


## Why Indonesia's garlic self-sufficiency program failed?

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### ABSTRACT

This research provides insights into the ongoing failure of Indonesia's garlic self-sufficiency program. Despite the implementation of various initiatives, the program has consistently failed to achieve its objectives. The study was conducted in East Lombok Regency, one of the main centers for garlic development in Indonesia. Using the Exit, Voice, Loyalty, and Neglect (EVLN) model, the research uncovers the root causes of the program's failure from the farmers' perspective. A total of 45 farmers participated as respondents, including importer partner farmers, government assistance recipients, and independent farmers. The findings reveal that most farmers are dissatisfied with the program's implementation, causing them to take passive and destructive responses. This dissatisfaction is primarily due to the inadequate provision of production facilities both in terms of quantity, quality, and delivery timing. Furthermore, ineffective import quota arrangements in terms of quantity and timing have suppressed the selling price of garlic for farmers at harvest time, while production costs are relatively high, especially for quality seeds and fertilizers. To address these issues, the program must be improved by ensuring timely, sufficient, and high-quality support for production facilities. Moreover, more effective import quota management is essential to stabilize prices and ensure fair profits for garlic farmers.

**Contribution/Originality:** The contribution of this study is that garlic farmers' dissatisfaction with the government's self-sufficiency program has led to passive and destructive attitudes, such as reducing planting areas, minimizing crop maintenance, and some farmers even stopping garlic cultivation. These farmers' behaviors result in decreased production and a failure to achieve self-sufficiency.

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## 1. INTRODUCTION

Garlic is a strategically important food commodity in Indonesian cuisine and plays a crucial role in the country's agricultural economy (Kiloes et al., 2024). Beyond its use as a fresh cooking ingredient, garlic possesses a wide range of scientifically proven health benefits. Numerous studies have demonstrated that garlic exhibits antimicrobial, antiviral, antifungal, antiparasitic, antioxidant, anti-inflammatory, cardioprotective, hepatoprotective, neuroprotective, anticancer, antidiabetic, and immunomodulatory properties (Bayan et al., 2014; Koca et al., 2015; Kopec et al., 2013;

Melguizo-Rodríguez et al., 2022; Shang et al., 2019). This makes garlic a potential ingredient for the development of the pharmaceutical, supplement, and functional food industries in Indonesia. Additionally, garlic also has potential in the aquaculture industry (Bayan et al., 2014; Melguizo-Rodríguez et al., 2022; Zhao et al., 2021). Research shows that garlic can be used as a natural alternative to antibiotics in fish farming, helping to increase growth and fight disease in various aquaculture species (Mukherjee et al., 2020; Valenzuela-Gutiérrez et al., 2021). This can support the development of a sustainable fisheries industry in Indonesia (Kiloes et al., 2024). Thus, garlic is not only important as a food commodity but also has significant economic potential in the health, pharmaceutical, and aquaculture industries. The development and optimal utilization of garlic's potential can provide economic added value for Indonesia, in addition to its role in suppressing the inflation rate. The high demand for garlic in Indonesia, both for household consumption and industrial raw materials, has made this commodity an important element in the national economy (Mar'atusholikha et al., 2019). However, despite these significant benefits, almost all domestic garlic consumption in Indonesia is met through imports.

As the world's largest importer of garlic, where more than 95% of domestic consumption is met through imports, Indonesia is in a very risky situation. This is because the production and trade of garlic worldwide are highly dependent on one country. China controls around 86% of the world's garlic production and trade, where almost all of Indonesia's consumption needs are dependent (Table 1).

**Table 1.** Indonesia's import of garlic during 2017-2023.

Year	Total import (Tonnes)	Import from China	
		(Tonnes)	(%)
2017	549,767	541,235	98.4
2018	582,995	580,846	99.6
2019 <sup>a)</sup>	513,504	513,504	100.0
2020	587,748	587,748	100.0
2021	602,977	602,977	100.0
2022	566,176	566,176	100.0
2023	564,114	564,114	100.0

Note: <sup>a)</sup> imputed value.

Source: Food and Agriculture Organization [FAO] (2025).

