

The Analysis of Income of Broiler Chicken Farmers Partnership Pattern at Al-An'am Farm

Subhan Effendi¹, Ilham Ahmad², Muhammad Saleh³

State Agricultural Polytechnic of Pangkajene Islands, Pangkep, Indonesia

State Agricultural Polytechnic of Pangkajene Islands, Pangkep, Indonesia

State Agricultural Polytechnic of Pangkajene Islands, Pangkep, Indonesia

email: effendisubhan.politani@gmail.com

Received: 2023-05-21

Accepted: 2023-05-22

Publication: 2023-05-25

Abstract

This study aims to analyse the income of broiler chicken farmers partnership patterns at Al-An'am Farm. This research was conducted between June and July 2022, at Attangsalo Village, Ma'rang District, Pangkep Regency. This descriptive study aims at describing the research variables to find out the pattern and income of broiler chicken farming businesses in collaboration with companies at Attangsalo Village Ma'rang Subdistrict, Pangkep Regency. The population in this study was one person who partnered with a company. The data analysis used descriptive statistics, exploring at partnership patterns, operational costs, revenues, and income. The results show that the patterns of collaboration with a company is written agreement without security deposit. The income of farmers who partner with companies tend to be higher.

Keywords: Broiler; Farm; Income Analysis; Partnership

Introduction

Husbandry subsector is a part of agricultural sectors that plays a role in increasing the pace of economy both in local and national levels. The poultry business in Indonesia has become a business that has complete components from up to downstream sectors. Broiler chicken business, for example, is a type of business that has potential to be developed. This is because of relatively short production period of approximately 32-35 days, high productivity, cheaper, and market demand that tends to increase. Broiler chicken belongs to types of poultry group as a food source, especially as animal protein providers (Ratnasari R, et al 2015).

The development of husbandry business contributes and has important role to the progress of agriculture, meeting domestic animal protein needs and providing job opportunities for community. However, broiler farming businesses generally have several challenges including limited business capital, lack of mastery of technology, unstable prices, low access to markets, and low business margins. Slaughter chicken farmers can work together or partner with a company to overcome a number of existing obstacles (Latifa, 2021).

Subkhie et al (2013) described the advantages of partnering with core companies such as obtaining technical guidance, supported by the government, and guaranteed marketing. Partnered farms are potentially developed as long as the cooperation runs properly in accordance with the contractual agreement between the farmer and the core company.

Broiler meat consumption in Indonesia is 3,426,042 tons per year (BPS, 2021), or 7.1 kilograms per capita per year. It tends to develop since the government encouraged people to increase nutritional intake by consuming broiler chickens since it is easily accessible to public, its price is relatively cheap compared to other types of meat. Individuals obtain a daily nutritional

intake of 19.73 calories, 1.19 proteins and 1.63 fats by intaking those amounts. This number is small compared with the per capita consumption of other countries (BPS, 2021).

Pangkep Regency is one of the areas where many people apply the broiler chicken partnership, more especially in Tala Village, Ma'rang District, Pangkep Regency. As for the initial site survey that has been carried out formerly, it is well known that farmers who raise broiler chickens in Ma'rang District cooperate with some partnership companies.

This study will analyse the income of one of the broiler chicken farmers in partnership with PT Charoen Phokphand Indonesia, Tbk, located in the central area of Makassar City, South Sulawesi. The result of this study is expected to provide data or information on broiler chicken business income in Al-An'am Farm, Tala Village, Ma'rang District, Pangkep Regency.

Literature Review

Broiler chicken is a superior type of broiler and has been widely farmed in Indonesia. Many people run broiler farming as the main livelihood. The broiler chicken business is a business related to cultivation activities to manage living things. In order to get maximum results from these cultivation activities, farmers must provide all they need to support their activities. Therefore, farmers must comprehend broiler chickens and apply supportive maintenance for good conditions or for the life of broiler chickens (Tamaluddin, 2016).

Broilers are marketed at live weights between 1.3-1.6 kg per chicken and are kept at the age of 5-6 weeks. Yamima (2014) said that the advantage of broiler chickens is a short production cycle, which is within 4-6 weeks broiler chickens can be harvested with a body weight of 1.5-1.56 kg / head. The company should provide good strains so that chickens get good results, the company should also be selective in giving seeds and feed.

