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Research Article

Analysis on the Added Value of Excelsa Coffee (Coffea liberica var. dewevrei) in Wonosalam, Jombang

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ABSTRACT

The district of Wonosalam in Jombang, Indonesia, harbors significant potential in the agribusiness sector, with a particular focus on Excelsa coffee. Excelsa coffee is currently being cultivated with the vision of establishing it as a signature commodity of Wonosalam. This study is dedicated to analyzing the value transformation that occurs during the conversion of coffee cherries into green beans, further processing of green beans into roasted beans, and providing recommendations for enhancing added value. The study employed a purposive sampling technique, with data analysis conducted using the Hayami method. Nineteen respondents engaged in Excelsa coffee processing participated in the study. The findings of this study demonstrate that the conversion of cherries into Excelsa coffee green beans and the subsequent transformation of green beans into roasted beans indeed contribute to increased value. Specifically, the added value of green beans for Excelsa coffee amounts to IDR 1,153 per kilogram, while the added value for red-picked Excelsa coffee reaches IDR 4,458 per kilogram. Furthermore, the added value of Random Excelsa coffee roast beans is calculated at IDR 12,525 per kilogram, with red-picked Excelsa coffee roast beans achieving an added value of IDR 35,525 per kilogram. To further enhance the added value of Excelsa coffee, improvements can be made in post-harvest quality and downstream processing of coffee.

INTRODUCTION

The agricultural sector plays a pivotal role in the economic landscape of Jombang's community. An analysis utilizing the Location Quotient (LQ) method has revealed that nine out of the seventeen key sectors in Jombang exhibit strong economic potential (Nadhiroh & Qurrata, 2020). Specifically, the agriculture, forestry, and fisheries sector emerge as the foundational sectors in Jombang, boasting an LQ value of 1.57 and contributing significantly to the Gross Regional Domestic Product (GRDP) at 17.44% (Huda & Cahyono, 2021). Among these sectors, agriculture stands out as a catalyst for enhancing economic growth in Jombang (Maghfiroh, 2021). One sub-district within Jombang that holds considerable promise the agricultural sector is Wonosalam,

particularly in the domain of coffee cultivation. Wonosalam's geographical features are conducive to coffee production, as it is situated at an altitude exceeding 500 meters above sea level, enjoying temperatures ranging from 17 to 30 degrees Celsius (Agastya & Ariyani, 2023). Coffee cultivation in Jombang presents a comparative advantage, as affirmed by Saifullah et al. (2021). The coffee varieties cultivated in Wonosalam encompass Arabica, Robusta, and Excelsa, offering a diverse range of options within this promising agricultural commodity.

Liberica coffee comprises two distinct varieties, namely Coffea liberica var liberica and Coffea liberica var dewevrei. Among the general public, the variety Coffea liberica var dewevrei is more commonly recognized as Excelsa coffee (Herawati et al., 2022). Excelsa coffee offers the advantage of being relatively easy to cultivate, thriving in a range of environments, including peatlands and lowlands (Amalia et al., 2023). The distinctive characteristics of Excelsa coffee in Wonosalam are its unique blend of bitter, sweet, and sour flavors (Yunas, 2019).

Excelsa coffee boasts the advantage of having a lower caffeine content. Its caffeine level stands at 0.94%, which is notably lower than Liberica coffee at 1.2%, Arabica coffee at 1.2%, and Robusta coffee at 2.6% (Davis et al., 2022). While Excelsa coffee may not enjoy the same popularity as Arabica or Robusta coffee, it holds substantial development potential. In Wonosalam, Excelsa Coffee is actively pursued, with the aim of establishing it as a distinctive commodity for the region's future.

The harvest of Excelsa coffee in Wonosalam often remains unprocessed, with some being sold in its raw cherry form. This practice of selling unripe cherries represents a missed opportunity for added value and results in losses. Processing Excelsa coffee can significantly enhance its value, contributing to the economic well-being of both coffee farmers and processors. Analyzing this added value is critical, given that Excelsa coffee serves as a vital income source for the local community. Added value, in this context, refers to the increase in value a commodity experiences through various treatments such as processing, transportation, or storage (Simatupang et al., 2022). It can be calculated as the difference between the resulting output and the costs incurred for raw material procurement and other input expenses (Hidayat et al., 2020). Furthermore, added value serves as a metric for assessing the compensation derived from processing activities (Rahmalia et al., 2023).

Processing coffee cherries results in semi-finished products, typically in the form of dried coffee beans (green beans) or final products ready for consumption as roasted beans. This processing not only extends the shelf life of coffee but also adds significant economic value. Similar research on the added value of post-harvest coffee processing has been conducted in various regions. For instance, the added value of dry Robusta coffee beans in Tabanan amounts to IDR 4,066 per kilogram (Nugraha et al., 2019). In Central Aceh, green Arabica coffee beans have an added value of IDR 17,000 per kilogram (Hasni et al., 2022). Additionally, processing semi-finished green beans into the final product of roasted beans can generate further added value. This transformation positively impacts the economy. For instance, the added value of roasted Arabica coffee beans in Banjarnegara is IDR 94,361 per kilogram (Zain & Nurrochmat, 2021), while in Bener Meriah, Aceh, it is IDR 145,449 per kilogram (Waknate et al., 2022). It's important to note that the added value of roasted Arabica coffee beans differs from that of roasted Robusta coffee beans, with the latter having an added value of IDR 58,500 per kilogram in Jember (Yekti et al., 2022). The research on Excelsa coffee in Wonosalam is particularly significant because, to date, no studies have explored the added value of coffee in this region, especially concerning Excelsa coffee.

This study is dedicated to analyzing the value transformation that occurs during the processing of Excelsa coffee cherries into green beans and further into roasted beans. Additionally, it aims to offer recommendations for enhancing the added value of Excelsa coffee. A distinctive aspect of this research lies in its exploration of the added value of Excelsa coffee, a subject that has remained unexplored in prior studies. Previous research predominantly focused on assessing the added value arising from post-harvest processing of Arabica or Robusta coffee. The outcomes of this study also serve to enrich public knowledge and awareness by highlighting the existence of alternative coffee varieties, such as Excelsa coffee, alongside the more commonly known Robusta and Arabica coffee types.

METHOD

The research was carried out during the period from October to December 2022, with data analysis conducted between January and February 2023. The study took place in Wonosalam, Jombang, Indonesia. The research employed a purposive sampling technique, chosen due to the specific nature of the research focus, which centered on assessing the added value resulting from post-harvest processing of Excelsa coffee. Purposive sampling is a non-probability method where participants are selected based on specific criteria

defined by the researcher. These participants are typically chosen for their relevance and suitability to research objectives. In this case, the respondents included individuals involved in processing Excelsa coffee cherries into green beans and those processing green beans into roasted beans. To identify these processors, Excelsa coffee processors located in various areas of Wonosalam, including Carangwulung, Distance, Wonosalam, Sumber, and Notorejo, were included in the study, as these regions are known for their Excelsa coffee production. Respondents among Excelsa coffee processors, specifically those involved in the transformation of green beans into roasted beans, were selected from small and medium-sized enterprises (SMEs) situated in the heart of Jombang. The criteria for selecting respondents for this study encompassed the following:

1. The respondents must be Excelsa coffee processors engaged in either the processing of cherries into green beans or the subsequent processing of green beans into roasted beans.
2. The Excelsa coffee being processed must be authentic Excelsa coffee, cultivated and processed within the Wonosalam region.
3. The processing of Excelsa coffee should be conducted with the intent of generating profit or as part of a business endeavor.

A total of 29 Excelsa coffee processors from the Wonosalam region participated in this study, encompassing both household-scale processors and small to medium-sized enterprises (SMEs). Further details regarding the respondents can be found in Table 1.

Table 1. Research Respondents

No	Output	Total	Scale	Percentage
1	*Random excelsa coffee green beans*	13	household-scale	44,82 %
2	*Green beans from red-picked Excelsa coffee*	8	household-scale	27,59 %
3	*Roasted bean*	8	SMEs	27,59 %
	Total	**29**		**100 %**

Source: Primary data processed, 2022

The data analysis employed the Hayami method, along with descriptive statistics. The analysis of the added value using the Hayami method is presented in Table 2.

Table 2. Value Added Analysis using the Hayami Method

No	Output, Input, Price	Unit	Formula
1.	Output	Kg	(1)
2.	Input	Kg	(2)
3.	Labor	Working hours / HOK	(3)
4.	Conversion Factor		4 = (1) : (2)
5.	Worker Coefficient	working hours / HOK	5 = (3 / 2)
6.	Output Price	IDR / Kg	(6)
7.	labors' Wages	IDR	(7)
Income and Profits			
8.	Raw material prices	IDR / Kg	(8)
9.	Other input contributions	IDR / Kg	(9)
10.	Product value	IDR / Kg	10 = (4) x (6)
11	Value-added	IDR / Kg	11a = (10) – (8) – (9)
11	Ratio of Value-added	%	11b =(11a):(10) x 100%
12 a.	Labor income	IDR	12a = (5) x (7)
b.	Labor share	%	12b = (12a):(11a) x 100
13 a.	Profit	IDR / Kg	13a = (11a) – (12a)
b.	profit rate	%	13b = (13a):(10) x 100
Remuneration for Production Factors			
14	margins	IDR / Kg	14 = (10) – (8)
14 a.	Labor income	%	14a = (12a):(14) x 100%
14 b.	Other input contributions	%	14b = (9):(14) x 100%
14 c.	Company profit	%	14c = (13a):(14) x 100%

Source: (Hayami, 1987 in Rizkiawan et al., 2023)

Data collection encompassed direct field observations and structured interviews involving open-ended questions with Excelsa coffee processors. The utilization of the Hayami method offers the advantage of assessing not only the added value acquired through processing but also the added value generated through marketing efforts (Muzkiyah et al., 2022).

RESULTS AND DISCUSSION

Excelsa coffee processing starts with the utilization of raw materials in the form of cherries, which are typically harvested between July and September in Wonosalam. These cherries, collected during the harvest season, undergo processing to become semi-finished products referred to as green beans. The primary objective of this processing stage is to prolong the shelf life of the coffee. Green beans represent a semi-finished product not intended for immediate consumption, and the process itself typically spans 1 to 2 months. These Excelsa green beans serve to meet the demand for coffee outside of the harvest season. Subsequently, the acquired green beans are subjected to the roasting phase, transforming them into roasted beans. Roasted beans, the final product, are ready for marketing and are available in either seed or powder form. The entire process, from raw materials to the ultimate product of roasted beans, is depicted in Figure 1.

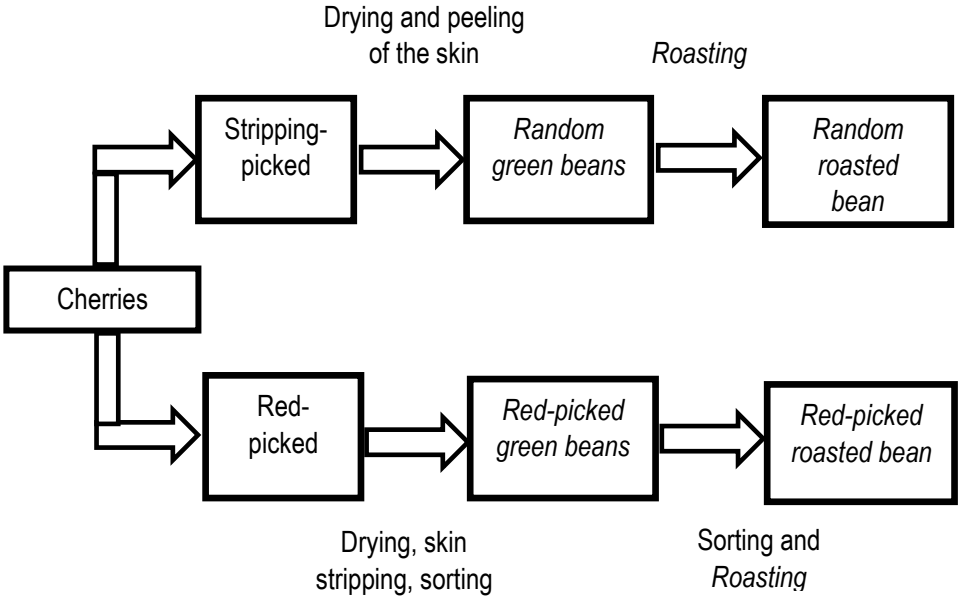

Figure 1. Process flow for Excelsa coffee processing
Source: Primary data processed, 2022

The processing of Excelsa coffee involves both upstream and downstream phases. Upstream processing entails the conversion of cherries into green beans, a task typically undertaken by coffee processing households. In contrast, downstream processing involves the transformation of green beans into roasted beans and is carried out by roasteries. Both stages of processing contribute to the creation of added value. Table 3 presents the average added value generated from green beans and roasted beans across the 29 Excelsa coffee processors surveyed.

Table 3. The average added value derived from green beans and roasted beans in the case of Excelsa coffee processing.

No	Types of Coffee	Average Added Value
1	Random Excelsa green beans	IDR 2,080 per kilogram
2	Red-picked Excelsa green beans	IDR 5,515 per kilogram
3	Roasted bean Excelsa	IDR 46,230 per kilogram

Source: Primary data processed, 2022

Analysis on Added Value

Processing Excelsa coffee cherries into green beans and subsequently processing green beans into roasted beans have a notable impact on the added value. The added value of green Excelsa coffee beans results from various treatments, including sorting, drying, and peeling the cherries' skin. On the other hand, the added value of roasted Excelsa coffee beans arises from the roasting process. These value changes due to processing were assessed using the Hayami method, and the results are presented in Table 4.

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Table 4. Analysis on Added Value of Excelsa Coffee Processing

No	Output, Input, Price	Formula	*Green bean*		*Roasted Bean*	
			Random	**Red-picked**	***Random***	**Red-picked**
1	Output (Kg)	1	105	87.5	0.94	0.94
2	Raw material input (Kg)	2	700	700	1.17	1.17
3	Labor (HOK)	3	7	11.81	0.03	0.03
4	Conversion factor	4=1:2	0.15	0.125	0.80	0.80
5	Labor coefficient (HOK)	5=3:2	0.01	0.0168	0.0256	0.0256
6	Output price (IDR/Kg)	6	35,000	65,000	70,000	130,000
7	Labors' wages (IDR)	7	50,000	100,000	20,000	20,000
Income and Profit						
8	Price of raw materials (IDR/Kg)	8	4,000	3,500	35,000	60,000
9	Contribution of other inputs (IDR/Kg)	9	97	167	8,475	8,475
10	Output value (IDR/Kg)	10 = 4 x 6	5,250	8,125	56,000	104,000
11a	Added-value (IDR/Kg)	11a =10 - 8 – 9	1,153	4,458	12,525	35,525
11b	Ratio of Added-value	11b = (11a:10) x 100 %	21.96	54.87	22.37	34.16
12a	Labor income (IDR/Kg)	12 a = 5 x 7	500	1,688	512	512
12b	Labor share (%)	12b = (12a : 11a) x 100%	43.37	37.85	4.087	1.441
13	Profit (IDR/Kg)	13a = 11a -12a	653	2,771	12,013	35,013
	Profit rate (%)	13b = (13a :10) x 100 %	12.44	34.10	21.45	33.65
Remuneration for Production Factors						
14	Margin (IDR/Kg)	14 = 10 – 8	1,250	4,625	21,000	44,000
14a	Labor income	14 a = (12 a : 14) x 100	40	36.49	2.438	1.16
14b	Other contributions	14 b = (9:14) x 100	7.76	3.61	40.36	19.26
14c	Company profit	14 c = (13a : 14) x 100	52.24	59.90	57.20	79.57

Source: Primary data processed, 2022

Added value of *Green* Excelsa Coffee *Bean*

a. Input, Output, Price

The input utilized in this study includes Excelsa coffee cherries, priced at IDR 4,000 per kilogram for immature cherries and IDR 3,500 per kilogram for ripe cherries. Green Excelsa coffee beans are categorized into two types: random and red-picked. Random green Excelsa coffee beans are those that do not adhere to the established coffee processing standards, while red-picked green Excelsa coffee beans are produced following the proper coffee processing procedure, albeit without specific quality standards (such as a cupping score) specifically designed for Excelsa coffee. Consequently, they cannot be classified as premium or specialty coffee, as long as the raw material used consists of cherries that are a mixture of ripe and half-ripe cherries. The green Excelsa coffee beans used in this research are exclusively derived from perfectly ripe cherries, exhibiting distinct red cherry characteristics. Ripe cherries are chosen due to their capacity to yield the most desirable taste, attributed to the optimal sugar content within the cherries.

During the harvest season, an average of 700 kilograms of Excelsa coffee cherries are utilized as input for the production of green beans. Processing these 700 kilograms of cherries into green Excelsa coffee beans yields an output of 105 kilograms, whereas processing them into red-picked green Excelsa coffee beans results in an output of 87.5 kilograms. This discrepancy in output is attributed to the higher water content of green Excelsa coffee beans, which is approximately 15%, compared to the water content of approximately 12% in red-picked green Excelsa coffee beans. It's worth noting that random green Excelsa coffee beans do not undergo a sorting process, whereas red-picked green Excelsa coffee beans have undergone a sorting process to separate defective green beans from those that meet the desired quality standards. Sorting is a critical step as it serves to segregate defective green beans from their higher-quality counterparts. This process is particularly important in maintaining overall quality, especially in terms of flavor.

The selling price for random green Excelsa coffee beans is notably lower at IDR 35,000 per kilogram, whereas red-picked green Excelsa coffee beans command a higher price of IDR 65,000 per kilogram. This significant price disparity can be attributed to the longer processing time required for red-picked green Excelsa coffee beans compared to random green Excelsa coffee beans. Furthermore, the divergence in selling prices is influenced by the use of higher-quality raw materials in the production of red-picked green Excelsa coffee beans in contrast to the raw materials used for random green Excelsa coffee beans. These distinctions in

post-harvest processes and raw material quality contribute to differences in overall quality, with random green Excelsa coffee beans generally exhibiting lower quality compared to their red-picked counterparts.

Labor is a vital component in the production process, involving activities such as cherry picking, cherry sorting, and green bean sorting. Labor inputs are quantified in terms of labor hours or HOK, with one HOK equivalent to 8 hours of work (Siregar & Oktaviana, 2020). The production of random green Excelsa coffee beans requires 7 HOK of labor, whereas producing red-picked green Excelsa coffee beans necessitates 11.81 HOK. This disparity in HOK signifies that the processing of cherries into red-picked green Excelsa coffee beans is a lengthier and more labor-intensive procedure. The labor required for processing cherries into green beans is limited to cherry picking, whereas the labor input for processing cherries into red-picked green Excelsa coffee beans encompasses cherry picking, cherry sorting, and green bean sorting.

Another significant input in the processing of Excelsa coffee cherries into green beans is the diesel fuel used to operate the huller machine, which is employed to remove the dried cherry husks. The input cost for producing green Excelsa coffee beans is IDR 97 per kilogram, while for red-picked green Excelsa coffee beans, it's IDR 167 per kilogram. The discrepancy in input costs can be attributed to the longer duration of cherry hulling required for red-picked Excelsa coffee, resulting in greater diesel fuel consumption.

b. Income and Profit

As depicted in Table 4, the added value of green beans for random Excelsa coffee amounts to IDR 1,153 per kilogram, which is lower than the added value of green beans for red-picked Excelsa coffee, totaling IDR 4,458 per kilogram. This discrepancy in added value highlights that red-picked green Excelsa coffee beans undergo a more substantial increase in value. The primary factor contributing to this difference is the selling price. The selling price of random green Excelsa coffee beans consistently lags behind that of red-picked green Excelsa coffee beans. This variation in selling prices consequently leads to lower profits for random green Excelsa coffee beans, with profits amounting to IDR 653 per kilogram compared to IDR 2,771 per kilogram for red-picked green Excelsa coffee beans.

The added value of green Excelsa coffee beans is observed to be lower in comparison to green Arabica coffee beans from other regions. For instance, the added value of green Arabica coffee beans for Marmomulyo coffee producers stands at IDR 7,440.75 per kilogram (Hidayat, 2022). Similarly, the added value of green Arabica coffee beans in Sumbermalang, Situbondo, amounts to IDR 14,920 per kilogram (Hariyanto & Achmar, 2019). This disparity can be attributed to the general trend of higher selling prices for green beans in the Arabica coffee market as compared to green beans in the Excelsa coffee market. Arabica coffee is known for its more intricate flavor profile, contributing to its elevated selling price. Consequently, these variations in green bean selling prices play a pivotal role in determining the added value.

The added value of green Excelsa coffee beans appears to be relatively similar to that of green Robusta coffee beans from other regions. For instance, in the Cibulau Hijau farmer group, Cisarua, green Robusta coffee beans exhibit an added value of IDR 5,510 per kilogram (Tamaradewi et al., 2019). This similarity in added value arises from the comparable selling prices of green Robusta coffee beans and green Excelsa coffee beans. In terms of classification, the green bean added value ratio for random Excelsa coffee is considered moderate at 21.96%, while the green bean added value ratio for red-picked Excelsa coffee is categorized as high, standing at 54.87%. In accordance with the classification criteria, added value is deemed moderate if the value added ratio falls within the range of 15% to 40%, and high if the ratio surpasses 40% (Sinaga et al., 2022).

c. Margin

The profit margin for random green Excelsa coffee beans is notably lower than that for red-picked green Excelsa coffee beans. For both random and red-picked green Excelsa coffee beans, the primary contribution to the margin is derived from profits, with labor income and other input contributions constituting the remaining components.

Added value of Roasted Excelsa Coffee Bean

a. Input, Output, Price

The production of roasted Excelsa coffee beans requires the use of green beans. Random green Excelsa coffee beans are utilized in the production of random roasted Excelsa coffee beans, whereas red-picked

green Excelsa coffee beans are employed for making red-picked roasted Excelsa coffee beans. The cost of green beans for Excelsa coffee stands at Rp. 35,000 per kilogram, while the price for green beans intended for red-picked Excelsa coffee is Rp. 60,000 per kilogram. This price differential is influenced by the quality disparity between the two types of green beans. Red-picked green Excelsa coffee beans are of superior quality compared to random green Excelsa coffee beans, hence the higher selling price.

Roasting Excelsa coffee, derived from green beans, entails an approximate 20% reduction in weight due to the dehydration of these beans during the roasting procedure. Roasted Excelsa coffee is available in two varieties: random roasted Excelsa coffee beans are priced at IDR 70,000 per kilogram, whereas red-picked roasted Excelsa coffee beans command a higher price of IDR 130,000 per kilogram. The superior taste profile of red-picked Excelsa coffee stems from its processing method, which involves the use of fully ripened coffee cherries, commonly referred to as "red-picked" coffee. Ripe coffee cherries have been shown to yield enhanced flavor and aroma in the final product (Wibowo & Palupi, 2022). Research by Adri et al. (2022) reinforces the notion that high-quality coffee with superior taste characteristics can be consistently achieved through red picking. The roasting process for Excelsa coffee, transitioning from green beans to roasted beans, necessitates a measure of labor input. Fortunately, the use of a roasting machine streamlines this process, minimizing labor requirements to a modest extent. On average, each batch of roasting consumes approximately 15 minutes. Labor time in the roasting process is quantified in working hours (HOK), allowing for efficient management of resources.

b. Income and Profit

Referring to the data presented in Table 4, it becomes evident that the profitability of random roasted Excelsa coffee beans stands at IDR 12,013 per kilogram, while the corresponding figure for red-picked roasted Excelsa coffee beans reaches IDR 35,013 per kilogram. This notable variance in profitability is directly attributable to the higher market price commanded by red-picked roasted Excelsa coffee beans as compared to their random roasted counterparts. This disparity in market pricing is rooted in divergent target demographics. Red-picked roasted Excelsa coffee beans primarily cater to coffee connoisseurs and individuals possessing substantial purchasing power, often classified as the upper middle class. Conversely, the original market segmentation for roasted Excelsa coffee beans predominantly encompasses individuals with more limited purchasing capacity, colloquially termed the lower middle class. This segmentation divergence is closely linked to the prevailing pricing strategies. Moreover, empirical evidence underscores the pivotal role of price in consumer decisions regarding Excelsa coffee purchases. Statistical analysis, employing the t-test, demonstrates a compelling and statistically significant correlation between price and consumer choices, with a significance level of 0.05 or lower (Wahyuni, 2019).

