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'Perseduaan' Social Capital to Develop Beef Cattle Breeding Agribusiness with a Profit-Sharing System in Rural West Sumatra

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Abstract: This paper discusses the use of '*perseduaan*' profit-sharing system as a source of capital among cattle breeders. Beef cattle's sharing is an Indonesian traditional economic system based on local wisdom values. Even though it is a traditional system, it is based on the principles of good cooperation. Because breeders involved in this system often face the issue of capital, *perseduaan* profit-sharing system is used as a solution even though its effectiveness has not been proven. Based on that, this research describes the economic perspective, particularly effectiveness of Indonesia's local cattle sharing system. The data were obtained through a survey of 216 profit-sharing partners. The data were analyzed using PLS-SEM. The results of the study show that the beef cattle business partnerships are quite effective in increasing the production and income of farmers. All indicators have a significant effect on the 5% significance level as a measure of constructing partnership effectiveness. Furthermore, the partnership is significantly effective on the farmers' income. The income contribution of profit-sharing activity to family income is 34.5% which is considered low compared to income from other sources such as civil servants and rice farming. This study concludes that the government must make policies to increase the livestock population by strengthening the "Profit Sharing" institution as a source of capital among breeders.
Keywords: social capital; beef cattle breeding; agribusiness; profit-sharing system; farmer income

"波斯语"社会资本在西苏门答腊农村发展肉牛养殖农业综合企业，采用利润分享制度

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摘要:
本文讨论了使用"波斯语"利润分享系统作为养牛者的资本来源。肉牛共享是一种基于当地智慧价值观的印尼传统经济体系。尽管它是一个传统系统，但它基于良好合作的原则。由于参与该系统的育种者经常面临资金问题，因此尽管其有效性尚未得到证实，但说服了利润分享系统作为解决方案。在此基础上，本研究描述了经济角度，特别是印度尼西亚当地牛共享系统的有效性。这些

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数据是通过对216家利润分享合作伙伴的调查获得的。使用偏光扫描电镜分析数据。研究结果表明，肉牛企业合作伙伴关系在增加农民的产量和收入方面非常有效。所有指标均在5%的显着性水平上具有显着影响，作为构建伙伴关系有效性的衡量标准。此外，合作伙伴关系对农民收入有显着影响。利润分享活动对家庭收入的贡献为34.5%，与公务员和水稻种植等其他来源的收入相比，这被认为是较低的。这项研究的结论是，政府必须制定政策，通过加强作为育种者资金来源的"利润分享"制度来增加牲畜数量。

关键词：社会资本; 肉牛养殖； 农业综合企业； 利润分享制度； 农民收入

1 Introduction

West Sumatra Province, which becomes one of the beef production centers in Indonesia, has an important role in supplying beef throughout Indonesia. The demand for meat in West Sumatra is quite high due to the community's habits such as cooking the local traditional dish called rendang. The relatively high potential demand for beef should be followed by an increase in the cattle population cultivated by farmers in this region. However, the growth rate of the cattle population is not balanced with the demand rate for beef. Meat production will increase if the total population expands by optimally utilizing resources. Community empowerment is a concept of economic development that encapsulates social values. This concept reflects a new paradigm in development, which is people-centered, equitably distributed, and environmentally and socially sustainable.

Community empowerment can be implemented through the development of a beef cattle agribusiness system. The development of agribusiness-oriented beef cattle business with a partnership design is considered an alternative to increase breeder profits[1]. Beef cattle development has good prospects as seen from the high growth rate in demand for beef, which has not been able to be fulfilled by domestic production. If the very high demand for meat is matched by local economic strength, it will create significant progress for national economic growth[2]. This situation indicates that the cattle farming business plays a strategic role. Technically, the efforts to increase the competitiveness of the beef cattle business can be done by enhancing productivity and expanding economic activity through profit-sharing partnerships[3]. Previous research has shown that the local livestock production-sharing system generates business benefits in an economic dimension[4].

From a macroperspective, several factors have a link to the problems of imbalance between supply and demand for beef growth, including the spread of production centers, the relatively far geographical distance between production centers and consumption centers, limited transportation infrastructure, and supporting institutions. At the micro level, there are several problems in smallholder livestock businesses such as limited capital, low mastery of technology, livestock diseases, and institutional in pre-production, production, and post-production aspects. One of the institutional aspects that have long been applied and have become a culture in economy of the cattle breeding business is the profit-sharing system. Profit-sharing in the beef cattle business is a traditional Indonesian economic system that is formed naturally based on local wisdom and values. In West Sumatra, it is known as *perseduaan*. Cattle *perseduaan* is a condition in which a person can raise cows entrusted by investors with certain rules regarding financing and profit sharing[5].

