



Analysis of Efficiency and Break Even Point of Sheep Farming at Sukawangi Village Sumedang Regency

Anggia Jelita*, Linda Herlina, & Achmad Firman

Animal Husbandry Study Program, Faculty of Animal Husbandry,
Padjadjaran University

Jl. Raya Bandung Sumedang KM.21, Hegarmanah, Kec. Jatinangor, Kabupaten Sumedang, Jawa Barat 45363

* Email Correspondence: anggiajelita9999@gmail.com

• Submitted: December, 13rd, 2023 • Revised: February, 27th, 2024 • Accepted: February, 27th, 2024

ABSTRACT. This study analyzes efficiency and break even point to provide an overview of sheep farming in Sukawangi Village, Pamulihan Subdistrict, Sumedang Regency in July 2023. The aims of this study is to count total production cost, find out farmer's income, and analyze the efficiency and break even point of sheep farming. The method used was a survey by interviewing 88 farmers using simple random sampling. Based on the results of the study, it showed that the total production costs for sheep farming in Sukawangi Village are IDR 27,432,069/unit enterprises/year, and the income is IDR 3,055,431/unit enterprises/year. The efficiency value of the sheep farming business in Sukawangi Village is 1.11 which means that the business is efficient and profitable. The production break event point value is 3 heads adult sheep equivalent, smaller than actual sales which is 6 heads adult sheep equivalent, while the price break event value is IDR 4,238,845/unit enterprises/year, smaller than the actual sales price, which is IDR 4,710,975/unit enterprises/year.

Keywords: Efficiency, break even point, sheep farming, production costs, income

INTRODUCTION

Sheep commodities play a very important role in the economy of rural communities. Sheep farming is one of the businesses that can be relied upon as a livelihood to improve the economic standard of farmers life , because sheep have many advantages and do not require too much rearing cost. The existence of sheep is spread across several regions of Indonesia, especially West Java Province which contributes the highest sheep population in Indonesia of 9,987,870 heads (BPS, 2022). Almost 70% of the sheep population in Indonesia comes from West Java Province.

Sumedang Regency is one of the areas of West Java Province that has potential in sheep farming. According to the Badan Pusat Statistik (BPS) Kabupaten Sumedang (2022), sheep have the largest population of other ruminants in Sumedang Regency, which is 95,135 heads. Sumedang Regency has potential natural

resources and human resources that support raising livestock, because the majority of people's livelihoods are farming and raising livestock.

Pamulihan Subdistrict is the second largest sheep producing area in Sumedang Regency, with a population of 11,720 sheep (BPS Kabupaten Sumedang, 2022). Pamulihan Subdistrict consists of 11 villages and one of the villages that produces the most sheep is Sukawangi Village. Sukawangi Village has good potential in the field of sheep farming and produces as many as 1584 heads. Almost 70% of the livelihoods of Sukawangi villagers are farmers.

Sheep farming in Sukawangi Village in general has never been conducted a study on efficiency analysis and break even point, so the author is interested in conducting this research. Sheep are chosen for this research due to their low maintenance needs, adaptability, and do not

require too much cost. Through this research on the analysis of efficiency and break even points, it will provide an overview of the sheep farming business in Sukawangi Village so that the business can continue and develop continuously. Efficiency analysis shows if a business is efficient and profitable, while break even point analysis tells us the minimum ownership needed to avoid losses. The purpose of this study is to count total production cost, find out farmer's income, and analyze the efficiency and break even point of sheep farming.

MATERIALS AND METHODS

The research in Sukawangi Village was conducted in July 2023. The location was determined with the consideration that Sukawangi Village has the largest sheep population in Pamulihan Subdistrict. The population used was all sheep farmers in Sukawangi Village, totaling 725 people. The sample was calculated using the Slovin formula (Sugiyono, 2017) as follows:

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{725}{1 + 725 (10\%)^2}$$

$$n = 87,87 = 88 \text{ (rounded up)}$$

This study used a survey method by directly interviewing 88 farmers selected by simple random sampling. The variables observed were total production costs, revenue, and income of sheep farming. Data analysis used in this research is production costs analysis, revenue analysis, efficiency analysis, and break even point analysis.

