

# Analysis of the competitiveness of shallot farming between the rainy season and the dry season in Bima Regency

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## ABSTRACT

This study aims to (1) determine private and social benefits and transfer effects using PAM Analysis on shallot farming patterns in Bima Regency; (2) determine the competitiveness of shallot farming patterns in Bima Regency. The data analysis method used is the Policy Analysis Matrix (PAM) model. The PAM matrix is a policy analysis matrix that functions to measure the efficiency of input use, comparative and competitive advantages and the level of government intervention or interference in an economic activity. The results of this study indicate that shallot farming in the rainy season in Bima Regency has a positive value at the private profit level of Rp. 185,302,600, a social profit level of Rp. 139,550,488, and net transfer effects where to measure the total impact of all divergences from profit of Rp. 45,752,112. This means that shallot farming in the rainy season in Bima Regency has good efficiency at the price level. While shallot farming in the dry season in Bima Regency has a positive private profit level of Rp. 87,372,650, a positive social profit level of Rp. 121,007,833, and net transfer effects where to measure the total impact of all divergences from profit is negative of Rp. -33,635,183. This shows that there is no additional producer surplus caused by government policies applied to input and output. Shallots in Lambu District, Bima Regency, shallot farming in the rainy season has strong competitiveness because it has a comparative advantage with a DRCR value of 0.03 and a competitive advantage with a PCR value of 0.02. While shallot farming in Bima Regency in the dry season also has strong competitiveness because it has a comparative advantage with a DRCR value of 0.02 and a competitive advantage with a PCR value of 0.05. This shows that shallot farming in the rainy season and dry season in Bima Regency is good to be developed to become a superior commodity.

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## 1. INTRODUCTION

The agricultural sector is one of the sectors that has a considerable role in the Indonesian economy because it is a source of state foreign exchange revenue, encouraging economic growth and providing jobs. In addition, the agricultural sector is also the main pillar in supporting the country's food security, because of its contribution to meeting the consumption needs or food

needs of most Indonesians. Another advantage of the agricultural sector compared to other sectors in the economy is agricultural production based on domestic resources (Nurhapsa *et al*, 2015).

One of the horticultural commodities in question is shallots. This type of commodity has several considerations for the government for its development, namely, it has an important role in increasing farmers' income, absorbing labor, having good market prospects, and can increase the country's foreign exchange. According to Purba (2018) shallots are a commodity that has the ability to increase farmers' income levels, as a raw material in almost all food industries, needed at all times as cooking spices, traditional medicines, export opportunities and can open up job opportunities.

The development of high-value agricultural commodities in order to be able to increase the profits of farmers is the most important thing to increase the capabilities of the agricultural sector. This is because the agricultural sector is able to contribute directly to economic growth and the welfare of farming households depending on the level of farming income and also the surplus generated by the sector. Horticultural commodities are commodities that have the potential to have increased economic value and have the potential to continue to be developed. In developing farming with high-value horticultural commodities, one of them is to increase farmers' production, namely by developing onion farming.

Bima Regency is one of the districts in West Nusa Tenggara Province (NTB) and is located in the easternmost part of Sumbawa Island, flanked by Dompu Regency to the west, East Nusa Tenggara Province to the east, and the Flores Sea to the north and the Indonesian Ocean to the south. Bima Regency consists of eighteen sub-districts, among the eighteen sub-districts there are several sub-districts that carry out shallot farming activities, one of which is Lambu sub-district. Lambu District is included as a shallot farming development area. The economic structure of Bima Regency is still dominated by the agricultural sector and most of the population works in the agricultural sector. In 2017, around 54.71 percent of the population of Bima district worked in the agricultural sector. In addition to rice, Bima Regency also has other superior crop commodities, including vegetable crops such as onions, garlic, cayenne peppers, tomatoes, cabbage and long beans (BPS Bima Regency, 2018).

Lambu District, Bima Regency is an area of West Nusa Tenggara province that has a mainstay commodity, namely shallots. Having a rapid population growth rate, increasing market needs and high selling prices are factors that can stimulate farmers to be able to increase agricultural production, especially in the shallot commodity.

The problem faced in the process of shallot farming in Lambu District, Bima Regency is the low mastery of technology, farmers do not have enough capital to buy agricultural inputs, such as fertilizers and medicines. So far, farmers have bought inputs (fertilizers) only according to the farmers' ability, not in accordance with the recommended fertilizer dose, because the capital used by farmers so far has only used personal capital, fluctuations in the price of shallots that change at any time and high production costs are also problems faced by shallot farmers in Lambu District, Bima Regency. At the moment, there is no country that is in a state of autarky or isolated state without economic relations with other countries. This is because no country can meet its needs independently (Sarwono and Pratama, 2014).