Agricultural development in West Sumatra so far has not emphasized local institutions which are considered as social capital in society. According to [6], the obstacles in the implementation of partnerships happen because partnerships are applied based on compassion, differences in the ability to master technology, and consistency in fulfilling agreements. Improvements in institutional aspects are needed to increase technology mastery and market control by local farmers.

Powerlessness in functioning local institutions such as the *perseduaan* profit-sharing system results in the failure of agribusiness development in rural areas. This will impact the level of farmers' income. Institutional empowerment is needed to reduce acute disparities between groups in society. A profit-sharing system is a form of business partnership based on cooperation between investors and smallholder breeders, in the form of vertical cooperation where both parties should receive profits and benefits. According to [7], a partnership is a partnership run by various agribusiness actors, starting from pre-production, production, and

marketing activities.

The profit-sharing system in cattle farming has long been adopted by the community. Even though in reality, this system has not provided optimal results, neither from the side of the owners of capital nor from the side of the breeders due to low productivity, this profit-sharing system is still applied in rural communities. Generally, the investment happens because of the expectation to get a high profit. Interestingly, this system remains sustainable and operational even though the low productivity and birth spacing of cattle obtain low profitable investment compared to investing in other livestock businesses, such as broiler chickens. The success of the profit-sharing business is dependent on the commitment of both partners in implementing the unwritten agreement in implementing this *perseduaan* profit-sharing system.

2 Materials and Methods

This study was designed as survey research. Based on the source, the type of data collected in this study consisted of primary and secondary data. Primary data is sourced from breeders and capital owners, while secondary data is sourced from related agencies such as Provincial/District/City Statistical Offices, Provincial/District/City Animal Husbandry Services, and other agencies that have the required data. There are two types of respondents in this study, namely breeders and capital owners. The number of breeders included as respondents was 216, and investors as resource persons were 60.

The analytical methods used are:

1) The Delfi method was used to analyze the factors driving the participation of farmers in the profit-sharing system.

2) To analyze how effective the social capital of the *perseduaan* profit-sharing partnership is in increasing farmers' income, using formulation:

$$SV = \frac{\text{DaLL} - \text{Da UL}}{\text{Au UL} - \text{Au LL}}$$

3) To analyze business productivity, using the Cobb-Douglas production function[8]:

$Y = a\, x_1^{b1} x_2^{b2} x_3^{b3} x_4^{b4} x_5^{b5} x_6^{b6} x_5^{b7} e^{D} e^{u}$

logs to: $\log Y = \log a + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 + b_4 \log X_4 + b_5 \log X_5 + b_6 \log X_6 + b_7 \log X_7 + e^{D} + e^{u}$

4) To analyze the effectiveness of the "*Perseduaan*" partnership to increase farmer income, using structural equation model PLS[9].

5) To analyze the magnitude of the income contribution from the partnership cattle business to household, using formula below:

$$perseduaan\ contribution = \frac{\text{perseduaan income}}{\text{total income}} \times 100\%$$

The analytical methods used are:

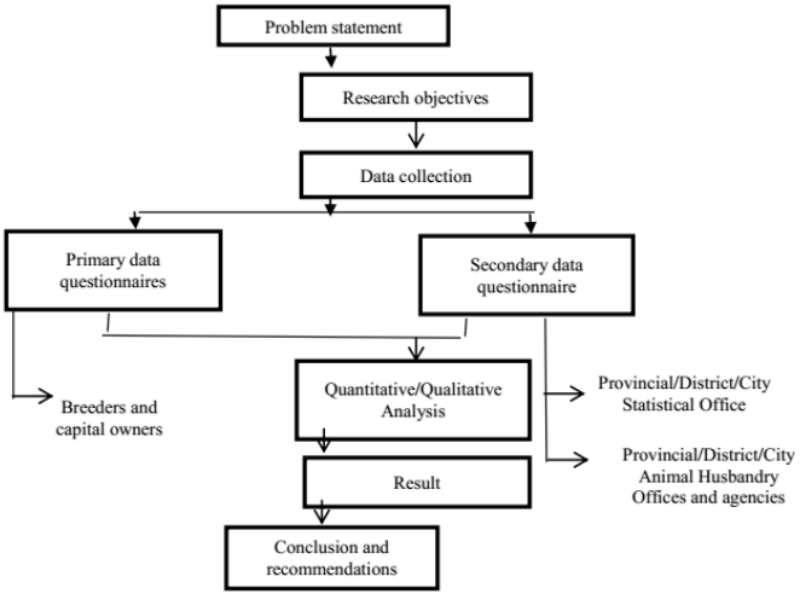

Fig. 1 The flow of the research methods

3 Results and Discussion

West Sumatra has sufficient natural resources to improve the community's economy, especially in the agricultural, tourism, mining, and energy