Production Costs Analysis

Production costs analysis is calculated using the formula (Soekartawi, 1995):

$$TC = TFC + TVC$$

Where:

TC = Total Cost (IDR /year)

TFC = Total Fixed Cost (IDR/year)

TVC = Total Variabel Cost (IDR /year)

Revenue Analysis

Revenue analysis can be calculated using the formula (Soekartawi, 1995):

$$TR = Y \times P_y$$

Where:

TR = Total Revenue (IDR/year)

Y = Total Production

P = Price (IDR)

Income analysis can be calculated using the formula (Soekartawi, 1995):

$$Pd = TR - TC$$

Where:

Pd = Income (IDR)

TR = Total Revenue (IDR/year)

TC = Total Cost (IDR/year)

Efficiency Analysis

Efficiency analysis is calculated using the following formula (Suratiah, 2015):

$$R/C \text{ Ratio} = \frac{TR}{TC}$$

Where:

TR = Total Revenue (IDR)

TC = Total Cost (IDR)

Break Even Point Analysis

Production break even point analysis is calculated using the formula (Suratiah, 2015):

$$BEP \text{ Production} = \frac{FC}{P - AVC}$$

Where:

FC = Fixed Cost (IDR)

P = Price (IDR)

AVC = Average Variable Cost (IDR)

Price break even point analysis is calculated using the formula (Suratiah, 2015) as follows:

$$BEP\ Prices = \frac{TC}{Y}$$

Where:

FC = Fixed Cost (IDR)

P = Price (IDR)

AVC = Average Variable Cost (IDR)

RESULT AND DISCUSSION

Demographic Profile of Farmers in Sukawangi Village

Demographic profile of sheep farmers in Sukawangi Village is shown in Table 1.

Table 1. Demographic profile of farmers

No	Components	Total	
		...frequency...	...%...
1	Age (years)		
	<15	0	0
	15-64	70	79,55
	>65	18	29,45
2	Level of Education		
	No Formal Education	1	1,14
	Primary	70	79,55
	Middle	10	11,36
	Secondary	7	7,95
	Tertiary	-	0
3	Years of Farming Experience		
	≤ 10	35	39,77
	>10	53	60,23

Source: Data Analysis (2023).

Badan Pusat Statistik (BPS) classifies the age of the population into productive age and unproductive age. Productive age is in the age range of 15-64 years, while unproductive age is below the age of 15 years and above the age of 65 years. Table 1 shows that farmers have an age range of 15-64 (79.55%), meaning that most farmers in Sukawangi Village are at a productive age. According to Ibrahim et al. (2020), farmers at productive age have good physical conditions, actions, and thinking skills, as well as stable emotional conditions, making it easy to accept innovations.

The average education level of Sukawangi Village is primary level (79.55%), this shows that farmers have a low level of education. A low level of education affects the lack of adoption of new innovations that can improve the development of animal husbandry, but this is not in accordance with Kurnia (2019) statement that the high level of education possessed by farmers does not guarantee the development of

their business. According to Perwitasari et al. (2019), farmers with an elementary school education level run their business with knowledge based on hereditary experience.

The average sheep farming experience in Sukawangi Village is more than 10 years (60.23%). Long enough farming experience indicates that farmers have good abilities, skills and knowledge. According to Widiarso (2022) farming experience will affect the ability of farmers to run and manage their business. Farmers with long enough experience have a good understanding of the livestock business they run and will always be careful in taking an action.

Production Costs

Production costs are the total amount of fixed costs and variable costs. Production cost of sheep farming in Sukawangi Village is shown in Table 2.

Table 2. Total production costs

No	Components of Cost	Production Costs (IDR/unit enterprises/year)			%
		Real	Hidden	Total	
1	Fixed Costs				
	Cage depreciation	342.496	-	342.496	1,25
	Tools depreciation	300.871	-	300.871	1,10
	Livestock purchase cost	2.038.011	-	2.038.011	7,43
a	Total Fixed Costs	2.681.379	-	2.681.379	9,77
2	Variable Costs				
	Feed	-	16.145.704	16.145.704	58,86
	Family Labor	-	8.604.986	8.604.986	31,37
	Hired Labor	-	-	-	-
	Veterinary and drug	-	-	-	-
b	Total Variabel Costs	-	24.750.690	24.750.690	90,23
	Total Costs (a+b)			27.432.069	100

Source: Data Analysis (2023).

Real costs in sheep farming are the tangible expenses incurred in the production process. These costs include expenses such as cage depreciation, tools depreciation (sickles, broomsticks, buckets, pitchforks, shovels, and pickaxes depreciation), and livestock purchase stock. Hidden costs refer to expenses in sheep farming that are not immediately apparent in the production process. For example, feed costs, where farmers obtain feed through grazing without directly purchasing it. In this case, the cost is calculated based on the time spent grazing multiplied by the hourly wage rate.

Table 2 shows that the percentage of variable costs (90.77%) is greater than fixed costs (9.77%). Fixed costs consisted of cage depreciation, equipment depreciation, and livestock purchase costs. The highest fixed cost incurred by farmers is the cost of purchasing livestock totaling IDR 2,038,011/unit enterprises/year.