The existence of an increasingly free world market scheme with a high level of competition but benefiting the trading sector of a commodity has great risks and benefits. There is a high risk if the state is unable to present goods or services in accordance with international market demand, but it will have significant advantages if all aspects of the trade are used as a quality standard for goods or services from a country. One way to overcome this is to increase the competitiveness of products (Satryana and Karmini, 2016).

Based on the above problems, the purpose of this study is to determine the private and social benefits as well as transfer effects by using PAM Analysis on shallot farming patterns in Bima Regency, and to determine the competitiveness of shallot farming patterns in Bima Regency.

## 2. METHOD

### 2.1 Design and Types of Research

The basic method or main design used in this study is the descriptive method, especially quantitative descriptive. The descriptive method is a method of examining the status of a group of people, an object, a set of conditions, a set of thoughts or a class of events in the present, which aims to make a systematic, factual, and accurate description, description or painting of the facts, properties and relationships between phenomena being investigated (Nazir, 2002).

The type used in this study is survey. According to Sugiyono (2008), the survey method is used to obtain data from certain natural (not artificial) places, but researchers carry out treatments in data collection, such as distributing questionnaires, tests, structured interviews, and so on.

## 2.2 Research Location and Time

This research was carried out in Lambu District, which is one of the central areas of shallot production in Bima Regency. The selection of the location of this research was carried out deliberately (*purposive sampling*) on the grounds that the area is one of the centers of shallot production. The implementation time for this research was carried out from August 23 to October 23, 2024.

## 2.3 Population and Sample

The population in this study is 120 shallot farmers. Sampling is done intentionally (*purposive sampling*), which is deliberately selecting farmers who are trying to plant shallots. So that a sample was obtained in this study as many as 60 farmers.

## 2.4 Data Types and Sources

The types of data used in this study are primary data and secondary data. A data source is anything that can provide information about data based on its source. Primary Data is data obtained through a direct interview process with farmers who carry out farming using a list of questions (questionnaire) that has been provided as a tool in data collection. Secondary data, i.e. data that has been collected for the purpose of solving the problem that is being faced, this data can also be found quickly. In this study, the secondary data sources are BPS, the Agriculture Office and others.

## 2.5 Data Collection Techniques

The data collection techniques in this study are:

1. Observation is data collection by directly observing the condition of the respondents and the conditions that occur in the research area, namely Bima Regency, West Nusa Tenggara Province related to the planting season.
2. Interviews are data collection by conducting a series of direct interviews with respondents, namely farmers, to obtain information or necessary data regarding respondents' identities, farming costs, and farm receipts and productivity.
3. Documentation is a method of collecting data by collecting data through written information, namely information obtained from respondents related to the research being carried out which is a document document that has to do with the words needed in the research.

## 2.6 Data Analysis Techniques

The data analysis used in this study is a quantitative descriptive analysis using the calculation analysis of the competitiveness analysis of farming using *the Policy Matrix Analysis (PAM)* analysis tool.

According to Pearson et al. (2005), the measurement of competitive advantage can be done by calculating private advantages, and the measurement of comparative advantage can be done by calculating social advantages.

Private prices and social prices are used in PAM analysis. Private prices are the actual prices that farmers receive, while social prices are prices that occur under perfectly competitive market conditions, but it is difficult to find markets with such conditions, so it is assumed that trade in international markets is perfectly competitive, so that the prices of inputs and outputs traded can be considered as shadow prices.

Agricultural inputs in PAM analysis are divided into tradable and non-tradable inputs. Tradable inputs are inputs that are traded in international markets, while non-tradable inputs are domestic inputs. The allocation of tradable input use in shallot farming includes: onion seeds, urea fertilizer, phonska fertilizer, SP 36 fertilizer, ZA fertilizer, and medicines. Meanwhile, the allocation for the use of non-tradable shallot farming inputs includes: land rent, labor wages, and farming equipment.

The Policy Analysis Matrix (PAM) model and its formulation can be seen in Table 3.

