

COMPETITIVENESS OF PADDY RICE FARMING TO INCREASE FARMERS' INCOME IN SERANG REGENCY

Eka Laelah¹, Dian Anggraeni², and Aliudin³

^{1,2,3} Postgraduate Agricultural Science Study Program, Sultan Ageng Tirtayasa University, Serang

E-mail: ekalaelah@gmail.com

Corresponding Author

DOI: 10.15408/aj.v16.i2.28208

Abstrak

Rice is the staple food of most Indonesians, therefore rice as a strategic commodity that must be maintained and regulated by the government. This study aims to analyze the competitiveness of paddy rice farming in Serang Regency. Analyzing the impact of government policies on the competitiveness of paddy rice farming in Serang Regency. Analyze the impact of government policies on the welfare of paddy rice farmers in Serang Regency. This study using primary data was carried out in Serang Regency, the number of respondents in this study was 84 people consisting of: Pontang District 27 respondents, Tirtayasa district 29 respondents, and Tanara District 28 respondents. An analysis used is the Policy Analysis Matrix (PAM), and the Policy Analysis Matrix (PAM) is used to analyze the competitiveness of paddy rice farming businesses, analyze the impact of government policies on paddy rice farming, and analyze the impact of government policies on the welfare of paddy rice farmers in Serang Regency. The results showed that the competitiveness of paddy rice farming is financially (private) and economically (social), has competitiveness comparatively and competitively with PCR and DRC values of paddy rice farming, namely 0.16 and 0.17, respectively. The impact of government policies provides incentives to develop paddy rice farming in Serang Regency reflected by the NPCI value = 0.62; NPCO = 1.015; EPC = 1.03 and SRP = 0.03 which are all positive. This means that the government has effectively protected rice farming in Serang Regency.

Keywords: Rice Paddy; Farming; Competitiveness; Policy Analysis Matrix (PAM)

INTRODUCTION

Rice plants have an interesting opportunity to be cultivated because rice has a multipurpose function, both for food and processed. Rice can be used as a staple food and ground into rice flour for food products. Rice is known as a source of carbohydrates mainly in the endosperm, other parts of rice are commonly known as industrial raw materials, including: oil in the outer shell of rice (rice bran), husks as fuel or paper-making materials and fertilizers. so that this commodity has better marketing prospects and is a strategic commodity in agricultural development and the Indonesian economy. Rice business is inseparable from government interference in the form of policies, for example: subsidy policies, taxes, and changes in the rupiah exchange rate. The impact of government policies often causes differences in input and output prices from rice farming so that it will affect financial and economic calculations issued by farmers.

The importance of paddy rice in the national food system has been emphasized in the current government policy that has set strategic goals including: 1) Increasing the availability of domestic strategic food 2) Increasing the competitiveness of national agricultural commodities (Strategic Plan of the Ministry of Agriculture). The ability of producers to produce rice with fairly good quality and low production costs, so that the prices that occur in the international market can be produced and marketed by producers by obtaining sufficient profits and can maintain the continuation of their production activities. The main indicators that determine the magnitude of competitiveness are price and quality. The price of products is determined by the cost structure of production and by government policy. The phenomenon that occurs is that with the opening of the domestic market for suppliers from abroad, it will become a threat to Indonesian farmers with the flow of rice production from outside making

Indonesia a market for rice products from outside. So, it is necessary to be prepared by Indonesian farmers to improve the quality of their products in order to be able to compete for exports both comparatively and competitively.

Rice production in Serang Regency has increased from year to year, but in 2019 rice production has decreased significantly due to many disruptions that occurred in rice farming in that year so that it experienced a decline. Efforts made to achieve sustainable rice self-sufficiency in Serang Regency continue to show that conditions continue to improve. This condition is supported by the participation of the Ministry of Agriculture (Departement of Agriculture) and the Serang Regency Government in increasing rice production in Serang Regency, the Ministry of Agriculture through the Serang Regency Agriculture Office (Disperta) in the form of rice production facilities. Meanwhile, the Serang Regency government also took part by continuing to increase the Added Planting Area (LTT) of paddy rice, so it is expected that rice production will increase.