The highest variable costs came from feed costs, which accounted for 58.86% of the total production costs. Naim and Prayitno (2021) state that variable costs are the highest of production costs, especially feed and labor costs. Labor costs include both family labor and hired labor. Hired labor refers to paying workers to assist with tasks related to sheep farming on an hourly basis. Variable costs incurred by sheep farmers in Sukawangi Village are only feed and labor costs, because other costs such as electricity, water, and transportation costs are mixed with daily household usage, as for the cost of drugs are not calculated because farmers still use traditional methods using turmeric and jackfruit leaves.

Revenue and Income

Revenue and income of sheep farming in Sukawangi Village is shown in Table 3.

Table 3. Revenue, income, and efficiency analysis

No	Description	Total
		... IDR/Year...
1	Revenue	30.487.500
2	Production costs	27.432.069
	Income (1-2)	3.055.431
	R/C Ratio (1/2)	1,11

Source: Data Analysis (2023).

The revenue of sheep farming comes from the sales of sheep. Manure waste is not sold because farmers use it as fertilizer for their agricultural land. Revenue can be obtained by multiplying two indicators: the quantity of production and the selling price of the product. Sheep revenue in Sukawangi Village is determined by the selling price and the number of sheep sold. The average revenue component and the results of the calculation of sheep farming income can be seen in Table 3.

Sheep farming income is obtained from total revenue minus total production costs. Table 3 shows that the average income of sheep farmers in Sukawangi Village for one year is IDR 3,055,431/unit enterprises with an average ownership of 7.8 head of adult sheep equivalent. The monthly income of sheep farmers is IDR 254,619, which is still below the Standard Regional Minimum Wage of Sumedang Regency because sheep farming is just used as a side job.

Efficiency Analysis

Efficiency analysis of sheep farming in Sukawangi Village is shown in Table 3. Sheep farming in Sukawangi Village has an efficiency of 1.11, which means that every IDR 1000 expense will get IDR 1110 of revenue and IDR 110 of income. This efficiency value is greater than 1 so that sheep farming in Sukawangi Village is efficient and feasible to run. The efficiency value of sheep farming is higher than the results of Rahayu's research (2017) in Golat Village, Ciamis Regency, which is 1.08. According to Karjono (2017) to increase the R/C Ratio is to reduce total costs by reducing fixed costs and variable costs by prioritizing efficient feeding, preventative healthcare, and smart breeding.

Break Even Point Analysis

Break even point analysis of sheep farming in Sukawangi Village is shown in Table 5.

Table 5. Break even point analysis

Description	Production	Prices
	... heads of adult sheep equivalentIDR/Unit of Enterprises/Year...
Break even point	3	4.238.845
Actual sales	6	4.710.975

Source: Data Analysis (2023).

Table 5 shows that the average actual sales of sheep are above the calculation of the average break even point in Sukawangi Village, so that the sheep farming business can be profitable from sheep sales. The results of the production break even point calculation show that each farmer must sell 3 heads of adult sheep equivalent, while the actual sales are 6 heads of adult sheep equivalent. The minimum sales price according to the break even point price calculation is IDR 4,238,845/unit enterprises/year, while the actual sales price is IDR 4,710,975/unit enterprises/year. This break even point value is higher than the results of research by Khotimah et al. (2022) in Kertajati

District, Majalengka Regency, which obtained a production break even point of 2 adult sheep equivalents and a price break even point of IDR 3,419,277/unit enterprises/year. According to Karjono (2017) to reduce the break even point of price can be done by reducing the total cost of production or by increasing total production, while to reduce the break even point of production can be done by increasing prices or by reducing total costs.

CONCLUSION

The conclusion of the research on sheep farming in Sukawangi Village is that the

production cost is IDR 27,432,069/unit enterprises/year, while the income is IDR 3,055,431/unit enterprises/year. The efficiency value of sheep farming is 1.11, which means that the farming business is efficient. Sheep farming has exceeded the break even point seen from the production break even point of 3 adult sheep equivalent smaller than the actual sales of 6 adult sheep equivalent, and the price break even point value of IDR 4,238,845/unit enterprises/year smaller than the actual sales price of IDR 4,710,975/unit enterprises/year. The suggestion that can be proposed in this study is to increase the number of livestock and focus on factors like cleanliness, health, sheep quality, and feed nutrition to achieve greater profits.

CONFLICT OF INTEREST

We certify that there is no conflict of interest with any financial, personal, or other relationships with other people or organization related to the material discussed in the manuscript.