**Table 1.** Polycis analysis matrix (PAM) analysis

Variabel	Income	Fees - Fees		Advantage
		Input Tradable	Input Non-Tradable	
Private Pricing	A	B	C	$D = A - B - C$
Social Pricing	E	F	G	$H = E - F - G$
Price Divergence	$I = A - E$	$J = B - F$	$K = C - G$	$L = D - H = I - J - K$

Source: Scott Pearson, et al. 2005

Information:

A : Private Reception

G : Non Tradable Input Fee

B : Private Tradable Input Fee

H : Social Profit

C : Input cost *non tradable* Private      I : Transfer Output  
 D : Private profit                                      J : Transfer Input Tradable  
 E : Social Acceptance                                K : Transfer Factor  
 F : Input cost *tradable* social                    L : Net Transfer

Based on the PAM matrix in table 3, it can be seen that the first row of the PAM matrix is calculated using private prices in the profit analysis, consisting of private profits and social profits.

Private profit is the difference between the income of the cost actually paid by the farmer. Social profit is the difference between income and costs calculated by social price. In the third row of Table 3 is the difference between private and social prices. The next analysis calculates comparative advantages (Domestic Cost Ratio/DRCR) and competitive advantages (Private Cost Ratio/PCR). Corn farming has a comparative advantage if it has a DRCR value of less than 1 ( $DRCR < 1$ ), and corn farming has a competitive advantage if it has a PCR value of less than 1 ( $PCR < 1$ ). The Domestic Resource Cost Ratio (DRCR) is  $G/(E-F)$ , while the Private Cost Ratio (PCR) is  $C/(A-B)$ .

### 3. RESULTS AND DISCUSSION

#### 3.1 Respondent Identities

The identity of the respondents described in the following discussion illustrates various aspects of the situation of farmers that are suspected to have a relationship between the characteristics of farmers and the diversity of communication channels used by farmers in Lambu District, Bima Regency. Various aspects of the characteristics in question are: age, education level, farming experience, number of family dependents and land area.

##### 3.1.1 Age of the Farmer

Age is a determining factor in all activities of each respondent in order to maximize the labor and capital used during the processing of farming. In the field of agriculture, age level is an important factor, the younger the age of the strength to be able to work optimally. In general, young farmers (productive age) have greater physical resilience when compared to older farmers. Young farmers are more flexible in their farming. The following age level of farmers who are respondents in Lambu District, Bima Regency can be seen in Table 2.

**Table 2.** Age Level of Shallot Farmers Respondents in Lambu District, Bima Regency

No.	Age (Years)	Quantity (souls)	Percentage (%)
1.	29-33	7	11,67
2.	34-38	9	15,00
3.	39-42	15	25,00
4.	43-50	16	26,67
5.	51-53	5	8,33
6.	54-58	8	13,33
	Sum	60	100,00

Source: Primary Data After Processing, 2024

Based on Table 2, it shows that the age classification of shallot farmers between the first planting pattern and the second planting pattern is the most at the age of 43-50 years as many as 16 people with a percentage of 26.67%. This means that at that age farmers are still in the productive category, which means that farmers are still able to work optimally in managing and producing them. Age level is one of the decisive factors for shallot farmers in their farming management efforts.

##### 3.1.2 Education Level

The level of education is one of the factors or aspects of assessing the progress of a nation in general and the region in a village in particular. The higher the level of education of farmers, the higher the level of progress of an area. The educational factor will facilitate innovation and new technology so that it can be said that relatively farmers who have a level of education will manage their farming well compared to farmers with low education. For more details on the education level of respondent farmers in Lambu District, Bima Regency, see Table 3.

**Table 3.** Education Level of Shallot Farmers Respondents in Sumi Village, Lambu District, Bima Regency

No.	Education Level	Quantity (Soul)	Percentage (%)
1.	Finishing Elementary School	6	10,00
2.	Completion of Junior High School	13	21,67
3.	High School Graduation	31	51,67
4.	Bachelor/S1	10	16,67
	Sum	60	100,00

Source: Primary Data After Processing, 2024

Based on Table 3, it shows that the education level of shallot farmers between the planting pattern of one and the planting pattern of the two is the largest, namely the level of high school graduation of 31 people with a percentage of 51.67%, the second largest is the level of junior high school graduation education of 13 people with a percentage of 21.67%, the third largest, namely the level of bachelor's / S1 education as many as 10 people with a percentage of 16.67%, and the smallest level of education, namely the level of elementary school graduation as many as 6 people with a percentage of 10.00%.

### 3.1.3 Farming Experience

Farming experience can show the success of farmers in managing their farming. Because it can be a guideline in the future. Young farmers are inexperienced, so to compensate for their shortcomings, they need to be dynamic. On the other hand, older farmers have a lot of experience in farming so they can be careful in their actions. The experience of shallot farming in Sumi Village, Lambu District, Bima Regency can be seen in Table 4.