The advantages of broiler chickens are tender meat, large size, wide, dense and contained chest shape, efficiency to feed is relatively high and most of the feed is converted into meat. Broiler chickens are harvested around 4-6 weeks with a body weight of 1.2-1.9 kg/head (Santoso and Sudaryani, 11; Yamima, 2014).

Broiler farming business is divided into two patterns, independent patterns and partnerships. Independent farmers in principle provide all production inputs from their own capital and are free to market their products. While partnership breeders, in principle, partner companies provide breeder products such as DOC, vitamins, medicines to technical guidance and marketing results, while plasma provides cages and workers.

Research Method

This research was carried out at Al An'am Farm in Attangsalo Village, Ma'rang District, Pangkep Regency. The reason of choosing this area is because it is one of the places that has the potential to develop broiler chicken farms. The study was conducted in June and July 2022. The data used was a descriptive quantitative study. This study provides an overview of the amount of income received by broiler chicken farmers in the partnership pattern at Al An'am Farm. The data was collected through interviews and observations.

Data analysis techniques used in this study are:

a. Production Cost = $TC = FC + VC$

TC = Total Cost

FC = Fixed Cost

VC = Variable Cost

b. Reception = $TR = Q \times P$

TR = Total Receipts

Q = Total Production

P = Selling Price

c. Revenue = $n = TR - TC$

Td = Total Revenue

TR = Total Receipts

TC = Total Cost

d. Return Cost Ratio (R/C) = $(TR (Rp)) / (TC (Rp))$

TR = Total Receipts (Rp)

TC = Total Cost

e. B/C (Benefit cost ratio)

B/C = $(TB (Rp)) / (TC (Rp))$

TB = Total Revenue (Rp)

TC = Total Cost (Rp)

f. BEP (Break event point)

BEP (unit) = $(TFC (Rp)) / (\text{Selling Price per unit} - ((TVC (Rp)) / Q))$

TFC = Total Fixed Cost (Rp)

TVC = Total Variable Cost (Rp)

Q = Total production

Results and Discussion

Partnership Pattern

The broiler chicken partnership system can be defined as collaboration in the field of broiler chicken cultivation carried out by two parties which are the core company and plasma farmers. A common form of collaboration is the core company (in some areas carried out by poultry shops) as a provider of infrastructure (DOC, feed, vaccines and medication). The plasma farmers are responsible for carrying out livestock activities to become broiler chickens that are ready to harvest.

Rahma (2014) explained that partnership is a series of processes that are used regularly and gradually to get optimal results. It begins with prospective partners, understanding the advantages and disadvantages of their business, starting to build up strategy and continue to monitor and evaluate until the target is achieved. Some factors leading farmers to participate in the partnership system are:

- a. Facilities of livestock production
- b. Experts are available
- c. Working capital from partner companies
- d. Guaranteed marketing,

Yulianti (2012) said that these kinds of assistance are mostly provided by companies so that business plan can be implemented to achieve both party's goals. The types of partnership patterns are below:

a. Plasma Core Pattern

The plasma core pattern is a partnership system between small businesses and medium or large enterprises in which medium enterprises or large enterprises act as the core and small businesses as plasma. The core company conducts coaching from the preparation of production facilities, guidance, until marketing products. In this plasma core pattern, medium enterprises or large enterprises as the core foster and develop small businesses in their plasma (Ichyudin, 2006).

The system of business partnership between medium or large companies as the nucleus and farmers as plasma is based on the plasma-core philosophy, analogous to the biological life of the cell, that is, the nucleus is a small part of the cell determines the life and activities of the whole cells. While plasma is the largest part of the cell's function of protecting, buffering and supplying the needs of the nucleus.

b. Sub Contract Pattern

The sub-contract partnership pattern is a partnership system between business partner company and a group of business partners that produce components needed by partner company as part of their production. This partnership is proven by an agreement on a joint contract that includes volume, price, quality and time, subcontracting patterns that are very useful to create technology transfer, as well as guaranteed product marketing.

c. General Trade Patterns

The general trade partnership pattern is a business partnership system in marketing production. The parties involved in this pattern are marketing and commodity supplier business groups needed by the marketing party. Its profits come from price margins and guaranteed prices of products traded, as well as product quality in accordance with the agreement of the partner.

d. Agency Pattern

The agency pattern is a partnership between partner groups and other partner groups that specifically in marketing partner company's business goods and services. Besides that, the franchise system allows wide job opportunities. However, if one of the partners refuses to keep the agreement that has been set, there will be a dispute.

e. Agribusiness Operational Collaboration Pattern

The agribusiness operational collaboration is a partnership between partner groups and partner companies. In this pattern, while partner groups provide land, facilities, and workers, partner companies provide costs or business capital and the means to foster livestock and agricultural commodity.