Thus, if there is a production failure in China or other reasons that result in a decrease in global supply, it will impact the price stability in Indonesia's domestic market because garlic is one of the strategic food commodities that contribute to inflation (Zaini et al., 2024). Based on Table 1, it is evident that Indonesia has long lacked self-sufficiency in the garlic commodity. To address this issue, the Indonesian government has initiated a garlic development program aimed at achieving self-sufficiency through increased production and expanded planting areas (Mar'atusholikha et al., 2019). This ambitious program, outlined in the Ministry of Agriculture Regulation No. 46/2019, requires the coordinated efforts of multiple stakeholders, each playing a crucial role in achieving the desired outcome. These stakeholders include the central government, provincial governments, district governments, garlic importing businesses, and local farmers. However, the desired self-sufficiency in 2019 was not realized, even though the target time for achievement has been shifted to 2021 and finally 2024. Therefore, this paper provides insights into the failure of Indonesia's garlic self-sufficiency program using a case study of the implementation of the self-sufficiency program in East Lombok Regency, West Nusa Tenggara Province, which is one of the main garlic production centers in Indonesia. To date, no scientific studies have been found that uncover the causes behind the failure of the garlic self-sufficiency program, except for some magazine or newspaper reports (Tempo, 2020). Additionally, this research applies the Exit, Voice, Loyalty, and Neglect (EVLN) model to agricultural policies, which have not been widely used.

## 2. MATERIAL AND METHOD

### 2.1. Exit, Voice, and Loyalty (EVL) Model

The EVL model was first introduced by Hirschman (1970) to understand how organizations respond to declining performance, and continues to be a relevant framework for analyzing the individual and collective responses to various challenges in social and economic systems. When individuals or entities perceive a deterioration in their work environment or organizational effectiveness, they typically react in ways intended to maximize their benefits or mitigate potential losses (Dowding et al., 2000; Udechukwu et al., 2007; Withey et al., 1989). These reactions can be categorized into three distinct strategies: exit, voice, and loyalty (Lassalle, 2020).

The framework of Exit, Voice, and Loyalty provides a lens through which to understand the reactions of individuals or communities when confronted with deteriorating performance in economic, social, or political systems. Individuals, firms, or organizations typically respond to worsening work conditions or environments in ways that maximize their expected benefits from their activities (Managanta et al., 2022). This model, initially conceived to explain employee responses to adverse working conditions within companies, has found broader applicability across diverse contexts (Dowding et al., 2000). The Exit, Voice, and Loyalty model, as a seminal framework, posits that individuals encountering decline in an organization, system, or relationship have three primary options: exit, voice, or loyalty. Exit, as a response, embodies the act of withdrawing or disengaging from a deteriorating situation, which could manifest as an employee leaving a company, a customer switching to a competitor, or a citizen emigrating from a country (Gehlbach, 2006). Voice, in contrast, represents an active and constructive response, where individuals express their concerns, suggestions, or grievances in an attempt to improve the situation from within (Managanta et al., 2022).

This can take the form of employees speaking up to management, customers providing feedback to a company, or citizens engaging in political activism to influence policy (Botha et al., 2023). Loyalty, the third option, signifies a passive and enduring commitment to the organization or system, even in the face of decline (Huang et al., 2005). In subsequent iterations, the EVL framework has been expanded to include neglect as an additional response when confronting diminishing performance (Naus et al., 2007). Individuals who exhibit neglect demonstrate a decrease in engagement and effort, frequently resulting in further deterioration of organizational outcomes (Wahlberg et al., 2017). Thus, the EVL model becomes the EVLN model. The EVLN model can also be applied to the agricultural sector, where farmers may exhibit dissatisfaction with government policies or programs. Farmers who are dissatisfied may choose to exit such programs or redirect their resources to alternative enterprises, such as diversifying their crop production or seeking new marketing channels (BIRTHAL et al., 2020). Conversely, loyal farmers may continue to participate in government programs despite shortcomings, perhaps due to habit, a lack of alternative options, or a belief in the potential for future improvement (Eidt et al., 2020). Some farmers may also voice their concerns to policymakers or engage in collective action to advocate for changes to existing programs and policies that would better address their needs and challenges. Some indifferent farmers may neglect their crops by minimally caring for them to reduce costs (Diao et al., 2023). The farmers' responses can then be characterized into two-dimensional categories, namely active/passive and constructive/destructive, as shown in the following Table 2 (Robbins et al., 2018).