Improving the quality, quantity and added value of rice needs to be done appropriately in farming. This is since rice itself is the main commodity, although there are still problems faced by paddy rice farmers in Serang Regency, namely; rising prices of production facilities such as fertilizers and pesticides, price fluctuations. Several areas in Serang Regency are dominated by rice farming businesses in three districts, namely: Pontang District, Tirtayasa District, and Tanara District. The three sub-districts have mostly rice farmers' livelihoods as the main income because the large paddy fields and the condition of the land used are not suitable for planting other crops besides rice. Improvement of the cultivation system, support of agricultural institutions, technological innovation, facilities, and infrastructure, as well as price guarantees will be able to increase the competitiveness of rice production. The development of rice farming business has wide opportunities and prospects, due to the guarantee of the market, population, industrial growth (consumption needs increase). This opportunity can be seen from the environment in Serang Regency has many labor-intensive industries that act as consumers who need a lot of rice as a basic need for consumption

A commodity is said to have competitiveness when the commodity can be produced cost-efficiently in terms of the use of domestic resource costs. Based on the description above, it is necessary to conduct a study to find out the extent of the competitiveness of paddy rice farming business in terms of the financial and economic benefits of paddy rice farming and comparative advantages and competitive advantages, the impact of government policies on the competitiveness of paddy rice farming businesses, and the impact of government policies on the welfare of rice farmers in Serang Regency.

RESEARCH METHODS

Research Location and Time

This research was designed using a descriptive method with a quantitative approach. The descriptive method is a method of examining the status of a group of people, an object, a condition, a system of thought or a class of events in the present. The purpose of this descriptive research is to make a systematic, factual, and accurate description, picture or painting of the facts, properties and relationships between the phenomena investigated (Nazir, 2011). The descriptive method plays a role in encouraging readers' initial understanding of rice crops and plays a role in explaining the results of quantitative data analysis. The research was conducted in Serang Regency as one of the food barns in Banten Province, the research location was selected purposively with the consideration that the location is a rice crop production center in Serang Regency where rice crops are the leading commodity of Serang Regency. One of the reasons for the selection of three sub-districts, namely: Pontang, Tirtayasa, and Tanara Districts to be the center of rice crop production is because of the large expanse of agricultural land.

This research was conducted from February to June 2022.

The objectives of this study are; 1) Analyzing the competitiveness of paddy rice farming in Serang Regency. 2) Analyze the impact of government policies on the competitiveness of paddy rice farming in Serang Regency. 3) Analyze the impact of government policies on the level of welfare of paddy rice farmers in Serang Regency. In determining respondents, it was carried out intentionally (purposively) using a proportional allocation formula to 84 rice farmers.

Data Source Type

The main data was obtained from the cost structure of rice farming in the 2020 growing season. To estimate the Policy Analysis Matrix (PAM), we need a comprehensive set of data. The data collected from 84 farmers is private prices. To calculate social prices used different assumptions. Social income is represented by international paddy rice prices in agricultural commodity trade. Regarding the inputs traded; The price of seeds, fertilizers, and non-subsidized pesticides is used to represent social prices. Since domestic factors are *non-tradable* variables that do not have international prices as their opportunity costs, the social prices of domestic factors must be calculated by direct evaluation. In Serang District it can be assumed that there is no policy distortion or market failure to land and labor costs, so the private value of domestic factors can be considered a reflection of their true social prices.

Data Analysis

The existence of government intervention through the Production Improvement and Added Value Program in increasing production and income of farmers, how government intervention should be assessed, then the Policy Analysis Matrix (PAM) is used. The use of the PAM model with the consideration that with this model can answer the research objectives to be achieved, the Policy Analysis Matrix (PAM) was developed to analyze the economic impact of the program. The Policy Analysis Matrix (PAM) model can be used to analyze business profits both privately and socially, competitive advantage (financial efficiency) and comparative advantage (economic efficiency), as well as their impact on the commodity system on farming, processing, and marketing activities systematically. PAM analysis can be used in commodity systems with various regions, types of farming and technology. The PAM matrix consists of three lines, where the first line is a calculation with the private price (actual price or market price) that is, the price received by the farmer. The second line of calculation with social price (shadow price) is a price that describes the actual social value or economic value for both costs and results (Pearson, et al. 2005).

This study examines the Competitiveness of Rice Paddy Farming to Increase Farmers' Income in Serang Regency by applying the Policy Analysis Matrix (PAM) approach shown through financial and economic analysis, each of which represents private profitability and social profitability as well as indicators of government protection of paddy rice production in Serang Regency which are expressed by protection ratios such as Nominal Protection Coefficient on Output (NPCO), Nominal Protection Coefficient on Input (NPCI), *Effective Protection Coefficient* (EPC), and *Subsidy Ratio to Producers* (SRP), and to determine competitiveness through competitive advantages and comparative advantages to produce paddy rice described by the *Private Cost Ratio* (PCR) to measure competitive advantage and *Domestic Resources Cost Ratio* (DRC) to measure comparative advantage. If the farming business has a comparative and competitive advantage, then the farming business is competitive. The PAM model can be seen in Table 1.