**Table 4.** Farming Experience of Shallot Farmer Respondents in Lambu District, Bima Regency

No.	Farming Experience (Years)	Quantity (Soul)	Percentage (%)
1.	6-10	38	63,33
2.	11-16	22	36,67
	Sum	60	100,00

Source: Primary Data After Processing, 2024

Based on Table 4, it shows that the most experience of shallot farmers between the first planting pattern and the second planting pattern is 6-10 years as many as 38 people with a percentage of 63.33%. Meanwhile, the lowest experience was 11-16 years old and as many as 22 people with a percentage of 36.67%.

### 3.1.4 Number of Family Dependents

The family dependents in question are all family members who have a living burden for the farming in question. The number of dependents of farmer families tends to also affect farming operational activities, because relatively large families are a source of labor in their farming, especially productive family members, besides that the number of family members is one of the most decisive potentials in increasing production and farming income. For more clarity on the number of dependents of the families of the respondents of shallot farmers in Lambu District, Bima Regency, see Table 5.

**Table 5.** Number of Family Dependents of Shallot Farmers Respondents in Lambu Village, Bima Regency

No.	Number of Family Dependents (People)	Quantity (Soul)	Percentage (%)
1.	1-2	13	21,67
2.	3-4	36	60,00
3.	5-6	8	13,33
4.	7-8	3	5,00
	Sum	60	100,00

Source: Primary Data After Processing, 2022

Based on Table 5, it shows that the number of dependents of shallot farming families between planting pattern one and planting pattern two is the most which is 3-4 people with a percentage of 60.00% and the number of family dependents is the least which is 7-8 people as many as 3 people with a percentage of 5.00%.

### 3.1.5 Land

Land as a place where farming activities take place is one of the production factors in farming. The area of agricultural land cultivated by each farmer varies, where farmers who have more land will tend to get greater production than those who have a small land area. To find out the land area of the shallot farmers, you can see Table 6.

**Table 6.** Land Area of Shallot Farmers in Lambu District, Bima Regency

No.	Land Area (Ha)	Quantity (Soul)	Percentage (%)
1.	0,50-0,79	27	45,00
2.	0,80-1,09	18	30,00
3.	1,10-1,39	0	0,00
4.	1,40-1,69	13	21,67
5.	1,70-1,99	0	0,00
6.	2,00-2,29	2	3,33
	Sum	60	100,00

Source: Primary Data After Processing, 2024

Based on Table 6, it shows that the land area of shallot farmers between the first planting pattern and the second planting pattern is the most which is 0.50-0.79 Ha as many as 27 people

with a percentage of 45.00%, while the least land area is 2.00-2.29 Ha as many as 2 people with a percentage of 3.33%.

### 3.2 Profitability of Shallot Farming Between Rainy and Dry Season in Bima Regency

The advantages of farming in this study are seen from two aspects, namely private profits and social benefits. The profit of shallot farming is determined by the size of the difference between the total revenue and the total cost. In Lambu District, Bima Regency, farmers farm shallots in two seasons, namely the rainy season and the dry season. Rahmadiyah & Rum (2020) stated that the benefits of farming include financial benefits and economic benefits. Private profit is revenue minus farming costs based on private prices, while social profits are income minus farming costs based on social prices. The analysis of private profits and social benefits in shallot farming in the rainy season can be seen in Table 7.

**Table 7.** Indicators of Financial Profit and Economic Advantage in the Rainy Season in Lambu District, Bima Regency.

Variabel	Quantity (Units/ha)	Private Value (Rp)	Social Value (Rp)
1. Production (kg)	8.845	210.653.000	159.210.000
2. Variable Cost (VC):			
a. Seed (kg)	713,33	18.680.000	12.840.000,00
b. Urea (kg)	84,50	219.700,00	475.904,00
c. Phonska (kg)	106,00	243.800,00	1.142.362,00
d. SP 36 (kg)	106,00	254.400,00	258.110,00
e. A.S. (kg)	119,17	202.538,33	359.752,50
f. Pesticides (liters)	5,20	1.191.167,67	958.400,00
Workforce (HOK)			
a. Land Preparation (HOK)	2,35	235.000,00	235.000,00
b. Planting (HOK)	6,96	487.666,67	487.666,67
c. Fertilization (HOK)	1,00	100.000,00	100.000,00
d. Weeding (HOK)	3,27	326.666,67	326.666,67
e. OPT (HOK) Handling	1,00	100.000,00	100.000,00
f. Harvest (HOK)	12,12	1.258.333,33	1.258.333,33
3. Fixed Fee (FC):			
g. Tool shrinkage		2.646.600,00	2.646.600,00
h. Tax		39.317	39.317
4. Total Cost (TC):		27.997.000	23.409.212
5. Income		182.656.000	159.210.000
6. R/C Ratio		6,52	6,80