**Table 2.** Responses to dissatisfaction into two dimensional categories.

Dimensional categories	Constructive	Destructive
Active	Voice	Exit
Passive	Loyalty	Neglect

Although the application of the *EVLN* model in the context of socioeconomic studies of farmers is relatively rare, this model offers a comprehensive framework to understand farmers' responses to various challenges and changes in the agricultural system (Martin et al., 2018). The EVLN model, originally developed in organizational behavior studies, provides a useful lens to analyze how farmers react to dissatisfaction or changes in their socioeconomic conditions (Rahmawati et al., 2024). Therefore, further exploration is needed on how the EVLN model can be adapted and applied in the agricultural context to provide deeper insights into farmers' behavior in facing changes in socioeconomic conditions. For example, when farmers face a decline in commodity prices, an increase in production costs, or changes in agricultural policies, they may respond in various ways reflected in the four EVLN dimensions (Ashari et al., 2020). In the context of farmers' socioeconomic conditions, a deep understanding of the factors influencing farmers' response choices is crucial for designing effective policies and programs. Factors such as farmer characteristics, farm conditions, institutional factors, and attributes of agricultural technology can influence farmers' decisions to adopt exit, voice, loyalty, or neglect strategies (Suprehatin, 2021). For example, farmers with limited resources and low access to information may be more likely to choose a neglect strategy because they feel they lack the capacity to make changes (Wahyuni et al., 2021). Meanwhile, farmers with strong social capital and extensive networks may be more active in voicing their interests through a voice strategy (Managanta et al., 2022; Suharti et al., 2023). It is also important to consider how technological innovation can influence farmers' responses within the EVLN framework (Swastika et al., 2020). In this study, the four responses or attitudes of farmers towards the garlic development policy are defined as:

Exit - the farmer's response to stop or plan not to plant garlic again in the next season.

Voice - the active response of farmers by conveying opinions or constructive protests to stakeholders about the difficulties experienced by garlic farmers.

Loyalty - the farmer's response by continuing to plant and maintain garlic plants without any action to protest the situation, but optimistic that in the future the conditions will improve on their own.

Neglect - the apathetic response of farmers to the situation they face, such as reducing the planting area of garlic or performing minimal plant care.

## 2.2. Sample

The respondents in this study were farmers who had previously or were currently growing garlic in the 2021-2023 planting season, either independently or in partnership with importers. The number of respondents was set at a quota of 45 people, comprising importer-partner farmers, government assistance recipients, and independent farmers. The importer-partner farmer respondents were selected using data from farmers surveyed in the 2022 planting season, enabling the identification of changes in responses by comparing with previous data. Government assistance recipient farmer respondents were determined through simple random sampling from the group of recipient farmers, while independent or self-supporting farmers were selected by accidental sampling due to the unavailability of a suitable sampling frame.

## 2.3. Data Analysis

The collected data were analyzed using thematic analysis for qualitative data combined with cross-tabulation between the level of sustainability of the garlic development program in the rows and farmers' responses to program implementation in the columns. This was performed using software tools SPSS (Statistical Package for the Social Sciences) to assess the significance of the findings and to support the conclusions drawn from the data. Analysis of the association between variables was done by examining the statistical value of *Fisher's exact test*. Fisher's exact test is particularly useful for small sample sizes or when expected cell frequencies are low, providing an exact calculation of the probability of obtaining the observed results.

### 3. RESULT AND DISCUSSION

#### 3.1. Respondent Characteristics

On average, the respondent farmers were 41 years old, with the youngest garlic farmer being 22 years old and the oldest being 70 years old. They had approximately 22 years of farming experience, with the shortest experience being 2 years and the longest being 50 years. However, in terms of experience in garlic cultivation, farmers had generally been involved for about 20 years, ranging from 1 to 50 years. More details on the characteristics of the respondents are presented in Table 3. The land ownership among the farmers is unequal, with the smallest plot being 4 are and the largest 8 hectares. On average, the farmers control approximately 0.94 hectares of land. Within their landholdings, around 36 percent is dedicated to garlic cultivation, which yields a productivity of 11.4 tons per hectare. The majority of the land is utilized for growing other horticultural crops, such as chili peppers, tomatoes, cabbages, shallots, spring onions, eggplants, green beans, carrots, potatoes, and strawberries. This diversification reflects the farmers' familiarity with mitigating farming risks. The selling price of garlic received by the farmers fluctuates significantly, ranging from IDR 4,000 to IDR 16,000 per kilogram of fresh bulbs. Furthermore, most garlic farmers benefit from government or importer-provided production inputs as part of the mandatory 5 percent planting program for the garlic development initiative aimed at achieving self-sufficiency. This assistance encompasses the provision of mulch, seeds, fertilizers, and pesticides.