The value addition achieved through the production of red-picked roasted Excelsa coffee beans is notably higher, amounting to IDR 35,525 per kilogram, in contrast to the IDR 12,525 per kilogram value addition observed in random roasted Excelsa coffee beans. This substantial discrepancy underscores that the transformation of green Excelsa coffee beans into red-picked roasted beans significantly enhances value. It is worth noting that the added value of roasted Excelsa coffee beans, as ascertained in this study, aligns closely with the added value observed in roasted Robusta coffee beans sourced from regions beyond Wonosalam, Jombang. Specifically, roasted Robusta coffee beans in Grabag, Magelang, yield an added value of IDR 16,000 per kilogram (Adji et al., 2021), while in the Kalipucang area, Pasuruan, this figure stands at IDR 33,871 per kilogram (Hidayanti et al., 2021). However, when juxtaposed with the added value of Arabica coffee beans cultivated in the Cisarua area, Bogor, Excelsa coffee's value addition in Wonosalam appears comparatively lower. For instance, the added value of roasted Arabica coffee beans within the Cibulau Hijau farmer group, Cisarua, is notably higher, at IDR 163,035 per kilogram (Tamaradewi et al., 2019). This differential in added value can be attributed primarily to variations in selling prices. In a broader context, it is noteworthy that roasted Arabica coffee beans tend to command the highest selling prices across all coffee types.

Additional cost components encompass expenses related to LPG and packaging, which collectively amount to IDR 8,475 per kilogram. Comparatively, the profit margin associated with roasted Excelsa coffee beans trails behind that of red-picked roasted Excelsa coffee beans. This margin predominantly originates from profits, with supplementary contributions from labor income and other input expenditures. Upon applying the Hayami method for computation, it becomes evident that the transformation of Excelsa coffee from its

green bean form into roasted beans generates a notably higher economic value when contrasted with the process of converting Excelsa coffee cherries into green beans. Several factors underpin this discrepancy in added value between roasted beans and green beans:

1. Output

The roasting process incurs a shrinkage of approximately 20%, signifying a relatively modest disparity between input and output subsequent to roasting. In stark contrast, the transformation of cherries into green beans involves a considerably larger shrinkage. The substantial shrinkage observed during the process of cherries becoming green beans stems from the necessity of removing the cherry skins and reducing water content through drying. This results in a pronounced reduction in mass. The ratio between the initial raw material in the form of cherries and the eventual yield of green beans typically ranges from 8:1, and in some cases, even contracts to 9:1.

2. Selling price

The market value of roasted Excelsa coffee beans surpasses that of their green counterparts, thus yielding a notable impact on value addition. This correlation between selling price and added value indicates that higher selling prices correspond to augmented value. However, it is noteworthy that alterations in the selling price of roasted beans exhibit a relatively modest magnitude when juxtaposed with the fluctuations in the selling price of green beans. The fluctuations in the selling prices of green Excelsa coffee beans are intrinsically tied to variations in product availability. Diminishing availability, particularly in the green bean form, invariably triggers price escalations. The concomitant reduction in coffee availability, coupled with escalating prices, has culminated in a constricting effect on demand, with instances of stagnation or even decline.

One additional determinant influencing the escalation of selling prices pertains to natural factors. Excessive rainfall, for instance, can lead to crop failure or reduced crop yields. This decline in harvest output translates into a constrained supply of Excelsa coffee, thereby exerting upward pressure on selling prices. In addition to the availability of goods and the impact of natural variables, another determinant influencing selling prices is plant productivity. The Excelsa coffee plants in the Wonosalam region are currently experiencing a decline in productivity. As these coffee plants age, their capacity to absorb essential nutrients diminishes. In the case of the Excelsa coffee plants in Wonosalam, they have surpassed their productive phase, resulting in a discernible reduction in yield levels.

3. Production cost

The expenses associated with transforming Excelsa coffee cherries into green beans outweigh those incurred in the conversion of green beans into roasted beans. These costs encompass labor expenditures for harvesting, cherry sorting, and green bean sorting. The procedure for converting Excelsa coffee cherries into green beans relies heavily on manual labor performed by household workers. However, it is important to acknowledge that this approach carries a potential risk: the fixed labor costs remain constant even as worker productivity diminishes over time.

To enhance the value proposition of Excelsa coffee, a strategic framework must be devised. Heightened added value will lead to more significant economic advantages. Economic benefits for dry coffee (green beans) sales are readily apparent through elevated selling prices (Rosiana, 2020). The correlation between higher green bean prices and augmented income is well-established. Price dynamics significantly influence the income of coffee farmers in Wonosalam (Ningtyas et al., 2022). Therefore, the overarching goal of our value enhancement strategy is to bolster the competitiveness of Excelsa coffee, enabling it to rival Arabica and Robusta coffee varieties. Several strategies can be employed to achieve this goal:

1. Post-harvest quality improvement

Quality indeed constitutes a pivotal factor influencing the added value of Excelsa coffee. Specifically, the quality differentials are discernible between red-picked green Excelsa coffee beans and red-picked roast Excelsa coffee beans when contrasted with randomly selected green and roasted Excelsa coffee beans. A detailed comparative analysis of the added value associated with green and roasted Excelsa coffee beans is meticulously documented in Table 5.

Table 5. Comparison of the Added Value of Green Bean and Roasted Bean from Excelsa Coffee

No.	Type of Coffee	Added Value
1	Random green Excelsa coffee beans	IDR 1,153 per kilogram
2	Random roasted Excelsa coffee beans	IDR 12,525 per kilogram
3	Red picked bean Excelsa green coffee	IDR 4,458 per kilogram
4	Red picked roasted Excelsa coffee beans	IDR 35,525 per kilogram

Source: Primary data processed, 2022

Table 5 underscores a conspicuous disparity in the added value between green beans and roasted beans of red-picked Excelsa coffee when juxtaposed with their randomly selected counterparts. This variance in added value can be unequivocally attributed to the discernible discrepancy in quality. The superior quality exhibited by the red-picked green and roast beans of Excelsa coffee, in contrast to the randomly selected green and roasted beans of Excelsa coffee, is indisputable. Such enhancements in quality inherently translate into heightened bargaining power for Excelsa coffee within the consumer market.

The process of converting red-picked Excelsa coffee into green beans and roasted beans is notably protracted and entails higher expenditures; however, these investments are justified by the commensurate economic gains. This meticulous approach encompasses a stringent selection of raw materials to ensure the attainment of exceptional taste profiles. The target market segment for these premium products comprises individuals with greater purchasing power, specifically the upper middle class. In contrast, green beans and roasted beans derived from random Excelsa coffee tend to cater to a market segment composed of individuals from the lower middle class. These disparities in market segmentation are fundamentally underpinned by variations in product quality. Consequently, distinct market segments warrant disparate treatments and levels of coffee quality (Hamzah et al., 2021).

The findings from the analysis of added value underscore the pivotal role played by quality in influencing economic gains. Quality enhancement, as demonstrated, serves as a catalyst for augmenting economic value. However, the pursuit of quality improvement for green beans and roasted beans of Excelsa coffee necessitates access to robust facilities and infrastructure. Unfortunately, in the context of Wonosalam, the advancement of quality in green beans and roasted beans for Excelsa coffee encounters obstacles due to the inadequate distribution of production facilities and infrastructure. Furthermore, the quest for improved quality mandates intensive support aimed at enhancing coffee processing competencies. Coffee processors in Wonosalam possess rudimentary skills, which require refinement given the evolving landscape of coffee processing technology. This aligns with prior research that underscores the significance of production facilities and labor in impacting added value. Consequently, the endeavor to elevate the added value of coffee can be effectively pursued through stringent control and enhancement of production facilities and labor (Wibowo & Palupi, 2022).

2. Downstream processing of coffee

Downstream processing in the coffee industry represents a concerted effort to transition from the production of green Excelsa coffee beans to the production of roasted Excelsa coffee beans. Analysis employing the Hayami method unequivocally demonstrates that the added value of roasted Excelsa coffee beans surpasses that of their green counterparts. This increase in added value promises to yield favorable economic outcomes. However, the journey toward downstream processing of Excelsa coffee necessitates comprehensive assistance and support. The objective is to empower coffee processors in Wonosalam not only to produce green beans but also to master the art of producing roasted beans. Such an undertaking holds the potential to significantly truncate the marketing chain. As it is widely recognized, the length of the marketing chain for Excelsa coffee invariably correlates with higher selling prices at the consumer level. The downstream processing of Excelsa coffee stands as a mutually beneficial proposition. Excelsa coffee processors can unlock the potential to produce roasted Excelsa coffee beans, endowed with substantially augmented added value compared to green Excelsa coffee beans. Meanwhile, consumers stand to gain by accessing Excelsa coffee at price points that remain within a reasonable range, thus enjoying the product without incurring exorbitant costs.

CONCLUSION

The process of transforming cherries into green beans and subsequently converting green beans into roasted beans bears a significant impact on value addition. To provide a clearer perspective, the added value

for green beans of Excelsa coffee is IDR 1,153 per kilogram, whereas the added value for green beans of red-picked Excelsa coffee is notably higher at IDR 4,458 per kilogram. Similarly, the added value for randomly selected roasted Excelsa coffee beans is IDR 12,525 per kilogram, whereas the added value for red-picked roasted Excelsa coffee beans is impressively elevated to IDR 35,525 per kilogram. Elevating the added value of Excelsa coffee warrants a concerted effort towards enhancing post-harvest quality and the downstream processing of coffee. This approach advocates diversifying Excelsa coffee into more appealing products, thereby substantially augmenting its added value. One illustrative example is the creation of coffee bags or coffee variants devoid of sediments, which have the potential to captivate consumer interest and bolster the added value of Excelsa coffee.

REFERENCES

Adji, I. P., Karyadi, & Sitepu Harum. (2021). Analisis Nilai Tambah Pengolahan Kopi Robusta di Kelompok Tani Gemah Ripah Dusun Mejing Banjarsari Kecamatan Grabag Kabupaten Magelang. *Jurnal Agromedia*, *39*(2), 113–121.

Adri, Firdaus, & Yardha. (2022). Identifikasi Panen, Pasca Panen dan Kelembagaan Usatani Kopi. *Jurnal Ilmiah Terapan Universitas Jambi*, *6*(2), 192–200.

Agastya, A. A. R., & Ariyani, A. H. M. (2023). Strategi Pengembangan Kawasan Agropolitan Komoditas Kopi Di Kecamatan Wonosalam Kabupaten Jombang. *Jurnal Agriscience*, *3*(3), 2745–7427. https://journal.trunojoyo.ac.id/agriscience

Amalia, D. N., Kurniati, Y., & Wahyuni, I. (2023). Kinerja Usahatani Kopi Liberika di Kecamatan Betara Kabupaten Tanjung Jabung Barat. *Agricultural Socio-Economic Empowerment and Agribusiness Journal*, *1*(2), 83. https://doi.org/10.20961/agrisema.v1i2.63967

Davis, A. P., Kiwuka, C., Faruk, A., Walubiri, M. J., & Kalema, J. (2022). The Re-emergence of Liberica Coffee As A Major Crop Plant. *Journal Nature Plants*, *8*(12), 1322–1328. https://doi.org/10.1038/s41477-022-01309-5

Firmansyah, D., & Dede. (2022). Teknik Pengambilan Sampel Umum dalam Metodologi Penelitian: Literature Review. *Jurnal Ilmiah Pendidikan Holistik (JIPH)*, *1*(2), 85–114. https://doi.org/10.55927

Hamzah, M. S., Baroh, I., & Harpowo. (2021). Analisis Pemasaran Biji Kopi Robusta di Desa Jambuwer Kecamatan kromengan Kabupaten Malang. *Journal of Agricultural Sosioeconomics and Business*, *4*(2), 65–74. https://doi.org/10.22219/agriecobis

Hariyanto, Y., & Achmar, M. (2019). Analisis Nilai Tambah Usaha Kopi Arabika "ARGOPURO COFFEE" Pada Kelompok Masyarakat (POKMAS) Walida Di Desa Tlogosari Kecamatan Sumbermalang. *AGRIBIOS : Jurnal Ilmiah*, *17*(1), 15–25.

Hasni, D., Yusriana, & Auliaddin. (2022). Analisis Nilai Tambah Pada Rantai Pasok Produk Kopi Arabika Dengan Metode Hayami (Studi Kasus di Kabupaten Aceh Tengah). *Jurnal Agrointek*, *16*(4), 560–572. https://doi.org/10.21107/agrointek.v16i4.13104

Herawati, D., Loisanjaya, M. O., Kamal, R. H., Adawiyah, D. R., & Andarwulan, N. (2022). Profile of Bioactive Compounds, Aromas, and Cup Quality of Excelsa Coffee (Coffea liberica var. dewevrei) Prepared from Diverse Postharvest Processes. *International Journal of Food Science*, *2022*. https://doi.org/10.1155/2022/2365603

Hidayanti, N. S., Aji, J. M. M., & Hapsari, T. D. (2021). Added Value Of Robusta Coffee Products Of "Dwi Tunggal" Farmer Group In Bromo Mountain Slope. *IOP Conference Series: Earth and Environmental Science*, *672*(1). https://doi.org/10.1088/1755-1315/672/1/012024

Hidayat, M. R., Wathoni, N., & Amiruddin. (2020). Analisis Nilai Tambah Dan Pemasaran Kopi Organik: Studi Kasus Pada Kelompok Tani Mule Paice Di Desa Batu Mekar Kecamatan Lingsar Kabupaten Lombok Barat. *Jurnal Agroteksos*, *30*(3), 161–172.

Hidayat, U. (2022). Analisis Nilai Tambah Pengolahan Buah Cherry Kopi Dalam Upaya Meningkatkan Manfaat Ekonomi Koperasi. *Jurnal Ilmiah Multi Disiplin Indonesia*, *1*(8), 1130–1142.

Huda, M. F., & Cahyono, H. (2021). Peningkatan Pertumbuhan Ekonomi Melalui Pengembangan Sektor Unggulan Di Kabupaten Jombang. *INDEPENDENT : Journal Of Economics*, *1*(2), 76–91. https://journal.unesa.ac.id/index.php/independent

Kembaren, E. T., & Muchsin. (2021). Pengelolaan Pasca Panen Kopi Arabika Gayo Aceh. *Jurnal Visioner Dan Strategis*, *10*(1), 29–36.

Maghfiroh, A. (2021). Pola Pertumbuhan Perekonomian melalui Sektor Unggulan Daerah Kabupaten Jombang. *Journal of Economic, Management, Accounting and Technology*, *4*(2), 119–129. https://doi.org/10.32500/jematech.v4i2.1560

Muzkiyah, D., Jakiyah, U., & Heryadi, D. Y. (2022). Analisis Nilai Tambah Agroindustri Keripik Pisang Agroindustry. *Jurnal Ilmu Pertanian Dan Perkebunan*, *4*(1), 47–56. https://jurnal.ugp.ac.id/index.php/JIPP

Nadhiroh, S. R., & Qurrata, V. A. (2020). Pemanfaatan Potensi Lokal Guna Meningkatkan Perekonomian Masyarakat Di Kabupaten Jombang. *Prosiding Hasil Pengabdian Kepada Masyarakat (HAPEMAS 2)*.

Ningtyas, H., Zuhriyah, A., Triyasari, R., Isdiana, & Suprapti. (2022). Faktor-Faktor Yang Mempengaruhi Pendapatan Petani Kopi (Studi Kasus Di Desa Wonosalam , Kecamatan Wonosalam, Kabupaten Jombang. *Jurnal Agriscience* , *3*(2), 480–498. https://journal.trunojoyo.ac.id/agriscience

Nugraha, I. D. G. S., Wiranatha, A. S., & Yoga, I. W. G. S. (2019). Analisis Nilai Tambah Pada Rantai Pasok Kopi Robusta Olah Kering Di Desa Munduk Temu, Pupuan, Tabanan. *Jurnal Rekayasa Dan Manajemen Agroindustri* , *7*(1), 72–80.

Rahmalia, D., Zakaria, W. A., & Rupaidah, E. (2023). Analisis Nilai Tambah Kopi Bubuk Tjap Tugu Liwa (Studi Kasus Pada Agroindustri Tjap Tugu Liwa di Kecamatan Balik Bukit Kabupaten Lampung Barat). *Jurnal Ilmiah Mahasiswa Agroinfo Galuh*, *10*(1), 304–314.

Rizkiawan, M. F., Tjahaja, I., Laily, D. W., & Veteran, N. (2023). Analisis Nilai Tambah Usaha Pengolahan Kopi Green Beans dan Kopi Bubuk di Begawan Ringgit * Muhammad Faiz Rizkiawan, Indra Tjahaja, Dona Wahyuning Laily. *Jurnal Media Agribisnis*, *8*(1), 1–13. https://doi.org/10.33087/mea.v8i1.144

Rosiana, N. (2020). Dinamika Pola Pemasaran Kopi Pada Wilayah Sentra Produksi Utama Di Indonesia. *Jurnal Agrosains Dan Teknologi*, *5*(1).

Saifullah, R., Raharja, S., & Suharjo, B. (2021). Strategi Pengembangan Komoditas Kopi Excelsa Di Kabupaten Jombang Provinsi Jawa Timur. *Jurnal Manajemen IKM*, *16*(1), 17–24.

Simatupang, A. E. C., Simatupang, J. T., & Berutu, P. T. S. (2022). Analisis Nilai Tambah Dan Strategi Pengembangan Agroindustri Kopi Bubuk Robusta. *Jurnal Methodagro*, *8*(1), 67–76.

Sinaga, N. M. R., Girsang, R., & Hia, H. (2022). Analisis Nilai Tambah Pengolahan Kopi Menjadi Sabun Kopi Di Desa Simpang Teritit, Kecamatan Wih Pesam, Kabupaten Bener Meriah (Industri Rumah Tangga Laysia Gayo). *Jurnal Darma Agung*, *30*(3), 1073–1083.

Siregar, A. P., & Oktaviana, N. (2020). Realokasi Kartu Pra Kerja Dalam Mendukung Intensifikasi Sektor Pertanian. *Agrisaintifika: Jurnal Ilmu - Ilmu Pertanian*, *4*(1), 1–13.

Tamaradewi, R. N., Miftah, H., & Yusdiarti, A. (2019). Analisis Nilai Tambah Dan Strategi Pengembangan Usaha Kopi (Coffea, sp) Di Kelompok Tani Hutan (KTH) Cibulao Hijau. *Jurnal Agribisains*, *5*(2). https://doi.org/10.30997/jagi.v5i2.2322

Wahyuni, D. (2019). Pengaruh Harga Terhadap Keputusan Pembelian Kopi Excelsa Seduh Di Warung Pojok Wonosalam Jombang. *JPEKBM (Jurnal Pendidikan Ekonomi, Kewirausahaan, Bisnis Dan Manajemen)*, *3*(2), 29. https://doi.org/10.32682/jpekbm.v3i2.1472

Waknate, R., Gultom, F., & Harahap, A. F. M. (2022). Analisis Nilai Tambah Dan Strategi Pengembangan Usaha Pengolahan Specialty Coffee Di Kecamatan Wih Pesam Kabupaten Bener Meriah Provinsi Aceh. *Jurnal Prointegrita*, *6*(1), 152–169.

Wibowo, Y., & Palupi, C. B. (2022). Analisis Nilai Tambah Pengolahan Biji Kopi Arabika (Studi Kasus: Rumah Kopi Banjarsengon, Jember). *JURNAL AGROTEKNOLOGI*, *16*(01), 37. https://doi.org/10.19184/j-agt.v16i01.28209

Yekti, R. P., Anggraeni, O. J., Cnawp, R. P., Djamali, R. A., & Putra, D. E. (2022). Strategy Directions for the Potential Development of Robusta Coffee Based on Social Forestry with Value Chain and Added Value Approaches. *Budapest International Research and Critics Institute Journal*, *5*(4), 29840–29852. https://doi.org/10.33258/birci.v5i4.7139

Yunas, N. S. (2019). Implementasi Konsep Penta Helix dalam Pengembangan Potensi Desa melalui Model Lumbung Ekonomi Desa di Provinsi Jawa Timur. *Matra Pembaruan*, *3*(1), 37–46. https://doi.org/10.21787/mp.3.1.2019.37-46

Zain, F. A., & Nurrochmat, D. R. (2021). Analisis Finansial Dan Nilai Tambah Usaha Agroforestry Kopi Pada Program CSR PT Indonesia Power Up Mrica Kabupaten Banjarnegara. *Risalah Kebijakan Pertanian Dan Lingkungan*, *8*(3), 109–120.

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Research Article

Correlation between the Performance of Agricultural Extension Workers and the Behavior of Vegetable Farmers in Terjun, Medan Marelan, North Sumatra, Indonesia

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ABSTRACT

This study aims at assessing the performance of agricultural extension services (also known as agricultural advisory services) and the behavior of vegetable farmers while examining the correlation between these two variables. Data were collected through direct interviews, discussions with farmers, and on-site observations conducted in the Terjun region of Medan Marelan, North Sumatra, Indonesia. A simple random sampling method was employed, with 48 samples selected without consideration of population strata. This research adopts a descriptive and quantitative qualitative research approach. The findings reveal two key performance indicators for agricultural extension workers. First, the assessment of visits and training indicated an average score of 146.2, with a 76.14% rating, categorizing it as 'good.' Second, the evaluation of the extension workers' performance yielded a similar score of 146.2, also categorized as 'good.' The correlation analysis between farmer behavior and the performance of agricultural extension workers yielded three distinct outcomes. Firstly, the correlation between farmers' knowledge and the performance of extension workers resulted in a value of 0.175, indicating a very weak correlation with a significance value exceeding 0.05. Secondly, the correlation between farmers' characteristics and the performance of extension workers showed a coefficient of 0.014, suggesting a very weak correlation with a significance value exceeding 0.05. Lastly, the correlation between farmers' skills and the performance of extension workers resulted in a coefficient of 0.166, denoting a very weak correlation with a significance value exceeding 0.05.

INTRODUCTION

Initially, agricultural development primarily centered on production; however, contemporary agricultural development necessitates an agribusiness-oriented approach, encompassing not only production but also market-oriented strategies (Denysiuk et al., 2023; Krasnorutskyy, 2022). A prominent facet of agribusiness-centered development initiatives involves the cultivation of horticultural commodities, with a specific focus on the diversification of crops, environmental sustainability, and the expansion of production hubs. The

advancement of horticultural sub-commodities, particularly vegetables, demands a concentrated and commercially-driven effort on an agribusiness scale, underpinned by professional management. The overarching objectives of this approach are to stimulate job creation, augment the income of agribusiness stakeholders, and bolster regional revenue and foreign exchange reserves. These endeavors align with the overarching goals of agricultural development in Indonesia, which include elevating agricultural output, enhancing the financial well-being of farmers, improving the quality of food products, bolstering community nutrition, and catalyzing economic prospects in rural areas (Bahua, 2016).

Development encompasses endeavors aimed at instigating positive societal transformation, and agricultural development constitutes a pivotal dimension of this broader pursuit (Alexander, 2022; Helfenstein et al., 2022). Agricultural development transcends mere economic enhancement; it necessitates concomitant human development, with farmers serving as integral participants. The active engagement and benefit derived by farmers from development initiatives are contingent upon the advancement of individual quality.

A crucial element of agricultural development, agricultural extension services (also known as agricultural advisory services) plays a fundamental role in empowering farmers and various stakeholders within the agricultural sector to augment productivity, income, and overall welfare. The role of agricultural extension within development activities is paramount, acting as a vital link connecting farmers with development programs. This linkage through agricultural extension activities facilitates the cultivation of farmers' human resources, instilling them with qualities that embody technological proficiency, openness, transparency, and active participation in civil society (Tamsah & Yusriadi, 2022).

In accordance with the Regulation of the Minister of Agriculture No. 273/Kpts/OT.160/2007, an extension worker holds the authority, sanctioned by an officially recognized organization within the realms of agriculture, fisheries, and forestry, to facilitate agricultural extension activities. Notably, the Minister of Agriculture's Regulation No. 37/Permentan/OT.10/3/2007 delineates a key responsibility of extension workers: fostering the maturation and capacity development of farmers, promoting their autonomy, and enhancing their responsibility in the utilization and enhancement of agricultural resources (Hernanda & Fatchiya, 2015).

Agricultural extension workers are tasked with the transformation of farmers' conventional modes of thought, labor, and lifestyle into contemporary, forward-looking practices aligned with current agricultural advancements. An extension worker assumes the role of an educator, equipped with the ability to induce changes in the knowledge, skills, attitudes, and practices of the farmers under their supervision. Furthermore, an extension worker must embody leadership qualities, possess the capacity to captivate farmers' attention and elicit the desired outcomes, while skillfully directing farming activities towards improved profitability and efficiency. These extension workers often collaborate with farmer leaders for the development of extension materials, integrating various competencies such as effective communication, comprehensive knowledge, and adaptability to the diverse characteristics of farmers (Bahua et al., 2010; Hernanda & Fatchiya, 2015).