sectors. Most of the population works in the agricultural sector, approximately 48% and the rest depend on trade, hotel/restaurant, and industrial sectors for their livelihoods. Noticing the availability of land for developing large ruminant livestock, land in West Sumatera can accommodate around 3,250,000 large livestock, while the current large livestock population is around 138,081 cattle. It can be summarized that there is still ample land available for developing large livestock. Ten districts/cities in West Sumatra have become business areas, especially the beef cattle farming business. Human resources actually can support the development of beef cattle. Most of the breeders are experienced and skilled in cultivating beef cattle, while the service apparatus is also experienced and skilled and always ready to provide services in the field such as inseminators, pregnancy examiners, and record examiners, Semen Handling, Embryo Transfer (ET), Healthcare Professionals and Paramedics.

West Sumatra people are mostly farmers, besides they also raise beef cattle on a part-time basis to supplement their income, and some are done with a profit-sharing system. The success of a livestock business is determined by the level of the farmer's ability to manage his business, and the ability of the farmer related to age, education, and farming experience.

3.1 The Implementation of the "*Perseduaan*" Profit-Sharing System for Fattening Beef Cattle in West Sumatra

The profit-sharing system has been implemented for a long time by breeders and capital owners in West Sumatra. The "*Perseduaan*" system implements only the concept of trust and mutual assistance between breeders and the owners of capital. Several things must be considered in the implementation of the "*Perseduaan*" system, including breeder requirements, agreements between breeders and investors, and procedures. Every farmer who has fulfilled the requirements as a breeder will arrange an agreement in the "*Perseduaan*" system verbally. If further there is a dispute, both breeders and investors will solve it through deliberation. The law that is applied in society is unwritten customary law provisions. It has been integrated into the soul of the community. This is reinforced by the opinion of [10], who explains that customary law is a factor in the emergence of a profit-sharing system in an area because it is closely related to the habits of the local community and sanctions are given by the community concerned.

3.2 Pushing Factors for the *"Perseduaan"* Profit-Sharing Partnership

3.2.1 From the Breeder's Side

The dominant factors that encourage breeders to join the *"Perseduaan"* profit-sharing partnership for the beef cattle business are discovered based on in-depth interviews. The results of the interviews obtained several reasons by the breeders: (1) *Capital:* 62.5% of breeders considered the problem of capital as a driving factor for them in implementing the *perseduaan* profit-sharing partnership system; (2) *Desire to raise livestock,* approximately 6.94%; (3) *Desire to own livestock:* Owning livestock is a matter of pride because the value of one's wealth can be seen from the ownership of cows; (4) *Savings:* Generally, the purpose of owning livestock is for savings, so it is not production oriented; (5) *Additional income:* 6.02% of breeders reasoned that they do *"Perseduaan"* to increase their income without preparing a high cost; (6) *Having free time:* 5.56% of breeders want to take advantage of their free time besides their main job; (7) *Side job:* Mostly communities become farmers and decide to take side jobs as breeders in the "*Perseduaan"* system in West Sumatra; (8) *Economic demands:* Family economic demands encourage breeders to implement the "*Perseduaan"* system. By implementing the "*Perseduaan"* system, the breeders can fulfill their family economic needs.

3.2.2 From the Side of the Capital Owner

The dominant factors that encourage capital owners to implement the "*Perseduaan"* system sequentially are: (1) *The desire to help their relatives,* approximately 28.3%; (2) *Saving money,* stated by 25% of the respondents; (3) *Investment:* Approximately 25% of the respondents expect to profit from their investment. (4) *Not having time to raise livestock:* Approximately 16.7% of the respondents stated that they did not have time to raise their livestock; (5) *Capital owners are old:* Approximately 5% of the respondents who own cattle are no longer able to raise livestock because they are already at a non-productive age.