The requirement of the partnership is written agreement. The contractual agreements written and can be completed by voice recording to as additional evidence in case of disputes. Disobeyed to contract agreement can lead to invalid agreement.

Income Analysis Of Al An'am Broiler Chicken Farm

1. Fixed Cost

Fixed cost is cost that is fixed in its amount and does not depend on the quantity of production but to maximum capacity such as land rent, loan interest and electricity (Soekartawi, 2006).

a. Cage Devaluation Cost

Cage devaluation cost is the highest fixed cost component that the farmers spend during production. The calculation of this cost is obtained by dividing the costs for cage manufacture by the period of using the cage.

b. Equipment Devaluation Cost

It is not only the cage has devaluation but the cage equipment also devaluates over time. Equipment devaluation is included in the fixed cost because the value of the cage equipment from year to year shrinks even though the cage is emptied.

Table 1. Devaluation Cost

No	Description	Amount/ Item	Price/ Item (Rp)	Amount (Rp)	Economic al Age (Periode)	Devaluatio n (Periode)
1. Cage						
	Close House Cage	1 Unit	510.000.000	510.000.000	60	8.500.000
2. Tools						
	Doc Feed Place	300 Units	14.000	4.200.000	30	140.000
	Layer Feed Place	298 Units	28.500	8.493.000	30	283.100
	Drink Place	2160 Units	5.000	10.800.000	30	360.000
	Fan	8 Units	5.350.000	42.800.000	48	891.667
	Gasolec	18 Units	1.390.000	25.020.000	48	521.250
	Compressor	1 Unit	5.800.000	5.800.000	48	120.833
	Sheeting	25 Rolls	1.200.000	30.000.000	24	1.250.000
	Pipe	248 Bars	42.000	10.416.000	36	289.333
	L Pipe Connection	13 Units	5.000	65.000	36	1.805
	T Pipe Connection	10 Units	6.000	60.000	36	1.667
	Lamp	59 Units	26.000	1.534.000	6	767.000
	Petting Lights	59 Units	6.000	354.000	24	14.750
	Cable	11 Rolls	247.000	2.717.000	24	113.208
	Nail	16 Kg	28.000	448.000	60	7.467
	Switch	6 Units	15.000	90.000	24	3.750
	Generator Set	1 Unit	40.000.000	40.000.000	48	833.333
	Gas Cylinder	20 Units	230.000	4.600.000	48	95.833
Total				697.397.000		14.194.994

Table 1. Shows the costs on devaluation in a period. The devaluation cost of cages and equipment consist of cages and equipment. The equipment used are such as DOC feed holders, layer feed holders, chick drinker nipples, fans, gasolecs, compressors, tarpaulins, pipes, L and T pipe connections, ±300 hood mixers, lamps, petting lamps, cables, nails, switches, generators, and gas cylinders. The amount of expenses on evaluation of the cage and equipment reach to Rp. 14,194,994/period.

2. Variable Costs

Variable costs are costs that change along with the size of the production volume, for example expenses for production facilities, buying seeds, medicines, feed and others (Soekartawi, 2006).

a. Chicken Breed Cost (DOC)

Breed should not be ignored. It can be said that good quality broiler chicken breeds are breeds with high meat production with as little as feed conversion.

Table 2. Cost of chicken breeds

Description	Quantity	Price per head (Rp)	Total (Rp)
Purchase DOC	14.000 head	14.000	120.400.000

Source: Al-An'am Farm, 2022

Table 2 describes the cost of chicken breeds (DOC) experienced during a period. In the table it is shown that the total cost of chicken breeds is Rp. 120,400,000. The type of breed used is cobb strain broiler chicken, sourced from PT. Bintang Sejahtera Bersama (BSB), as many as 14,000 DOCs.

b. Feed Cost

Feed is one of the important factors that affects the high and low growth rate of broilers. It is known that broiler farming business, animal feed plays a very important role in ensuring the survival of the business. More importantly is the price of the feed. The feed used is from PT. Charoend Pokphand Indonesia with feed code S-10 for chickens aged 1-14 days, feed code S-11 for aged 15-30 days and feed code S-12 for chickens aged 31-45 days or until it is harvest.