Table 1. *Policy Analysis Matrix* Calculation

	Acceptance	Input costs <i>Tradable</i>	Cost factor <i>Domestic</i>	Advantage
Private	A	B	C	D
Social	E	F	G	H
Divergence	I	J	K	L

Source: (Pearson, et al. 2005).

Information:

1. Private Profitability (D) = $A - (B + C)$
2. Social Profitability (H) = $E - (F + G)$
3. Transfer *Output* (I) = $A - E$
4. Transfer *Input* (J) = $B - F$
5. Transfer Factor (K) = $C - G$
6. Net Transfer (L) = $D - H = I - (J + K)$
7. NPCO (*Nominal Protection Coefficient Output*) = A/E
8. NPCI (*Nominal Protection Coefficient Input*) = B/F
9. EPC (*Effective Protection Coefficient*) = $(A - B)/(E - F)$
10. SRP (*Subsidy Ratio to produce*) = L/E
11. PCR (*Private Cost Ratio*) = $C/(A - B)$
12. DCR (*Domestic Cost Ratio*) = $G/(E - F)$

The description of the indicators used in this PAM is as follows:

- a. Private *Profitability* (PP); $D = A - (B + C)$
Private profitability is an indicator of the competitiveness of the commodity system based on technology, input value, input costs and transfer of existing policies. If $D > 0$ then the commodity system gains profit at normal costs, which has the implication that the commodity is capable of expansion, except when resources are limited or there are alternative commodities that are more profitable.
- b. Social Profitability or Social *Profitability* (SP); $H = E - (F + G)$
Social profitability is an indicator of the *comparative advantage* of the commodity system in the condition that there is no divergence either due to government policies or market distortions. If $H > 0$, it means that the commodity system gains profit from normal costs in social prices and can be prioritized in development.
- c. *Protection Coefficient on Tradeable Input* (NPCI) is calculated from the comparison of tradeable private input cost notation and *tradeable* social input cost (B/F) notation. The indicator if $NPCI < 1$, means that the policy is protective of farming businesses, namely consumers of tradeable *inputs* in the form of subsidies to *tradeable inputs*. If $NPCI > 1$, the policy is not protective of farming or there is no subsidy policy against *tradeable inputs*.
- d. *Nominal Protection Coefficient on Output* (NPCO) is calculated from the comparison of private acceptance identity with social acceptance (A/E) in the PAM table. The indicator is that if $NPCO > 1$, the policy has been able to protect farming businesses or commodity producers. If $NPCO < 1$ policies have not been able to protect farmers or commodity producers.
- e. *Effective Protection Coefficient* (EPC) is calculated from the notation $(A - B)/(E - F)$ in the PAM table. The indicator is if $EPC > 1$, combined or overall policy has been able to protect the farming business. If $EPC < 1$, the combination or the whole policy has not been able to protect the farming business.
- f. *Subsidy Ratio to Producer* (SRP) is calculated from the comparison of identity divergence gains compared to social acceptance (L/E). $SRP < 0$, means that the applicable government policy causes farming businesses to incur production costs greater than the balance costs for production (*opportunity costs*). $SRP = 0$, meaning that the applicable government policy

- does not cause producers to incur production costs greater than the balance to produce.
- g. PCR (*Private Cost Ratio*) = $C/(A-B)$ PCR benchmarks are:
- 1) Commodities have competitiveness if $PCR < 1$, which means that the business is financially efficient in utilizing domestic resources so Serang Regency has a competitive advantage in producing paddy rice, meaning that the actual price of paddy rice farming business benefits farmers.
 - 2) Commodities do not have competitiveness if $PCR > 1$, which means that the business is not financially efficient in utilizing domestic resources so Serang Regency does not have a competitive advantage in producing paddy rice, meaning that the actual price of paddy rice farming is detrimental to farmers.
- h. DCR (*Domestic Cost Ratio*) = $G/(E-F)$ The DCR (comparative advantage) benchmarks are:
- 1) Commodities have a comparative advantage if $DCR < 1$, which means that businesses are economically efficient in utilizing domestic resources so Serang Regency has a comparative advantage in producing paddy rice so that demand fulfillment is better to produce itself domestically than imports or bring in from outside.
 - 2) Commodities do not have a comparative advantage if $DCR > 1$, which means that the business is not economically efficient in utilizing domestic resources so Serang Regency does not have a comparative advantage in producing paddy rice so that the fulfillment of domestic demand is better by bringing in from outside or imports.

