the sharpness of the distribution. Skewness reflects the asymmetry of the data, whereas kurtosis refers to the peakedness in comparison to the normal distribution.

Table 3: Normality Test for Social Indicator Data (X2)

Indikator	Mean	Median	Nilai Min	Nilai Maks	Std. Dev	Kurtosis	Skewness	Jml Obsv
X2.1	3,294	4	1	5	1,295	-0,587	-0,584	54
X2.2	3,235	4	1	5	1,456	-1,141	-0,432	54
X2.3	4,147	4	3	5	0,733	-1,101	-0,248	54
X2.4.1	4,235	4	3	5	0,689	-0,834	-0,360	54
X2.4.2	4,176	4	3	5	0,785	-1,328	-0,336	54
X2.4.3	4,088	4	2	5	0,818	-0,450	-0,509	54
X2.5.1	2,412	2	1	5	1,003	0,891	0,894	54
X2.5.2	3,676	4	1	5	0,830	1,717	-0,597	54
X2.5.3	3,765	4	3	5	0,644	-0,617	0,277	54

Note: The data presented is primary data that has been processed.

The **Critical Ratio (CR) values for kurtosis and skewness** observed in Table 3 range from -1.328 to 1.717. Considering that the CR values for kurtosis (peakedness) and skewness (asymmetry) lie between -2.58 and +2.58 [12], this indicates that the data meets the criteria for normality testing. In structural model testing, several tests are conducted to evaluate the relationships between latent constructs. One such test is the **R-Square** for endogenous constructs [13]. The R-Square value represents the coefficient of determination for the endogenous constructs. According to [14], R-Square values are interpreted as follows: 0.67 (strong), 0.33 (moderate), and 0.19 (weak).

Table 4: R-Square and Adjusted R-Square Analysis Results

Matrix	R Square	Adjusted R Square
X2.4 Application of Science and Technology Skills	0,778	0,771
X2.5 Availability of Labor	0,609	0,596
X2.3 Experience in Livestock Farming	0,349	0,329
X2.1 Age of the Farmer	0,137	0,110
X2.2 Education Level of the Farmer	0,125	0,098

Note: The data presented is primary data that has been processed.

The R Square value for the variable X2.1 (Age of the Farmer) in relation to Y (Partnership) is 0.137, with an Adjusted R Square of 0.110. This means that the influence of the age of the farmer on the partnership is weak, accounting for only 13.7%, since the R Square is below 19%. This suggests that age does not significantly affect the partnership, and there are no age restrictions for becoming a partner in Bulungan Mandiri Farm.

For the variable X2.2 (Education Level of the Farmer), the R Square value is 0.125, with an Adjusted R Square of 0.098. This indicates that the influence of education level on the partnership is also weak, at 12.5%, as the R Square is below 19%. The farm considers farming experience to be more influential than the level of formal education when it comes to determining the partnership.

The R Square value for the variable X2.3 (Experience in Livestock Farming) in relation to Y (Partnership) is 0.349, with an Adjusted R Square of 0.329. This shows that the influence of farming experience on the partnership is moderate, accounting for 34.9%, since the R Square is between 33% and 67%. Experience in livestock farming is a crucial factor for success in the farming business, and those with more experience tend to have higher skills and better knowledge in farm management. For the variable X2.4 (Application of Science and Technology Skills), the R Square value is 0.778, with an Adjusted R Square of 0.771. This suggests that the influence of science and technology application skills on the partnership is strong, at 77.8%, as the R Square is above 67%. The adoption of technology in farming is greatly influenced by the characteristics of the farmer, such as experience, education, and other factors.

Lastly, the R Square value for the variable X2.5 (Availability of Labor) in relation to Y (Partnership) is 0.609, with an Adjusted R Square of 0.596. This indicates that the influence of labor availability on the partnership is moderate, accounting for 60.9%, as the R Square is between 33% and 67%. The use of female and child labor is significant in livestock farming as it allows the head of the household to engage in other activities. Although this labor is not paid, it reduces production costs and helps increase the farm's household income.

CONCLUSION

Faktor sosial dari 5 variabel independen yaitu X2.1 (umur peternak) berpengaruh lemah, X2.2 (Pendidikan peternak) berpengaruh lemah, X2.3 (pengalaman budidaya ternak) berpengaruh moderat, X2.4 (kemampuan penerapan iptek) berpengaruh kuat dan X2.5 (ketersediaan tenaga kerja) berpengaruh moderat.

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