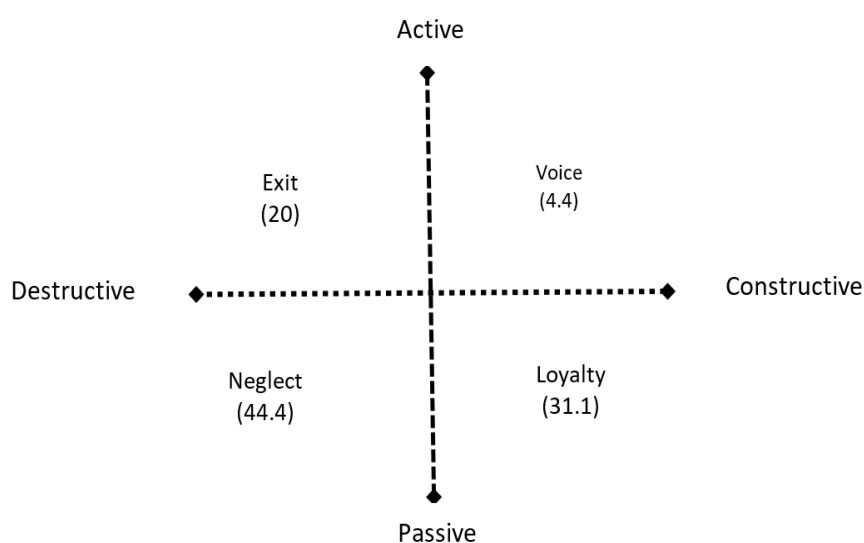
**Table 3.** Characteristics of farmers and garlic farming.

Characteristics	N	Minimum	Maximum	Mean
Age (Year)	45	22	70	41.02
Farming experience (Year)	45	2	50	22.11
Experience in garlic farming (Year)	45	1	50	19.78
Land size (Are)	45	4	800	94.11
Land used for garlic farming (Are)	45	1	300	34.42
Production (kg)	45	200	15,000	2,646.67
Price (IDR/kg)	45	4,000	16,000	9,288.89
Valid N (Listwise)	45			

#### 3.2. Farmers' Response to the Garlic Development Program

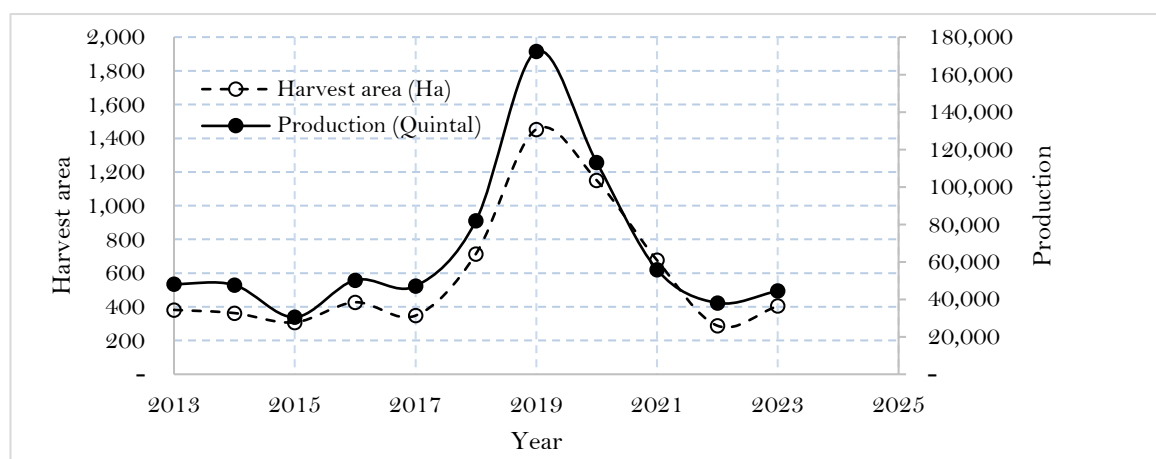
In this section, farmers were asked whether they were satisfied with the garlic development program they were participating in. Based on the responses obtained, it was found that only a small proportion of the farmers, amounting to 4%, expressed satisfaction with the ongoing garlic development program in which they were involved. In contrast, the majority (96%) conveyed a sense of dissatisfaction. The primary source of this dissatisfaction stemmed from the low selling prices received by farmers during the harvest period, while the production costs incurred remained relatively high, especially for seeds and fertilizers (Danasari et al., 2023). The dissatisfaction was also related to the production inputs assistance due to the inaccuracy in quantity and quality, especially for seed. This unfavorable situation was further exacerbated by delays in the provision of seed assistance by the government or partner importers, which compelled farmers to undertake planting activities during the rainy season.

This, in turn, led to the increased susceptibility of their crops to pest and disease infestations. Additionally, conducting planting operations during the rainy season resulted in a rise in labor costs at every stage of the planting and maintenance processes (Zaini et al., 2021). Finally, the government's policy of frequently and inconsistently opening the import tap before the harvest or allowing for increased import quotas contributed to a collapse in the selling price of the garlic produced by the farmers (Tempo, 2023). In response to these unsatisfactory conditions, the farmers exhibited varied responses, but the majority adopted a neglect attitude (Figure 1).