Extension workers are entrusted with pivotal tasks and functions, and their effectiveness hinges on their ability to function as motivators, educators, supporters, and catalysts for behavioral shifts within the agricultural community. Consequently, extension workers must possess a diverse array of competencies, including adept communication skills, an in-depth knowledge base, and the flexibility to tailor their approach to suit the unique attributes of the farmers they serve (Hernanda & Fatchiya, 2015).

The government recognizes the pivotal role of agricultural extension workers in advancing the agricultural sector as they directly engage with farmers. Their successful execution of extension activities hinges upon their own commitment and capabilities. Extension workers are entrusted with the task of formulating work plans and delivering extension services tailored to the specific requirements of target communities. To fulfill this mandate, proficient and capable extension workers are imperative in discharging their responsibilities. These workers serve as guides, technicians, liaisons, organizers, and catalysts who influence farmers within the agricultural context (Sudiadnyana et al., 2019).

Performance, in the organizational context, refers to the tangible accomplishments or achievements of an individual as they effectively and efficiently carry out their designated roles and responsibilities over a defined period. The effectiveness of extension workers is of paramount importance as it serves to persuade policymakers and secure funding for extension programs, reinforcing regional development. Extension workers should endeavor to design extension initiatives aligned with the region's potential and market demands, catering to diverse community needs. The superior performance of agricultural extension workers substantially contributes to heightened agricultural yields, signifying their pivotal role in addressing the challenges faced by farmers throughout the agricultural process (Sudiadnyana et al., 2019).

The Minister of Administrative Reform's Regulation No: PER/19/M.PAN/10/2008, which outlines the Functional Position of Agricultural Extension Workers and their Performance Evaluation, stipulates that the Performance of Agricultural Extension encompasses two key components:

1. Training and Visits

The training component of agricultural extension combines instructional sessions with the primary objective of enhancing the capacities of extension workers in fulfilling their duties. Subsequently, visits to individual farmers or farmer groups are conducted in accordance with a pre-established schedule, with the overarching aim of achieving extension goals, including instigating changes in the behavior, skills, and knowledge of farmers.

2. Evaluation

Evaluation constitutes an integral facet of the extension process, involving an assessment of changes in various aspects, including farmers' knowledge, behavior, attitudes, the availability of facilities and infrastructure, and the efficacy of extension methods employed (Sugiarta et al., 2017).

Behavior encompasses a set of actions undertaken by individuals in response to various stimuli, gradually evolving into habits influenced by personal values. Human behavior represents human actions and activities, encompassing observable and unobservable interactions with the environment. This expression materializes in the form of knowledge, attitudes, and actions. Behavior can be rationally comprehended as an organism's or individual's response to external stimuli, taking on two forms: passive and active. The passive form comprises internal reactions occurring within individuals, while the active form denotes behavior directly observable by others (Hernanda & Fatchiya, 2015).

Farmers constitute the primary stakeholders in agricultural production and represent a segment of the Indonesian population actively pursuing enhanced well-being and intelligence. One means of elevating intelligence is through extension activities. The presence of extension workers is anticipated to facilitate the absorption and acceptance of agricultural information by farmers. The extent to which farmers utilize information significantly influences the effectiveness of extension initiatives. Effective implementation of activities, as advised by extension workers, necessitates suitable communication channels to ensure farmers' receptive engagement. A strong rapport between Field Agricultural Extension Workers (Indonesian: *Penyuluh Pertanian Lapangan*, abbreviated PPL) and farmers in the Medan Marelan region contributes to the success of PPL activities, potentially enhancing farmers' skills and altering their policies regarding vegetable farming. Extension activities play a crucial role in assisting farmers in achieving superior outcomes in vegetable production. Proficient PPL implementation serves as a catalyst for farmers to enhance their vegetable cultivation practices (Bahua et al., 2010).

Medan Marelan, situated in North Sumatra, Indonesia, encompasses a population of 182,515 individuals and spans an area of 44.47 square kilometers. As per data from the Agricultural Extension Center, a single PPL operates in Terjun, Medan Marelan, North Sumatra, Indonesia, servicing a single farmer group. Given the limited agricultural knowledge and awareness among the local farming community, the presence of PPLs in this region assumes considerable significance.

Farmer groups in Terjun, Medan Marelan, North Sumatra, Indonesia, exhibit active engagement in extension service activities. This active participation is driven by the belief that extension workers provide invaluable guidance, solutions, and educational support, aiding farmers in achieving optimal crop growth, thereby enhancing product quality and market value. Motivated by these dynamics, the present study seeks to explore "The Correlation Between Agricultural Extension Performance and Vegetable Farmer Behavior in Terjun, Medan Marelan, North Sumatra, Indonesia."

The Research Questions; How is the performance of agricultural extension described in Terjun, Medan Marelan, North Sumatra, Indonesia?; How is the behavior of vegetable farmers towards extension performance in Terjun, Medan Marelan, North Sumatra, Indonesia?; and What is the correlation between farmer behavior and the performance of agricultural extension in Terjun, Medan Marelan, North Sumatra, Indonesia?

The Research Objectives is to assess the performance of agricultural extension in Terjun, Medan Marelan, North Sumatra, Indonesia; To analyze the behavior of vegetable farmers regarding the role of extension in Terjun, Medan Marelan, North Sumatra, Indonesia; and To determine the correlation between farmer behavior and the performance of agricultural extension in Terjun, Medan Marelan, North Sumatra, Indonesia.

METHOD

Research Method

This research adopts a descriptive approach that combines qualitative and quantitative methodologies to address contemporary issues through data analysis. The descriptive qualitative aspect of this study is applied to gather insights into the performance of agricultural extension workers and the behavior of vegetable farmers (Sugiono et al., 2021).

Method Used for Research Site Determination

The research site was determined using purposive sampling, a technique guided by specific criteria. It was conducted in Terjun, Medan Marelan, North Sumatra, Indonesia, selected due to the active participation of vegetable farmer groups in extension activities.

Sampling Method

The research employed the simple random sampling method to select respondents. This approach, known as simple random sampling, entails the random selection of individuals from the population without consideration of strata. It can be executed by random and ordinal tables (Sudiadnyana et al., 2019). In the case of this study, the total population of registered farmer group members in Terjun, Medan Marelan, North Sumatra, Indonesia, was 325 farmers. To determine the sample size, the study followed established guidelines: when the subject population is less than 100, it is advisable to include all subjects as samples, whereas if the subject population exceeds 100, a sample size ranging from 10-20% or 20-25% can be selected (Yalitoba, 2019). Considering practicality and constraints, this study opted for a 15% sample of the total population, calculated using the Slovin formula:

$$n = 15\% \times 325$$
$$= 48{,}75$$
$$= 48 \text{ sample}$$

Where:
n = number of samples
N = total population

Data Collection Methods

This research employed both primary and secondary data collection methods. Primary data was acquired through face-to-face interviews and discussions with farmers in Terjun, Medan Marelan, North Sumatra, Indonesia. In contrast, secondary data was sourced from relevant agencies, such as the Central Bureau of Statistics office, along with various supporting journals, literature, and online resources. The data collection techniques encompassed (Bakhtiar et al., 2020):

1. Observation, entailing direct observation of the subject of study.
2. Interviews, involving structured interviews with the sampled farmers.

Data Analysis Method

To address the first research question regarding the performance of agricultural extension in Terjun, Medan Marelan, North Sumatra, Indonesia, the performance of agricultural extension workers encompasses three fundamental aspects: training, visits, and evaluation. These three dimensions are systematically executed by extension workers on a weekly basis. The analytical approach employed is descriptive statistical data analysis, which entails the use of frequency distribution tables to assess extension worker performance in Terjun, Medan Marelan, North Sumatra, Indonesia. To gauge the performance of extension workers in this context, a Likert Scale is applied, with measurements assigned weighted scores for each indicator. To facilitate data analysis, a scoring system is utilized:

Table 1. Alternative Answer for Likert Scale

Alternative Answer	Weight
Strongly Agree (SA)	4
Moderately Agree (MA)	3
Agree (A)	2
Disagree (D)	1

Source: Sugiono et al. (2021)

To derive interpretation results, it is imperative to ascertain the highest score value, score index, and score interval. This involves the following calculations:

1. Determining the maximum score:
   Maximum score = Number of Respondents × Likert Highest Score × Number of Questions.
2. Computation of the score index:
   Score Index (%) = (Calculated Score / Maximum Score) × 100.
3. Interval Formula:

$$I = \frac{100}{\text{Jumlah skor likert}}$$

To facilitate data analysis, a scoring system is implemented. As per Sugiono et al. (2021), the criteria for interpreting respondents' achievement levels based on their scores are as follows:

1. Scores ranging from 20% to 39.99% are categorized as "Poor."
2. Scores ranging from 40% to 59.99% are categorized as "Good enough."
3. Scores ranging from 60% to 79.99% are categorized as "Good."
4. Scores ranging from 80% to 100% are categorized as "Very good."

To address the second research question, pertaining to the behavior of vegetable farmers regarding the performance of extension services in Terjun, Medan Marelan, North Sumatra, Indonesia, qualitative data was acquired through interviews and observations. In this study, the researchers aimed to elucidate, categorize, and compare the data to draw an informative conclusion. Performance was assessed by aggregating the scores of both positive and negative questions.
Formula:

$$Interval = \frac{Maximum\ Score - Minimum\ Score}{Number\ of\ Categories}$$

$$Interval = \frac{3-1}{3} = \frac{2}{3} = 0{,}66$$

1.00 + 0.66 = 1.66
1.67 + 0.66 = 2,33
2.34 + 0,66 = 3
3.01+ 0,66 = 3.67

The classification of research findings aligns with the calculated class intervals as follows:

- 3.01-3.67, categorized as “high.”
- 2.34-3.00, categorized as “medium.”
- 1.67-2.33, categorized as “low.”
- 1.00-1.66, categorized as “very low.”

To address the third research question concerning the correlation between farmer behavior and the performance of agricultural extension in Terjun, Medan Marelan, North Sumatra, Indonesia, IBM SPSS Statistics 25 was utilized. After acquiring data suitable for statistical analysis, it was processed and analyzed using non-parametric statistics through the Spearman rank correlation test (rho or rs) within the SPSS 25 program. The Spearman rank coefficient formula, as outlined by (MacFarland & Yates, 2016), is as follows:

$$rs = \frac{\sum x^2 + \sum y^2 - \sum di^2}{2\sqrt{\sum x^2 \sum y^2}}$$

Where:
rs : Spearman correlation coefficient
di : Difference
x : Independent variable
y : Dependent variable

To establish the correlation between the two variables, namely the correlation between farmer behavior and the performance of agricultural extension workers in the Medan Marelan sub-district, please refer to Table 1 below. The guidelines for interpreting the correlation coefficient, as suggested by Sugiono et al. (2021).

Table 2. Interpretation of Correlation Coefficient

No	Interval	Correlation
1	0,00 – 0,199	Very Low
2	0,20 – 0,399	Low
3	0,40 – 0,599	Moderate
4	0,60 – 0,799	Strong
5	0,80 – 1,00	Very strong

Source: Sugiono et al. (2021)

RESULTS AND DISCUSSION

Performance of Extension Workers in Terjun

Agricultural extension in Terjun, Medan Marelan, North Sumatra, Indonesia, entails the active engagement of extension workers in the field, with the objective of assisting farmers by offering insights to facilitate informed decision-making. The performance evaluation of agricultural extension in Terjun encompasses three primary components: conducting visits, providing training, and conducting evaluations.

To gauge the assessment of agricultural extension workers' performance in Terjun, Medan Marelan, North Sumatra, Indonesia, it can be elucidated through the respondents' evaluations, as follows:

Performance of Extension Worker Visit

Table 3. Indicators of Data for Visit Performance and Training of Extension Workers

No	Statements	Respondents' Perceptions								Total Score	%
		SA		A		D		SD			
		R	S	R	S	R	S	R	S		
1	Agricultural extension workers assist farmers in obtaining production facilities.	16	64	18	54	7	14	7	7	139	72,39
2	Agricultural extension workers convey information through easily understandable media.	22	88	24	72	2	4	-	-	164	85.41
3	Agricultural extension workers excel in communication.	22	88	24	72	2	4	-	-	164	85.41
4	Agricultural extension workers excel in supervision.	17	68	27	81	3	6	1	1	156	81.25
5	Agricultural extension workers ensure that the information they convey is readily comprehensible to farmers.	3	12	22	66	19	38	4	4	120	62.5
6	Agricultural extension workers conduct visits regularly, typically occurring 1 to 3 times a month.	22	88	24	72	2	4	-	-	164	85.41
7	Agricultural extension workers refrain from endorsing activities conducted by farmer groups.	-	-	-	-	27	54	21	21	75	39.06
8	Agricultural extension workers actively promote the enhancement of farmers' skills.	22	88	25	75	1	2	-	-	165	85.93
9	Agricultural extension workers offer training sessions to farmer groups.	21	84	20	60	6	12	1	1	157	81,77
10	Agricultural extension workers demonstrate the process of selecting high-quality production facilities, such as seeds, fertilizers, pesticides, and equipment.	17	68	29	87	2	4	-	-	159	82.81

Source: Primary data processed, 2023

Description: SA = Strongly Agree, A=Agree, D= Disagree, SD= Strongly Disagree, R= Respondent, S = Score

The results of farmers' perceptions regarding the performance of agricultural extension workers in terms of visits and evaluations indicate that the highest score is attributed to the statement affirming that agricultural extension workers actively promote farmers' skill enhancement, receiving a score of 165, corresponding to 85.93%. Conversely, the lowest score pertains to the statement indicating that agricultural extension workers refrain from endorsing activities organized by farmer groups, with a score of 75, equivalent to 39.06%. Based on the calculations presented in the table above, it can be deduced that the performance of extension workers in conducting visits and training falls under the "good" category.

Direct research in the field, involving the distribution of questionnaires to farmers, underscores that extension workers exhibit competence. Farmers who have availed themselves of the guidance and training offered by extension workers every Tuesday or Thursday at 09:00 AM, in the designated focal area for vegetable farming within Terjun, are particularly appreciative. The extension activities, though not mandatory, serve as a valuable resource (Dos Santos et al., 2018).

During these sessions, extension workers provide instructions and training in plain language, ensuring farmers grasp the guidance easily. They cover various aspects, including the essential steps in vegetable cultivation such as securing quality production materials like seeds, fertilizers, pesticides, and suitable agricultural equipment. The instruction encompasses the broader spectrum of cultivation techniques, encompassing seeding, plowing, planting, maintenance, and harvesting.

The extension workers diligently document the proceedings, aligning with prior research findings (Imran et al., 2019), which underscore that farmers derive significant benefits from extension activities. These activities not only enhance the farmers' knowledge and skills but also result in practical applications in their agricultural endeavors. This positive impact parallels findings from previous studies conducted, emphasizing that extension methods implemented by local government agencies, particularly Agriculture Offices, have empowered farmers with knowledge, fostered innovation, and improved their agricultural practices.

Performance of Extension Worker Evaluation

Table 4. Indicators of Data for Performance of Extension Worker Evaluation

No	Statement	Respondents' Perception								Total Skor	%
		SD		A		D		SD			
		R	S	R	S	R	S	R	S		
1	Agricultural extension workers facilitate access to capital for farmers.	-	-	-	-	30	60	18	18	78	40.62
2	Agricultural extension workers promote collaboration among farmers and farmer groups.	22	88	24	72	2	4	-	-	164	85.41
3	Agricultural extension workers motivate farmers to enhance their production.	22	88	25	75	1	2	-	-	165	85.93
4	Agricultural extension workers foster innovation and the generation of novel ideas among farmers.	22	88	25	75	-	-	1	1	164	85.41
5	Agricultural extension workers emphasize the significance of farmers participating in farmer groups.	20	80	24	72	4	8	-	-	160	83.33
Average										**146.2**	**76.14**

Source: Primary data processed, 2023

Description: SA = Strongly Agree, A=Agree, D= Disagree, SD= Strongly Disagree, R= Respondent, S = Score

Based on the findings presented in Table 4, it is evident that farmers' perceptions of agricultural extension workers' performance regarding extension programs can be summarized. The highest score, indicating strong agreement, is associated with the third statement - agricultural extension workers play a pivotal role in motivating farmers to enhance their production, achieving a score of 165 and a percentage of 85.93%. In contrast, the lowest score is linked to the first statement - the facilitation of capital access for farmers, scoring 78 with a percentage of 40.62%.

In practice, farmers reported that they did not directly receive capital from the extension workers. Instead, they obtained subsidized fertilizers and seeds from the government, which were distributed by agricultural extension workers to farmer groups. These farmer groups, in turn, allocated seeds and subsidized fertilizers to their members. Subsidized fertilizers were made available to farmers at a reduced cost, such as Urea fertilizer at IDR 2,500 per kilogram and NPK at IDR 3,500 per kilogram. Seeds were distributed to farmers at no cost. Furthermore, agricultural extension officers encouraged farmers to join these farmer groups, highlighting the various benefits, including access to subsidized seeds and fertilizers, as well as opportunities for collaborative efforts to increase production (Famela et al., 2023).

This observation aligns with prior research, as Hernanda and Fatchiya (2015) underscore the essential role of evaluation in extension, emphasizing its position in program planning. This perspective, positing that evaluation involves the analysis of an object's strengths and weaknesses, offering insight into unmet needs. Similar to program preparation, evaluation serves as a guiding tool for extension workers and stakeholders during program implementation. Further maintains that evaluation can be linked to the analysis of program-

related challenges within the program environment or the target conditions to be realized. Evaluation, therefore, should be an integral component of extension activities, aiding in the identification of program deficiencies and assessing the extent to which program objectives have been accomplished.

Behavior of Vegetable Farmers towards the Performance of Agricultural Extension Workers

The assessment of vegetable farmers' behavior in Terjun, Medan Marelan, North Sumatra, Indonesia, involves evaluating their knowledge, attitudes, and skills. These criteria are gauged based on various provided statements, and the measurement of farmer behavior is presented in Tables 5, 6, and 7 below.

Table 5. Level of Farmers' Knowledge in Terjun, Medan Marelan

No	Statement	Total Score	Criteria
1	Conventional planting system with established spacing.	103	Moderate
2	Essential land cultivation activities (clearing, hoeing, plowing).	112	Moderate
3	Optimal timing for fertilization (during tillage, maintenance, or pre-harvest).	120	High
Total		**335**	Moderate
Average		**112**	

Source: Primary data processed, 2023

Table 5 illustrates the level of knowledge among farmers in Terjun, Medan Marelan. The highest score was obtained for the third statement, indicating the ideal timing for fertilization during various stages such as land cultivation, maintenance, or before harvest, with a score of 120, classifying it as "high." Conversely, the lowest score was assigned to the first statement, representing the use of a conventional planting system with known planting distances, resulting in a score of 103, categorizing it as "medium."

Field research indicates that farmers in Terjun primarily employ the conventional planting system. The cultivation process begins with land clearing, ensuring that the soil is free from weeds. Soil processing occurs approximately one week before planting, followed by creating planting holes spaced at 40x50 cm. Subsequently, 4-week-old seedlings are transplanted into these pre-prepared holes. Ongoing maintenance includes the replacement of dead plants, weeding to manage any unwanted plant growth, and strategic watering based on prevailing weather conditions. During dry spells, watering is conducted either in the morning or afternoon. Fertilization, administered three times, is vital. Pesticides are applied as needed to combat plant pests. The fertilizers utilized encompass Urea, NPK, Poska, and KCL, with the initial application of manure during planting, followed by subsequent applications at 2 and 5 weeks of age.

Table 6. Level of Farmers' Attitudes in Terjun, Medan Marelan

No	Statement	Total Score	Average Score	Criteria
1	Utilizing manure to enhance soil nutrients and improve its elemental composition.	110	2.29	Moderate
2	Applying fertilization techniques through spraying facilitates a more rapid and uniform distribution, enhancing plant absorption.	107	2.23	Moderate
3	Employing high-quality local seeds is conducive to elevating production yields.	119	2.48	High
Total		**336**	**7.00**	**Moderate**
Average		**112**	**2.33**	

Source: Primary data processed, 2023

Based on the findings presented in Table 6, the assessment of farmers' attitudes in Terjun, Medan Marelan is notable. The highest score is attributed to the third statement, which highlights that the utilization of locally superior seeds significantly contributes to enhanced production, earning a score of 119 and falling under the high criteria. Conversely, the lowest score pertains to the first statement, emphasizing the utilization of manure to enrich soil nutrients and elements, achieving a score of 110, classifying as moderate.

The empirical investigation involved distributing questionnaires directly to farmers in the field. According to the responses, farmers typically apply manure at the initiation of vegetable planting, using various types such as chicken manure, cow manure, and goat manure. The primary aim of this practice is to boost soil nutrient levels. Furthermore, the fertilization process is performed through spraying, albeit in a relatively manual and straightforward manner. Farmers dissolve the fertilizer in water within a bucket, stir it until achieving a homogeneous mixture, and subsequently apply it using a repurposed glass directly onto the vegetable plants. Additionally, farmers predominantly rely on seeds provided by agricultural extension workers. These extension

workers instruct the farmer group's leader to distribute the available fertilizers from the warehouse. While the fertilizers are not distributed free of charge (Charles & Hwang, 2011), they are offered at a reduced price compared to non-member farmers, underlining the importance of farmer group membership (Sugiono et al., 2021).

Table 7. Level of Farmers' Skills in Terjun, Medan Marelan

No	Statement	Total Score	Average Score	Criteria
1	Engaging in weeding approximately 20 days after the initial planting.	104	2.17	Moderate
2	Implementing specific plant spacing techniques during planting to ensure sufficient room for root absorption of fertilizers.	109	2.27	Moderate
3	Watering practices involve morning and evening sessions while avoiding over-saturating or allowing the soil to become excessively dry.	120	2.50	High
Total		**333**	**6.94**	Moderate
Average		**111**	**2.31**	

Source: Primary data processed, 2023

Following direct field research involving questionnaire distribution to farmers, it became evident that the skill levels of farmers in Terjun, Medan Marelan, North Sumatra, exhibit variations. Notably, the third statement highlighting the practice of morning and evening irrigation without creating excessively muddy or arid soil received the highest score, signifying a high level of proficiency (score of 120). Conversely, the statement regarding weeding plants approximately 20 days after planting received the lowest score, reflecting a medium proficiency level (score of 104). The variation in proficiency can be attributed to the diverse range of vegetables cultivated by farmers in the Medan Marelan.

The research also elucidated that weeding commences when the vegetables reach a 20-day growth stage, with subsequent weeding taking place approximately every two weeks, especially during the rainy season. Adequate plant spacing, a critical factor influencing plant growth, is determined to minimize competition among plants and optimize sunlight exposure. This parameter also facilitates seed quantity calculation and eases maintenance tasks, particularly weeding (Reddy, 2016; Saulić et al., 2022). The irrigation schedule is adjusted according to prevailing weather conditions, with watering executed in the morning and evening when dry conditions necessitate it.

Correlation between Behavior of Farmers and Performance of Extension Workers
Correlation between Knowledge of Farmers and Performance of Extension Workers

To compute the Spearman rank correlation based on questionnaire responses, the data initially needs to be transformed into ordinal form through ranking. The Spearman rank correlation coefficient was assessed using the SPSS Statistics software, applying the Spearman rank correlation method, yielding the subsequent output:

Tabel 8. SPSS Output for Analysis of Spearman Rank Correlation Coefficient between Knowledge of Farmers and Performance of Extension Workers

Correlations

			Extension Workers' Performance	Farmers' Knowledge
Spearman's rho	Extension Workers' Performance	Correlation Coefficient	1.000	.175
		Sig. (2-tailed)	.	.234
		N	48	48
	Farmers' Knowledge	Correlation Coefficient	.175	1.000
		Sig. (2-tailed)	.234	.
		N	48	48

Source: Primary data processed, 2023

Table 8 presents the correlation analysis results, which indicate a correlation coefficient of 0.175, derived from the Spearman rank test. This value suggests a very low correlation between farmers' knowledge and the performance of extension workers. Furthermore, considering the significance of the two-tailed test, it is evident that neither variable holds statistical significance, as the alpha value exceeds 0.05.

Field research findings reveal that farmers' knowledge remains relatively low. Many farmers choose not to participate in extension activities because they are not obligatory, some prefer to rely on their existing

knowledge, and others may be unable to participate due to age and limited educational backgrounds. Notably, the average educational attainment among farmers extends only up to the equivalent of high school. Additionally, the effectiveness of village-level counseling is hampered by the infrequent visits of extension workers, typically limited to approximately three times per month (Pasaribu & Novanda, 2022), with only one extension worker assigned to each farmer group despite their relatively large membership.