RESULTS AND DISCUSSION

Serang Regency is one of the eight regencies or cities in Banten Province, located at the western end of the northern part of Java Island and is the main gateway connecting Sumatra Island and Java Island with a distance of ± 70 km from Jakarta City, Serang Regency has the advantage of *geostrategic position* as a buffer area for the State Capital. So that it has easy access to services and market resources.

From the enumeration results, it is known for Serang district that the average age of respondents is 41.94 percent with a range of 41-50 years. The majority education level is elementary school (SD) with a percentage of 59.52 percent. The largest arable land area with a percentage of 50 percent is 1 ha. Most of the respondent farmers have a considerable number of dependents in meeting the needs of their families. The percentage of respondent farmers based on family members who have the highest family dependents is 3 to 4 family dependents with a percentage of 54.76 percent and the total respondent farmers who have dependents with this number as many as 46 people.

Defining Inputs and Outputs

This study has components in the form of input and output components. Input components are all inputs used in farming activities until they produce outputs that are ready to be sold. These input components include: seeds, land, labor, organic fertilizers, inorganic fertilizers (urea fertilizers, NPK, and TSP), liquid pesticides, as well as other agricultural tools, such as: hoes, sickles, machetes, ticks, and sprayers. Meanwhile, the output produced is dry grain harvested. When conducting economic analysis research each input and output must be adjusted in advance to the social price level (shadow price), following the determination of the price of the input and output shadows:

Output Shadow Price

Pearson et. Al (2005) argues that the shadow price of *tradable output* used is the price that applies to the *border price*, both when the goods arrive from abroad (import), as well as goods to be sent abroad (export). So that the parity price of paddy rice at the farmer level was obtained

at IDR 4,745.41 per kg.

Input Shadow Pricing

The calculation of the shadow price of agricultural production facilities and tradable equipment is the same as the calculation of the price of the output shadow, that is, by using border prices, for export commodities, FOB prices are used, and for imported commodities, CIF prices are used. Meanwhile, the price of shadow production facilities and infrastructure and *non-tradable* equipment is used by domestic prices after issuing several domestic factors. The shadow price in the study consists of:

1) Fertilizer Shadow Price

Estimation of fertilizer shadow prices using international prices. It is known that the shadow price of Urea fertilizer is IDR 3,993.56 per kg, NPK Phonska fertilizer is IDR 4,039.60 per kg, and SP-36 fertilizer is IDR 8,611,899 per kg.

2) Organic Fertilizer Shadow Price

The shadow price of organic fertilizer in this study is based on market prices. The shadow price of organic fertilizer at the study site is the same as the average price of the actual price at the farmer level, which is IDR 800 per kg.

3) Seed Shadow Price

The price of seed shadow is the private price, so the price of seed shadow at the study site is the same as the actual average price at the farmer level, which is IDR 12,166.67 per kg.

4) Pesticide Shadow Price

In this study, the determination of the shadow price of pesticides is based on private prices or actual prices at the farmer level. It is based on the trade in pesticides that have been handed over to the market or the absence of government intervention in which case subsidies for pesticides have been revoked. The pesticides used by farmers are liquid pesticides, so the shadow price of pesticides is obtained at IDR 94,761.9 per liter.

Financial and Economic Analysis and Impact of Government Policy Rice Policy Matrix Analysis (PAM)

Competitiveness of Rice Paddy Farming Business

From Input-Output Tradable Goods and *Non-Tradable Goods* it can be compiled Policy Analysis Matrix. To find out the competitiveness and policy of the government towards rice farming in Serang Regency can be seen in Table 2 below:

Table 2. Policy Analysis Matrix (PAM) on paddy rice farming in Serang Regency, Banten Province

	Acceptance	Input Tradable	Input Non-Tradable	Advantage
Private	38.133.537,07	1.371.460,18	5.893.170,67	30.868.906,22
Social	37.935.044,81	2.226.699,82	6.008.956,41	29.699.388,58
Divergence	198.492,26	-855.239,64	-115.785,74	1.169.517,64

Source: Results of Private Budget and Social Budget Calculations, processed (2021)

Based on Table 2 above, the results of the Policy Analysis Matrix (PAM) show that the value of financial benefits is IDR 30,868,906.22 /ha and social benefits are IDR 29,699,388.58 per ha. This is seen from the PCR (*Public Costratio*) value or Private Cost Ratio of 0.16 meaning that rice commodities have a competitive advantage, so to produce a unit of production at a financial/private price, 0.16 financial domestic input costs are needed. The DRCR (*Domestic Resources Cost Ratio*) value is 0.17 meaning that paddy rice farming has a comparative advantage, meaning that to produce a unit of production at a social price requires only 0.17 domestic resource costs at social prices. The smaller the value of the two magnitudes

the higher the competitiveness. Rice commodities are also able to expand both in financial and social prices (without market distortions/government interference).