**Figure 1.** Quadrant of farmer responses in the constructive/Destructive and active/passive dimensions.  
**Note:** The numbers in parentheses represent the percentage of respondents.

According to the response dimensions, as outlined by Farrell & Rusbult (1985), around 65 percent of farmers exhibited a destructive attitude (exit and neglect), while only 35 percent demonstrated a constructive approach (voice and loyalty) towards the challenges they faced in garlic farming. Many farmers who have adopted a destructive attitude towards the program have led to a decrease in the planting area and production of garlic, as a result of farmers who no longer grow garlic (exit) and those who have reduced their planting area or are performing minimal plant care (neglect). The high proportion of farmers with a destructive mindset was primarily due to the government's perceived inconsistent policies in restricting garlic imports, which resulted in a sharp drop in the selling prices for farmers during harvest. This was clearly evident when the Ministry of Trade liberalized garlic imports in 2020, causing significant losses for all garlic farmers. As one farmer stated, "Garlic prices have plummeted since the COVID-19 pandemic. Previously, the price at the farm level could reach IDR 15,000/kg, but during the pandemic, it has fallen to between IDR 5,000 and IDR 7,000/kg." The dramatic decline in garlic prices faced by farmers was not confined to the study location but rather occurred throughout Indonesia due to the improper management of imports. This disappointment has driven farmers to adopt a passive attitude towards the development of garlic (Wahyuni et al., 2021).



**Figure 2.** Trends in garlic production and harvested area in east lombok regency from 2013 to 2023.

**Note:** 1 quintal = 0,1 ton

**Sources:** NTB Satu Data (2024)

Based on the active/passive dimension, it appears that the majority of farmers (more than 75%) have a passive attitude towards the implementation of the garlic development program (Neglect and Loyalty). This explains why garlic production and harvested area in East Lombok Regency have tended to decline in the last five years, despite efforts of the national garlic development program (Figure 2). Even if there is a slight increase in production and harvested area between 2022 and 2023, it is the impact of the UPLAND Project, which includes the development of garlic that actually grows in the highlands in its program. This project also provides production facilities and purchases the harvest of garlic from participating farmers (Zaini et al., 2025). This passive response is evident from the farmers' attitude of minimally caring for the plants to reduce production costs. The farmers who exhibit a neglectful attitude (44.4%) are those who grow garlic by relying on the assistance of various production facilities such as mulch, seeds, fertilizers, and pesticides from the garlic development program in order to achieve self-sufficiency.

### 3.3. Implications of Farmers' Attitudes towards Achieving Self-Sufficiency Program

Garlic self-sufficiency will be achieved if farmers, as the frontline actors in increasing production and cultivated area, perceive garlic development as highly sustainable, given the significant dependence on imported garlic. Previous studies on the sustainability of garlic development in East Lombok Regency, based on farmers' subjective perceptions, indicated a low level of sustainability (Zaini et al., 2024). Therefore, this section presents a cross-tabulation analysis of farmers' responses to the unsatisfactory condition of garlic farming and the degree of sustainable development. The analysis results can be useful for program improvement.

The cross-tabulation analysis showed that the majority of farmers (77.8%) assessed the sustainability of garlic development as low, based on the level of the sustainability index category, and only 22.2% rated it as moderate (Table 4). This reflects a substantial gap between program goals and farmer perceptions (Mar'atusholikha et al., 2019).

**Table 4.** Cross-tabulation between farmer response and sustainability of garlic farming.

Sustainability level (SI)			EVLN				Total
			Exit	Voice	Loyalty	Neglect	
SI	Low	Count	8	0	13	14	35
		% of total	17.8%	0.0%	28.9%	31.1%	77.8%
	Moderate	Count	1	2	1	6	10
		% of total	2.2%	4.4%	2.2%	13.3%	22.2%
Total		Count	9	2	14	20	45
		% of total	20.0%	4.4%	31.1%	44.4%	100.0%



The next crucial step is to investigate whether the perspectives and behaviors of farmers are linked to the continued feasibility of self-sufficiency initiatives. To rigorously assess this relationship, Fisher's exact test (Table 5), a statistical method particularly suited for small sample sizes and categorical data, was employed (Coulibaly et al., 2021). The decision to use Fisher's exact test stemmed from the presence of a cell with a zero value within the observational data, which violates the assumptions of other association tests like the Chi-square test (Nnodim et al., 2020).