Correlation between Attitude of Farmers and Performance of Extension Workers

The Spearman rank correlation was calculated based on the questionnaire results. Initially, the data was transformed into ordinal values and ranked accordingly. The Spearman rank correlation coefficient was then computed using the SPSS Statistics program, resulting in the following output:

Tabel 9. SPSS Output for Analysis of Spearman Rank Correlation Coefficient between Attitude of Farmers and Performance of Extension Workers

Correlations

			Extension Workers' Performance	Farmers' Attitude
Spearman's rho	Extension Workers' Performance	Correlation Coefficient	1.000	.014
		Sig. (2-tailed)	.	.926
		N	48	48
	Farmers' Attitude	Correlation Coefficient	.014	1.000
		Sig. (2-tailed)	.926	.
		N	48	48

Source: Primary data processed, 2023

The table above reveals a correlation coefficient of 0.14, as derived from the Spearman rank test. This indicates a very low correlation between farmers' attitudes and the performance of extension workers. The significance value (Sig.) of 0.926 is greater than α (0.05), suggesting a lack of statistical significance in the relationship between these two variables.

Field research corroborates this finding, as it demonstrates that the correlation between farmers' attitudes and the performance of extension workers is notably weak (Alemnew & Abebe, 2023). Many farmers rely on traditional, inherited farming practices rather than adhering to the guidance provided by extension workers. For instance, although extension workers offer certified seeds at no cost, some farmers revert to using uncertified local seeds once the provided seeds are depleted due to the allure of lower prices. Consequently, this leads to suboptimal vegetable production results.

Additionally, farmers' limited participation in extension activities stems from the fact that extension officers only visit the land of the farmer group leader to conduct agricultural extension meetings (Cahyono & Agunga, 2016). This geographical distance between farmers' lands deters their attendance, and the absence of participation often goes unpunished as extension workers do not enforce consequences. Furthermore, the extension workers' role largely consists of offering advice and guidance upon farmers' request. Practical demonstrations in areas such as planting, crop care, and harvesting are seldom provided, and extension workers primarily fulfill a formality of their office duties. These factors contribute to the observed very low correlation between extension workers and farmers.

Correlation between Skill of Farmers and Performance of Extension Workers

In calculating the Spearman rank correlation from the questionnaire results, the data must first be transformed into ranked ordinal values. We conducted the Spearman rank correlation coefficient test using the SPSS Statistics program, which yielded the subsequent results:

Tabel 10. SPSS Output for Analysis of Spearman Rank Correlation Coefficient between Skill of Farmers and Performance of Extension Workers

Correlations

			Extension Workers' Performance	Farmers' Skill
Spearman's rho	Extension Workers' Performance	Correlation Coefficient	1.000	.166
		Sig. (2-tailed)	.	.261
		N	48	48
	Farmers' Skill	Correlation Coefficient	.166	1.000
		Sig. (2-tailed)	.261	.
		N	48	48

Source: Primary data processed, 2023

The table presented above was used to interpret the correlation between two variables, resulting in a correlation coefficient of 0.166 from the Spearman rank test. This value indicates a very weak correlation between farmers' skills and the performance of extension workers. Furthermore, the significance value was tested, with a value of Sig. 0.261, indicating a lack of significant correlation between the two variables.

Field research has provided insights into the weak correlation between farmer skills and extension workers' performance (Purnomo & Kusnandar, 2019). This is primarily due to the simplicity of the skills possessed by farmers, such as manual irrigation practices using basic tools like water machines. Although extension workers initially provide certified seeds to enhance productivity, their assistance is limited in frequency, prompting farmers to revert to using local, uncertified seeds, which are more affordable but yield suboptimal results in vegetable farming.

CONCLUSION

The performance of extension workers is assessed through the following indicators: firstly, visits and training, scoring an average of 146.2 with a 76.14% rating, categorizing it as 'good.' Secondly, the evaluation of extension worker performance also received a score averaging 146.2, with a 76.14 index, classifying it as 'good.' Farmers' behavior towards extension workers' performance is categorized into three aspects. First, the level of farmers' knowledge is rated with 'moderate' criteria, scoring an average of 112 and an index of 2.32%. Second, the attitude of farmers also falls within the 'moderate' category, with an average score of 112 and an index of 2.32%. Third, the skill level of farmers shows 'moderate' characteristics, averaging 111 in scores and 2.31% in index. The correlation between farmers' behavior and the performance of agricultural extension workers is divided into three sections. Firstly, the correlation between farmers' knowledge and the performance of extension workers is found to have a value of 0.175, indicating a very low correlation and a non-significant relationship ($\alpha > 0.05$). Secondly, the correlation between farmers' attitudes and the performance of extension workers is evaluated with a score of 0.014, indicating a very low correlation and a non-significant relationship ($\alpha > 0.05$). Thirdly, the correlation between farmers' skills and the performance of extension workers shows a result of 0.166, signifying a very low correlation and a non-significant relationship ($\alpha > 0.05$).

REFERENCES

Alemnew, W., & Abebe, A. (2023). Analysis of Research–Extension-Farmers Linkage: The Case of Dangila District, Ethiopia. *International Journal of Science, Technology and Society*. https://doi.org/10.11648/j.ijsts.20231101.11

Alexander, K. C. (2022). Agricultural Development and Social Transformation. *Journal of Rural Development*, *40*(2), 132. https://doi.org/10.25175/jrd/2021/v40/i2/168037

Bakhtiar, A., Sudibyo, R. P., Indriani, & Shodiq, W. M. (2020). The Dynamics of Horticultural Farmers Groups in Malang Regency and Batu City. *SOCA: Jurnal Sosial, Ekonomi Pertanian*, *14*(3), 473. https://doi.org/10.24843/SOCA.2020.v14.i03.p09

Bahua, M. I. (2016). *Kinerja penyuluh pertanian*. Deepublish.

Bahua, M. I., Jahi, A., Asngari, P. S., Saleh, A., & Purnaba, I. G. P. (2010). Faktor-faktor yang mempengaruhi kinerja penyuluh pertanian dan dampaknya pada perilaku petani jagung di Provinsi Gorontalo. *Jurnal Ilmiah Agropolitan*, *3*(1), 293–303.

Cahyono, E. D., & Agunga, R. (2016). Policy and Practice of Participatory Extension in Indonesia: A Case Study of Extension Agents in East Java Province. *Journal of International Agricultural and Extension Education*, 38–57. https://doi.org/10.5191/jiaee.2016.23303

Charles, M., & Hwang, H.-C. (2011). Subsidized Fertilizer Distribution Method in Zimbabwe. *Journal of Korean Society of Rural Planning*, *17*(4), 39–50. https://doi.org/10.7851/ksrp.2011.17.4.039

Denysiuk, O., Svitlyshyn, I., Tsaruk, I., Vikarchuk, O., & Dankevych, A. (2023). Diversification in the enterprises' activities for sustainable development in the agricultural sector. *RIVISTA DI STUDI SULLA SOSTENIBILITA'*, *12*(2), 85–102. https://doi.org/10.3280/RISS2022-002007

Dos Santos, G., De Souza, J. H., De Almeida, J. R., Rigolon, J. M., Gomes, M. S., Gomes, M. S., Dos Santos, R. B., & Cruz, R. O. (2018). The Extension Activities in The Process of Training University Students. *International Journal on Alive Engineering Education*, *5*(1), 39. https://doi.org/10.5216/ijaeedu.v5i1.53764

Famela, O., Aditya Prayudhi, L., & Zamrodah, Y. (2023). STRATEGI PENYALURAN PUPUK BERSUBSIDI DI KECAMATAN WONOTIRTO. *Grafting : Jurnal Ilmiah Ilmu Pertanian*, *13*(1), 27–32. https://doi.org/10.35457/grafting.v13i1.2770

Helfenstein, J., Diogo, V., Bürgi, M., Verburg, P. H., Schüpbach, B., Szerencsits, E., Mohr, F., Siegrist, M., Swart, R., & Herzog, F. (2022). An approach for comparing agricultural development to societal visions. *Agronomy for Sustainable Development*, *42*(1), 5. https://doi.org/10.1007/s13593-021-00739-3

Hernanda, T. A., & Fatchiya, A. (2015). Tingkat kinerja penyuluh pertanian di kabupaten Ogan Komering Ulu (OKU) Selatan. *Jurnal Penyuluhan*, *11*(1).

Imran, A. N., Muhanniah, M., & Giono, B. R. W. (2019). Metode penyuluhan pertanian dalam meningkatkan pengetahuan dan keterampilan petani (Studi kasus di Kecamatan Maros Baru Kabupaten Maros). *Jurnal AGRISEP: Kajian Masalah Sosial Ekonomi Pertanian Dan Agribisnis*, 289–304.

Krasnorutskyy, O. (2022). Methodological basics of the strategic development of hemp production at agricultural enterprises. *Ukrainian Journal of Applied Economics and Technology*, *7*(3), 255–260. https://doi.org/10.36887/2415-8453-2022-3-36

MacFarland, T. W., & Yates, J. M. (2016). Spearman's Rank-Difference Coefficient of Correlation. In *Introduction to Nonparametric Statistics for the Biological Sciences Using R* (pp. 249–297). Springer International Publishing. https://doi.org/10.1007/978-3-319-30634-6_8

Pasaribu, A. S., & Novanda, R. R. (2022). Effectiveness of Agricultural Extension Communication of Spinach Farming. *Agriecobis : Journal of Agricultural Socioeconomics and Business*, *5*(02), 143–148. https://doi.org/10.22219/agriecobis.v5i02.17358

Purnomo, S. H., & Kusnandar. (2019). Barriers to acceptance of information and communication technology in agricultural extension in Indonesia. *Information Development*, *35*(4), 512–523. https://doi.org/10.1177/0266666918767484

Reddy, P. P. (2016). Seed Quality, Treatment, Rate, Depth, and Metering. In *Sustainable Intensification of Crop Production* (pp. 143–154). Springer Singapore. https://doi.org/10.1007/978-981-10-2702-4_10

Saulić, M., Đalović, I., Božić, D., & Vrbničanin, S. (2022). PROCENA AKTIVNE REZERVE SEMENA KOROVSKIH BILJAKA U ZEMLJIŠTU. *Zbornik Radova / XXVII Savetovanje o Biotehnologiji Sa Međunarodnim Učešćem*, 93–98. https://doi.org/10.46793/SBT27.093S

Sudiadnyana, I. K. A., Setiawan, I. G., & Putra, A. (2019). Pengaruh Kinerja Penyuluh Pertanian Terhadap Perilaku Petani Pada Penerapan Tanam Jarwo 2: 1 Di Kecamatan Banjarangkan Kabupaten Klungkung. *Jurnal Manajemen Agribisnis*, *7*(1), 30–41.

Sugiarta, P., Ambarawati, I., & Putra, I. G. S. A. (2017). Pengaruh kinerja penyuluh pertanian terhadap perilaku petani pada penerapan teknologi PTT dan produktivitas padi di Kabupaten Buleleng. *Jurnal Manajemen Agribisnis*, *5*(2), 34–42.

Sugiono, E., Efendi, S., & Al-Afgani, J. (2021). Pengaruh Motivasi Kerja, Kompetensi, Dan Kompensasi Terhadap Kinerja Karyawan Melalui Kepuasaan Kerja Pt. Wibee Indoedu Nusantara (Pustaka Lebah) Di Jakarta. *Jurnal Ilmiah Manajemen, Ekonomi, & Akuntansi (MEA)*, *5*(1), 718–734.

Tamsah, H., & Yusriadi, Y. (2022). Quality of agricultural extension on productivity of farmers: Human capital perspective. *Uncertain Supply Chain Management*, *10*(2), 625–636. https://doi.org/10.5267/j.uscm.2021.11.003

Yalitoba, A. (2019). Pengaruh Tambahan Penghasilan Terhadap Kinerja Pegawai Pada Sekretariat Daerah Kabupaten Sigi. *Jurnal Kesejahteraan Sosial*, *6*(01).

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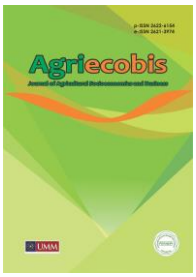

Research Article

Feasibility Analysis of Large Red Chili (Capsicum Annum L.) Farming in Tawangargo, Karangploso, Malang, Indonesia, Across Wet and Dry Seasons

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Seasonal Comparison

ABSTRACT

This study investigates the financial feasibility of large red chili (*Capsicum annum L.*) farming during both the rainy and dry seasons in Tawangargo, Karangploso, Malang, Indonesia. Many farmers in this region do not thoroughly evaluate the costs and revenues associated with their farming practices, leading to uncertainty regarding the financial feasibility of large red chili farming. The primary aim of this research is to assess the financial feasibility of such farming practices across seasons and to compare their financial viability. The research employs the analysis of the Revenue-to-Cost (R/C) ratio and a paired sample t-test to evaluate the financial feasibility of large red chili farming. Our findings reveal that large red chili farming in both rainy and dry seasons is financially feasible. The R/C ratio for the rainy season is 2.12, and for the dry season, it is 1.51, both of which exceed the critical threshold of 1, indicating the financial feasibility of farming and developing large red chili in this region. The results of the Paired Sample Test demonstrate significant differences in the financial feasibility of large red chili farming between the rainy and dry seasons in Tawangargo, Karangploso, Malang, Indonesia. The average of income per-hectare for large red chili farming is IDR 101,573,764 during the rainy season and IDR 45,393,331 during the dry season.

INTRODUCTION

The large red chili (*Capsicum annum L.*) commodity presents significant potential due to its high market value (Usman et al., 2021). East Java, one of Indonesia's leading provinces in large red chili production, contributed approximately 101.7 thousand tons to the total production in 2018. Prominent large red chili cultivation regions encompass Malang, Banyuwangi, Kediri, and Tuban. Among these, Malang stands out as a substantial contributor, yielding 21.75 thousand tons of large red chili (Badan Pusat Statistik Jawa Timur, 2018). In the pursuit of assessing the feasibility of large red chili farming, feasibility analysis serves as a pivotal approach to determine the financial sustainability of this agricultural enterprise. This process involves the establishment of various parameters and criteria to gauge the business's feasibility. A farming operation is

deemed feasible if it generates profits that effectively cover all expenses incurred throughout the farming cycle (Ratnawati et al., 2019).

There is a notable lack of detailed cost analysis and income assessment among many large red chili farmers, making it challenging to determine the profitability of their cultivation endeavours. Moreover, a substantial number of business actors, particularly farmers, have not conducted a comprehensive assessment of the R/C (Revenue-to-Cost) ratio for their farming enterprises, hindering their ability to ascertain the feasibility of their farming operations. Betty & Wijaya (2020), Nurhafsah et al (2021), have proposed that a comparative evaluation between large red chili farming during the rainy and dry seasons is warranted. This evaluation focuses on the R/C ratio, where farming during the dry season appears to offer more favourable prospects. This is primarily attributed to higher production yields and reduced costs resulting from limited pesticide and labour utilization. In contrast, suboptimal harvests in the rainy season adversely affect its financial feasibility.

In accordance with research findings by Usman et al (2021), multiple factors such as farmer age, land area, average selling price, total production, and production costs exert a substantial impact on the profitability of large red chili farming in Blitar. Specifically, the average selling price and total production factors exhibit a positive and significant influence on the profitability of large red chili farming, while the production cost factor exerts a negative and considerable impact on profitability. Conversely, farmer age and land area demonstrate no statistically significant influence on the profitability of large red chili farming in Blitar. Notably, among these factors, the total production level exerts the most profound influence on the profitability of large red chili farming in Blitar.

In their study, Eman et al (2022) conducted a comparative analysis of income and the financial feasibility of cultivating curly red chili and cayenne pepper in Taraitak Raya, Langowan Utara, Minahasa. The findings of this research reveal distinguishable disparities in the average income generated by the two crops, with curly red chili exhibiting higher returns when juxtaposed with cayenne pepper. Furthermore, it is noteworthy that the R/C (Revenue-to-Cost) Ratio values for both curly red chili and cayenne pepper farming are equivalent and exceed the critical threshold of 1, thereby affirming the financial feasibility of both agricultural endeavors.

Gufron et al (2021) conducted an analysis that compared the cost structures between organic and inorganic rice farming, alongside an income comparison. The findings from this study indicate that the income derived from organic rice farming surpasses that of inorganic rice farming. Specifically, the average R/C (Revenue-to-Cost) ratio for organic rice farming stands at 2.4, while for inorganic rice farming, it is 1.7. This disparity underscores the superior profitability and efficiency of organic rice farming when assessed within an single growing season. Moreover, the results of the difference test highlight a statistically significant variance in income between organic and inorganic rice farming.

According to Anam et al (2020), the assessment of the R/C (Revenue-to-Cost) ratio is applied to the cultivation of both curly chili and cayenne pepper breeding. This evaluation seeks to elucidate the comparison of income levels and R/C ratios between these two farming practices. The results demonstrate that the R/C value for curly chili breeding stands at 2.23, while the R/C value for cayenne pepper breeding is 2.29. Notably, the comparison of the R/C ratios for chili breeding farming indicates no significant difference between the R/C values of curly chili and cayenne pepper breeding.

Leksono et al (2018) conducted a comparative analysis of income between organic and inorganic rice farming in Seputih Banyak, Central Lampung. The findings revealed that, in nominal terms, the income derived from organic rice farming was significantly higher (IDR 29,631,144.00 with an R/C ratio of 1.45) compared to the income from inorganic rice farming (IDR 19,115,370.00 with an R/C ratio of 1.79).

This study's novelty, in comparison to prior research, lies in its utilization of an independent sample t-test analysis to assess the feasibility of large red chili farming during both the rainy and dry seasons. The research objectives encompass the examination of the financial feasibility of large red chili farming in Tawangargo, Karangploso, Malang, Indonesia, during the rainy and dry seasons, as well as the comparative analysis of the financial feasibility of large red chili farming in this area during both seasons.

METHOD

The research methodology employs a census sampling approach, where the entire population of large red chili farmers engaged in cultivation during both the rainy and dry seasons in Tawangargo, Karangploso, Malang, Indonesia, serves as the study's sample. Data collection involves direct observation to gather information pertinent to the research, and structured interviews are conducted to obtain primary data from farmers through questionnaires. The research employs a quantitative methodology, focusing on the analysis of large red chili farming data during both rainy and dry seasons. Quantitative descriptive analyses encompass

cost analysis, income analysis, and the application of a paired sample t-test. Income analysis involves calculating the difference between total income and total costs, which includes both variable and fixed costs. The computation of the R/C (Revenue-to-Cost) ratio is a pivotal component to evaluate the financial status of large red chili farming. The indicators for the R/C ratio are as follows:

- R/C ratio > 1: Large red chili farming is deemed feasible or profitable.
- R/C ratio < 1: Large red chili farming is considered unfeasible or unprofitable.
- R/C ratio = 1: Large red chili farming operates at a break-even point, where profit and loss are balanced.

RESULTS AND DISCUSSION

In this study, variable costs associated with large red chili cultivation during both the rainy and dry seasons in Tawangargo, Karangploso, Malang, Indonesia, encompass labour, seeds, fertilizers, and pesticides.

Table 1. Average variable costs for large red chili farming per hectare per season, differentiating between the rainy and dry seasons.

No	Description	Rainy Season Planting Average Amount (IDR)	Dry Season Planting Average Amount (IDR)
1	Labor:		
	- Land Processing and Seeding	4,729,778	4,729,778
	- Planting	2,870,078	2,870,078
	- Fertilization	2,579,969	2,579,969
	- Weeding	1,966,386	1,966,386
	- Pest/Disease Control	3,889,689	2,451,589
	- Watering	8,000	630,000
	- Harvesting	7,203,519	7,203,519
2	Seed	4,016,667	4,004,000
3	Fertilizer	17,531,833	18,414,333
4	Pesticides	24,848,411	21,351,222
	Total Variable Cost (IDR)	**69,644,331**	**66,200,875**

Source: Primary data processed, 2023

The variable costs associated with large red chili production in Tawangargo, Karangploso, Malang, Indonesia, during both the rainy and dry seasons encompass labour, seeds, fertilizers, and pesticides. As shown in Table 1, it is evident that the variable costs during the rainy season exceed those in the dry season. This disparity can be attributed to the higher expenses incurred for pest and disease control, primarily due to increased susceptibility to diseases in the rainy season.

Parining dan Dewi (2018) affirm that the higher cost of large red chili farming during the rainy season is primarily attributed to the heightened incidence of diseases, pests, and weeds during this period. Conversely, maintenance is notably more straightforward during the dry season, resulting in relatively lower expenses. Hamidah (2016) further emphasizes that effective fertilization practices can help mitigate the risk of attacks, along with proper harvest and post-harvest handling techniques.

The success of large red chili production significantly hinges on the quality of the seeds employed. The superior attributes of these seeds, including production volume, resistance to pests and diseases, and adaptability to varying climatic conditions, have been articulated by Ardian et al (2017). Furthermore, it is important to note that differences in fertilization practices, the cost of fertilizer application, and labor usage exist between farmers employing organic fertilizers and those who do not. These distinctions inevitably lead to variations in production and costs.

Fixed Costs of Large Red Chili Farming in the Rainy and Dry Season

In this study, the fixed costs associated with large red chili production during both the rainy and dry seasons in Tawangargo, Karangploso, Malang, Indonesia, encompass land tax, land rent, and equipment depreciation.

Table 2. Average Fixed Costs of Large Red Chili Farming Per Hectare Per Season in the Rainy and Dry Season.

No	Description	Rainy Season Amount (IDR)	Dry Season Amount (IDR)
1	Land tax	463,889	463.889
2	Land rent	10,483,333	10,483.333
3	Equipment depreciation	10,115,238	10,115,238
	Total	**21,062,461**	**21,062,461**

Source: Primary data processed, 2023

The fixed costs associated with large red chili production in both the rainy and dry seasons exhibit no significant differences. The variance primarily emerges from the land preparation processes, where land tax, land rent, and equipment depreciation remain consistent across both seasons. However, the methods employed in land preparation differ in accordance with the specific growing season. In this study, the respondents cultivated large red chili on the same land, regardless of whether it was during the rainy or dry season, which accounts for the absence of differences in fixed costs.

Dara & Irada (2022) emphasize the critical importance of cost information for profit-oriented businesses. The absence of a detailed cost breakdown leaves businesses without a benchmark to gauge whether their income surpasses their incurred expenses. Consequently, a lack of such vital information hampers the ability to determine the profitability of the business in question, which is essential for its development and sustainability.

Total Cost of Large Red Chili Farming in the Rainy and Dry Seasons

In this study, the total costs of the dry and rainy seasons in Tawangargo, Karangploso, Malang, Indonesia were used during the farming process.

Tabel 3. Average Total Cost of Large Red Chili Farming Per Hectare for Both the Rainy and Dry Seasons.

No	Description	Rainy Season Average Amount (IDR)	Dry Season Average Amount (IDR)
1	Fixed Cost	21,062,461	21,062,461
2	Variable Cost	69,644,331	66,200,875
	Total Cost	**90,706,791**	**87,263,336**

Source: Primary data processed, 2023

This table delineates the comprehensive costs, encompassing both variable and fixed costs, associated with large red chili production per hectare during both the rainy and dry seasons. The total cost per hectare amounted to IDR 21,062,461, indicating no variation in fixed costs between the two seasons. However, a distinction arises in the variable costs per hectare in rainy and dry season large red chili farming in Tawangargo, Karangploso, Malang, Indonesia. Specifically, variable costs amount to IDR 69,644,331 for the rainy season and IDR 66,200,875 for the dry season. This discrepancy reflects the disparities in variable costs between the two seasons, with the average total cost per hectare being greater in the rainy season (IDR 90,706,791) compared to the dry season (IDR 87,263,336). This variance is predominantly attributed to differences in variable costs, such as a higher utilization of pesticides during the rainy season.

Revenue

Revenue, in this context, signifies the income acquired by farmers from the sale of large red chilies generated during both the rainy and dry seasons, encompassing the aspects of production and pricing.

Table 4. Average Revenue of Large Red Chili Farming Per Hectare for Both the Rainy and Dry Seasons.