REFERENCES

- Badan Pusat Statistik. 2022. *Populasi Domba menurut Provinsi (Ekor) 2020-2022*. Jakarta. <https://www.bps.go.id/indicator/24/473/1/populasi-domba-menurut-provinsi.html> [23 Mei 2023].
- Badan Pusat Statistik Kabupaten Sumedang. 2022. *Kabupaten Sumedang dalam Angka 2022*. Sumedang. <https://sumedangkab.bps.go.id/publication/2022/02/25/6f08b349be1b878dce9a6df4/kabupaten-sumedang-dalam-angka-2022.html> [23 Mei 2023].
- Ibrahim, I., Supamri, S., dan Zainal, Z. 2020. Analisis Faktor-Faktor yang Mempengaruhi Pendapatan Peternak Rakyat Sapi Potong di Kecamatan Lampasio Kabupaten Tolitoli Provinsi Sulawesi Tengah. *JSEP (Journal of Social and Agricultural Economics)*, 13(3), 307-315. <https://doi.org/10.19184/jsep.v13i3.18446>
- Karjono, K. 2017. Analisis Titik Impas untuk Menciptakan Efisiensi Produksi Usaha Tani Melon di Kecamatan Praya Timur Kabupaten Lombok Tengah. *Jurnal Agrotek Ummat*, 4(2), 67-72. <https://doi.org/10.31764/agrotek.v4i2.979>
- Khotimah, T. N., Rahmah, U. I. L., dan Yuliandri, L. A. 2022. Analisis Kelayakan Usaha Ternak Domba Di Kecamatan Kertajati Kabupaten Majalengka. *Tropical Livestock Science Journal*, 1(1). <https://doi.org/10.31949/tlsj.v1i1.3779>
- Kurnia, E., Riyanto, B., dan Kristanti, N. D. 2019. Pengaruh Umur, Pendidikan, Kepemilikan Ternak dan Lama Beternak terhadap Perilaku Pembuatan Mol Isi Rumen Sapi di Kut Lembu Sura. *Jurnal Penyuluhan Pembangunan*, 1(2), 40-49. <https://doi.org/10.34145/jppm.v1i2.166>
- Naim, A., dan Prayitno, R. S. 2021. Analisis Usaha Ternak Domba Ekor Tipis Skala Rumah Tangga di Desa Jatirejo Kecamatan Karanganyar Kabupaten Demak. *AGROMEDIA: Berkala Ilmiah Ilmu-ilmu Pertanian*, 39(1), 33-40. <https://doi.org/10.47728/ag.v39i1.311>
- Perwitasari, F. D., Bastoni, B., dan Arisandi, B. 2019. Analisis Pendapatan Usaha Ternak Domba Secara Intensif Di Kabupaten Cirebon. *Jurnal Ilmu Ternak Universitas Padjadjaran*, 19(1), 1-9. <https://doi.org/10.24198/jit.v19i1.18648>
- Rahayu, T. 2017. Upaya Pengembangan Agribisnis Ternak Domba Melalui Perbaikan Mutu Pakan dan Peningkatan Peran Kelompoktani di Kecamatan Panumbangan Kabupaten Ciamis. *Mimbar Agribisnis: Jurnal Pemikiran Masyarakat Ilmiah Berwawasan Agribisnis*. 1(2). 173-180. <http://dx.doi.org/10.25157/ma.v1i2.59>
- Siswati, L., Insusanty, E., Susi, N., Arianto, A., dan Pranata, Z. Pendapatan Pertanian Terpadu Kelapa Sawit dengan Ternak Sapi di Kampung Delima Jaya Kecamatan Kerinci Kanan Kabupaten Siak. *Jurnal Peternakan*. 20(1), 32-41. <http://dx.doi.org/10.24014/jupet.v20i1.19238>
- Soekartawi. 1995. *Analisis Usaha Tani*. UIP Press. Jakarta. p. 54 - 91.

Sugiyono, S. 2017. *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta. Bandung. p. 8 – 11

Suratiyah, K. 2015. *Ilmu Usahatani (Edisi Revisi)*. Penebar Swadaya. Jakarta. p. 76 – 86.

Widiarso, B. P., Jeni, C., dan Nurdayati, N. 2022. Hubungan Tingkat Kosmopolitan dan Karakteristik Inovasi dengan Sikap Peternak Sapi Potong pada Pengobatan Luka Traumatik Menggunakan Salep Ekstrak Tanaman Yodium. *Jurnal Penyuluhan*. 18(01), 49-58. <https://doi.org/10.25015/18202235900>