Table 3. Feed Cost

No	Feed Code	Quantity (Kg)	Price (Rp)	Total (Rp)
1.	S-10	9.500	9.400	89.300.000
2.	S-11	11.250	9.300	104.625.000
3.	S-12	14.400	9.200	132.480.000
Total				326.405.000

Source Al-An'am, Farm, 2022

Table 3. shows the feed costs spent during a period. It can be seen from the table that the total cost of feeding reaches up to Rp. 326,405,000.

c. Cost of Vaccines, Medicines and Vitamins

In order to obtain profitable results of broiler chickens, chicken health is very important. Handling problems properly can prevent the possibility of worse disease for broilers. One of the disease preventions is vaccination to booster immunity against viruses that can be transmitted.

Table 4. Vaccine Cost, Medicines and Vitamins

No	Description	Quantity	Price (Rp)
1.	Pulnotil AC 240 ml	1 Vial	1.269.840
2.	Biogreen 1 lt	1 BT	285.714
3.	Agita 10 WG 100 gr	9 Packs	484.137
4.	VH 1000 DS	1 Vial	377.777
5.	Norflox 33 150 gr	8 Packs	1.866.664
6.	Nopstress Electrolytes 150 gr	8 Packs	342.856
7.	Amilate 100 gr	8 Packs	241.269
Total			5.153.571

Source Al-An'am, Farm, 2022

Table 4. Shows the supporting costs spent in that period. It can be seen from the table that the total supporting cost is Rp. 3,100,000. Litter or husk is used for chicken bedding or chicken saplings aged 1-12 days while sugar is used as a stamina enhancer or energy Win chickens.

d. Labour

The workers employed at Al-An'am Farm is a couple of husband and wife (2 people) who are in charge of raising chickens in feeding and drinking, regulating cage temperature, giving vitamins, cleaning cages, and others. Employees costs is taken from 10% of the profits, which is Rp. 6,625,330. Since the numbers of workers are 2 people, it means the total cost is Rp. 13,250,661. Labour costs are determined after total income minus total costs excluding employees' costs.

3. Revenue

Revenue is the total number of products sold multiplied by the price of that products, so revenue is the overall result of the number of goods or products successfully sold. Al An'am Broiler Farm Business in one period of chicken rearing can harvest up to 6 times

Tabel 5. Sales of Broiler Chickens in one period

No	Dates	Sales Quantity	Unit (Kg)	Unit Price	Total
1	11/06/2022	1.500	1.798,3	23.480	42.224.084
	11/06/2022	500	617,9	23.480	14.508.292
	11/06/2022	470	553,5	23.480	12.996.180
	11/06/2022	500	635	23.080	14.655.800
2	12/06/2022	150	190,4	23.080	4.394.432
3	15/06/2022	980	1.943,2	21.380	41.545.616
4	16/06/2022	430	764,6	21.880	16.729.448
	16/06/2022	900	1.845,8	21.380	39.463.204
	16/06/2022	950	1.633,7	21.980	35.908.726
	16/06/2022	400	698	21.980	15.342.040
	16/06/2022	400	656,8	22.180	14.567.824
	16/06/2022	1.050	2.101,2	21.380	44.923.656
	16/06/2022	1.440	3.053,7	21.280	64.982.736
5	17/06/2022	1.010	1.940	21.680	42.059.200
	17/06/2022	300	561	21.680	12.162.480
	17/06/2022	1.360	2.762,2	21.380	59.055.836
6	18/06/2022	720	1.387,4	21.680	30.078.832
	18/06/2022	350	704,1	21.380	15.053.658
	18/06/2022	350	694,8	21.380	14.854.824
Total		13.760	24.541,60	-	535.506.868