No	Description	Production Average (Kg)	Price Average (IDR)	Revenue Average (IDR)
1	Planting in the rainy season	8,901	21,717	192,280,556
2	Planting in the dry season	10,861	12,250	132,656,667

Source: Primary data processed, 2023

The average revenue per hectare for large red chili farmers during the rainy season amounts to IDR 192,280,556, while in the dry season, it is IDR 132,656,667. This discrepancy between the two seasons can be attributed to variations in production levels and selling prices. During the rainy season, production tends to be lower, yet the selling price is notably higher, resulting in a substantial price differential. This significant price disparity is primarily a consequence of fluctuations in the availability of large red chilies within the market. During the simultaneous harvest, typically in the dry season, the market is flooded with large red chilies, resulting in lower prices due to oversupply. In contrast, during the rainy season, the market experiences limited availability of large red chilies, but the demand remains high, thus leading to increased prices. These findings align with the research of Betty & Wijaya (2020), highlighting the influence of market availability on pricing dynamics. Furthermore, Chuzaimah et al (2023) elaborate on the greater appeal of large red chili farming during the rainy season. This preference can be attributed to the significantly higher prices achieved during this period compared to the dry season, which substantially impacts farmers' income. The high prices are driven by

a combination of limited supply and strong demand, adhering to economic principles that dictate price increases when demand outstrips supply. Nurul et al (2021) also acknowledge the presence of risks in farming, particularly within the production process. Factors such as weather conditions, pests, and plant diseases can lead to production risks. Additionally, price fluctuations introduce price risk, impacting farmers' income due to uncertain or fluctuating selling prices.

Income

Income is derived by deducting the total production costs from the revenue of large red chili in both the rainy and dry seasons.

Table 5. Average Income Per Hectare for Large Red Chili Farming during Both the Rainy and Dry Seasons.

No	Description	Rainy Season Average Amount (IDR)	Dry Season Average Amount (IDR)
1	Revenue	192,280,556	132,656,667
2	Total Cost	90,706,791	87,263,336
3	Income	101,573,764	45,393,331
4	R/C Ratio	2.12	1.51

Source: Primary data processed, 2023

Based on the data in the table, large red chili farmers planting in the rainy season generate an average income of IDR 101,573,764 per hectare. This income is computed by subtracting the average total cost from the average revenue during the rainy season. In contrast, during the dry season, the income is IDR 45,393,331, indicating a notable disparity between the two seasons, with higher income during the rainy season. The discrepancy in income can be attributed to the pricing dynamics of large red chili. In the dry season, the price of large red chili tends to be lower compared to the rainy season. Consequently, farmers earn less during the dry season, despite higher production. It is noteworthy that even though there is a considerable difference in income between the dry and rainy seasons, large red chili farming in the dry season remains economically viable. This phenomenon in the dry season can be partially attributed to the relatively high productivity of large red chili, leading to overproduction. Multiple regions in Bali province engage in large red chili production, contributing to a risk of declining prices during the dry season harvest, as noted by Parining dan Dewi (2018). Furthermore, research by Istiyanti et al (2015) emphasizes the seasonal dependency of chili production and pricing. In the rainy season, fewer farmers venture into chili cultivation due to higher risks, resulting in elevated market prices. Conversely, during the dry season, the market is flooded with chili produce, causing prices to decline.

Feasibility of Farming (R/C Ratio)

In a broader context, the profitability of a business is contingent on whether the revenue surpasses the associated costs (Assegaf, 2019). This analytical approach aims to assess the viability and potential for development of a given business. The R/C ratio serves as a key determinant of profitability, assessing whether farming in either the rainy or dry season is lucrative, unprofitable, or simply breaking even. Referring to the data presented in the table above, the R/C ratio for the rainy season is 2.12, indicating that for every 1 rupiah invested during this season, a revenue of IDR 2.12 is generated. Similarly, the R/C ratio for the dry season is 1.51. Therefore, the R/C ratio demonstrates that large red chili farming in both the rainy and dry seasons is financially viable. However, a comparative evaluation reveals the rainy season to be more promising, given its higher income compared to the dry season, despite relatively consistent total and variable costs incurred throughout both seasons. In a corroborative study by Betty & Wijaya (2020), an examination of the viability of large red chili farming in different seasons aimed to discern any disparities in feasibility. The results indicate variations in the viability of large red chili farming between the dry and rainy seasons. Specifically, the R/C ratio for the dry season was 1.977, while for the rainy season it was 1.789. Although both seasons demonstrate feasibility, a comparative analysis suggests that the dry season may present a more favorable scenario for cultivation.

Paired Sample t-test

The hypothesis was evaluated through a paired sample t-test analysis, preceded by a scrutiny of research data to ensure adherence to the prerequisites for this analysis, including the normality test.

The normality test is conducted as a prerequisite for the Paired Sample t-test analysis, serving to ascertain the distribution of the data as either normal or abnormal. (Tarumasely, 2020).

Table 6. Normality Test

Description	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Rainy	.106	30	.200*	.933	30	.058
Dry	.127	30	.200*	.956	30	.240

Source: Primary data processed, 2023

The results of the normality test, as indicated by the Kolmogorov-Smirnov test, reveal that both the rainy season (with a significance value of 0.200) and the dry season (also with a significance value of 0.200) exhibit normal distribution. Consequently, the significance values for both seasons surpass the threshold of 0.05, affirming the normality of the data, in accordance with the Kolmogorov-Smirnov criteria:

- When the significance value (sig value) > 0.05, the data is considered normal.
- When the significance value (sig value) < 0.05, the data is deemed non-normal.

Hypostases

The hypotheses tested in this study are:

$H0$ = There is no significant difference between the feasibility of large red chili farming in the rainy and dry seasons.

$H1$ = There is a significant difference between the feasibility of large red chili farming in the rainy and dry seasons.

To test these hypotheses, we present the results of the paired sample t-test, including paired sample statistics, paired sample correlation, and paired sample tests (two-tailed significance) in the following table:

Table 7. Paired Samples Statistics

Description		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Rainy	208.13	30	64.693	11.811
	Dry	150.93	30	39.376	7.189

Source: Primary data processed, 2023

The test results indicate that the average value for the rainy season is 2.1600, while the average value for the dry season is 1.5400. Therefore, the average value for the rainy season is higher than that of the dry season. This suggests that the feasibility of farming during the rainy season is greater than in the dry season. This difference is evident in the income generated from large red chili farming, which is higher during the rainy season, despite the relatively similar average costs incurred.

The greater feasibility of large red chili farming during the rainy season compared to the dry season can be attributed to the pricing dynamics. During the rainy season, the price of large red chili peppers tends to be higher due to limited market availability and increased demand, leading to higher prices. Conversely, the dry season witnesses an abundance of large red chili production from various suppliers, causing prices to decrease compared to the rainy season. However, it's essential to note that the R/C ratio values indicate that large red chili farming is equally viable during both seasons in Tawangargo, Karangploso, Malang, Indonesia. This is in line with the findings of Betty & Wijaya (2020), who observed differences in prices driven by market availability during rainy and dry seasons. During the simultaneous harvest, typically in the dry season, an oversupply of large red chilies and limited demand results in lower prices. In contrast, the rainy season experiences high demand and limited supply, leading to higher prices for large red chilies. Royun Nuha et al (2023) also noted that fluctuations in production and prices during different seasons can impact farming income. Moreover, different seasons affect the allocation of production factors, influencing the cost structure of farming. Specifically, the cultivation of large red chili, which is prone to diseases during the rainy season, leads to higher pesticide expenses for farmers.

Table 8. Paired Samples Correlations

Description		N	Correlation	Sig.
Pair 1	Rainy & Dry	30	.714	.000

Source: Primary data processed, 2023

The results of the paired sample correlations test reveal a significance value of 0.000, indicating that the large red chili farming business in Tawangargo, Karangploso, Malang, Indonesia, demonstrates a significant

relationship between the rainy and dry seasons. The significance value is less than 0.01, underscoring the strength of this relationship.

Table 9. Paired Samples Test

Description		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Rainy - Dry	57.200	45.781	8.358	40.105	74.295	6.843	29	.000

Source: Primary data processed, 2023

The outcomes of the t-test, as evidenced in the Paired Sample Test, indicate a significance value of 0.000, which is less than 0.05. This implies that there exists a disparity in the feasibility of farming between the rainy and dry seasons. This conclusion aligns with the established decision rule:

- When the probability value (two-tailed significance) is greater than 0.05, H0 is accepted, signifying no difference.
- Conversely, when the probability value (two-tailed significance) is less than 0.05, H1 is accepted, signifying a difference.

The examination of hypotheses in this study reveals disparities in the viability of large red chili farming between the rainy and dry seasons in Tawangargo, Karangploso, Malang, Indonesia. This variation in viability can be attributed to the greater average income during the rainy season compared to the dry season, despite relatively similar total costs. The reduction in income during the dry season can be traced to lower red chili prices in contrast to the rainy season. Even though dry season production exceeds that of the rainy season, the reduced prices contribute to diminished dry season earnings. Notably, the average expenses incurred by large red chili commodity farmers in Tawangargo, Karangploso, exhibit minimal differences between the two seasons. Furthermore, disparities in production could be attributed to additional inputs, such as manure and soil liming, applied before planting, consistent with findings from Nurhafsah et al (2021), which emphasize the role of manure in influencing chili weight and production. Supplementing manure increases nutrient availability for plants, fostering robust growth and yield. Inorganic pesticides are also widely employed by farmers, as underscored in research of Usman et al (2021), aiming to prevent crop failures.

The elevated prices of large red chili during the rainy season can be attributed to the heightened risks associated with this season, leading to reduced production and consequently, increased market prices when compared to the dry season. This trend aligns with the findings of Betty & Wijaya (2020), which note that while dry season yields tend to be higher, the rainy season commands higher prices. This price disparity is primarily driven by the abundance of chilies during simultaneous harvests in the dry season, causing prices to plummet due to low demand. Conversely, the rainy season sees a limited market supply against a surge in demand, resulting in elevated prices for large red chilies. Parining & Dewi, (2018) concur, emphasizing that not only are the average prices greater during the rainy season, but the associated farming costs are also higher. These elevated costs are a direct result of the heightened susceptibility of red chili plants to diseases, pests, and weeds in the rainy season. In contrast, the dry season presents more favourable conditions, leading to relatively lower expenses. Research of Zahroh (2022) corroborates these observations, attributing lower production in the rainy season to pest and disease attacks, which lead to crop damage and a subsequent reduction in large red chili yields. It's essential to acknowledge that each season, be it rainy or dry, poses distinct risks and challenges for farmers to contend with.

Anggela et al (2019) have expounded on the influence of weather conditions on large red chili farming. During the rainy season, excessive waterlogging and high humidity create an environment conducive to accelerated pest and disease development. Particularly, extended periods of heavy rainfall can expose farmers to the risk of crop failure due to flooding. Conversely, the dry season brings aridity that inhibits plant growth, leading to suboptimal crop conditions. This, in turn, translates to reduced income for farmers during the rainy season, owing to the fluctuating selling prices and varying production costs, along with disparities in land tenure among farmers. Adhiana (2021) has also pointed out that suboptimal utilization of production facilities, including inadequate technology adoption, the use of non-preferred seeds, and subpar application of both inorganic and organic fertilizers, contributes to low productivity among large red chili farmers. Furthermore, productivity levels

in large red chili farming are subject to seasonal variations, soil fertility dynamics, and recurring pest infestations, such as leaf curl disease, which afflict most of these farmers.

The profitability of large red chili farming is notably higher during the rainy season compared to the dry season, primarily due to the elevated farm-level selling prices. The dry season witnesses a surge in large red chili production, causing prices to decline. This scenario underscores an inverse relationship between production volume and price, indicating that increased production leads to price reduction. The distinction in the feasibility of large red chili farming between these seasons mirrors the local context. Many farmers opt for rainy season cultivation due to comparable costs in both seasons, with the rainy season reaping higher incomes. Anwarudin et al (2015) elucidated that rainy season chili production remains consistently low as rice cultivation dominates most fields. On dry land, farmers are hesitant to plant chilies due to the high risk of crop failure, substantial production costs, particularly for pesticides, and lower productivity compared to the dry season. Another deterrent for year-round large red chili farming is the increasingly challenging irrigation conditions, heightening the risk of crop failure during the dry season. Ramadhani et al (2022) attributed the meager production to a combination of factors, including farming technology, farmer readiness and knowledge, resource provisions, capital constraints, and farmers' predictive abilities. Planning large red chili cultivation is contingent on rain patterns as they directly influence water availability, a vital component for robust plant growth. Inadequate or excessive watering can disrupt fertilization and render plants susceptible to pests. Rain serves as the primary source of irrigation, necessitating an understanding of forthcoming rainfall conditions to inform effective cultivation planning (Imtiyaz et al, 2017).

Large red chili production and pricing are profoundly influenced by seasonal fluctuations. During the rainy season, a limited number of farmers engage in large red chili cultivation due to the elevated associated risks, resulting in relatively high market prices for the produce. Conversely, the dry season witnesses a surge in large red chili cultivation as many farmers participate, causing market prices to decrease

CONCLUSION

The Feasibility Analysis of Large Red Chili Farming in Tawangargo, Karangploso, Malang, Indonesia, yields the following conclusions: Large red chili farming is financially viable, with revenues consistently exceeding total costs. Profitable outcomes are consistently achieved, with rare instances of losses recorded in both the rainy and dry seasons. Distinct differences in the feasibility of large red chili farming exist between the rainy season (from months 10 to 3) and the dry season (from months 4 to 9) in Tawangargo. In the rainy season, the average income per hectare per season is IDR 101,573,764, whereas in the dry season, it stands at IDR 45,393,331.

REFERENCES

Adhiana. (2021). Analisis faktor–faktor yang mempengaruhi produksi cabai merah. Jurnal Agrica Ekstensia, 15(1), 1–10.

Anam, K. B., Sasongko, L. A., & Subantoro, R. (2020). Komparasi Kelayakan Usaha Pembibitan Cabai Merah Keriting (Capisum Annum L.) Dengan Cabai Rawit (Capisum Frutescens L.) Di Desa Banyukuning Kecamatan Bandungan Kabupaten Semarang. Jurnal Ilmu-ilmu Pertanian, 16(1), 1–11.

Anggela, R., Refdinal, M., & Hariance, R. (2019). Analisis Perbandingan Risiko Usaha Tani Padi Pada Musim Hujan dan Musim Kemarau di Nagari Mungo Kecamatan Luak Kabupaten Lima Puluh Kota. JOSETA: Journal of Socio-economics on Tropical Agriculture, 1(1), 36–44. https://doi.org/10.25077/joseta.v1i1.7 https://doi.org/10.25077/joseta.v1i1.7

Anwarudin, M. J., Sayekti, A. L., Marendra, A. K., & Hilman, Y. (2015). Production Dynamics and Price Volatility of Chili: Anticipation Strategy and Development Policy. Pengembangan Inovasi Pertanian, 8(1), 33–42.

Ardian, R., Sudarta, W., & Ketutu, R. I. (2017). Perbandingan Pendapatan Usahatani Cabai Rawit dengan Menggunakan Pupuk Anorganik dan Pupuk Campuran(Organik, dan Anorganik). 6(2), 240. http://ojs.unud.ac.id/index.php/JAA https://doi.org/10.24843/JAA.2017.v06.i02.p07

Assegaf, A. R. (2019). Pengaruh Biaya Tetap Dan Biaya Variabel Terhadap Profitabilitas Pada Pt. Pecel Lele Lela Internasional, Cabang 17, Tanjung Barat, Jakarta Selatan. Jurnal Ekonomi dan Industri, 20(1), 1–5. https://doi.org/10.35137/jei.v20i1.237 https://doi.org/10.35137/jei.v20i1.237

Badan Pusat Statistik Provinsi Jawa Timur. (2019). Analisis Data Cabai Provinsi Jawa Timur 2018. BPS Provinsi Jawa Timur. http://journal.um-surabaya.ac.id/index.php/JKM/article/view/2203

Betty, R., & Wijaya, J. (2020). Studi Komparatif Kelayakan Komparatif Kelayakan Usahatani Cabai Merah Pada Musim Yang Berbeda. Agristan, 2(2), 91–101. https://doi.org/10.37058/ja.v2i2.2353

Chuzaimah, Endang, L., Dewi, M., Agustina, K., & Fiana, P. (2023). Kajian Komparatif Berdasarkan Musim Pada Usahatani Cabai Besar Di Kecamatan Pedamaran Kabupaten Ogan Komering Ilir. 16(2), 2201–2214. https://doi.org/10.36085/agribis.v16i2.5576

Dara, L., & Irada, S. (2022). Analisis Harga Pokok Produksi Dan Pendapatan usahatani Cabai merah (Capacicum Annuum L.) Di Kabupaten Kerinci Provinsi Jambi. Jurnal Ekonomi Pertanian dan Agribisnis (JEPA), 6(2), 388–398. https://doi.org/10.21776/ub.jepa.2022.006.02.5

Eman, E., Mandei, J. R., & Lolowang, T. F. (2022). Analisis Pendapatan Usahatani Cabai Di Taraitak Raya Kecamatan Langowan Utara Kabupaten Minahasa Income Analysis Of Chili Farming In Taraitak Raya North Langowan DistrictMinahasa Regency (Comparative Study Between Curly Redc Chili (Capsiccum Annum L .). Agrisosioekonomi: Jurnal Transdisiplin Pertanian (Budidaya Tanaman, Perkebunan, Kehutanan, Peternakan, Perikanan), Sosial dan Ekonomi, 18(3), 743–750. https://doi.org/10.35791/agrsosek.v18i3.44712

Gufron, D. R., Inayah, T., & Junaidi. (2021). Perbandingan Pendapatan Usahatani Padi Organik Dan Padi Anorganik Di Desa Watukebo, Kecamatan Blimbingsari Kabupaten Banyuwangi. Sharia Agribusiness Journal, 1(2), 153–168. https://doi.org/10.15408/saj.v1i2.22282

Hamidah, E. (2016). Analisis Pendapatan Usahatani Cabai Merah (Capsicum Annum L.) (Studi Kasus Di Dusun Teguhan Desa Mendogo Kecamatan Ngimbang). Journal Saintis, 8(2), 113–126.

Imtiyaz, H., Barlian Henryranu, P., & Nurul, H. (2017). Sistem Pendukung Keputusan Budidaya Tanaman Cabai Berdasarkan Prediksi Curah Hujan. Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer, 1(9), 1–6. http://industri.kontan.co.id/news/aaci-sebut-kurangnya-pasokan-jadi-penyebab-kenaikan-harga-cabai-merah.%0Ahttps://bisnis.tempo.co/read/1302831/bps-inflasi-januari-039-persen-dipengaruhi-kenaikan-harga-cabai%0Ahttp://protan.studentjournal.ub.ac.id/index.p

Istiyanti, E., Khasanah, U., & Anjarwati, A. (2015). Pengembangan Usahatani Cabai Merah di Lahan Pasir Pantai Kecamatan Temon Kabupaten Kulonprogo. AGRARIS: Journal of Agribusiness and Rural Development Research, 1(1), 6–11. https://doi.org/10.18196/agr.112

Leksono, T. B., Supriyadi, & Zulkarnain. (2018). Analisis Perbandingan Pendapatan Usahatani Padi Organik Dan Anorganik Kecamatan Seputih Banyak Kabupaten Lampung Tengah. Jurnal Wacana Pertanian, 14(2), 69–79. https://doi.org/10.37694/jwp.v14i2.45

Nurhafsah, H, R., Andriani, I., & Fitriawaty. (2021). Analisis Usahatani Cabai di Luar Musim Berdasarkan Penerapan Komponen Budidaya Cabai Merah di Provinsi Sulawesi Barat. Jurnal Teknotan, 15(1), 9–14. https://doi.org/10.24198/jt.vol15n1.2

Nurul, M., Erry, P. F., & Dwi, S. W. (2021). Pendapatan Dan Risiko Usahatani Cabai Di Kecamatan Sumberejo Kabupaten Tanggamus. Jurnal Ilmu ilmu Agribisnis, 9(1), 62–69. https://doi.org/10.23960/jiia.v9i1.4820

Parining, N., & Dewi, R. K. (2018). Analisis Risiko Pendapatan Cabai Merah Pada Lahan Sawah Dataran Tinggi Di Kabupaten Karangasem, Bali. Jurnal Sosial Ekonomi Pertanian, 12(1), 109–117. https://doi.org/10.24843/soca.2018.v12.i01.p09

Ramadhani, M., Jamil, M., & Gustiana, C. (2022). Analisis Titik Impas Usahatani Cabai Merah (Capsicum annum, L) (Studi Kasus di Desa Paya Meuligoe Kecamatan Peuruelak Kabupaten Aceh). Jurnal Inovasi Penelitian, 2(11), 3599–3604.

Ratnawati, I., Noor, T. I., & Hakim, D. L. (2019). Analisis Kelayakan Usahatani Cabai Merah (Studi Kasus pada Kelompok Tani Mekar Subur Desa Maparah Kecamatan Panjalu Kabupaten Ciamis). Jurnal Ilmiah Mahasiswa Agroinfo Galuh, 6(2), 422–429. https://doi.org/10.25157/jimag.v6i2.2510

Royun Nuha, M., Andita Putri, T., & Dwi Utami, A. (2023). Pendapatan Usahatani Cabai Merah Berdasarkan Musim di Provinsi Jawa Tengah. Jurnal Ilmu Pertanian Indonesia, 28(2), 323–334. https://doi.org/10.18343/jipi.28.2.323

Tarumasely, Y. (2020). Perbedaan Hasil Belajar Pemahaman Konsep Melalui Penerapan Strategi Pembelajaran Berbasis Self Regulated Learning. Jurnal Pendidikan Dan Kewirausahaan, 8(1), 54–65. https://doi.org/10.47668/pkwu.v8i1.67

Usman, I. M., Marwanti, S., & Rahayu, W. (2021). Analisis Faktor-Faktor Yang Memengaruhi Keuntungan Usahatani Cabai Merah Besar (Capsicum Annum L.) Di Kabupaten Blitar. Agrista, 9(2), 56–68. http://www.ufrgs.br/actavet/31-1/artigo552.pdf

Zahroh, F. (2022). Analisis Kelayakan Usaha Tani Cabai Besar Pada Masa Off Season (Studi Kasus Kelompok Tani Satriya Desa Srambah Kecamatan Proppo Kabupaten Pamekasan). Agropross : National Conference Proceedings of Agriculture, 416–423. https://doi.org/10.25047/agropross.2022.312

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Research Article

Business Sustainability Analysis of *Tapis Jejama Kham* MSMEs among Youth

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ABSTRACT

The declining number of Tapis craftsmen signifies a waning cultural interest. It is imperative to proactively address the imperative of ensuring the continuity of Tapis Micro, Small, and Medium Enterprises (MSMEs) as a means to safeguard Lampung's rich craft heritage in an ever-evolving world. Thus, a comprehensive analysis of the business sustainability of Tapis MSMEs within the younger generation, who serve as both successors and conservators of the Lampung Tapis tradition, becomes a necessity. This study is dedicated to evaluating the status of business continuity within the *Tapis Jejama Kham* MSME, conducted during September-October 2022 in Negeri Katon, Pesawaran, Lampung, Indonesia. The research engaged 32 respondents, all of whom were members of the *Tapis Jejama Kham* MSMEs, aged between 16 and 30 years. Employing a quantitative descriptive approach with a focus on the Triple Bottom Line (TBL) methodology, this study elucidates that the economic aspect, driven by the aspirations of the younger generation to enhance their family's standard of living, predominantly underpins the sustainability of this enterprise.

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) constitute a sector exhibiting a consistent upsurge in entrepreneurial activities within Indonesia. The inherent characteristics of MSMEs, marked by adaptability and mobility in response to uncertain market conditions, render them vital in bolstering the economy by mitigating unemployment and poverty. The proliferation of MSMEs significantly contributes to employment opportunities, particularly for individuals with limited economic means. Within the context of cultivating an inclusive economy, MSMEs hold a strategic role, positioned at the epicenter of economic development. The equitable presence of these enterprises is pivotal in elevating income levels, enhancing communal economic prosperity, and broadening the spectrum of employment prospects.

Fostering opportunities in the MSME sector can be achieved through the effective utilization of regional potential, with Lampung, a province situated on the Sumatran island, being renowned for its diverse regional assets and unique cultural heritage, notably the Tapis handicraft industry. Tapis handicrafts are deeply

ingrained within the cultural fabric of Lampung and are designated as Traditional Cultural Expressions (TCE) by the indigenous populace, symbolizing purity and safeguarding against external impurities. The usage of Tapis handicrafts signifies the social status of their users and serves as the official attire during traditional and religious ceremonies for the Lampung community, akin to cherished family heirlooms (Ariani, 2021).

The Tapis Jejama Kham Micro, Small, and Medium Enterprises (MSMEs) situated in Negeri Katon, Pesawaran, Lampung, Indonesia, serves as an exemplar of the Tapis industry's resilience amidst evolving circumstances. Noteworthy field observations have revealed that, since 1980, the women of Lampung have incorporated the practice of Tapis embroidery as a regular and pervasive domestic pursuit. This evolution has transfigured this endeavor into the principal livelihood of the local community, leading to a tangible boost in members' financial autonomy, exemplified by monthly earnings ranging from IDR 1 to 2 million.