Impact of Government Policy

A government policy in an economic activity will have a positive or negative impact on the actors of the system. The impact of existing policies can also reduce or increase the production and productivity of these economic activities. By using several indicators from the PAM analysis, you can find out the magnitude of the impact of government policies on paddy farming in Serang Regency, as can be seen in Table 3 below:

Tabel 3. Indicators of the Impact of Government Policies on Rice Paddy Farming through the Horticultural Production and Added Value Increase Program in Serang Regency in 2020

Indicators	Unit of Value	
Impact of Output Policy		
Transfer Output (OT)	IDR/ha	198.492,26
Nominal Output Protection Coefficient (NPCO)		1,01
Transfer Input (IT)		-855.239,64
Nominal Input Protection Coefficient (NPCI)	IDR/ha	0,62
Transfer Factor (FT)		-115.785,74
Impact of Input-Output Policy		
Net Transfer (NT)	IDR/ha	1.169.517,64
Transfer Factor (FT)		-115.785,74
Efficiency Gains (PC)		1.04
Effective Protection Coefficient (EPC)		1.03
Producer Subsidy Ratio (SRP)		0.03

Source: Data processed (2021)

Table 3. presents indicators of the impact of government policies in the form of the ratio of government protection to rice farming in Serang Regency. The results of the analysis show that paddy rice production in Serang Regency has been protected by the government which is indicated by a nominal value of *Protection Coefficient on Output* (NPCO) of more than 1. Based on the output policy analysis, an Output Transfer (OT) value of IDR 198,492.26 was obtained, the resulting OT value was positive ($OT > 0$) indicating that there was a transfer to the paddy rice farming business of IDR 198,492.26 due to differences in social prices and private prices. This causes the actual income earned to be greater than the social income, it can be interpreted that the actual price of paddy rice is higher than the social price received, resulting in a decrease in consumer surplus (the benefits received when the price of rice is lower than the highest price that consumers are willing to pay decrease) and the surplus of paddy rice farming business increases (the profit received by paddy rice farmers increased). This is supported by another parameter, namely *the Nominal Protection Coefficient on Tradable Output* (NPCO) which obtained a value of 1.01. The value of NPCO more than one ($NPCO > 1$), can be interpreted to mean that the government's policy towards output causes the actual price to be greater than the social price. This shows that the government's policy through fertilizer subsidies has been able to protect paddy rice farming in Serang Regency, Banten Province. 2. Input Transfer Value (IT) is the difference between *tradable* input costs and social input costs. Based on the results of the analysis, a negative IT value of IDR -855,239.64, ($IT < 0$) was obtained, so there is a government subsidy on *tradable inputs*, so that farmers do not pay the full social costs that should be paid. Transfer Factor (TF) is the difference between the cost of domestic inputs calculated at financial (private) prices and the cost of domestic inputs calculated based on social prices (shadow prices). Based on the calculation of PAM, the TF value of paddy rice farming is IDR -115,785.74. The obtained TF value is negative ($TF < 0$), so

it can be concluded that there is no transfer from farmers of *non-tradable input* producers. The results of the analysis showed that the NPCI value was 0.62. This value means that there is a policy of protection for input consumers in the form of fertilizer subsidies which causes the financial price of inputs to be lower than the price of the shadow. So that paddy rice farmers in Serang Regency who use subsidized fertilizers receive a price that is 62 percent cheaper than the price that should be in the condition that there is no policy. 3. based on the results of the NT value analysis of IDR 1,169,517.64 per hectare. This value is of positive value, which means that there is an intensive policy and net transfers received of IDR. 1,169,517.64. Based on research, it shows that there is an additional surplus of paddy rice farming producers in Serang Regency. The *Protection Coefficient* (PC) value shows the effect and impact of the combined policy on output, tradable input, and *non-tradable input*. The pc value obtained was 1.04. The value of the PC is greater than one, this means that the net transfer that flows to the rice paddy farming business in Serang Regency causes the private profit of the farming business to be 1.04 times greater than it should be if there is no transfer *policy*. Based on the results of the analysis, the EPC value showed a positive value ($EPC > 1$) of 1.03. This shows that the government's policy to protect farmers is running effectively in providing additional income for paddy rice farming in Serang Regency, Banten Province. Based on the results of the analysis, an SRP value of 0.03 was obtained. The positive SRP value ($SRP > 0$), this shows that the existence of applicable government policies has a beneficial impact on paddy rice farming in Serang Regency, because it incurs production costs lower than the balance cost (*Opportunity Cost*).