3.3 *Perseduaan* Profit-Sharing Partnerships as Social Capital and Their Effectiveness in the Development of Beef Cattle in West Sumatra

Social capital includes institutions, relationships, attitudes, and values that direct and drive interactions between people and contribute to social and economic development. All the

behavior of socioeconomic activities of local community members 11 embedded in a network of social relations. The high value of social capital owned in an area can help farmers in terms of production, distribution, and innovation[11]. Social capital is measured based on trust, norms, networks, and reciprocity. The main elements of social capital as an investment are participation in networks, reciprocity, mutual trust, the existence of norms, values, and proactive attitudes[12]. Trust is the essence of social capital. This is an indication of the potential readiness of people to cooperate with other people. Trust in others is a key factor in forming various kinds of participation. "Social capital is a part of social life, networks, norms, and beliefs that encourage participants to act more effectively to achieve common goals"[13].

To analyze social capital from the perspective of breeders and model owners, the Delphi method was applied with three stages of interviews on different questionnaires. The first stage of the questionnaire only identified the driving factors for breeders and capital owners to enter a *perseduaan* profit-sharing partnership. The first stage questionnaire produces 6 categories of trust, namely: a sense of responsibility, openness, the realization of hope, honesty, personality, and kinship. Further, there are 5 categories of norms namely; arrange deals; obtain equal rights; create a sense of security; avoid conflict, and lack of trust. Meanwhile, for the network, there are five categories, namely; goal commonality; participative attitude; want to make a profit; shared beliefs, and want to develop the business. Additionally, from the side of reciprocity, five categories are found: cooperation, win-win solution, the exchange of information, caring attitude, and empathy.

The second stage of the questionnaire identifies the dominant factors, and the third stage of the questionnaire determines the most important indicators as a motive for this *perseduaan* profit-sharing partnership. The results of the second and third stages of the questionnaire, namely the level of effectiveness of the social capital of the *perseduaan* profit-sharing partnership in West Sumatra, are described in Tab. 1.

Tab. 1 The level of effectiveness of social capital for profit-sharing partnerships in West Sumatra (Primary data processed, 2022)

Social Capital	Achievement Score of Each Aspect (%)	Overall Achievement Score (%)	Achievement Category (%)	Effectiveness Level
Trust		64,7	>52–68	Quite Effective
- Honesty	26,6			
- Openness	20,4			
- Realization of hope	17,6			
Norm		64,8	>52–68	Quite Effective
- Avoid conflict	27,3			
- Get equal rights	20,9			
- Arrange deals	16,6			
Network		64,9	>52–68	Quite Effective
- Desire to develop the business	28,7			
	21,4			
- Goal commonality	14,8			
- Participative attitude				
Reciprocity		64,7	>52–68	Quite Effective
- Caring attitude	21,7			
- Win-win solution	21,6			
- Cooperation	21,4			

Tab. 1 shows that on the trust aspect, the honesty indicator gets the highest score. On the norm aspect, conflict avoidance has the highest score, on the network aspect, the desire to develop a business has the highest score; on reciprocity, mutual caring has the highest score. Those results indicate that the four aspects measured become capital in social life in the implementation of the *perseduaan* sharing partnership. Those aspects are at a fairly effective level. According to [14], there are five levels of effectiveness namely > 80–100 - very effective, > 68–84 - effective, > 52–68 - moderately effective, > 36–52 - less effective, and 20–36 - ineffective. This effectiveness level can be achieved because for a long time *perseduaan* profit-sharing system has been implemented with mutual trust and transparency. Even if an occasional conflict occurs, they can solve those conflicts because they respect their relatives. Besides, the achievement of the same goal to gain additional income leads them to care for each other and work together for mutual benefit. Furthermore, kinship is more important than just obtaining

financial benefits. Per the opinion of [15] who said that the economic profit sharing in the cattle production sharing pattern is considered not more important than the others. A family only takes care of 1–2 cattle and considers it has already been able to fulfill their domestic needs compared to farmers' income from other sources.

3.4 The Use of Factors of Production Efficiency and the Amount of Factor Share Received by Each Actor

The results of data processing using SPSS are presented in Tab. 2.