Source: Primary Data After Processing, 2025

Indicators of financial profit of shallot farming in the rainy season can be seen from the value of private profits which are based on the actual price or the price received by farmers. The financial profit of shallot farming measures the level of profit based on the actual input and output price (Darmayanti et al., 2019). The financial profit of shallot farming in the rainy season in Lambu District, Bima Regency is Rp 182,656,000 per hectare, while the economic profit of shallot farming reaches Rp 159,210,000 per hectare. The level of financial feasibility of farming as measured by the R/C ratio value is 6.52, while the economic feasibility of shallot farming is 6.80. Financial feasibility means that every rupiah of private costs of shallot farming in the rainy season will receive a revenue of 6.52 rupiah, while economic feasibility means that every rupiah of social costs of shallot farming in the rainy season will receive a revenue of 6.80 rupiah. The financial benefits of shallot farming have a higher value compared to economic benefits, but on the other hand, the level of economic feasibility of shallot farming is higher than the level of financial feasibility. This phenomenon can occur due to the difference in private and social prices for inputs and outputs that can be traded in onion farming. So far, private prices tend to have a higher value compared to social prices. This situation shows that shallot farming has financial feasibility and economic feasibility, so that shallot farming in the rainy season in the Lambu District area of Bima Regency will be profitable to be developed on a high economic scale.

**Table 8.** Indicators of Private Profit and Social Benefit in the Dry Season in Lambu District, Bima Regency.

Variabel	Quantity (Units/ha)	Private Value (Rp)	Social Value (Rp)
1. Production (kg)	7.706	110.191.000	138.720.000
2. Variable Cost (VC):			
a. Seed (kg)	682,50	17.209.166,67	12.285.000,00
b. Urea (kg)	76,33	198.466,67	598.166,67
c. Phonska (kg)	97,00	223.100,00	1.142.362,00
d. SP 36 (kg)	108,83	261.200,00	258.110,00
e. A.S. (kg)	103,00	175.100,00	359.752,50
f. Pesticides (liters)	2,61	598.166,67	598.166,67

*Analysis of the competitiveness of shallot farming between the rainy season and the dry season in Bima Regency (Nilasari)*

Workforce (HOK)				
a.	Land Preparation (HOK)	2,00	200.000,00	200.000,00
b.	Planting (HOK)	7,22	505.166,67	505.166,67
c.	Fertilization (HOK)	1,00	100.000,00	100.000,00
d.	Weeding (HOK)	2,85	285.000,00	285.000,00
e.	OPT (HOK) Handling	1,00	100.000,00	100.000,00
f.	Harvest (HOK)	12,08	1.208.333,33	1.208.333,33
3. Fixed Fee (FC):				
a.	Tool shrinkage		2.646.600,00	2.646.600,00
b.	Tax		39.317	39.317
4. Total Cost (TC):				
			25.464.950	21.765.267
5. Income			84.726.050	116.954.733
6. R/C Ratio			3,33	5,37

Source: Primary Data After Processing, 2025

The financial profit of shallot farming in the dry season in Lambu District, Bima Regency is Rp 84,726,050 per hectare, while the economic profit of shallot farming reaches Rp 21,765,267 per hectare. The level of financial feasibility of shallot farming as measured by the R/C ratio value is 3.33, while the economic feasibility of shallot farming is 5.37. Financial feasibility means that every rupiah of private costs of shallot farming will receive revenue of 3.33 rupiah, while economic feasibility means that every rupiah of social costs of shallot farming will receive revenue of 5.37 rupiah. The economic benefits of shallot farming have a higher value compared to financial benefits, as well as the level of economic feasibility of shallot farming is higher than the level of financial feasibility. This phenomenon can occur due to the difference in private and social prices for inputs and outputs that can be traded in shallot farming. So far, private prices tend to have a higher value compared to social prices. However, shallot farming in the dry season has financial feasibility and economic feasibility, so that shallot farming in the Lambu District area of Bima Regency will be profitable to be developed on a high economic scale.