The production process entails the meticulous weaving of threads to form the foundational fabric, followed by ornate embellishments with gold and silver threads. Notably, the ranks of proficient Tapis embroiderers specializing in weaving the foundational cloth have dwindled over time. Most Tapis artisans have opted to procure pre-fabricated base cloth from external sources, then adorning it with gold thread. Additionally, the selection of Tapis motifs has progressively adapted to match consumer preferences and market trends, diverging from the traditional base cloth and intricately complex Tapis motifs of yore (Rosanta & Rizkiantono, 2018). This trend underscores the pressing necessity for measures to safeguard the heritage of Tapis Lampung, particularly by ensuring the sustainable continuity of Tapis Jejama Kham MSMEs within the younger generation, who are poised to inherit and perpetuate the legacy.

Amidst the pervasive apprehensions regarding the potential obsolescence of these multi-generational practices and the declining proficiency of the local women, a concerted community initiative has emerged to transmit the art of crafting Tapis Lampung to the youth. This initiative embodies the principle of empowering the younger generation, enabling them to access resources for income augmentation, fulfillment of needs, and active engagement in the developmental trajectory (Hasanuddin & Rangga, 2022). Encouraging the participation of the younger generation as members of Tapis Jejama Kham MSMEs represents the inaugural stride toward future generational succession. This strategic deployment is envisaged to galvanize the younger cohort into unleashing their potential, thereby stimulating fresh employment prospects and mitigating unemployment, ultimately fostering societal prosperity. Hence, this inquiry has been undertaken to appraise the sustainability of Tapis Jejama Kham MSMEs operated by the younger generation in Negeri Katon, Pesawaran, Lampung, Indonesia.

METHOD

The study employed a census methodology, focusing on the Tapis Jejama Kham Micro, Small, and Medium Enterprises (MSMEs) located in Negeri Katon, Pesawaran, Lampung, Indonesia. The selection of this research site was purposefully made based on the notable distinction of Tapis Jejama Kham MSMEs as the preeminent Tapis Lampung Center in Lampung, and its standing as the largest MSME with numerous national-level achievements. Some of these achievements encompass its endorsement by the Ministry of Cooperatives and Small and Medium Enterprises (MSMEs) as a featured exhibitor in the national Batik exhibition, and its designation as a sponsor for fashion events organized by the Indonesian Ministry of Tourism, among others. The research was carried out during the period of August to September 2022.

Data collection involved the administration of a questionnaire to respondents, yielding both primary and secondary data. Primary data was obtained directly from respondents through the questionnaire instrument, while secondary data was derived from literature reviews and documents encompassing general information about the village's potential and details regarding institutions or agencies affiliated with Tapis Jejama Kham MSMEs. The study's respondents were drawn from the membership of Tapis Jejama Kham MSMEs, selected through purposive sampling, with specific criteria focusing on the youth category, aged 16 to 30 years, resulting in a sample size of 32 respondents.

The data analysis employed a quantitative descriptive method with a Triple Bottom Line (TBL) approach. Quantitative descriptive analysis encompassed basic data accumulation, characterized by the frequency of prevalent data (mode) and the categorization of ordinal data using the Likert scale. The application of quantitative descriptive analysis within the TBL approach serves to substantiate the hypothesis that business entities must consider three crucial aspects when evaluating the consequences of their operational activities (Budiawan, 2019).

The concept of Triple Bottom Line (TBL) was introduced by John Elkington in 1999, leading to the formulation of the Profit, People, and Planet framework. Profit refers to the economic benefits accrued by

business entities, People embodies the notion of social responsibility, and Planet signifies environmental stewardship (Elkington, 2013). TBL serves as a foundational construct for assessing business performance and organizational achievement through the lenses of economic, social, and environmental impact. It serves as a pragmatic framework for promoting sustainability, affording businesses a means to maintain a consistent and well-rounded emphasis on the economic, social, and environmental dimensions, as previously delineated by the organization (Michael et al., 2019). Underpinned by the TBL paradigm, the fulfillment of economic, social, and environmental responsibilities paves the way for the attainment of sustainable development objectives within the purview of Tapis Jejama Kham MSMEs.

The ordinal scale utilized in this study is characterized by its discrete classification of data. This scale does not indicate the magnitude of differences between categories, rendering it unsuitable for the application of standard arithmetic operations, such as addition, subtraction, and multiplication, thus precluding the calculation of averages and standard deviations (Singarimbun & Effendi, 2015). Consequently, the mode serves as the statistical tool of choice when employing the ordinal scale in this research, aligning with the restricted analytical capabilities inherent to this scale (Yuliarmi & Marhaeni, 2019).

RESULTS AND DISCUSSION

Sustainability entails the critical task of equipping the succeeding generation with the requisite resources to bolster business continuity. Notably, one pivotal facet exerting a profound influence on the sustainability of businesses is active participation. The promotion of participation signifies a collective endorsement from the community for fostering developmental endeavors, which transcends mere support and delves into the active engagement in the developmental process. An embodiment of this endeavor is the involvement of the youth, who represent the forthcoming generation entrusted with steering the nation's progress towards sustainability (Kasila & Kolopaking, 2018). Sustainability, as conceptualized, encompasses a tripartite framework, incorporating the economic, social, and environmental dimensions (Nuraini, 2022). To holistically address the tenets of business sustainability, spanning the economic, social, and environmental facets, it is imperative to integrate statements within these realms. Both individuals and institutions mutually share the responsibility of enhancing participatory development as an instrumental instrument in this context. The application of technology to manage and optimize waste handling stands as an indispensable facet of community empowerment in the socio-economic and environmental management domains (Listiana et al., 2022). Business sustainability in Tapis Jejama Kham MSMEs is gauged through three distinct indicators, encompassing the economic, social, and environmental dimensions.

Economic aspect

The foremost consideration in evaluating community well-being is the economic dimension. It pertains to various factors including employment opportunities and the accessibility of essential goods and services. Vigilance regarding the availability of basic necessities and informal support systems is paramount when assessing economic indicators. This vigilance is indispensable in addressing issues such as unemployment, underdevelopment, and impoverished living conditions that often afflict communities and impede their progress. Resolving such challenges necessitates the implementation of a comprehensive array of policies aimed at aligning the village's trajectory with envisioned development objectives (Yanti et al., 2020). The determination of a region's economic viability is a multifaceted endeavor intertwined with economic considerations. Spanning the entire spectrum from production to consumption, the preparation of an area for habitation hinges significantly on its economic facets (Juliandi et al., 2021).

Table 1. Economic aspects in the sustainability of Tapis Jejama Kham MSME

No	Statement	Answer (Mode)				
		SA	A	N	DA	SDA
1	Employment prospects for rural youth	14	**17**	1	0	0
2	Reducing rural youth unemployment rates	12	**15**	5	0	0
3	Increasing output	**14**	13	5	0	0
4	Increasing income	13	**13**	6	0	0
5	Promising business opportunities	10	**15**	7	0	0

Description: SA (strongly agree), A (agree), N (Neutral), DA (disagree), SDA (strongly disagree)

Table 1 provides an overview of the economic dimensions influencing the sustainability of Tapis Jejama Kham Micro, Small, and Medium Enterprises (MSMEs). Analysis of the respondents' feedback revealed a

prevalent agreement with the statements, indicating a substantial endorsement of the economic aspect that propels the members to persevere in the Tapis Jejama Kham MSMEs business. Field observations affirm that, since 2021, a significant proportion of the respondent members have relied on Tapis production as an auxiliary source of family income. It is evident that the economic dimension wields considerable influence over the members' decision to sustain their involvement in the Tapis business (Gitosaputro & Listiana, 2018).

To foster business advancement, it is imperative that the community has access to production advice and suitable equipment in terms of type, quantity, quality, and timeliness. The absence of these requisites may impede the business's smooth operation and success. Members of Tapis Jejama Kham MSMEs require a range of tools and materials for weaving, encompassing pressure tools, rulers, pencils, erasers, gold thread, needles, and paper for motif designs. These essential resources are primarily procured by respondent members through direct purchases from Tapis distributors in Negeri Katon, particularly Ms. Redawati and Ms. Zul. Tapis MSMEs are further supported by infrastructure, including a Tapis gallery, which serves as both an offline marketing venue and a workspace for respondent members. Marketing efforts are not confined solely to the Tapis Gallery but extend to direct channels through Tapis dealers, who assist in facilitating sales to various markets. Additionally, products are stocked at the Bambu Kuning Market in Bandar Lampung and are tailored to meet customer orders.

Field data indicates that member incomes are contingent upon the volume of Tapis production completed, with monthly earnings typically ranging between IDR 250,000 to IDR 300,000. The prevailing wage system utilized within this Tapis MSMEs framework is output-based, remunerating respondent members in proportion to their individual production output. Inherently, wage levels vary among members based on the quantity of work accomplished. The evolution of Tapis MSMEs aligns with the incorporation of various new technologies, including sewing machines and wool yarn, alongside the introduction of novel product lines. The diverse array of Tapis products, such as shawls, sarongs, caps, dresses, uniforms, and T-shirts, underscores the versatility of the members' craftsmanship. This multifaceted economic aspect is further elucidated through pertinent statements.

(a) Employment prospects for rural youth

Youth, often synonymous with unemployment, presents a notable challenge that warrants attention and resolution. The scarcity of job openings coupled with intense competition tends to dishearten and discourage young individuals. A proactive approach to mitigating unemployment involves the creation of new job opportunities with an entrepreneurial perspective (Sujatna & Istimal, 2018). Tapis Jejama Kham Micro, Small, and Medium Enterprises (MSMEs) actively contribute to this approach by generating employment avenues for the youth.

Field data reveals that a significant majority of respondents, specifically 31 out of 32 (96.87%), have acknowledged that the presence of MSMEs has indeed opened doors for youth employment in the village. This surge in Tapis MSMEs is instrumental in empowering the youth to not only secure a source of income but also alleviate the financial strain on their families. Consequently, this newfound opportunity has galvanized the village's youth, encouraging their active participation in Tapis Jejama Kham MSMEs.

(b) Reducing rural youth unemployment rates

The Indonesian economy has borne the brunt of the severe ramifications of the COVID-19 pandemic, leading many companies to resort to workforce downsizing as a survival strategy. Regrettably, this drastic measure has exacerbated the predicament of mounting youth unemployment. Those individuals who previously secured employment and later faced layoffs have been compelled to return to their hometowns, thereby augmenting the financial burdens borne by their families. Entrepreneurship emerges as a pivotal avenue to mitigate this pressing issue, endeavoring to counteract the surge in unemployment and create opportunities for gainful employment (Sujatna & Istimal, 2018).

During this tumultuous period, the presence of Tapis Jejama Kham Micro, Small, and Medium Enterprises (MSMEs) emerged as a tangible lifeline for youth seeking to sustain their productivity, notwithstanding the fact that the income generated in this context fell significantly short of what they previously earned in the corporate sector. A resounding majority of respondents, encompassing 27 out of 32 (84.37%), unanimously concurred that the presence of Tapis Jejama Kham MSMEs had indeed played a pivotal role in mitigating youth unemployment in the village. The decision to become part of the Tapis MSMEs family signifies a tangible step towards reducing youth unemployment in Negeri Katon.

(c) Increasing output

Business performance serves as a pivotal gauge for evaluating the success and profitability of a business entity (Sembiring et al., 2021). This assessment hinges on the determination and perseverance of members within the framework of Tapis Jejama Kham Micro, Small, and Medium Enterprises (MSMEs). Over time, as consumer demand for Tapis MSMEs' products surged, the need for escalated output became apparent, necessitating the fulfillment of consumer orders within stipulated timeframes. Consequently, Tapis MSMEs experienced a surge in membership to accommodate the mounting production demands. A notable 84.37% of the respondents attested to the significance of this observation.

(d) Increasing income

The surging demand for products following the COVID-19 pandemic has elicited a positive response from the respondents, chiefly reflected in a notable upswing in the income of member participants. Globally, individual income generation predominantly hinges upon the marketing of their products (Hayati et al., 2021). A robust consensus, encompassing 26 respondents (81.25%), underscored the acknowledgment of income augmentation within Tapis Micro, Small, and Medium Enterprises (MSMEs). This financial upturn serves as a compelling impetus, reinforcing the resolve and commitment of the respondents to engage actively in Tapis-related business activities.

It is imperative to emphasize that this supplemental income accrues exclusively to the members without any deductions attributable to the MSMEs or the leadership thereof. According to the head of the MSMEs, as long as the members fulfill their work commitments and execute orders as stipulated, the income realized unequivocally belongs to the individual members.

(e) Promising business opportunities

The research participants recognize Tapis Micro, Small, and Medium Enterprises (MSMEs) as a promising endeavor for the younger generation, who will undoubtedly play a pivotal role in the ongoing narrative of Indonesia's heritage. The progressive strides observed in the evolution of Tapis Jejama Kham MSMEs have been encouraging. Notably, a resounding consensus was voiced by 25 respondents (78.12%) who endorsed the premise that Tapis MSMEs represent a promising avenue for the respondents. The forward-looking initiatives undertaken by Tapis MSMEs, including the adoption of online marketing strategies and the integration of sewing machine technology, underscore the prospects of future success for Tapis Jejama Kham MSMEs.

The utilization of social media within the business realm is a concerted effort to broaden marketing reach and foster more robust communication with customers. Business entities can engage more effectively with their clientele, leveraging the valuable feedback, criticism, and suggestions provided by customers to enhance and refine their business operations (Atmaja & Verawati, 2020). This observation underscores the significance of acknowledging the spirited ambition of the youth and their aspirations for future development, a sentiment that warrants attention from relevant authorities and the general populace alike.

Social aspect

Social interaction encompasses human relations and the interface between humans and their environment. Within the realm of the natural sciences, the focus centers on understanding interactions within the realm of nature, while the social sciences are dedicated to the examination of human interactions with one another. In the context of Tapis craftsmen, the social dimension underscores the significance of social capital as a pivotal support mechanism for business enhancement. This social capital predominantly hinges on established norms prevalent within the community. These norms encompass principles of mutual assistance, the maintenance of trust grounded in individual integrity, a shared sense of kinship, and a collective commitment to fulfilling tasks entrusted by the group leader (Putro et al., 2022).

Furthermore, the social aspect extends to encompass indicators that facilitate interactions with the broader public. This facet contributes to the establishment of a harmonious social fabric within the community (Juliandi et al., 2021).

Table 2. Social aspects in the sustainability of Tapis Jejama Kham MSME

No	Statement	Answer (Mode)				
		SA	A	N	DA	SDA
1	Fostering a Sense of Family	**15**	9	7	1	0
2	Cultivating a Culture of Collaborative Work	**14**	11	5	2	0
3	Nurturing Relationships	11	**14**	5	2	0
4	Enhancing the Quality of Human Resources (HR)	8	**16**	7	1	0
5	Realizing Self-Actualization	8	11	**13**	0	0

Description: SA (strongly agree), A (agree), N (Neutral), DA (disagree), SDA (strongly disagree)

Table 2 illustrates the distribution of social aspects within the context of business sustainability among respondent members of Tapis Jejama Kham Micro, Small, and Medium Enterprises (MSMEs), yielding a range of responses. Field observations indicate that a prevailing sense of camaraderie and mutual support already exists among the members of Tapis Jejama Kham MSMEs. Collaborative work fosters a culture of empathy and shared responsibility among respondent members. This spirit of cooperation is notably evident in the successful fulfillment of large-scale orders for Tapis products. It is pertinent to note that each respondent possesses a pool of qualified human resources and has expanded their network of relationships. While the endeavor to actualize respondents in the Tapis business faces certain challenges, the overarching narrative can be summarized as follows.

(a) Fostering a Sense of Family

A pivotal driver behind the advancement of Tapis Jejama Kham Micro, Small, and Medium Enterprises (MSMEs) is the cultivation of a profound sense of belonging. This burgeoning familial bond is regarded as a fundamental catalyst for embarking on entrepreneurial endeavors. The leadership within MSMEs consistently prioritizes the nurturing of a familial ambiance, fostering a comfortable environment where members can actively participate in the established social networks that underpin the enterprise's sustainability (Safira & Gunawan, 2022).

This influential factor consequently yields a heightened sense of ease and camaraderie among the workforces. Notably, 24 respondents (75%) overwhelmingly expressed their strong agreement with the notion that they already felt a profound sense of belonging within Tapis MSMEs. According to these respondents, Tapis MSMEs have thoughtfully implemented a familial framework, substantiated by instances where members collectively offer solace and support to one another during challenging times. This is further exemplified by the experience of non-native respondents who, upon joining Tapis MSMEs, were readily integrated and embraced as part of the family. These newcomers received patient guidance and mentorship from members who had preceded them in their journey with Tapis MSMEs.

(b) Cultivating a Culture of Collaborative Work

The workforce's valuable contribution is epitomized by the deeply ingrained practice of *Gotong Royong* (communal work or collective cooperation) within the local village community, as documented by Sariningrum and Subekti (2021). For village residents, especially those in Negeri Katon, *Gotong Royong* signifies a vital manifestation of social and communal unity. In the context of Tapis Jejama Kham Micro, Small, and Medium Enterprises (MSMEs), mutual cooperation serves as the cornerstone for efficiently handling orders and collaboratively addressing challenges.

The surge in demand for orders, at times occurring within tight deadlines, compels respondents to engage in relentless work. Impressively, 25 respondents (78.12%) expressed strong agreement with the assertion that members of Tapis MSMEs are habituated to working collaboratively. Those familiar with managing high order volumes seamlessly navigate these demands and often complete orders ahead of schedule. Conversely, respondents unaccustomed to such rapid turnovers may encounter challenges in managing the workload. However, the imperative of mutual cooperation emerges as a robust solution in such scenarios. Member respondents consistently rally together, extending their support to complete one another's tasks, thereby ensuring the satisfaction of consumers with their orders.

(c) Nurturing Relationships

Upon joining Tapis Jejama Kham Micro, Small, and Medium Enterprises (MSMEd), respondents underwent a transformative experience marked by the establishment of new, extensive networks. Individuals who initially possessed limited connections within Negeri Katon saw their social circles expand significantly, even extending

to government officials. These community-based relationships play a pivotal role in shaping the members' entrepreneurial mindset, as articulated by Nurmawati et al. (2022).

The development of these broader networks can be attributed to the diligent efforts of the member respondents in consistently delivering high-quality products, thereby attracting a more extensive customer base. An overwhelming majority of respondents, totaling 25 individuals (78.12%), affirmed the significance of these networks. According to their feedback, the surge in relationships can be primarily attributed to the utilization of online marketing channels. This strategy facilitated orders that reached customers in various regions across Indonesia.

(d) Enhancing the Quality of Human Resources (HR)

The enhancement of human resources (HR) among member respondents within Tapis Jejama Kham Micro, Small, and Medium Enterprises (MSMEs) has occurred as an indirect consequence. A substantial majority of 24 respondents (75%) corroborated this assertion, reflecting their agreement with this statement. Respondents attested to receiving training that equipped them to manage substantial orders within tight timeframes. Moreover, improvements in knowledge have been witnessed, a progression attributed to members' active participation in training sessions and site visits organized by Tapis Jejama Kham MSMEs.

These training endeavors yield several advantages, encompassing the enrichment of individuals' knowledge, skills, and attitudes that bolster the enhancement of their businesses. Following participation in these training programs, respondents acquire novel insights and abilities, which are anticipated to contribute to the amelioration of their enterprises and, indirectly, augment their household income (Listiana et al., 2022).

One manifestation of this improvement is evident in respondents' increased proficiency in marketing their products through digital marketplaces, a skill they acquired after receiving guidance during marketplace-focused training sessions.

(e) Realizing Self-Actualization

Self-actualization represents the pursuit of one's latent potential, as documented by Susandi et al. (2021). This concept closely intertwines with the preparedness and determination exhibited by respondent members for their personal development. Field data suggests that many of the respondents' grapple with self-actualization challenges. However, contemporary access to the internet has substantially facilitated the youth's exploration of various self-actualization-related literatures.

This survey revealed that 13 respondents (40.62%) were hesitant in their responses, primarily owing to a lack of knowledge regarding the potential for self-actualization within Tapis Jejama Kham MSMEs. It is crucial to emphasize the continuous nurturing of members' knowledge to enable them to unlock their full self-actualization potential in their respective businesses.

Environmental aspects

Analyzing the business environment is a crucial initial step in strategic management, as it involves an assessment of the environmental factors that may affect business operations (Sembiring et al., 2021). This evaluation serves to identify both potential positive and negative consequences of conducting the business, with a specific focus on the optimal utilization of raw materials.

The environmental impacts, if left unaddressed, can directly disrupt ongoing business activities or manifest in the future. These impacts encompass changes in the initial environmental conditions, which can adversely affect various aspects, including wildlife, vegetation, and human life. As a result, it is mandatory for every industrial company to possess an Environmental Impact Assessment (AMDAL) or Environmental Management and Monitoring Efforts (UKL-UPL) for effective environmental management (Budiawan, 2019).

Table 3. Environmental aspects in the sustainability of Tapis Jejama Kham MSME

No	Statement	Answer (Mode)				
		SA	A	N	DA	SDA
1	Optimizing Raw Material Utilization	**17**	14	1	0	0
2	Proficiency in Waste Management	1	9	**16**	6	0
3	Ensuring Minimal Environmental Impact of Waste	7	9	**14**	2	0
4	Efficient Waste Treatment	14	**16**	1	0	1
5	Adoption of Environmentally Friendly Practices and Technologies	12	**12**	7	0	1

Description: SA (strongly agree), A (agree), N (Neutral), DA (disagree), SDA (strongly disagree)

Table 3 elucidates respondents' perspectives on diverse statements concerning the environmental aspects. Responses from Tapis Jejama Kham MSME members span a spectrum of viewpoints on environmental aspects regarding sustainability. Below, we delve into a detailed examination of each statement.

(a) Optimizing Raw Material Utilization

The issue of raw materials pertains to the discussion of production inputs. Raw materials refer to the initial materials that undergo further processing in the production process (Kurniawan, 2022). A strong consensus was evident among respondents, with 31 individuals (96.87%) strongly agreeing with the assertion that member respondents have optimized the utilization of raw materials. Key production inputs essential for Tapis production encompass gold thread, woolen thread, base fabric, sewing needles, pressure tools, tacks, rulers, pencils, crayons, scissors, and pattern paper. Main materials like gold thread, woolen thread, and base fabric are utilized to their maximum extent. Waste, in the form of leftover Tapis fabric scraps following production, is meticulously collected by members for storage, with plans for future reprocessing. Furthermore, production inputs other than gold thread, wool thread, and base cloth can be effectively repurposed for subsequent production.

(b) Proficiency in Waste Management

The collective awareness concerning the proper management of production waste has been cultivated through the increase in knowledge and awareness (Safitri et al., 2021). However, understanding of production waste management in Tapis MSMEs remains quite limited. A notable finding reveals that 16 respondents (50%), expressing uncertainty in their responses, indicated that they have not yet developed a comprehensive grasp of production waste management. Respondents cite two primary reasons for this. Firstly, the production processes in Tapis MSMEs have, thus far, generated minimal waste and have not contributed to environmental pollution. Secondly, there has been a notable absence of waste literacy training or any specific training programs related to production waste management within Tapis MSMEs up until the time of this research.

(c) Ensuring Minimal Environmental Impact of Waste

Waste, in the context of this study, refers to the byproducts generated during industrial or household production processes that can potentially deteriorate the environmental quality. Solid waste produced as a result of human activities is commonly known as "trash." The management of waste can exert both positive and negative influences on the environment (Safitri et al., 2021). Respondents exhibited varying perspectives on the assertion that waste has no adverse impact on the environment. A total of 14 respondents (43.75%) expressed doubt, contending that they generated little to no production waste, which led them to believe that they had no need for knowledge regarding waste management procedures. Meanwhile, other respondents clarified that the production waste primarily consisted of unused fabric remnants, which they prudently stored for potential reuse in the future.

(d) Efficient Waste Treatment

The true essence of waste management is exemplified by the community's actions and proficiency in waste handling (Safitri et al., 2021). Waste treatment is of paramount importance for businesses and organizations in preventing environmental pollution. Tapis Jejama Kham MSMEs adopted this approach when they recognized that the accumulation of fabric remnants had reached significant levels. According to research findings, 30 respondents (93.75%) voiced their agreement by employing these fabric remnants from Tapis handicrafts to craft a diverse range of products. These creations encompassed items such as masks, calligraphy pieces, decorative photo frames, keychains, ornamental flowerpots, tablecloths, headscarves, bags, shoes, and more. These products not only added value for respondent members but also found markets within the community and served as decorative elements in their households.