Tab. 2 Effect of production factors on increasing beef cattle production in the *Perseduaan* sharing partnership in West Sumatra (Processed data, 2022)

Variable	Koefisien B	Sig.
(Constant)	1,69	,000
Maintenance duration	4,07	,000
The amount of forage given	0,52	,001
The amount of concentrate given	1,75	,000
The amount of medicine and vaccine	1,06	,009
Depreciation of cages and equipment	1,03	,136
The area of land owned by the breeder	0,94	,002
The number of cows taken care of	1,45	,000
The initial weight of the cow	42,82	,000
Farmers' working hours	7,07	,000

Based on Tab. 2, it produces a regression equation: $Y = 1.69 + 4.07\ (X_1) + 0.52\ (X_2) + 1.75\ (X_3) + 1.06\ (X_4) + 1.03\ (X_5) + 0\ .94\ (X_6) + 1.4$ $(X_7) + 42.82\ (X_8) + 7.07\ (X_9)$. 8 variables have a significant effect on the production of the *Perseduaan* livestock business system sharing, and one variable has no significant effect, namely the depreciation of cages and equipment. These results indicate that the factors of production have been used optimally to have a significant influence on weight gain (Y). The results obtained agree with the opinion of [16] who stated that the productivity of beef cattle is influenced by genetics, feed consumed, length of maintenance, and maintenance management.

3.5 Financial Benefit of Beef Cattle Fattening Profit-Sharing System in West Sumatra

The economic analysis of the "Equity" sharing system is presented in Tab. 3.

Tab. 3 Economic analysis of beef cattle fattening profit-sharing system in West Sumatra (IDR/breeder/period) (Processed data, 2022)

Profit-sharing system actors	Investment	Net Farm Income	Return on Investment (%)	Net Profit	Farmer's Share (%)
Capital owner	10.967.442	6.338.944	56,47	8.519.049	48,13
Breeder	297.874	6.338.944	21,28	8.325.185	47,05
Total	11.265.316	12.677.888			

Based on Tab. 3, it can be explained that the farmer's net income from the partnership beef cattle breeding business is IDR 6,338,944. According to [17], net profit is the profit obtained after deducting costs and taxes. This net profit is considered small considering the length of maintenance time, which is an average of 6 months. Based on the ROI figures, both breeders and capital owners get benefits. If the ROI figure obtained is compared to the interest on bank savings, the "billing" system is very profitable because the interest rate is higher than the bank deposit interest rate, which is only around 6 to 10% per year.

The farmer's share is part of the price received by farmers toward the price paid by final consumers in marketing. The farmer's share value received by investors is 48.13% greater than that received by farmers at 47.05. Both farmer's share values is close to 50%. However, this figure is still relatively low, which indicates a fairly efficient condition. When compared to independent breeders, in terms of input financing, they incur greater costs because they will buy cattle entirely at their own expense. Farmer's share of independent breeders is only 35.38% on average. Farmer's share value in the *Perseduaan* profit-sharing partnership is higher than that of independent breeders. According to [18], for measuring marketing efficiency, if the portion received by producers is less than 50%, marketing is not efficient and if the portion received is higher than 50%, marketing is efficient. The low number of Farmer's shares can occur due to the long chain of cattle marketing. Generally, partner breeders market or sell their cattle through *belantik* or collector traders by incurring transaction fees.

3.6 Revenue Contribution of Farmers Participating in the Pasiduoan Partnership

The results of revenue calculations from the beef cattle business with the *Perseduaan* partnership show that the average additional income of the *Perseduaan* breeders is IDR 8,325,185 during the fattening period, with the average monthly income being IDR 1,387,531. The average contribution of farmer income to the

total income of farmer households from *the perseduaan* system is 30.65%, which is in the third score class, namely in the range of income increase of 40%-60%. This is categorized as a moderate increase. [19] stated that the income of a farmer's family is inseparable from how to run and manage a cattle business, which is strongly influenced by various social and economic factors. However, this income facilitates the availability of capital to buy cattle breeds. As many as 66.20% or 143 respondents could buy one cattle breed, and 15.27% of respondents could buy two cattle breeds. This is because the income earned is used to pay for house repairs, school children, and consumption.

3.7 The Effectiveness of the Saduoan Profit-Sharing Partnership

The effectiveness of the *perseduaan* partnership is measured by looking at the goals achieved from the implementation of the beef cattle business partnership and the level of business efficiency, as seen from the efficiency indicators of the beef cattle business. Those indicators include daily weight gain, R/C, and the percentage of profit sharing from raising "breastfeeding" on farmer income. The results of measuring the efficiency level of the partnership "single" are described in Tab. 4.