In table 7 and table 8. It can be seen that the difference in income between the rainy season and the dry season, the rainy season tends to have a larger income than the dry season. However, the rainy season and the dry season both have financial feasibility and economic feasibility, so shallot farming between the rainy season and the dry season is feasible to be developed.

The factors that can affect income in shallot farming between the rainy season and the dry season are production, price, cost, weather, revenue and also supply of these factors greatly affect the difference in income from shallot farming between the rainy season and the dry season. In the rainy season there is less supply of shallots but it increases in price. This is because the more demand for the supply of shallots, the price of shallots increases. Meanwhile, in the dry season, there is a lot of supply of shallots produced by shallot farmers, but the price of shallots decreases. This is because the more supply of shallots offered by producers, the price of shallots decreases.

So what shallot farmers must pay attention to is production, price, cost, revenue from shallot farming between the rainy season and the dry season, the amount of production produced does not necessarily mean that shallot farming between the rainy season and the dry season gets a larger income, because to be able to find out some income that farmers get, farmers must calculate all the costs incurred and the total revenue generated so that it can be calculated and how much Farmers earn a lot of income.

In line with the results of the research of Fajarikad kk. (2020) which shows that shallot farming in technical, financial and socio-economic aspects in Kota Gajah District, Central Lampung has a climate, soil type and availability as well as farmer skills that meet for shallot plants. The financial analysis shows that the business is feasible to run because it has a revenue and cost ratio of 1.8, with a value of Rp.16,343,200,177.00. In the socio-economic aspect, it shows that shallot plants are able to increase farmers' income by 4 times compared to planting rice and open cooperative relationships with various parties, both government, private and farmers outside the Kota Gajah sub-district. The income level of shallot farming in Anggeraja District, Enrekang Regency. The results of the study show that the average income level of shallot farmers in Anggeraja District is 45.16776 million <sup>ha</sup>-1 with an R/C ratio value of 2.11. This shows that shallot farming in Anggeraja District is economically feasible (profitable) because the R/C value is > 1 (Nurhapsa 2015). Supported by the results of Subroto's research. (2024) which shows that this study assesses the feasibility of shallot farming using R/C ratio analysis. It was found that shallot farming is financially feasible with an R/C ratio of 1.32 in the dry season and 0.32 in the rainy season.

### 3.3 Analysis of the Competitiveness of Shallot Farming in the Rainy Season in Bima Regency.

The competitiveness of shallot farming in Bima Regency is measured through two indicators, namely competitive advantage measured based on the value of the private cost ratio (PCR) and comparative advantage measured based on the value of the domestic resource cost ratio

(DRCR). According to Zuhri et al. (2020), the competitive advantage of a commodity is determined by the value of private profits and the value of the private cost ratio (PCR). The prices used in this analysis are the market prices (actual prices) that occur at the farmer level (the market price has been affected by government intervention). Competitive advantage can also be seen from the PCR value, where this value describes the financial efficiency of a farming system. PCR is the ratio between the cost of domestic inputs to the added value or the difference between receipts and inputs that can be traded at the actual price level. Haryanto et al. (2019), comparative advantages reflect the efficiency of domestic resource use, which uses the domestic resource cost ratio (DRCR) indicator. Rahmaniyah & Rum (2020), DRCR is an indicator to determine the amount of domestic resource savings to produce one unit of product. The results of the analysis based on the calculation of PAM for shallot farming in the rainy season can be seen in table 9 below.

**Table 9.** Policy Analysis Matrix (PAM) of Shallots in the Rainy Season in Bima Regency.

Indicator	Acceptance	Input Tradable	Input Non Tradable	Advantage
Private	210.653.000	20.658.317	4.692.083	185.302.600
Social	159.210.000	16.070.529	3.588.983	139.550.488
Divergence Impact	51.443.000	4.587.788	4.587.788	45.752.112

Source: PAM results after processing

From Table 9 above, it can be seen that the private profit of shallots in the rainy season has a positive value, which is Rp 185,302,600 per hectare with private revenue of Rp 210,653,000 per hectare; tradatable input costs of Rp 20,658,317 per hectare; and domestic factor costs of IDR 4,692,083 per hectare. This means that shallot farming in the rainy season in Bima Regency has the potential of competitive advantage, so it is feasible to be developed. Social benefits also have a positive value, namely IDR 139,550,488 per hectare with social receipts of IDR 159,210,000 per hectare; tradabele input costs of IDR 16,070,529 per hectare and domestic factor costs at social prices of IDR 3,588,983 per hectare.