Table 5 shows that the probability value obtained from Fisher's exact test is 0.03, which is less than the 5% confidence level. It means there is a strong association between farmers' responses to the unsatisfactory condition of garlic farming and the degree of development sustainability. Therefore, in order for garlic development to achieve a high level of sustainability and attain self-sufficiency, farmer dissatisfaction must be eliminated so that farmers adopt a constructive and active attitude. The current situation is that farmers have a destructive and passive attitude towards the garlic development program.

**Table 5.** Results of the chi-square and fisher's exact tests between farmer responses and the sustainability level of garlic farming.

Statistical tests	Value	df	Asymptotic significance (2-sided)	Exact sig. (2-sided)
Pearson chi-square	10.185 <sup>a</sup>	3	0.017	0.016
Likelihood ratio	9.755	3	0.021	0.030
Fisher's exact test	7.998			0.030
N of valid cases	45			

**Note:** a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is 0.44.

#### 4. CONCLUSION AND RECOMMENDATION

The majority of garlic farmers (96%) stated that they were dissatisfied with the implementation of the self-sufficiency program. This dissatisfaction was related to pre-harvest conditions, such as providing production facilities that were not timely, in the right quantity, and of good quality, which could reduce production and increase costs. Additionally, improper import quota arrangements have created poor post-harvest conditions, including low selling prices for the garlic produced by farmers, while production costs remain relatively high. These two unfavorable conditions have caused farmers to adopt a passive and destructive attitude towards the development of garlic, which in turn affects the sustainability of the development program. The results of Fisher's exact test analysis indicate a relationship between farmers' responses to these unsatisfactory conditions and the level of sustainability of garlic cultivation business development. Therefore, it is necessary to improve the program to create satisfactory pre-harvest and post-harvest conditions, encouraging farmers to take an active and constructive stance. Provision of production facilities must be timely, in the right quantity, and of good quality, as well as implementing effective trade (import) arrangements to establish profitable domestic garlic prices for farmers.

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**Transparency:** The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

**Competing Interests:** The authors declare that they have no competing interests.

**Authors' Contributions:** Both authors contributed equally to the conception and design of the study. Both authors have read and agreed to the published version of the manuscript.

#### REFERENCES

- Ashari, A. P., Hardiyono, H., & Aswar, N. F. (2020). Analysis of the influence of brand image, product quality, price and promotion on samsung smartphone purchasing decisions in Makassar. *MANDAR: Management Development and Applied Research Journal*, 3(1), 18-32.
- Bayan, L., Koulivand, P. H., & Gorji, A. (2014). Garlic: a review of potential therapeutic effects. *Avicenna Journal of Phytomedicine*, 4(1), 1-4.
- Birthal, P. S., Hazrana, J., & Negi, D. S. (2020). Diversification in Indian agriculture towards high value crops: Multilevel determinants and policy implications. *Land Use Policy*, 91, 104427. <https://doi.org/10.1016/j.landusepol.2019.104427>
- Botha, L., & Steyn, R. (2023). Employee voice as a behavioural response to psychological contract breach: The moderating effect of leadership style. *Cogent Business & Management*, 10(1), 2174181.
- Coulibaly, T. P., Du, J., & Diakité, D. (2021). Sustainable agricultural practices adoption. *Agriculture*, 67(4), 166-176. <https://doi.org/10.2478/agri-2021-0015>
- Danasari, I. F., Suryadi, D., Mandalika, E. N. D., & Suparyana, P. K. (2023). Profitabilitas Usaha Tani Bawang Putih pada Berbagai Tingkat Efisiensi di Kecamatan Sembalun. *Jurnal Agro Ekonomi*, 41(2), 129-146.
- Diao, H.-M., Hao, Y., Li, J., Ling, H.-W., Shi, K.-X., Zhang, W., . . . Jiang, B. (2023). Flavonoids from *Scutellaria likiangensis* diels and their antimalarial activities. *Fitoterapia*, 164, 105357. <https://doi.org/10.1016/j.fitote.2022.105357>
- Dowding, K., John, P., Mergoupis, T., & Van Vugt, M. (2000). Exit, voice and loyalty: Analytic and empirical developments. *European Journal of Political Research*, 37(4), 469-495. <https://doi.org/10.1111/1475-6765.00522>