CONCLUSION AND SUGGESTION

Paddy rice farming in Serang Regency, Banten Province has competitiveness in a competitive and comparative manner. With a PCR and DRCR value of less than one, namely a PCR value of 0.16 and a DRCR value of 0.17. Based on indicators of the impact of government policies related to output (NPCO) and related to inputs (NPCI) has been able to protect farmers and provide benefits to farmers. This means that the impact of existing government policies can support the competitiveness of paddy rice farming in Serang Regency. Based on indicators of the impact of government policies related to input-output has more than one value. This means that the impact of existing government policies can improve the welfare of paddy rice farmers in Serang Regency.

Based on the results of the discussion and conclusion of the research, the recommended policy recommendations to achieve rice paddy self-sufficiency and increase farmers' income in paddy rice farming in Serang Regency, some recommendations are as follows, efforts to increase paddy rice farming in Serang Regency, Banten Province, need to increase the amount of tsp fertilizer availability, village irrigation network channels (JIDES) are propagated, and the plot of organic fertilizer use is as recommended. The government needs to make policies to protect paddy rice farmers by providing facilities for facilitating the acquisition of Agricultural People's Business Credit (KUR) and maintaining the stability of input and output prices. The government needs to pay attention to changes in variables that have an impact on increasing or decreasing the competitiveness of farming businesses such as changes in international prices of commodities, changes in international prices of fertilizers and changes in the exchange rate of Dollar America (USA).

BIBLIOGRAPHY

Abdullah, Piter. 2002. Regional Competitiveness: Its Concept and Measurement in Indonesia.

- BPFE: Yogyakarta.
- Abdulrachman. 2012. Rice Crop Cultivation. PT. AAK: Yogyakarta.
- Arifin, Bustanul. 2005. Agricultural Development (Policy Paradigms and Revitalization Strategies). Gramedia Widiasarana Indonesia (Grasindo): Jakarta.
- Aldila, H. F., Anna Fariyanti, and Netti Tinaprilla. 2015. " *Competitiveness of Paddy Rice in the Indonesian Production Center Area*". Journal of Management & Agribusiness, vol 14 No 1.
- Anapu, H., E.Ruaw, C.Talumingan, A.Lobo and L.Pangemanan. 2005. Impact of Rice Import Tariff Policy in Minahasa Regency, North Sulawesi. In the Application of Policy Analysis Matrix on Agriculture in Indonesia. Indonesian Torch Foundation, Jakarta.
- Arafah. 2010. Management and Utilization of Paddy Rice. Earth Script: Bogor. Arikunto, Suharsimi. 2006. Research Procedures (A Practical Approach). Rineka Cipta: Jakarta.
- Aprizal. 2013. "Analysis of the Competitiveness of Palm Oil Farming in Mukomuko Regency". Thesis. Bengkulu: Faculty of Agriculture, Bengkulu University.
- Central Bureau of Statistics. Various years. Statistics Indonesia. Jakarta: BPS.
- Central Bureau of Statistics. Various years. Serang County In Numbers. Attack: Central Bureau of Statistics.
- Central Bureau of Statistics. Various years. Banten in Numbers. Attack: BPS. Balibangan. 2019. www.litbang.pertanian.go.id.
- Basri, Faisal and Haris Munandar. 2010. Fundamentals of International Economics: Introduction and Application of Quantitative Methods. Jakarta: Kencana Prenada Group.
- Daniel, Moehar. 2002. Introduction to Economics Pertanian. PT. Bumi Aksara: Jakarta.
- Darmayanti, Ni Wayan Surya; Ratna Winandi and Netti Tinaprilla. 2018. " *Analysis of Corn Competitiveness in Production Centers in Indonesia*". Agribusiness Forum Volume 8, No. 2: 137-154.
- Agriculture Office of Serang District. 2021. Planting Area Report (LTT). Agriculture Office of Serang Regency.
- Gittinger, J.P. 1986. Economic Analysis of Agricultural Projects. Translated by Sutomo and Mangiri. Edition II. University of Indonesia Press, Jakarta.
- Grant, Robert M. 1991. "Porters ' *Competitive Advantages of Nation*': An Assessment". Strategic Management Journal, Vol 12, 535-548. USA: Managent Departement, California Polytechnic State Univetsity.
- Hadi, H. (2004). International Economics. Jakarta: Ghalia Indonesia.
- Judge, A. 2014. Competitiveness of Paddy Rice Farming Business with Integrated Crop Management System (PTT) in Lampung Province. Thesis: Agribusiness Postgraduate Program, Faculty of Agriculture, University of Lampung.
- Halwani, Hendra. (2005) International Economics and Economic Globalization. Bogor: Ghalia Indonesia.
- Haryanto, Lorenta In; Masyhuri and Irham. (2018). "Policy Analysis in Measuring the Competitiveness of Corn Farming on Marginal Lands". Agroeconomics Vol. 29/Issue. 2.
- Istiqomah, A., Nindyantoro and Novindra. 2019. " *Analysis of Land Rent and Competitiveness of Organic Rice Agriculture in Tasikmalaya Regency*". Journal of Agriculture, Resources and Environmental Economics (JAREE 2).
- Jakiyah, U., Baga, L. M. and Tinnaprilla, N., 2016. Impact of Government Policy on Organic Rice Farming in West Java Province. Trade R&D Scientific Bulletin, 10 (1), pp. 129-146.
- Kanaka, S. and Chinnadurai M. 2015. " *Rice Cultivation Policy Analysis Matrix in India*". European Journal of Basic and Applied Sciences". Vol 2 No. 1: 33- 45.
- Said, A., Osmet and Devi Analia. 2020. " *Competitiveness Analysis of Soybean Commodities on Dry Land in Tebo Regency*". Agri Journal of Science, Vol 4, No 01.