Source Al-An'am, Farm, 2022

The revenue obtained by Al An'am farm is only from the Broilers sale. Its husks and manure are not sold, but they are given to workers for free. Table 4.6 shows the sales during May-June and the prices of target body weight sold in each transportation. Sales were made six times in that period. In the first transport on June 11, 2022, there were 1,970 heads with average weight of 1.20 kg valued at Rp. 23,480/head, 500 heads with average weight of 1.24 kg valued at Rp. 23,480, 500 heads with average weight of 1.27 kg valued at Rp. 23,080. On June 12, 2022, there were 150 heads with average weight of 1.27 kg which were valued at Rp. 23,080. On June 15, 2022, there were 980 heads with average weight of 1.98 kg which were valued at Rp. 21,380. On June 16, 2022, there were 430 heads with average weight of 1.78 kg valued at Rp. 21,880, 900 heads with average weight of 2.05 kg valued at Rp. 21,380, 950 heads with average weight of 1.72 kg valued at Rp. 21,980, 400 heads with average weight of 1.75 kg valued at Rp. 21,980, 400 heads with average weight of 1.64 kg valued at Rp. 22,180, 1,050 heads with average weight of 2.0 kg which is valued at Rp. 21,380, 1,440 heads with an average weight of 2.12 kg which is valued at Rp.

21,280. On June 18, 2022, there were 720 heads with an average weight of 1.93 kg valued at Rp. 21,680, 350 heads with average weight of 2.01 kg valued at Rp. 21,380, 350 heads with average weight of 1.99 kg valued at Rp. 21,380.

4. Income

Income is the difference in total cash receipts minus all costs spent in maintenance during one production period. The total cost in this case is fixed cost (including devaluation costs) and variable costs. While revenue is from total sale of broilers in one maintenance period. The data can be seen in Table 6.

Table 6. Income Recapitulation

No	Description	Total (Rp)
1	Fixed Cost (FC)	14.194.994
2	Variable Cost (VC)	
	a. Chicken Breeds	120.400.000
	b. Feed	326.405.000
	c. Vaccine, medicines, dan Vitamin	5.153.571
	d. Supportive items	3.100.000
	Total Cost (TC = FC + VC)	469.253.565
3	Revenue (R)	535.506.868
	Initial revenue ($B_0 = TR - TC$)	66.253.303
	Labour Cost (2 people) $((10\% \times B_0) \times 2)$	13.250.661
4	Final Income ($B_1 = B_0 - \text{Tenaga Kerja}$)	53.002.642
5	R/C	1,14
6	B/C	0,11
7	BEP	3,68

Source: Main data after analysing, 2022

In Table 6. shows the initial income (B_0) obtained from the sale of broilers before the deduction of labour cost. The labour wages per person is 10% of the initial income, so that the final income (B_1) is Rp. 53,002,642. This number includes the difference between the total revenue and the total cost per maintenance period and labour costs for two people.

5. Return Cost Ratio (R/C)

Return Cost Ratio (R/C) is a comparison between revenue and costs which aims to find out whether the livestock business is profitable to continue or not. It can be formulated as follows:

$$R/C = \frac{\text{Total Revenue (Rp)}}{\text{Total Cost (Rp)}}$$

$$R/C = \frac{\text{Rp. 535.506.868}}{\text{Rp. 469.253.565}}$$

$$R/C = 1,14$$

Criterion:

$R/C > 1$, the broiler chicken farming business is worth.

$R/C = 1$, the broiler chicken farming business breaks even

$R/C < 1$, the broiler chicken farming business is not worth.

6. Benefit Cost Ratio (B/C)

Benefit Cost Ratio (B/C) is a comparison between the income received in one broiler rearing period and the total costs.

$$B/C = \frac{\text{Total Income (Rp)}}{\text{Total Cost (Rp)}}$$

$$B/C = \frac{\text{Rp. 53.002.642}}{\text{Rp. 469.253.565}}$$

$$B/C = 0,11$$

Criterion:

$B/C > 1$, broiler chicken business is profitable.

$B/C = 1$, the broiler chicken business is not loss neither profit.

$B/C < 1$, the broiler chicken business is loss

It can be seen from the B/C formula calculation, a figure of 0.11 was obtained, that means that the business suffered a loss. This is because the calculation is only based on one rearing period, while in one year Al-An'am Farm is able to rear up to six times.

7. BEP

Break Event Point (BEP) is the balance between the total income received and the capital spent, so that there is no loss nor profit.