Tab. 4 Efficiency level measurement of the beef cattle business

No.	Efficiency Indicators	Total Score	Average score	%
1	Daily weight gain	59.697	277,7	66,7
2	R/C	343,4	1,6	0,6
3	Profit sharing percentage	652,0	3,03	1,1
	Total	60.692,4	282,33	100
	Average	280,9	2,86	

Based on Tab. 4, the overall achievement level score for the efficiency variable in each indicator is approximately 2.86, which is considered to be a fairly efficient category. However, stronger efforts are still needed to make the three efficiency indicators improve. As a result, the equity system can be adopted as an effective source of capital.

3.8 Influence of Breeder Characteristics (X1), Extension Assistance (X2), and the Implementation of Five Livestock Businesses (X3) on an Effective *Perseduaan* Profit-Sharing Partnership

3.8.1 Description of Respondents' Characteristics (Farmers) (X1)

An overview of the respondents' characteristics is described in Tab. 5. Based on Tab. 5, the variable characteristics of the breeders, represented by age, length of formal education, number of members leaving, and non-formal education (how many times have received livestock technical training) have a fairly effective influence in achieving the goal of *perseduaan*. Based on data calculations using qualitative analysis, the results obtained an average score of 2.92. This average value is in the range of 2.60–3.40 which is classified as quite effective.

Tab. 5 The analysis score on breeder characteristics variable (X1) toward *Perseduaan* success effectiveness

No.	Statements	1	2	3	4	5	Total Scores	Average	Category
1	Age	16	62	105	23	10	597	2.76	
		7.4%	28.7%	48.6%	10.6%	4.6%	55%		Sufficient
2	Formal education	18	49	50	94	4	662	3.06	
		8.3%	22.7%	23.1%	43.5%	1.9%	61%		Sufficient
3	Family members	14	53	103	40	6	619	2.87	
		6.5%	24.5%	47.7%	18.5%	2.8%	57%		Sufficient
4	Non-formal education	8	2	157	36	13	692	3.20	
		3.7%	0.9%	72.7%	16.7%	6.0%	64%		Sufficient
5	Breeding experience	39	112	1	0	64	586	2.71	
		18.1%	51.9%	0.5%	0.0%	29.6%	54%		Sufficient
	Breeders Characteristics (X1)						3156	2.92	Sufficient
	Percentage						58%		

The age of the breeder is sufficient (moderate) to influence the ability to adapt activities useful for advancing the livestock business. This agrees with [20] who states that breeders of productive age generally have high curiosity and a higher ability to adopt the technology. Respondents are generally in the productive age range so they can understand the "bilateral" system and actively participate in arranging agreements. The duration of receiving formal education shows the breeders' level of education. Based on Tab. 5, the education level of the partner breeders can help

the breeders understand each system and the agreements regulated in the *perseduaan* system. The higher the farmers' education, the higher the opportunity to improve their performance, and in the end, it makes the livestock business grow. Improving the farmer's ability to raise agricultural productivity is a pre-requisite for social and economic development of rural areas. This is because agriculture forms the bedrock of economic activities in the rural area.

Non-formal education is a form of activity to obtain information in a directed manner and can develop talents and enable participants to conduct activities effectively and efficiently in the future[21]. Non-formal education carried out by breeders is in the sufficient category. It can be seen that the provision of breeders from non-formal education has been able to support maintenance activities in the *perseduaan* system.

3.8.2 The Effect of Counseling (X2) on Achieving the *Perseduaa*n Goal

Counseling is a step in changing people's behavior from those who don't want to become willing, from those who don't know to know, and from those who can't afford to be able. With these positive changes, it is hoped that the community will be able to achieve increased production, income, profits, and improved welfare[22]. Calculating the same score, the average result is 2.88. This average value is in the range of 2.60–3.40. As result, the extension activities are quite effective in achieving the goal of the *perseduaan* profit-sharing partnership. For each region in West Sumatra, in general, farmers have received counseling either individually or in groups. The counseling process is often experienced personally, especially when parties from the animal health service or field extension officers come to the farmer's pen while giving medicine, vitamins, and vaccines.

3.8.3 The Influence of the Five Livestock Businesses (X3) on Achieving the *Perseduaan* Goal

In this study, the five farming factors applied were the selection of cattle breeds, provision of stables, feeding, disease control, maintenance management, waste treatment, and livestock marketing. These factors affect the cattle's productivity. The results of the score calculation show an average score of 3.22. This average value is in the range of 2.60–3.40. It was concluded that the five livestock business techniques were effective in achieving *perseduaan* goals. The quality of cattle breeds, comfortable and clean pens, adequate and regular feeding and drinking, vaccination and prompt supplement of vitamins and medicines to sick cows, proper handling of farm waste, and propert marketing of cattle will affect the success of the cattle breeding business under *perseduaan* profit-sharing partnership. According to [23], the availability of pens and complete equipment, responsible workforce in the livestock, and good livestock management will provide better results from this farming.