- Eidt, C. M., Pant, L. P., & Hickey, G. M. (2020). Platform, participation, and power: How dominant and minority stakeholders shape agricultural innovation. *Sustainability*, 12(2), 461. <https://doi.org/10.3390/su12020461>
- Farrell, D., & Rusbult, C. (1985). Understanding the retention function: A model of the causes of exit, voice, loyalty, and neglect behaviors. *Personnel Administrator*, 30(4), 129-140
- Food and Agriculture Organization [FAO]. (2025). *Garlic Import of Indonesia*. Retrieved from <https://www.fao.org/faostat/en/#data/TCL>
- Gehlbach, S. (2006). A formal model of exit and voice. *Rationality and Society*, 18(4), 395-418. <https://doi.org/10.1177/1043463106070280>
- Hirschman, A. O. (1970). *Exit, voice, and loyalty: Responses to decline in firms, organizations, and states* (Vol. 25). Cambridge, MA: Harvard University Press.
- Huang, Y.-Z., Edwards, M. J., Rounis, E., Bhatia, K. P., & Rothwell, J. C. (2005). Theta burst stimulation of the human motor cortex. *Neuron*, 45(2), 201-206. <https://doi.org/10.1016/j.neuron.2004.12.033>
- Kiloes, A. M., Sulistyaningrum, A., Khaririyatun, N., Mulyono, D., Prabawati, S., Syah, M. J. A., & Devy, N. F. (2024). Unravelling the provisioning system of a strategic food commodity to minimise import dependency: A study of garlic in Indonesia. *Food Policy*, 123, 102604. <https://doi.org/10.1016/j.foodpol.2024.102604>
- Koca, I., & Tasci, B. (2015). *Garlic as a functional food*. Paper presented at the VII International Symposium on Edible Alliaceae.
- Kopec, A., Piatkowska, E., Leszczynska, T., & Sikora, E. (2013). Healthy properties of garlic. *Current Nutrition & Food Science*, 9(1), 59-64. <https://doi.org/10.2174/1573401311309010010>
- Lassalle, F. (2020). Exit, voice, loyalty to sport organization power. *Strategic Change*, 29(5), 571-588. <https://doi.org/10.1002/jsc.2366>
- Managanta, A. A., Ridwan, L., F., & Ahmad, N. H. (2022). The relationship of farmers' characteristics and social capital with nilam (patchouli) farmers' empowerment in Togo Una-Una District, Central Sulawesi. *Analisis Kebijakan Pertanian*, 20(1), 12-136.
- Mar'atusholikh, V., & Firmansyah, I. (2019). *Sustainability of garlic cultivation at Tegal Regency, Central Java Province, Indonesia*. Paper presented at the In IOP Conference Series: Earth and Environmental Science (Vol. 399, No. 1, p. 012027). IOP Publishing. <https://doi.org/10.1088/1755-1315/399/1/012027>
- Martin, G., Allain, S., Bergez, J.-E., Burger-Leenhardt, D., Constantin, J., Duru, M., . . . Magne, M.-A. (2018). How to address the sustainability transition of farming systems? A conceptual framework to organize research. *Sustainability*, 10(6), 2083. <https://doi.org/10.3390/su10062083>
- Melguizo-Rodríguez, L., González-Acedo, A., Illescas-Montes, R., García-Recio, E., Ramos-Torrecillas, J., Costela-Ruiz, V. J., & García-Martínez, O. (2022). Biological effects of the olive tree and its derivatives on the skin. *Food & Function*, 13(22), 11410-11424. <https://doi.org/10.1039/d2fo01945k>
- Mukherjee, S., Nath, S., Chowdhury, S., & Chatterjee, P. (2020). Antimicrobial activity of garlic (*Allium sativum*) and its potential use in fish preservation and disease prevention. *Int J Microbiol Res*, 12(7), 1879-1883.
- Naus, F., Van Iterson, A., & Roe, R. (2007). Organizational cynicism: Extending the exit, voice, loyalty, and neglect model of employees' responses to adverse conditions in the workplace. *Human Relations*, 60(5), 683-718. <https://doi.org/10.1177/0018726707079198>
- Nnodim, A., & Aleru, P. (2020). Influence of non-formal education on entrepreneurship skill development among rural farmers in Ikwerre local government area, Rivers State. *International Journal of Adult Education and Technology* 11(1), 60-70. <https://doi.org/10.4018/ijaet.2020010104>
- NTB Satu Data. (2024). *Production, harvest area and productivity of garlic based on regency/city*. Retrieved from <https://data.ntbprov.go.id/index.php/dataset/9d3dbbdd-a8b8-4ea4-b89e-ad6b2c68772f/show>
- Rahmawati, A., Alwin, A., & Adiputra, A. (2024). The impact of farmers' socio-economic conditions due to the conversion of agricultural land in Setia Mulya Village, Bekasi Regency, Indonesia. *Jambura Geo Education Journal*, 5(2), 104-114. <https://doi.org/10.37905/jgej.v5i2.26493>
- Robbins, S. P., & Judge, T. A. (2018). *Essentials of organizational behavior*. Boston, MA: Pearson.
- Shang, A., Cao, S.-Y., Xu, X.-Y., Gan, R.-Y., Tang, G.-Y., Corke, H., . . . Li, H.-B. (2019). Bioactive compounds and biological functions of garlic (*Allium sativum* L.). *Foods*, 8(7), 246. <https://doi.org/10.3390/foods8070246>
- Suharti, R., Cepriadi, & Kausar. (2023). Analisis of the relationship of social capital to farmer empowerment in pad rice farming group in Jatibaru village, bungaraya subdistrict, siak regency. *Journal of Agribusiness and Community Empowerment*, 6(1), 18-24. <https://doi.org/10.32530/jace.v6i1.605>
- Suprehatin. (2021). Determinants of Agricultural technology adoption by smallholder farmers in developing countries: Perspective and prospect for Indonesia. *Jurnal Penelitian dan Pengembangan Pertanian Vol*, 40(1), 21-30.
- Swastika, D. K. S., & Indraningsih, K. S. (2020). Strategy formulation of farmers capacity building through technological innovation in disadvantaged regions of Indonesia. *Jurnal Agro Ekonomi*, 38(1), 15-27.
- Tempo. (2020). *Onion corruption layers*. Jakarta: Berita Tempo Plus
- Tempo. (2023). *Garlic import quotas give birth to rent seekers*. Jakarta: Berita Tempo Plus.
- Udechukwu, I. I., & Mujtaba, B. G. (2007). Determining the probability that an employee will stay or leave the organization: A mathematical and theoretical model for organizations. *Human Resource Development Review*, 6(2), 164-184.
- Valenzuela-Gutiérrez, R., Lago-Lestón, A., Vargas-Albores, F., Cicala, F., & Martínez-Porchas, M. (2021). Exploring the garlic (*Allium sativum*) properties for fish aquaculture. *Fish Physiology and Biochemistry*, 47(4), 1179-1198. <https://doi.org/10.1007/s10695-021-00952-7>
- Wahlberg, Å., Andreen Sachs, M., Johannesson, K., Hallberg, G., Jonsson, M., Skoog Svanberg, A., & Högberg, U. (2017). Post-traumatic stress symptoms in Swedish obstetricians and midwives after severe obstetric events: a cross-sectional retrospective survey. *BJOG: An International Journal of Obstetrics & Gynaecology*, 124(8), 1264-1271. <https://doi.org/10.1111/1471-0528.14259>
- Wahyuni, R. P., Sudibyo, R. P., & Amir, N. O. (2021). Factors influencing the level of farmer participation in organic plant cultivation in Junrejo District, Batu city. *Jurnal Ekonomi Pertanian Dan Agribisnis*, 5(2), 544-560. <https://doi.org/10.21776/ub.jepa.2021.005.02.22>
- Withey, M. J., & Cooper, W. H. (1989). Predicting exit, voice, loyalty, and neglect. *Administrative Science Quarterly*, 34(4), 521-539. <https://doi.org/10.2307/2393565>