- Ministry of Agriculture of the Republic of Indonesia. 2020. Strategic plan of the Ministry of Agriculture 2020-2024. Jakarta: Ministry of Agriculture of the Republic of Indonesia.
- Ministry of Agriculture. 2021. Agricultural statistics 2020. Agricultural Data and Information Center. Jakarta : Ministry of Agriculture of the Republic of Indonesia.
- Lestari, Sri P., Dyah Aring Hepiana Lestari, and Zainal Abidin. 2020. " *Competitiveness Analysis of Corn Farming in South Lampung Regency*". Journal of Food System and Agribusiness Vol. 4(2): 66-75.
- Listiani, R., Agus Setiyadi, and Siswanto Imam Santoso. 2019. Analysis of Rice Farming Income in Mlonggo District, Jepara Regency. Journal of Agrisocionomic 3 (1): 50-58.
- Manurung, S.O, and M. Ismunandji, 1998. Morphology and Physiology of Rice. Center for Research and Development of Food Crops. Bogor.
- Marzuki. 2005. Research Methodology Guide to Business and Social Research. Second Edition. Ekosiana: Yogyakarta.
- Miftachuddin A. 2014. "Analysis of Efficiency of Rice Farming Production Factors in Undaan District, Kudus Regency". *Economic development Analysis Journal*, ISSN 2252-6765, 3(1).
- Murtiningrum, Fery. 2013. "Competitiveness Analysis of Robusta Coffee Farming (Coffee Canephora) in Rejang Lebong Regency". Thesis. Bengkulu: Faculty of Agriculture, Bengkulu University.
- Nazir, M. (2011). Research Methods Third Edition. Bogor: Ghalia Indonesia.
- Novianti, T. 2003. Analysis of the Impact of Government Policies on the Competitiveness of Vegetable Superior Commodities. Thesis. Graduate Program. Bogor Agricultural Institute. Bogor.
- Okoruwa, Agatha Osivweneta Ogbe, Victor Olusegun and Olaide Jelili Saka. 2011. "Ecological Competitiveness of Rice and Maize Production in Nigeria". *Tropical and Subtropical Agroecosystems*, 14: 493- 500.
- Pearson, S., Gotsch, C. & Bahri, S., 2005. Application of Policy Analysis Matrix in Indonesian Agriculture. Jakarta: Indonesian Torch Foundation.
- Pitojo, S. 2000. Cultivating Tabelan Rice Fields. Self-Help Spreader: Jakarta.
- Porter, Michael E. 1990. The Competitive Advantage of Nations. The Free Press: New York.
- Pranoto SY. 2011. Impact of Government Policy on the Profit and Competitiveness of White Pepper (Muntok White Paper) in Bangka Belitung Province [thesis]. Bogor : Bogor Agricultural Institute.
- Purwono, L and Purnawati. 2007. Cultivation of Food Crops. Agromedia Publisher: Jakarta.
- Pusdatin Kementan. 2020. Agricultural Commodities Rice Food Crop Subsector. [Http://www.pusdatin.setjen.pertanian.go.id](http://www.pusdatin.setjen.pertanian.go.id) Jakarta.
- Agricultural Data Centers and Information Systems. 2021. Agricultural Macro Statistics 2020. Ministry of Agriculture. Jakarta.
- Rahim, Abdul and Hastuti. DRW. 2007. Agricultural Economics. Self-Help Spreader: Jakarta.
- Riyadi, D.M.M. 2002. Food Security issues and agendas. Seminar Proceedings: Population Pressure, Environmental Degradation and Food Security. Center for Development Studies and Food Security Institutional Coordination Projects. Bogor.
- Salvatore, Dominick. 1997. International Economics (Translation: H. Munandar). Jakarta: Erlangga.
- Septarisco, Yoanes Krisostomos Nargy Justra and Mary Prihtanti. 2019. " *Competitiveness of Rice Farming in Kecamatan Susukan, Semarang Regency using the Policy Analysis Matrix (PAM) Method*". *Agrineca*, Vol 19 NO. 1.
- Simajuntak, Sahat Barita. 1992. "Aanalysis of Competitiveness and the Impact of Government Policy on My Competitiveness of Indonesian Palm Oil Companies". Dissertation. Bogor:

- Postgraduate Program, Bogor Agricultural University.
- Soekartawi. 2002. Farm Business Analysis, UI- Press: Jakarta.
- Soekartawi. 2002. Basic Principles of Marketing Management of Agricultural Products Theory and Application, Raja Grafindo Persada: Jakarta.
- Soetrino. 2007. Improvement Strategies The Competitiveness of Robusta Coffee With Tree Five Competitiveness Model. Thesis. Postgraduate Agribusiness Study Program, University of Jember. Jember.
- Sudarsono.1995. Introduction to Microeconomics.Publisher of LP3ES Revised Edition: Jakarta.
- Sudirman, S. P. and A. Iwan S., 2003. Mina Rice. Self-Help Spreader: Jakarta.
- Sugiono.2012. Qualitative Quantitative Research Methods and R & D.Alfabeta: Bandung.
- Sukmaya, S. G., Rachmina, D., and Saptana, S. 2017. Competitiveness Analysis and Impact of Government Policies on Soybean Commodities Vs Soybean Exploitation in Lamongan Regency, East Java. Agribusiness Forum, 6(1), 21– 52.
[https://doi.org/10.29244/fagb.6.1.21-52.](https://doi.org/10.29244/fagb.6.1.21-52)
- Sulanjari, Kuswarini.1994. Comparative Advantages of Sugarcane and Rice Farming in Paddy Fields using the PAM method (Case in Sudogiri Village, Pasuruan, East Java) Thesis. Postgraduate Program in Universitas Brawijaya. Hapless.
- Suratih. 2006. Agricultural Science. Self-Help Spreader: Jakarta.
- Suyatno, A. Masyhuri. Irham. Mulyo, J H. 2014. Comparative Advantages of Rice Farming in Various Agroecosystem Patterns in Mempawah Regency. Journal of Social Economic Agriculture, Volume 3, Number 2.
- Sharbiah, Sarty; Ayub M. Padangaran and Darwis Budiyo. 2018. " *Analysis of the Comparative and Competitive Advantages of Sago Processing Business in Konawe District*". Journal of Socio-Agribusiness (JSA) e-ISSN: 2502-3292 Volume 2 Number 1: 32-42.
- Tambunan, Sincere. 2003. Development of Indonesia's Agricultural Sector. Ghalia Indonesia. Jakarta.
- Tarigan, R. 2005. Regional Economy. PT Bumi Aksara: Jakarta.
- Viktor S. (2015). "*Analysis of Rice Competitiveness in Banten Province*". Proceedings of the National Semina of Site-Specific Agroinnovation for Food Security in the Era of the ASEAN Economic Community.
- Widyatami, L. E., and Wiguna, A. A. 2019. Competitiveness and Impact of Government Policies on SRI Rice Farming in Rogojampi District, Banyuwangi Regency. AGRARIS, 5(2), 100–111.
- Yadjid, M. (2011). Yadjid, M. (2011). Analysis of the Competitiveness of Sugarcane Farming and Structural Adjustments to the Sugar Industry in West Java. Thesis. Graduate School of Bogor Agricultural University.
- Yanti, M., Tarumun, S., and Elinur. 2019. Competitive Advantages and Advantages of Rice Farming in Dumai City. Journal of Agribusiness, 21, 142–149.
- Yanti R. 2005. Yanti R. 2005. Application of Organic Agriculture Technology: Application of Organic Agriculture by Rice Paddy Farmers in Sukorejo Village, Sragen Regency, Central Java. Thesis. University of Indonesia.