3.9 Partnership Effectiveness Measurement (Y1)

The partnership effectiveness variable, represented by 2 statements whose results are presented in Tab. 6, is as follows.

Tab. 6 Description of the partnership effectiveness variable (Y1) (Data analysis, developed by the authors)

No.	Statements	1	2	3	4	5	Total Scores	Average	Category
1	Achievement of Success in Livestock Business	16 7.4%	22 10.2%	47 21.8%	88 40.7%	43 19.9%	768 71%	3.56	Good
2	Beef Cattle Business Efficiency	4 1.9%	0 0.0%	174 80.6%	25 11.6%	12 5.6%	686 64%	3.18	Sufficient
	Partnership Effectiveness (Y1) Percentage						1454 67%	3.37	Sufficient

Based on Tab. 6, the average score for the partnership effectiveness variable appears at 3.37. This average value is in the range of 2.60–3.40. The effectiveness of the partnership affects the achievement of business objectives and the efficiency of the *perseduaan* cattle breeding business. Effectiveness is the conscious use of resources, facilities, and infrastructure in a certain amount that has previously been determined to support work so that it can be completed on time[24]. Meanwhile, a partnership is collaboration between a business and medium business or large-scale businesses, and then, these medium-sized or large-scale businesses also provide training to their partners.

3.10 Descriptive Analysis Result of Farmers' Income (Y2)

The results of the farmer's income variable are presented in Tab. 7, as follows.

Tab. 7 Farmers' income descriptive variable (Y2)

No.	Statements	1	2	3	4	5	Total Scores	Average	Category
1	Farmers' Income	54	67	31	21	43	580	2.69	Sufficient
		25.0%	31.0%	14.4%	9.7%	19.9%	54%		
		Farmers' Income (Y2)					580	2.69	Sufficient
		Percentage					54%		

Based on Tab. 7, the average score of farmer income is 2.69, in the range of 2.60 – 3.40, which is in the moderately successful category.

3.11 Test Results of Partial Least Square Structural Model

To see the effect of latent variables of breeder characteristics (X1), extension assistance (X2), and implementation of five livestock businesses (X3) on the effectiveness of breeding (Y1) and farmer income (Y2), the PLS algorithm output from SmartPLS is used as shown below:

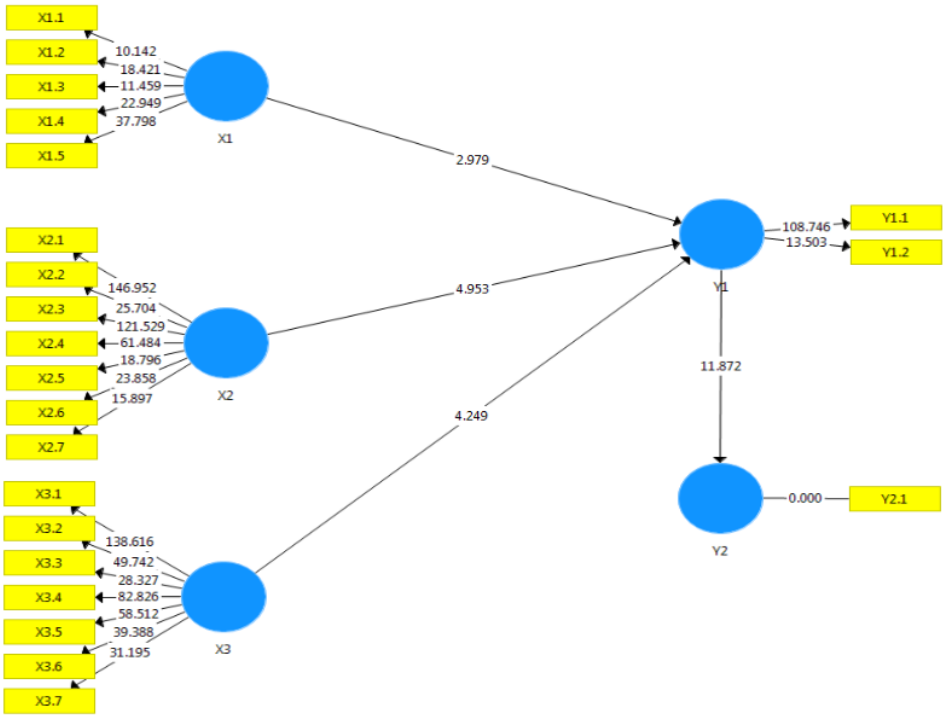

Fig. 2 PLS algorithm output

Based on Fig. 2, the influence of the dependent variable can be shown by the R-square value. The R-square value for Partnership Effectiveness is 0.818 and the R-square value for breeders' income is 0.615. The effectiveness of the partnership can be explained by 81.8% of the Characteristics of Farmers, Extension, and Techniques of the Five Livestock Businesses variables. The acquisition of substructure 2's R-square value on the farmer's income variable is 0.615, which indicates that the farmer's income can be explained by 61.5% on the partnership effectiveness variable. Predictive Relevance (Q2) measures how well the observed values are produced by the model and its parameter estimates. To calculate Q2, the researchers used the following formula: Q2 =1-(1-R21) (1-R22), Q2 = 1 (1–0.818) (1–0.615) = 0.930. The achieved Q2 value is 0.930 > 0. This means that the Q2 value provides evidence that the model has predictive relevance.

Hypothesis testing through path coefficient and t values is shown in Tab. 8.

Tab. 8 Pathway significance test (Path)

Hypothesis		Original Sample (O)	T Statistics (|O/STDEV|)	P Values	Conclusion
H1	X1 -> Y1	0.148	2.979	0.003	Accepted
H2	X2 -> Y1	0.317	4.953	0.000	Accepted
H3	X3 -> Y1	0.323	4.249	0.000	Accepted
H4	Y1 -> Y2	0.561	11.872	0.000	Accepted

Notes: X1 - farmers' characteristics, X2 - counseling, X3 - five livestock business, Y1 - partnership effectiveness, Y2 - income effectiveness

Based on Tab. 8, the t-value of Farmer Characteristics (2.979), Counseling (4.953), and Five livestock businesses (4.249) is a value greater than 1.96 with α = 0.05, so it can be concluded that there is a significant influence on Farmer Characteristics, counseling and implementation of the five livestock businesses on Partnership Effectiveness. The existence of counseling can make beef cattle farming activities more focused and structured. That activity can influence the effectiveness of the *perseduaan* partnership. According to [25], counseling has a positive effect on increasing production and increasing farmers' income. The better the implementation of the five livestock businesses, make the better the business performance of the *perseduaan* actors.

The Effectiveness of the beef cattle business in increasing farmers' income is measured by looking at two indicators: 1) The objective to be achieved from the implementation of beef cattle business partnerships; 2) The level of business efficiency which can be observed from the beef cattle business efficiency indicators, namely daily weight gain, R/C, and the percentage of profit sharing from raising livestock to farmer income. The results of measuring the effectiveness level of influence of the beef cattle business are presented in Tab. 9.

Tab. 9 Outer loading evaluation results of partnership effectiveness variables (Output of data processing using structural equation model, 2022)

Variable	Indicator	Original Sample	Sample Mean	Standard Deviation	T Statistics
Y1	Y1.1	0.964	0.963	0.009	108.746
	Y1.2	0.758	0.763	0.056	13.503

Tab. 9 provides the loading factor values for each manifest variable. The loading factor values of all indicators for latent variables show a > 0.7 score and T Statistics show > 1.96. This means that all indicators are considered valid and able to measure variables precisely. To test the hypothesis that partnership effectiveness has a significant effect on increasing farmer income, the t-value in Tab. 8 is used for the t-value of 11.872. This result value is greater than 1.96 with α = 0.05. It can be concluded that there is a significant effect of partnership effectiveness on farmer income. Effectiveness is a condition that indicates the level of success of management activities in achieving the goals set beforehand[26].

4 Conclusion

The conclusion of this study is that "Perseduaan" as a social capital play a positive role in the development of profit-sharing system. The existing social capital within the farming community has been successfully proven in developing beef cattle population. The effectiveness of "Perseduaan" partnership has a significant effect on increasing the farmer's income, contributing approximately 30.65% to farmer's total income. The policy implication of this research is that the government would be able to make regulations to increase the livestock population by strengthening the "Profit Sharing" institution as a source of capital among breeders.

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