(e) Adoption of Environmentally Friendly Practices and Technologies

Utilizing technology for waste processing to yield value-added products represents a community-driven initiative aimed at enhancing the community's capabilities and skills (Listiana et al., 2022). Despite significant progress, the exploration of eco-friendly methods and technologies is still an ongoing effort. Limited access to information has hindered the widespread adoption of new innovations (Iskandar et al., 2020). The majority of respondents, totaling 24 (75%), expressed their agreement as they actively strive to access more practical and

environmentally sustainable embroidery methods and technologies. Respondents, however, are confronted with constraints in developing these methods and technologies, with traditional tools like manual presses and wooden boards remaining their primary tools for embroidery. Typically, these tools are crafted manually or provided through institutional assistance. While pattern creation continues to rely on manual techniques involving pencils and pattern paper, a notable technological advancement for them is the introduction of sewing machines, facilitated by educational institutions, to produce hats and sew the edges of Tapis handicrafts.

Recapitulation of Business Sustainability of Tapis Jejama Kham MSME

Table 4 presents the consolidated results of business sustainability for Tapis Jejama Kham MSMEs. This comprehensive overview compiles responses from various indicators of business sustainability, offering valuable insights into the overall business performance based on the data collected.

Table 4. Recapitulation of the business sustainability of the Tapis Jejama Kham MSME

No	Statement	Answer (Mode)				
		SA	A	N	DA	SDA
Economic aspect						
1	Employment prospects for rural youth	14	**17**	1	0	0
2	Reducing rural youth unemployment rates	12	**15**	5	0	0
3	Increasing output	**14**	13	5	0	0
4	Increasing income	13	**13**	6	0	0
5	Promising business opportunities	10	**15**	7	0	0
Social aspect						
1	Fostering a Sense of Family	**15**	9	7	1	0
2	Cultivating a Culture of Collaborative Work	**14**	11	5	2	0
3	Nurturing Relationships	11	**14**	5	2	0
4	Enhancing the Quality of Human Resources (HR)	8	**16**	7	1	0
5	Realizing Self-Actualization	8	11	**13**	0	0
Environmental aspect						
1	Optimizing Raw Material Utilization	**17**	14	1	0	0
2	Proficiency in Waste Management	1	9	**16**	6	0
3	Ensuring Minimal Environmental Impact of Waste	7	9	**14**	2	0
4	Efficient Waste Treatment	14	**16**	1	0	1
5	Adoption of Environmentally Friendly Practices and Technologies	12	**12**	7	0	1

Description: SA (strongly agree), A (agree), N (Neutral), DA (disagree), SDA (strongly disagree)

The data presented in Table 4 indicates that the business sustainability of Tapis Jejama Kham MSMEs is predominantly in agreement with the responses. This implies that the sustainability of Tapis Jejama Kham MSMEs is influenced by three key factors: a robust economic foundation, active community engagement, and a commitment to environmental preservation. This sustainability is primarily driven by the aspirations of the youth to elevate their family's economic well-being. Nevertheless, it is crucial for relevant agencies to focus on enhancing support in areas related to self-actualization in social aspects and further investigating waste management and its environmental implications.

CONCLUSION

The research findings lead to the conclusion that the sustainability of Tapis Jejama Kham MSMEs hinges on three pivotal aspects: economic viability, social integration with the community, and environmental stewardship. This sustainability is primarily driven by the aspiration of the younger generation to enhance their family's economic well-being.

For future researchers embarking on similar studies, it is advisable to delve deeper into the communication strategies employed by the youth in advancing the sustainability of Tapis Jejama Kham MSMEs. This can provide valuable insights into the dynamics of youth-driven businesses in the context of agrinomics.

REFERENCES

Ariani, N. D. (2021). Kontribusi Pemerintah Daerah dalam Melindungi Kain Tapis Lampung. *Jurnal Meta-Yuridis*, *4*(1), 88–99.

Atmaja, H. E., & Verawati, D. M. (2020). Peluang Bisnis di Era Covid-19. *Jurnal Akuntansi Dan Bisnis*, *6*(2), 58–66. http://www.tjyybjb.ac.cn/CN/article/downloadArticleFile.do?attachType=PDF&id=9987

Budiawan, S. (2019). Analisis Pengungkapan Triple Bottom Line dalam Penerapan Akuntansi Manajemen Lingkungan pada Industri Pertambangan. *Gorontalo Accounting Journal (GAJ)*, *2*(1), 22–30.

Elkington, J. (2013). Enter the triple bottom line. *Enter the Triple Bottom Line*, *7*(1), 1–16. https://doi.org/10.4324/9781849773348

Gitosaputro, S., & Listiana, I. (2018). Dinamika Penyuluhan Pertanian: dari Era Kolonial sampai dengan Era Digital. In *CV. Anugrah Utama Raharja*.

Hasanuddin, T., & Rangga, K. K. (2022). Kinerja Penyuluh, Keberdayaan Petani dan Produktivitas Usahatani di Propinsi Lampung. *Suluh Pembangunan: Journal of Extension and Development*, *4*(01), 9–17.

Hayati, I., Anisya, N. N., & Syahrul, A. (2021). Peningkatan Pendapatan Rumah Tangga melalui Daur Ulang Limbah Masyarakat. *Proceding Seminar Nasional Kewirausahaan*, *2*(1), 1077–1082.

Iskandar, E., Sawitri, B., & Suryani. (2020). Penerapan Teknologi Pengelolaan Tanaman Terpadu (PTT) pada Usahatani Padi Sawah di Desa Sukaresmi Kabupaten Bogor. *Suluh Pembangunan : Journal of Extension and Development*, *2*(1), 1–7. https://doi.org/10.23960/jsp.vol2.no1.2020.37

Juliandi, R. S., Mardiana, & Tampubolon, D. (2021). Analisis Aspek Ekonomi dan Sosial Kota Pekanbaru sebagai Kota Layak Huni. *Revenue : Jurnal Ekonomi Pembangunan Dan Ekonomi Syari'ah*, *4*(02), 1–15. https://doi.org/10.56998/jr.v4i02.36

Kasila, M., & Kolopaking, L. M. (2018). Partisipasi Pemuda Desa dalam Perkembangan Usaha BUMDES "TIRTA MANDIRI" (Studi di Desa Ponggok, Kecamatan Polanharjo, Kabupaten Klaten, Provinsi Jawa Tengah). *Jurnal Sains Komunikasi Dan Pengembangan Masyarakat [JSKPM]*, *2*(1), 43–58. https://doi.org/10.29244/jskpm.2.1.43-58

Kurniawan, V. G. A. (2022). Analisis Persediaan Bahan Baku Pasir Besidi PT. Semen Baturaja. *Jurnal Multidisipliner Kapalamada*, *1*(3), 406–411.

Listiana, I., Bursan, R., Antika, L. L., Alda, M. K., & Hudoyo, A. (2022). Pemanfaatan Jerami dalam Pembuatan Kompos di Pekon Bulurejo Kecamatan Gadingrejo Kabupaten Pringsewu. *Open Community Servixe Journal*, *01*(01), 29–34. http://repository.lppm.unila.ac.id/41876/

Michael, R., Raharjo, S. T., & Resnawaty, R. (2019). Program CSR Yayasan Unilever Indonesia Berdasarkan Teori Triple Bottom Line. *Focus : Jurnal Pekerjaan Sosial*, *2*(1), 23. https://doi.org/10.24198/focus.v2i1.23116

Nuraini, C. (2022). Analisis Keberlanjutan Usahatani Minapadi di Kecamatan Leuwisari Kabupaten Tasikmalaya. *Suluh Pembangunan : Journal of Extension and Development*, *3*(2), 81–87. https://doi.org/10.23960/jsp.vol3.no2.2021.132

Nurmawati, A., Zakaria, K. A., & Puspita, D. (2022). Survival UMKM dalam Pengembangan Ekonomi Desa Pasca Pandemi Covid-19 di Desa Ngeni Kecamatan Wonotirto Kabupaten Blitar. *Jurnal At-Tamwil*, *4*(2), 120–140.

Putro, H. P. N., Rusmainah, Abbas, E. W., Subiyakto, B., & Putra, M. A. H. (2022). Peran Modal Sosial dalam Pengembangan UMKM Kerajinan di Kampung Purun. *Prosiding Seminar Nasional Lingkungan Lahan Basah*, *7*(3), 203–209.

Rosanta, R. A., & Rizkiantono, R. E. (2018). Perancangan Buku Visual Tapis Lampung sebagai Media Pelestarian Tapis. *Jurnal Desain Idea: Jurnal Desain Produk Industri Institut Teknologi Sepuluh Nopember Surabaya*, *17*(1), 5. https://doi.org/10.12962/iptek_desain.v17i1.4370

Safira, A. S., & Gunawan. (2022). Relasi Sosial Pengusaha Pembuatan Conthong di Desa Ngeluk, Kecamatan Penawangan, Kabupaten Grobogan Semarang) Annisa Sofi Safira, Gunawan. *Solidarity*, *11*(2), 244–256.

Safitri, Y., Rangga, K. K., & Listiana, I. (2021). Pengetahuan, Sikap dan Ketrampilan Wanita Tani dalam Pengelolaan Sampah di Wilayah Pesisir Kelurahan Srengsem. *Suluh Pembangunan : Journal of Extension and Development*, *3*(1), 1–7. https://doi.org/10.23960/jsp.vol3.no1.2021.72

Sariningrum, N. N., & Subekti, S. (2021). Partisipasi Anggota Gapoktan pada Program Pengembangan Usaha Pangan Masyarakat (PUPM) melalui Toko Tani Indonesia (TTI) di Kabupaten Tulung Agung. *Suluh Pembangunan : Journal of Extension and Development*, *3*(1), 17–27. https://doi.org/10.23960/jsp.vol3.no1.2021.64

Sembiring, W. M. K., Sayekti, W. D., & Gultom, D. T. (2021). Analisis Kinerja dan Strategi Pengembangan

Usaha pada Rose Florist di Bandar Lampung. *Jurnal Ilmu Ilmu Agribisnis*, *9*(1), 62–69.

Singarimbun, M., & Effendi, S. (2015). *Metode Penelitian Survai*. LP3ES.

Sujatna, Y., & Istimal, I. (2018). Pengentasan Pengangguran bagi Pemuda di Desa Cigudeg melalui Kegiatan Budidaya Ikan Lele. *JPPM (Jurnal Pengabdian Dan Pemberdayaan Masyarakat)*, *2*(2), 349–357.

Susandi, A., Luayyin, R. H., & Dirgayunita, A. (2021). Aktualisasi Diri untuk Mengurangi Perilaku Bullying pada Anak. *Jurnal Visi Ilmu Pendidikan*, *13*(2), 72–83. https://doi.org/10.26418/jvip.v13i2.45698

Yanti, L. S., Ambya, A., & Suparta, I. W. (2020). Evaluasi Program Gerakan Membangun Desa Sang Bumi Ruwa Jurai: Gerbang Desa Saburai di Provinsi Lampung. *Suluh Pembangunan : Journal of Extension and Development*, *2*(2), 84–94. https://doi.org/10.23960/jsp.vol2.no2.2020.65

Yuliarmi, N. ., & Marhaeni, A. A. I. . (2019). *Metode Riset Jilid 2*. CV. Sastra Utama.

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Research Article

Performance of Agricultural Extension Services (BPP) in Enhancing Rice Production in North Sumatra, Indonesia

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ABSTRACT

Indonesia has experienced an increase in national population, the Government is targeting rice production of 54.50 million tons in 2023. North Sumatra Province has the largest rice production on the island of Sumatra, 2,088,584 tons. The effectiveness of the Agricultural Extension Service (BPP) in Percut Sei Tuan is of concern to researchers. This research method uses a differential semantic measurement scale or attitude scale to analyze performance data. The number of samples determined in the research was 10 farmers per village so that the number of samples from all villages was 30 rice farmers with 5-point rating scale and the choices "Very Good" to "Very Poor" with the interval scale formula {a(m-n)}/b and the number of question attributes is 12 points, and the class interval is 9.6. The results performance is in the "Very Good" performance category with an average score of 4.24. However, based on their respective scores of 3.03, there is a low score of 2.53 in the category of agricultural extension officers who do not assist farmers in obtaining agricultural financing, nor do they help market their agricultural products. Extension officers have carried out but are still not optimal with answers from one research category.

INTRODUCTION

The escalating national food demand parallels the growth in population, with a persistent government commitment to achieving self-sufficiency in order to uphold food security. Notably, rice production stands as a primary agricultural commodity that consistently bolsters its productivity (Wahyuni et al., 2019). As per the data published by the Central Bureau of Statistics, the total production of Milled Dry Grain (MDG) in 2022 reached 54.44 million tons, reflecting a 333.68-thousand-ton increase, equivalent to 0.61 percent, in comparison to the 2021 production of 54.42 million tons of MDG. The Ministry of Agriculture has set an ambitious target for rice production in 2023, aiming to reach 54.50 million tons, further underscoring the imperative nature of augmenting rice output to maintain national food self-sufficiency (BPS, 2022).

Given Indonesia's agricultural nature, the agricultural sector assumes a crucial role in contributing significantly to economic growth (Palupi et al., 2022). Consequently, all pertinent data and information

concerning agricultural activities within the jurisdiction of the BPP (which may encompass one or multiple districts) must be systematically gathered by the BPP (Safitri et al., 2023). The mining and quarrying industry, manufacturing, electricity, gas, clean water, construction, and various other services sectors are intrinsically connected (Hernalius et al., 2018).

The extension officer's role as a field technician and officer of farmer empowerment constitutes an integral component of the holistic process aimed at achieving food security (Izmi et al., 2021). In accordance with Law No. 16 of 2006, extension serves as a learning process that empowers stakeholders and essential economic actors to facilitate their access to market information, technology, capital, and additional resources. This empowerment enables them to organize effectively, ultimately leading to heightened productivity, enhanced business efficiency, and improved income and welfare (Ardita et al., 2017).

The program's effectiveness and efficiency hinge on various factors, including the quality and competence of the officers who serve as counselors, their preparedness, support, and alignment with relevant departments and industries (Tucker, 2020). One avenue for enhancing agricultural human resources is through the dissemination of agricultural technology, a strategy in alignment with the Decree of the Minister of Agriculture No. 16 of 2008 (Permentan, 2013).

Active involvement of central and regional extension agencies emerges as a pivotal factor in augmenting farmer productivity within the agricultural domain. Functioning as a vital link between research realms and the practical endeavors of farmers and their households, as well as bridging the realms of science and governmental entities, the primary objective of agricultural extension revolves around fostering community self-reliance (Sugiarta et al., 2017).

At the most localized level, the sub-district, the foundation for orchestrating agricultural extension activities is provided by the Agricultural Extension Service (BPP). In line with the stipulations of Law No. 19 of 2013, which pertains to the Protection and Empowerment of Farmers, the deployment of at least one village assistant necessitates the employment of strategic methodologies to meet the mandated quantity requirements.

According to data sourced from the Agricultural Extension Center, Ministry of Agriculture of the Republic of Indonesia for the year 2023, the agricultural extension landscape encompasses 8,438 freelancers, 24,550 civil servant instructors, 1,043 civil servant instructors, 10,932 first aid instructors, 73 civil servant instructors holding assignments and study permits, and 1,043 civil servant instructors under the purview of THL-TBPP APBN and APBD. The current population of Government Agricultural Extension Officers stands at 45,181 individuals. An imperative observation is the necessity for agricultural extension officers in each of the 74,093 villages and 8,412 sub-districts. This starkly underscores the ongoing requirement for these officers to ensure at least one extension officer per village in numerous villages and sub-districts (Bahua, 2015).

North Sumatra, situated on the island of Sumatra, stands out as a significant contributor to rice production, notably yielding 2,088,584 tons in 2022, as reported by BPS (2022). Within North Sumatra, rice cultivation thrives, with notable centers in the districts of Simalungun, Deli Serdang, Serdangbedagai, Langkat, Mandailingnatal, South Tapanuli, Tapanuli Utara, Pandanglawas Utara, and Batubara. Deli Serdang, in particular, takes the lead, achieving a total yield of 436,820 tons.

Percut Sei Tuan, a sub-district within Deli Serdang Regency, emerges as a remarkable region with abundant rice production, evidenced by its 2020 output of 59,296.05 tons of Milled Dry Grain (MDG). This prevalence of rice signifies that a significant portion of the population engages in rice farming, substantiating their livelihoods (Gurning et al., 2022).

Nevertheless, rice farmers in Percut Sei face persistent challenges. The endeavor to fortify national food security through agricultural extension services encounters persistent fundamental issues (Manik, 2019). Evidently, the performance of top-tier agricultural extension officers assumes paramount importance as a catalyst for agricultural growth and the realization of self-sufficiency in food security (Wahyuni et al., 2019). Augmenting the effectiveness of the Agricultural Extension Service (BPP) as a conduit for agricultural extension emerges as a critical imperative, with a particular focus on empowering farmers and addressing the predicaments experienced by rice farmers in Percut Sei. Consequently, the research community's concern revolves around the efficacy of the Agricultural Extension Service (BPP) in promoting rice commodities in Percut Sei Tuan.

METHOD

The study encompassed the population of rice farmers residing in the villages of Percut, Tanjung Rejo, and Cinta Damai within the Percut Sei Tuan sub-district. Employing a simple random sampling technique, sample

members were selected from the population without stratification considerations (Sugiyono, 2017). The study predetermined a sample size of 10 farmers per village, culminating in a total sample of 30 rice farmers, reflecting the assumption that the entire population received identical treatment and engagement from the Agricultural Extension Service (BPP).

For the analysis of instructor performance, this study utilized a semantic differential measurement scale or attitude scale. This scale presents a spectrum of responses, ranging from highly positive on the right to significantly negative on the left, or vice versa (Ramadhayanti, 2019). The scale encompassed a five-point rating system, incorporating responses from "Very Good" to "Very Poor" (Sumanto, 2014). The calculation for the scale interval followed the formula:

$$\text{Scale Interval} = \{a\ (mn)\}/b \quad (1)$$

Where:
a = number of attributes
m = highest possible score
n = lowest possible score
b = number of rating scales to be formed

As for the evaluation of agricultural extension officer performance, respondents' responses were analyzed based on the interval scale formula:
Highest Score : 5 (Excellent)
Lowest Score : 1 (Poor)
Number of Question Attributes : 12

Resulting in an interval class of 9.6, facilitating the subsequent analysis (2).
Interval Class = ((5 x 12)-(1 x 12))/5
Interval Class = ((60)-(12))/5
Interval Class = 9,6

Table 1. Agricultural Extension Officer Performance Response Scores

Score	Description
12 – 21,60	Very Poor
21,61 – 31,20	Poor
31,21 – 40,80	Fair
40,81 – 50,40	Good
50,41 – 60,00	Very good

RESULTS AND DISCUSSION

Drawing upon prior research conducted by Safitri et al. (2023), our research sample comprises individuals of working age, thereby ensuring each participant's capacity to respond to a series of questionnaire items. As delineated by Bahua (2016), achievement or performance encompasses individual activities or behaviors associated with tangible tasks within an organizational context. This performance derives from the individual's competence and the efficacy of the agricultural extension officer, which varies according to the context, as posited by Zulkarnain et al. (2023). Following the integration of performance concepts from management science, wherein performance is defined as the outcomes of work, the term "work performance" has gained popularity. Performance, in this context, pertains to the concrete actions executed by individuals in response to the tasks they undertake. The core objective of agricultural extension is to enhance farmers' self-reliance and productivity. Consequently, the performance of educational staff correlates with the notion of empowerment, particularly in domains that have the potential to augment empowerment (Sutrisno, 2016).

The effectiveness of agricultural extension officers' hinges upon their capacity to guide farmers in various facets of farming, encompassing pre- and post-harvest management, as well as the successful entry of finished products into the market. In an era marked by access to advanced science and technology, the inability of farmers to adhere to sound agricultural practices can precipitate unfavorable consequences. Thus, agricultural extension officers must assume a pivotal role in assisting farmers in boosting agricultural output (Rahmawati et al., 2019).

The multifaceted roles assumed by agricultural extension officers at the Agricultural Extension Service (BPP) within the Percut Sei Tuan sub-district encompass their functions as facilitators, motivators, educators, and communicators. The effective execution of these roles is crucial for their function as agricultural extension officers. This study evaluates the performance of agricultural extension officers concerning their provision of guidance pertaining to rice commodities in Percut Sei Tuan, Deli Serdang.

The sub-district of Percut Sei Tuan consists of 20 villages, with a subset of villages, namely Percut, Tanjung Rejo, and Cinta Damai, actively engaged in rice farming. A total of ten farmers from each of these sub-villages involved in rice cultivation were selected as research respondents. The deployment of an interval scale through the semantic differential is detailed in Table 2 for reference.

Table 2. Agricultural Extension Officer Performance Interval Scale on Each Question Attribute

Interval	Performance Category
1 – 1,80	Very Poor
1,81 – 2,60	Poor
2,61 – 3,40	Fair
3,41 – 4,20	Good
4,21 – 5,00	Very good

Source: Primary data processed, 2022

Following the completion of the study, the outcomes of the analysis regarding the performance of agricultural extension officers within the Agricultural Extension Service (BPP) of the Percut Sei Tuan sub-district are as follows.

a. Performance of Agricultural Extension Officers as Facilitators

The evaluation conducted by farmers to appraise the performance of agricultural extension officers in fulfilling their role as intermediaries between farmers and those involved in agricultural cultivation and enhancement pertains to the sphere of rice farming. This metric serves as a means of assessing the extension officers' proficiency as facilitators, encompassing their abilities in providing resources, knowledge, and establishing connections between novel technologies and farmers. The subsequent presentation in Table 3 delineates the metrics for gauging the effectiveness of agricultural extension officers in their capacity as facilitators.

Table 3. Performance of Agricultural Extension Officers as Facilitators

No	Variables/Sub Variables	Score	Performance
1	Agricultural extension officers streamline the process for farmers to acquire high-quality production inputs.	4,53	Very Good
2	Agricultural extension officers aid in securing capital for farm businesses.	3,03	Fair
3	Agricultural extension officers support the marketing of agricultural produce.	2,53	Fair
4	Agricultural extension officers facilitate access to information from various sources for members of farmer groups.	3,73	Good
5	Agricultural extension officers actively contribute to the development of farmer groups by assisting farmers.	4,50	Very Good

Source: Primary data processed, 2022

Utilizing the interval scale, notable success is observed in the performance of agricultural extension officers who facilitate the acquisition of quality inputs for farmers, garnering a commendable score of 4.53. Likewise, their role in aiding farmers in the establishment of farmer organizations receives a high score of 4.50. This attests to the effective execution of their responsibilities as facilitators, as perceived by the farmers.

In contrast, attributes such as agricultural extension officers' assistance in securing business capital (with an attribute question score of 3.03) and their support in marketing agricultural products (with an attribute question score of 2.53) exhibit lower scores. Interviews with farmers reveal that agricultural extension officers grant farmers autonomy in obtaining financing for their agricultural pursuits, thus contributing to the emergence of independent farmers who have self-reliant market access for their produce.

b. Performance of Agricultural Extension Officers as a Motivator

In society, every interaction among individuals constitutes a distinct form of network. Diverse foundations of social relations yield varied networks (Rahmawati et al., 2019). In their capacity as development motivators, agricultural extension officers are tasked with a multitude of roles, encompassing education, mentorship, advisory services, information mediation, and resource provisioning. The evaluation of agricultural extension officers' effectiveness as motivators is contingent on factors such as leadership development, consultancy, and farmer resource coordination. The ensuing presentation in Table 4 details performance metrics for agricultural extension officers in their role as motivators.

Table 4. Performance of Agricultural Extension Officers as a Motivator

No	Variable/Sub Variable	Score	Performance
1	Agricultural extension officers motivate farmers to enhance their production.	4,67	Very good
2	Agricultural extension officers inspire farmers to foster innovation and generate novel ideas.	4,73	Very good
3	Agricultural extension officers promote the development of entrepreneurial skills among farmers.	3,70	Good
4	Agricultural extension officers offer guidance to farmers on acquiring agricultural capital.	3,83	Good
5	Agricultural extension officers regularly visit the fields of farmers.	4,20	Good

Source: Primary data processed, 2022

The outcomes of the performance analysis study of agricultural extension officers within the Agricultural Extension Service (BPP) of the Percut Sei Tuan sub-district provide valuable insights into their role as motivators. Of particular significance is the agricultural extension model that encourages farmers to innovate and generate novel ideas in agriculture, as it received the highest rating within this sub-variable. This resonates with the broader mission of extension officers, which is to empower farmers, promoting innovation to enhance production and augment farmers' income. Notably, this alignment underscores the pivotal role of motivation in influencing the attitudes, behaviors, and overall effectiveness of livestock extension officers in their daily activities. Furthermore, the responsibilities of an extension officer extend beyond agronomic practices to encompass the provision of motivation, fostering job satisfaction, and cultivating harmonious relationships among farmers to enhance agricultural management.

c. Performance of Agricultural Extension Officers as an Educator

Extension officers serve as educators disseminating information related to rural agriculture. Their presence is designed to reshape community mindsets, encouraging those who may be initially unwilling to become receptive and fostering a transition from ignorance to knowledge among the informed. Through their guidance, extension officers empower farmers in their agricultural pursuits, facilitating learning and skill development. The subsequent presentation in Table 5 offers an assessment of the effectiveness of agricultural extension officers in their roles as educators.