- Zaini, A., Anwar, A., & Danasari, I. F. (2024). Sustainability of garlic development in east lombok regency, West Nusa Tenggara. *Jurnal Penelitian Pendidikan IPA*, 10(9), 7113-7121. <https://doi.org/10.29303/jppipa.v10i9.9340>
- Zaini, A., Anwar, A., Zubair, M., Sudjarmiko, D. P., Suparmin, S., & Sari, N. M. W. (2021). Application of the principal agent model in the implementation of the mandatory garlic planting policy in East Lombok Regency. *Jurnal Agrimansion*, 22(3), 184-191. <https://doi.org/10.29303/agrimansion.v22i3.707>
- Zaini, A., Dipokusumo, B., & Fadli. (2025). *Resilience capacity of garlic farmers in East Lombok regency facing import policies*. Paper presented at the In IOP Conference Series: Earth and Environmental Science (Vol. 1471, No. 1, p. 012041). IOP Publishing. <https://doi.org/10.1088/1755-1315/1471/1/012041>.
- Zhao, R., Zhang, B., Sun, J., Zheng, Z., & Qiao, X. (2021). Evaluation of degradation of pigments formed during garlic discoloration in different pH. *Food Research International*, 140, 109957. <https://doi.org/10.1016/j.foodres.2020.109957>