Positive social benefits mean that shallot farmers make a profit, and are economically viable. Social benefits are an indicator of comparative advantage, meaning that there is efficiency in shallot farming during the rainy season in Lambu District, Bima Regency even though there is no subsidy or government intervention. Thus, the results of this analysis show that shallot farming carried out by farmers in the Bima Regency area has comparative advantages, and is efficient even without government assistance or intervention.

Based on Table 9, it can be seen that the divergence impact resulting from the PAM analysis for revenue is positive, the divergence impact for tradatable inputs and domestic factors is positive, and also the impact of profit divergence is positive. The impact of revenue divergence amounted to IDR 51,443,000 per hectare, the impact of profit divergence or *transfer effect* amounted to IDR 45,752,112 per hectare. The impact of divergence in tradable inputs has a positive value of IDR 4,587,788 per hectare and the impact of divergence of domestic factors amounted to IDR 4,587,788 per hectare. This means that shallot farming in the rainy season in Lambu District, Bima Regency has good efficiency at the price level.

Based on the results of the calculation of the PAM table of the competitiveness of shallot farming in Bima Regency, it can be seen that based on comparative advantages and competitive advantages, it can be seen in the following table 10:

**Table 10.** Indicators of the Competitiveness of Shallot Farming in the Rainy Season in Bima Regency

Indicator	Value
Private cost Rasio (PCR)	0,02
Domestic Resources Cost Ratio (DRCR)	0,03

Source: Primary data analysis 2025

The condition of competitive advantage of shallots in the research area and can see the allocation of resources to achieve financial efficiency in shallot farming. Financial efficiency is measured using PCR indicators. PCR is a ratio between the cost of Non-Tradable Input with the Receipt and Cost of Tradable Input. The PCR value shows the ability of a commodity system to finance its domestic factors at private prices. The smaller the PCR value, the higher the level of competitive advantage of farming of a commodity (Pearson, 2005). Meanwhile, the DRCR value is the ratio between the cost of domestic factors and the difference between revenue and tradable input costs at the shadow price (social) or the price in which there is no government policy.

In table 10, the PCR value for shallot farming in the rainy season in Bima Regency is less than 1, which is 0.02, which means that shallot farming in the rainy season in Bima Regency is good because it has a competitive advantage. Meanwhile, the DRCR value of shallot farming

in the rainy season in Bima Regency is less than 1, which is 0.03, which means it has a comparative advantage.

Based on the results of PCR and DRCCR analysis on shallot farming during the rainy season in Bima Regency, it shows PCR values  $< 1$  and DRCCR  $< 1$ . Thus, shallot farming in the rainy season in Bima Regency has a competitive advantage and a high comparative advantage. This shows that shallot farming in the rainy season in Bima Regency is good to be developed to become a leading commodity

### 3.4 Analysis of the Competitiveness of Shallot Farming in the Dry Season in Lambu, Bima Regency.

The results of the analysis based on the calculation of PAM of shallot farming in the dry season in Bima Regency can be seen in table 11.

**Table 11.** Policy Analysis Matrix (PAM) of Shallots in the Dry Season in Bima Regency.

Indicator	Acceptance	Input Tradable	Input Non Tradable	Advantage
Private	110.191.000	18.665.200	4.153.150	87.372.650
Social	138.720.000	14.965.517	2.746.650	121.007.833
Divergence Impact	-28.529.000	3.699.683	1.406.500	-33.635.183

Source: PAM results after processing

From Table 11 above, it can be seen that the private profit of shallots in the dry season has a positive value, which is Rp 87,372,650 per hectare with private revenue of Rp 110,191,000 per hectare; tradable input costs of Rp 18,665,200 per hectare; and domestic factor costs of IDR 4,153,150 per hectare. This means that shallot farming in the dry season in Bima Regency has the potential from the aspect of competitive advantage, so it is feasible to develop. Social benefits also have a positive value, namely IDR 121,007,833 per hectare with social receipts of IDR 138,720,000 per hectare; tradable input costs of IDR 4,153,150 per hectare and domestic factor costs at social prices of IDR 2,746,650 per hectare.

Positive social benefits mean that shallot farmers make a profit, and are economically viable. Social advantage is an indicator of comparative advantage, meaning that there is efficiency in shallot farming in the dry season in Lambu District, Bima Regency even though there is no subsidy or government intervention. Thus, the results of this analysis show that shallot farming carried out by farmers in the Bima Regency area has comparative advantages, and is efficient even without government assistance or intervention.