$BEP \text{ (units)} = \frac{\text{Total Fixed Costs (Rp)}}{\text{Selling Price per unit} - \frac{\text{Total Variable Costs}}{\text{Production Quantity}}}$

$$\begin{aligned} BEP \text{ (unit)} &= \frac{\text{Total Fixed Cost (Rp)}}{\text{Selling Price per Unit} - \frac{\text{Total Variabel Cost}}{\text{Total Production}}} \\ &= \frac{\text{Rp. 14.194.994}}{\text{Rp. 38.918} - \frac{\text{Rp. 482.504.226}}{13.760}} \\ &= \frac{\text{Rp. 14.194.994}}{\text{Rp. 3.852}} \end{aligned}$$

$$BEP \text{ (unit)} = 3.685$$

$$\begin{aligned} BEP \text{ Rupiah} &= \frac{\text{Production Fixed Price}}{\text{Selling Price per Unit} - \text{Variable Cost per Unit}} \times \text{Price per Unit} \\ &= \frac{\text{Rp. 14.194.994}}{\text{Rp. 38.918} - \text{Rp. 35.066}} \times \text{Rp. 38.918} \\ &= \frac{\text{Rp. 14.194.994}}{\text{Rp. 3.852}} \times \text{Rp. 38.918} \\ &= \text{Rp. 143.412.830} \end{aligned}$$

In order to achieve BEP, the unit must gain 3,685, which means that the process of broiler chicken

rearing will not gain profit nor losses if in 1 period lower than this number. While for BEP Rupiah must achieve sales of Rp. 143,412,830 in order to break even or BEP, which means neither profit nor loss.

Conclusion

Based on the research and data analysis, it can be concluded that: 1. The AI An'am broiler farming business in the partnership pattern in 2021 costs Rp.454,658,571, revenue Rp.535,506,868, and income of IDR 53,002,642. 2. RC Ratio in 2021 is 1.4 so that AI An'am livestock activities in the partnering pattern in Attangsalo Village, Ma'rang District obtain profits or are worthy to development.

Acknowledgements

We would like to thank all parties who have assisted in this research process, especially the staff of Technical Staff for the Pangkep State Agricultural Polytechnic.

References

- Akbar Lillahi, dkk 2019. Analisis Pendapatan Peternak Ayam Broiler Pola kemitraan di Kecamatan Nanggung Kabupaten Bogor
- Badan Pusat Statistik, 2021. Profil Pangan Dan Pertanian. Diakses tanggal 21 Juni 2022
- Bayu, 2020. Analisis Pendapatan Usaha Peternakan Ayam Broiler Pola Kemitraan di Kecamatan Karang Intan Kabupaten Bogor
- Bustami dan nurlela, 2010. Pengaruh Biaya Standar Terhadap Pengendalian Biaya Produksi Studi Kasus pada PT. ITP, Tbk. Sekolah Tinggi Ilmu Ekonomi Kesatuan Bogor, Bogor
- Dahlan dan Wawan, dkk 2016. Analisa Usaha Peternakan Ayam Broiler Pola Kemitraan di Kecamatan Sumberejo Kabupaten Bojonegoro
- Harisman, 2017. Pola Kemitraan Antara Petani Dengan PT. Indofood Fryto-Lay Makmur Pada UsahaTani Kentang Industri Varietas Atlantik
- Ichyudin, dkk, 2006. Pengantar Ekonomi. Jakarta.
- Iskayani, V. S Lestari dan W. Pakiding 2016. Analisis Pendapatan Peternak Ayam Broiler Pola Kemitraan di Desa Bontomatene Kecamatan Marusu Kabupaten Maros
- Kasmir, 2010. Analisis Laporan Keuangan. Jakarta; PT. Raja Grafindo Persada
- Latifa, 2021. Analisis Pendapatan Usaha Ternak Ayam Broiler (*Gallus domesticus*) Dengan Pola Kemitraan dan Pola Mandiri di Kecamatan Sekayu Kabupaten Musi Banyuasin
- Nizam, M 2013. Analisis Pendapatan Peternak Ayam Broiler pada Pola Kemitraan Yang Berbeda di Kecamatan Tellusiattinge Kabupaten Bone, Fakultas Peternakan, Universitas Hasanuddin Makassar
- Novianti, dkk 2014. Analisis Pelaksanaan Program Kemitraan Pemeliharaan Ayam Broiler di Kabupaten Limapulu Kota
- Putri dkk 2015. Analisis Pendapatan Dan Efisiensi Biaya Usahatani Tembakau Maesan 2 Di Kabupaten Bondowoso
- Rahma, UI, 2015. Analisis Pendapatan Usaha Ternak Ayam Ras Pedaging Pada Pola Usaha Yang Berbeda di Kecamatan Cingambul Kabupaten Majalengka