Based on Table 11, it can be seen that the impact of divergence resulting from the PAM analysis for revenue has a negative value of Rp -28,529,000 per hectare. This shows that producers receive a lower selling price than their social price, meaning that farmers do not get maximum profits. The impact of divergence for tradable inputs with a positive value of IDR 3,699,683 per hectare and the impact of divergence of domestic factors with a positive value of IDR 1,406,500 per hectare. The impact of profit digestion or *transfer effect* amounted to IDR -33,635,183 per hectare. This shows that there is no additional producer surplus caused by government policies applied to inputs and outputs.

Based on the results of the calculation of the PAM table of the competitiveness of shallot farming in Bima Regency, it can be seen that based on comparative advantages and competitive advantages, it can be seen in the following table 12:

**Table 12.** Indicators of the Competitiveness of Shallot Farming in the Dry Season in Bima Regency.

Indicator	Value
Private cost Rasio (PCR)	0,05
Domestic Resources Cost Ratio (DRCCR)	0,02

Source: Primary data analysis 2025

The condition of competitive advantage of shallots in the research area and can see the allocation of resources to achieve financial efficiency in shallot farming. Financial efficiency is measured using PCR indicators. PCR is a ratio between the cost of NonTradable Input with the Receipt and Tradable Input Cost. The PCR value shows the ability of a commodity system to finance its domestic factors at private prices. The smaller the PCR value, the higher the level of competitive advantage of farming of a commodity (Pearson, 2005). Meanwhile, the DRCCR value is the ratio between the cost of domestic factors and the difference between revenue and tradable input costs at the shadow price (social) or the price in which there is no government policy.

In table 12, the PCR value for shallot farming in the dry season in Bima Regency is less than 1, which is 0.05, which means that shallot farming in the dry season in Bima Regency is good because it has a competitive advantage. Meanwhile, the DRCCR value of shallot farming

in the dry season in Bima Regency is less than 1, which is 0.02, which means that it has a comparative advantage.

Based on the results of PCR and DRCR analysis on shallot farming in the dry season in Bima Regency, it showed PCR values of  $< 1$  and DRCR  $< 1$ . Thus, shallot farming in the rainy season in Bima Regency has a competitive advantage and a high comparative advantage. This shows that shallot farming in the dry season in Bima Regency is good to be developed to become a superior commodity.

Based on the results of the policy analysis matrix (PAM) analysis, shallot farming between the rainy season and the dry season in Lambu District, Bima Regency, West Nusa Tenggara, both have competitive and comparative advantages. This shows that both planting seasons in the research area are feasible to develop. In contrast to shallot farming in (Cirebon, Brebes, Tegal) in the research of Aldilad et al. (2020) which shows that shallot farming in the region is financially profitable but not economically profitable, with competitive advantages but no comparative advantages. The impact of government policies on output shows that there is government protection for shallot prices. Meanwhile, government policies related to inputs are still disincentive to farmers. Farmers have to pay more expensive inputs than they should, but simultaneously, the government's policy on inputs and outputs supports the production of shallots in Cirebon, Brebes and Tegal.

#### 4. CONCLUSION

Based on the results of the research and discussion of the competitiveness of shallot farming between the rainy season and the dry season in Lambu District, Bima Regency, West Nusa Tenggara Province, the conclusion is as follows: Shallot farming in the rainy season in Bima Regency has a positive value at the level of private profit of Rp. 185,302,600, the level of social profit of Rp. 139,550,488, and net transfer effects where to measure the total impact of all divergences from profit of IDR 45,752,112. This means that shallot farming during the rainy season in Bima Regency has good efficiency at the price level. Meanwhile, shallot farming in the dry season in Bima Regency has a positive level of private profit of Rp. 87,372,650, a level of positive social profit of Rp. 121,007,833, and net transfer effects where to measure the total impact of all divergences from negative profits of Rp. -33,635,183. This shows that there is no additional producer surplus caused by government policies applied to inputs and outputs. Shallots in Lambu District, Bima Regency, rainy season shallot farming has strong competitiveness because it has a comparative advantage with a DRCR value of 0.03 and a competitive advantage with a PCR value of 0.02. Meanwhile, shallot farming in Bima Regency in the dry season also has strong competitiveness because it has a comparative advantage with a DRCR value of 0.02 and a competitive advantage with a PCR value of 0.05. This shows that shallot farming in the rainy and dry seasons in Bima Regency is good to be developed to become a leading commodity.

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