Table 5. Performance of Agricultural Instructor as Educators

No	Variable/Sub Variable	Score	Performance
1	Agricultural extension officers illustrate the selection of high-quality production inputs, encompassing seeds, fertilizers, pesticides, and equipment.	4,63	Very good
2	Agricultural extension officers showcase correct techniques for rice plant cultivation.	4,43	Very good
3	Agricultural extension officers demonstrate the proper methods for harvesting and post-harvesting, aiming to optimize production.	4,63	Very good
4	Agricultural extension officers offer training on the adoption of new agricultural technologies to farmers.	4,17	Good
5	Agricultural extension officers consistently offer solutions to challenges encountered by farmers.	4,33	Very good

Source: Primary data processed, 2022

The Agricultural Extension Service (BPP) of Percut Sei Tuan has received a commendable evaluation for the performance of agricultural extension officers, as ascertained through a study assessing their role as educators. Agricultural extension officers consistently engage in the education of farmers, imparting accurate insights into techniques for harvesting, post-harvest procedures, cultivation, and production methods, thereby enhancing farmers' knowledge. Moreover, they actively offer training to introduce farmers to novel agricultural

technologies and persist in delivering support and solutions to address the challenges faced by farmers. As Padmasari et al. (2018) affirm, the core duty of these officers as educators encompasses aiding farmers across all facets of agriculture.

d. Performance of Agricultural Extension Officers as a Communicator

Agricultural extension officers function as communicators, serving as advisors who disseminate knowledge to enhance farmers' proficiency in agricultural practices. Through their guidance, farmers acquire awareness of the precise technology applications necessary in the evolving field of agriculture. Table 6, provided below, offers an evaluation of the communication skills demonstrated by agricultural extension officers.

Table 6. Performance of Agricultural Extension Officers as Communicators

No	Variable/Sub Variable	Score	Performance
1	Agricultural extension officers possess sound technical and practical knowledge when conducting extension activities.	4,90	Very good
2	Agricultural extension officers adeptly steer and guide farmers.	4,60	Very good
3	Agricultural extension officers diligently prepare materials prior to disseminating information concerning rice crops in their extension endeavours.	4,57	Very good
4	Agricultural extension officers exhibit effective communication with farmers.	4,60	Very good
5	Agricultural extension officers adeptly oversee both internal (farmer groups) and external (government or business partners) communication.	4,57	Very good

Source: Primary data processed, 2022

The agricultural extension officers from the Agricultural Extension Agency (BPP) in Percut Sei Tuan have significantly enhanced their communication skills. Research findings indicate that each sub-variable, when considered collectively, yields "very good" outcomes. This underscores the effective fulfillment of their responsibilities by extension officers, which involves offering support to farmers, fostering robust relationships, and serving as intermediaries between farmer organizations and external stakeholders, including government and corporate partners.

Table 7. Agricultural Extension Officers

No	Variables	Score	Category
1	Performance of agricultural extension officers as a facilitator	3,66	Good
2	Performance of agricultural extension officers as a motivator	4,23	Very good
3	Performance of agricultural extension officers as an educator	4,44	Very good
4	Performance of agricultural extension officers as a communicator	4,65	Very good
	Average Total Score	**4,24**	**Very good**

Source: Primary data processed, 2022

The Agricultural Extension Service (BPP) in Percut Sei Tuan achieves a "Very Good" performance rating with an average score of 4.24, as evaluated based on the performance of agricultural extension officers in their roles as facilitators, motivators, educators, and communicators.

Effectiveness of Agricultural Extension

Effective agricultural extension hinges on establishing robust communication channels with farmers in the field, fostering cooperative relationships between extension officers and farmers. To ensure effectiveness, agricultural extension must align with the specific interests and needs of farmers. A thorough investigation is essential to identify these individual and collective interests and needs, which can be satisfied within the constraints of available resources. This comprehensive understanding allows the prioritization of counseling activities based on the most critical interests and needs (Rangga et al., 2020).

The effectiveness of extension is gauged by the extent to which program objectives are achieved. The practical application of elements within rice cultivation technology, expressed through attained scores, serves as a yardstick for measuring this achievement. Central to the effectiveness of agricultural extension is the willingness of the target farmers to actively alter their behaviors through learning efforts. The effectiveness is further evaluated by considering the degree to which agricultural extension objectives are met, particularly in empowering farmers to implement recommended innovations (Faqih et al., 2015).

To assess the efficacy of extension services provided by agricultural extension officers to farmer groups, the primary benchmark employed is the increase in production, evaluated by examining the application of ten technology packages. These packages encompass the utilization of high-quality seeds, sound soil management practices, proper spacing, balanced fertilization, effective water management, diligent weeding, pest and disease control, efficient harvesting, post-harvest handling, and institutional factors.

The evaluation of agricultural extension officers' effectiveness at the Agricultural Extension Center (BPP) in Percut Sei Tuan relies on a ten-step approach, including: (1) Extension on the use of superior rice seeds; (2) Extension on comprehensive support for sound soil management practices; (3) Extension on proper planting distances; (4) Extension on balanced fertilization; (5) Extension on effective water management; (6) Extension on diligent weeding; (7) Extension on assistance with pest and disease control; (8) Extension on support for efficient harvesting practices; (9) Extension on proper post-harvest handling; (10) Extension on delivery of agricultural services. Effectiveness within each of these ten stages is measured using a semantic differential scale. A detailed data analysis of the effectiveness of agricultural extension implementation for each question attribute is presented in Table 8.

Table 8. Interval Scale Per Question Attribute of Agricultural Extension Effectiveness

Score	Category
1 – 1,6667	Not Effective
1,668 – 2,334	Fair
2,335 – 3,001	Very Effective

Source: Primary data processed, 2022

After conducting the research process, the results of the analysis of the effectiveness of agricultural extension through the Agricultural Extension Center (BPP) of Percut Sei Tuan District are as follows.

Table 9. Agricultural Extension Effectiveness

No	Variable/Sub-Variable	Score	Category
1	Extension on the use of superior rice seeds	3	Very Effective
2	Extension on comprehensive support for sound soil management practices	2,467	Very Effective
3	Extension on proper planting distances	2,4	Very Effective
4	Extension on balanced fertilization	3	Very Effective
5	Extension on effective water management	2,867	Very Effective
6	Extension on diligent weeding	2,267	Fair
7	Extension on assistance with pest and disease control	2,233	Fair
8	Extension on support for efficient harvesting practices	2,667	Fair
9	Extension on proper post-harvest handling	2,5	Fair
10	Extension on delivery of agricultural services.	3	Fair
	Average Total Score	**2,64**	**Very Effective**

Source: Primary data processed, 2022

The evaluation of agricultural extension officers' effectiveness at the Agricultural Extension Service (BPP) in Percut Sei Tuan reveals their commendable performance as extension officers, meriting a "very effective" categorization with an average score of 2.64. This signifies that the structured extension program encompassing ten stages has succeeded in reshaping farmers' mindsets, particularly enhancing their knowledge, skills, and attitudes toward rice farming. These findings align with the research conducted by Nastin et al. (2019), which underscores that the effectiveness of an extension program should be measured by its alignment with predefined plans and the actual outcomes realized. An ineffectiveness label is applicable when the efforts or actions do not yield the desired results.

Upon close examination of the effectiveness assessment, it is noteworthy that the stages related to seed utilization, balanced fertilizer application, and outreach to agricultural institutions secured the highest "very effective" rating. Agricultural extension officers have adeptly fulfilled their roles as facilitators, providing access to superior seeds and balanced fertilizers to boost rice productivity in Percut Sei Tuan. Moreover, these officers have proven themselves as capable mediators by fostering institutional links between farmers and governmental bodies, a role that significantly contributes to enhancing the quality of agricultural human resources and achieving agricultural development objectives, as articulated by Lesmana (2017).

CONCLUSION

The findings reveal that the performance of agricultural extension officers in their capacities as facilitators, motivators, educators, and communicators at the Agricultural Extension Service (BPP) in Percut Sei Tuan consistently falls within the "Very Good" performance category, averaging a score of 4.24. Nevertheless, the scores of 3.03 and 2.53 respectively indicate lower performance in terms of agricultural extension officers' involvement in securing agricultural financing for farmers and facilitating the marketing of agricultural products. The results of the assessment confirm the "very effective" execution of duties by agricultural extension officers at the Agricultural Extension Service Center (BPP) in Percut Sei Tuan, averaging a score of 2.64. However, the challenges faced by rice farmers, such as limited input options, seed quality, technology access, and post-harvest procedures, imply that there is room for improvement in the extension officers' overall performance.

These research findings provide valuable insights for recommending strategies to enhance the evaluation of agricultural extension officer performance through the Agricultural Extension Service (BPP) in Percut Sei Tuan. The aim is to develop and implement more effective programs and interventions, addressing persistent issues encountered by rice farmers. The ultimate goal of these programs is to stimulate agricultural innovation among farmers, fostering a positive impact on rice production and, in turn, advancing self-sufficiency in food security.

REFERENCES

Ardita, A., Dwp, S., &; Widjanarko, D. (2017). Performance Of Agricultural Extension Workers According To Farmer Perception: A Case Study In Landak District. *Journal Of Vocational And Career Education*, *2*(1), 1–8. Https://Doi.Org/10.15294/Jvce.V2i1.10908

Bahua, M. I. (2015). Counseling And Empowering Indonesian Farmers. In *Angewandte Chemie International Edition, 6(11), 951–952.* Ideas Publishing.

Bahua, M. I. (2016). *Performance Of Agricultural Extension Workers*. Deepublish Publisher.

Bps. (2022). Rice Harvest And Production Area In Indonesia 2022. In *Results Of Statistical Data Collection Activities Of Food Crop Agriculture Integrated With Area Sample Framework Method* (P. 345).

Bps. (2022). *Area Of Rice Harvest And Production In South Sumatra 2021*. 1–16.

Faqih, A., Dukat, &; Susanti, R. (2015). The Effectiveness Of Agricultural Extension Methods And Techniques In The Implementation Of Rice Cultivation Technology (Oryza Sativa L.) Legowo Jar Planting System 4:1 (Case Study In Silih Asih Farmer Group, Ciomas Village, Ciawigebang District, Kuningan Regency). *Journal Of Agrijati*, *28*(1), 45–67.

Hernalius, L. A., Sumardjo, S., &; Hamzah, H. (2018). The Effect Of Agricultural Extension On The Productivity Level Of Rice Fields. *Journal Of Communication Science And Community Development [Jskpm]*, *2*(3), 279–288. Https://Doi.Org/10.29244/Jskpm.2.3.279-288

Izmi, D. S., Yulaicho, M. R., &; Nawangsari, E. R. (2021). Policy Implementation Of The Strategic Command For Agricultural Development (Kostratani) Program In Sukodono District, Sidoarjo Regency. *Journal Of Education, Humanities And Social Sciences (Jehss*), *4*(2), 702–710. Https://Doi.Org/10.34007/Jehss.V4i2.729

Lesmana, D. (2017). The Performance Of Agricultural Extension Service In Samarinda Regency. *Epp*, *4*(2), 24–31.

Manik, J. R. (2019). The Transformation Of Agricultural Counseling To The Management Of Innovation In Order To Strengthen Food Security In The Kabupaten Dairi. *Jasc (Journal Of Agribusiness Sciences*), *3*(1), 41–45. Https://Doi.Org/10.30596/Jasc.V3i1.3677

Nastin, Sidu, D., &; Mappasomba, M. (2019). The *Effectiveness Of The Agricultural Extension Program In Increasing Farmers' Knowledge About Growing Organic Rice In Waode Buri Village, North Kulisusu District, North Buton Regency*. *4*(5), 110–116.

Padmasari, N. P. I., Sutjipta, N., & Putra, I. G. S. A. (2018). The Role Of Field Agricultural Extension Workers (Ppl) As Facilitators Of Farmer Farming In Subak Empas Tbuah Tabanan District, Tabanan Regency. *Journal Of Agribusiness And Agritourism*, *7*(2), 277. Https://Doi.Org/10.24843/Jaa.2018.V07.I02.P11

Palupi, R., Warnaen, A., &; Syamsuddin, A. (2022). The Strategy Of The Agricultural Extension Center In Improving The Welfare Of Farmers In The Kostratani Era In Wates District, Kediri Regency. *Al Qisthi*,

12(1), 34–44.

Permentan. (2013). Regulation Of The Minister Of Agriculture Of The Republic Of Indonesia Number 16/Permentan/Ot.140/2/2013 Concerning Guidelines For Information Management System For Agricultural Extension Within The Ministry Of Agriculture. Regulation Of The Minister Of Agriculture Of The *Republic Of Indonesia Number 16/Permentan/Ot.140/2/2013 Concerning Guidelines For Information Management System For Agricultural Extension Within The Ministry Of Agriculture*.

Rahmawati, R., Baruwadi, M., &; Ikbal Bahua, M. (2019). The Role Of Extension Worker Performance And The Effectiveness Of Extension Implementation In The Corn Intensification Program. *Journal Of Agricultural Socioeconomics*, *15*(1), 56. Https://Doi.Org/10.20956/Jsep.V15i1.6342

Rahmawati, Z., Sumardjo, S., Amiruddin, S., &; Ivanovich, A. (2019). Role Of Agricultural Counselling Centre In The Development Of Black Rice Programme In Central Java, Indonesia. *Journal Of Agricultural Extension*, *23*(1), 66–78.

Ramadhayanti, A. (2019). *Spss Applications For Research And Market Research*. Pt Elex Media Kamputindo.

Rangga, K. K., Mutolib, A., Yanvika, H., Listiana, I., &; Nurmayasari, I. (2020). The Level Of Effectiveness Of Agricultural Extension Workers In Jati Agung District, South Lampung Regency. *Journal Of Integrated Agribusiness*, *13*(1), 1. Https://Doi.Org/10.33512/Jat.V13i1.7162

Gurning, R.N.S., Siregar, A.F., & Wildani Lubis. (2022). The Effectiveness Level Of The Agricultural Extension Center (Bpp) Of Percut Sei Tuan District. *Madani Multidisciplinary Journal*, *2*(8), 3491–3496. Https://Doi.Org/10.55927/Mudima.V2i8.1093

Safitri, A., Listiana, I., Yanfika, H., Silviyanti, S., &; Rangga, K. K. (2023). The Relationship Between The Facilities And Infrastructure Of The Bpp Kostratani And Its Function As A Data And Information Center At Bpp Sidomulyo And Candipuro In South Lampung Regency. *Agriecobis : Journal Of Agricultural Socioeconomics And Business*, *6*(01), 1–12. Https://Doi.Org/10.22219/Agriecobis.V6i01.18984

Sugiarta, P., Ambarawati, I. G., &; Adi Putra, I. G. S. (2017). The Influence Of The Performance Of Agricultural Extension Workers On Farmer Behavior On The Application Of Ptt Technology And Rice Productivity In Buleleng Regency. *Journal Of Agribusiness Management*, *5*(2), 34. Https://Doi.Org/10.24843/Jma.2017.V05.I02.P06

Sugiyono. (2017). *Quantitative, Qualitative And R&D Research Methods* (3rd Ed.). Alphabeta.

Sumanto. (2014). *Theory And Application Of Research Methods*. Caps (Centre Of Academic Publishing Service).

Sutrisno, E. (2016). *Human Resource Management* (8th Ed.). National Library.

Tucker, M. (2020). *Overseas Posts Network Review*. Department Of Agriculture, Water And The Environment.

Wahyuni, S., Helmi, H., Tanjung, H. B., &; Oktavia, Y. (2019). The Role Of The Agricultural Extension Center (Bpp) In Food Commodity Extension (Case Study In Tanah Datar District). *Journal Of Agrisep: A Study Of Socioeconomic Problems Of Agriculture And Agribusiness*, *18*(2), 235–248. Https://Doi.Org/10.31186/Jagrisep.18.2.235-248

Zulkarnain, H., Suharto, &; Mazni, A. (2023). The Influence Of Competence And Motivation On The Performance Of Agricultural Extension Workers In The Food Security, Food Crops And Horticulture Office Of Central Lampung Regency. *Simplex Journal*, *4*(1), 82–94.

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Research Article

The Significance of Agricultural Extension Activities for Wetland Rice Farmers in Serang, Indonesia

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ABSTRACT

In the context of Serang, Indonesia, agricultural extension activities have recently faced challenges related to reduced participation, as observed by the majority of agricultural extension officers. This reduced participation manifests through the limited attendance of farmers in meetings, the passive engagement of farmers and their respective groups in facilitating extension activities, and the generally muted response to agricultural technology content presented during these sessions. Conversely, fostering greater participation in agricultural extension activities can be achieved through coordinated efforts with supportive assistance or the provision of incentives. This study aims to assess the significance of agricultural extension activities for wetland rice farmers in Serang, Indonesia. It adopts a qualitative research approach, focusing on the phenomenology of extension activities within the realm of rice farming in Serang. Data analysis for this study employs Husserl's transcendental phenomenology data analysis method, which is incorporated within the interactive model data analysis framework. The information pertaining to the experiences of agricultural extension activities, as recounted by the informants (farmers), was extracted by identifying specific statements made by the farmer informants during interviews. A total of 133 individual verbatim statements provided by informants were systematically categorized. Three overarching themes, or units of meaning, emerged from this categorization, revealing the essence of agricultural extension activities and the informants' perceptions. These themes are as follows: Extension as a Source of Information, Extension as a Source of Technology, and Extension as a Source of Assistance. They encapsulate the texture and structure of the farmers' experiences with rice farming extension activities. The textural description highlights aspects closely linked to the transmission of information, technology, government initiatives, and assistance delivery. The structural aspect examines the meaning of extension activities within the economic, learning, and participation contexts of the participants. Subsequently, the combined meaning and essence of the rice farming extension experiences for each farmer informant are synthesized, collectively painting a comprehensive picture of their experiences. These experiences extend beyond the acquisition of agricultural knowledge and technology; they also encompass the provision of much-needed assistance for farmers to effectively adopt and implement these innovations.

INTRODUCTION

Agriculture stands as one of the most pivotal sectors in underpinning food security, given that sustenance is a fundamental human requirement. According to the stipulations of Law No. 18 of 2012, food is a cornerstone commodity and a key stratagem for Indonesia, recognizing it as a fundamental human necessity that necessitates a collaborative endeavor by both the government and society. Food security is epitomized by the presence of an adequate, safe, diverse, nutritious, equitable, affordable food supply that respects the religious, cultural, and belief systems of the community (Ferguson et al., 2023).

The pursuit of meeting the populace's nutritional needs hinges on the sustainable growth of the agricultural sector and the fortification of competent human resources (HR). This equips primary and agricultural business participants with the wherewithal to leverage economic prospects, drawing from essential insights on technology, capital, and market dynamics essential for advancing their farming endeavors. Consequently, agricultural extension emerges as a strategic endeavor in agricultural development, spanning both regional and national contexts. Through agricultural extension, agricultural knowledge is systematically disseminated to the farming community, providing them with a deepened comprehension, augmented attitudes, and enhanced skills that bolster their business competitiveness and individual prosperity (Fadamiro et al., 2022; Tamsah & Yusriadi, 2022).

The agricultural landscape in Banten is auspicious, marked by several key facets. Firstly, its strategic geographical location places it in proximity to consumers and markets. Secondly, the region boasts relatively robust infrastructure, which leads to diminished transportation costs. Thirdly, Banten serves as a pivotal trade hub, accentuated by the presence of international ports and airports. Moreover, the steady population growth in Banten translates into increased food consumption needs, signifying promising opportunities for agricultural enterprises (Putri, 2019).

In the context of Serang, agriculture plays a significant role in the realm of economic development. The potential of this agricultural sector is discernible through vast expanses of arable land, the cultivation of staple crops such as rice and corn, the growing availability of agricultural human resources, and the rapid proliferation of agricultural technology and equipment.

A salient feature in the current agricultural landscape in Serang is a perceived lack of participation in agricultural extension activities, with this observation stemming from the scant attendance of farmers in meetings, farmers and their groups showing limited initiative in orchestrating activities conducive to the implementation of agricultural extension, and farmers exhibiting muted responses to the technological content delivered during these initiatives. Conversely, it is conceivable that agricultural extension endeavors could foster more active participation if harmoniously aligned with support mechanisms or incentivized interventions.

This study is geared toward unraveling the significance of agricultural extension activities for wetland rice farmers in Serang. While previous research has emphasized the pivotal role of extension activities in steering behavioral changes from the perspective of extension stakeholders, research scrutinizing the significance of extension for wetland rice farmers remains relatively underexplored.

Amanah (2007) delves into the profound implications of extension and its role in effecting transformations in the behavior of individuals, groups, and communities. It highlights how misinterpretations of extension by the public result from incongruities between the execution of extension and the established principles. The core tenet of extension hinges on the enhancement of community behavior via non-formal educational methodologies, enabling individuals to independently navigate and resolve the challenges they face. Although extension employs a myriad of approaches, it consistently prioritizes a participatory framework, encompassing diverse methods, all tailored to address the needs of extension participants while ensuring sustainability.

Another study, by Setiawan (2005), examines a spectrum of agricultural extension issues. These issues exhibit substantial variability, contingent upon the particular scientific vantage point from which they are viewed. The fundamental role of extension lies in assisting farmers in making decisions by presenting a range of alternative solutions to the issues at hand. However, the prevailing issue in contemporary extension activities is the prevalent shift toward a service-oriented model, as opposed to the original intent of empowering farmers to independently make informed decisions. Furthermore, it is beset by challenges stemming from farmers' limited knowledge and insight into understanding problems, devising solutions, and selecting the most appropriate problem-solving strategies to realize their goals.

In a separate inquiry, Putri et al. (2019) investigate farmers' engagement in extension activities and their adoption of wetland rice fertilization in Kersamanah, Garut, Indonesia. The study reveals that the majority of farmers in Kersamanah grapple with limited landholdings, often necessitated by economic constraints and subsistence demands. Their approach to extension activities encompasses the dissemination of agricultural

knowledge and technology to enrich members' understanding, the consolidation of farmer groups to promote cooperative endeavors, the provision of a platform for information verification, the cultivation of behavioral changes (comprising knowledge, attitudes, and skills), and a non-formal teaching and learning process. However, there are indications that extension activities are inadequately organized, attributable to members' busy schedules and their reluctance to actively participate. Notably, farmer participation in extension activities is reported as low by the majority of respondents (70.11%).

Furthermore, Budiman and Sadono (2010) investigates the level of participation and autonomy of alumni farmers from integrated crop management field schools. Their findings indicate that the most significant participation level (50 percent) falls within the medium category, with the remainder distributed between farmers with high (26.2 percent) and low (23.8 percent) levels of participation. These percentages encapsulate participation across the entirety of the planning, execution, monitoring, and evaluation phases. Specifically, the majority of farmers exhibit low participation in planning and evaluation activities, with participation rates at 83.3 percent and 64.3 percent, respectively. The underwhelming involvement in the planning phase largely stems from a paucity of information regarding the SL-PTT planning activities.

Purukan et al. (2021) assessed the Performance of Agricultural Extension Officers in Enhancing Food Self-Sufficiency in Ranoyapo, South Minahasa. Their findings revealed that agricultural extension activities face suboptimal implementation across Ranoyapo's villages. This inadequacy primarily arises from the dearth of government-provided resources. The government's support in terms of facilities and infrastructure for the Agricultural Extension Center in Ranoyapo is yet to reach its full potential, hampering the effective execution of field agricultural extension officers' duties in the area. The Ranoyapo Agricultural Extension Office (BPP) contends with a shortage of staff, as a mere three agricultural extension officers serve twelve villages. Ideally, each officer should be responsible for a single village, but due to this deficiency, each officer must oversee four villages. Consequently, the agricultural extension activities fall short of optimal performance, and the community struggles to fully grasp the intricacies of the agricultural learning process.

Hamyana (2017) phenomenological research delves into Work Motives in Agriculture within the Farmer Youth Group in Batu, East Java, Indonesia. This inquiry identified two overarching motives that either encourage or hinder the involvement of young individuals in agriculture. These motives are characterized as moral-cultural base motives and rational-structural base motives. From the moral-cultural perspective, engagement in agriculture is not solely a matter of profit or loss, but is perceived as a profound calling of the soul and a moral obligation. Conversely, from the rational-structural viewpoint, participation in agriculture is a deliberate choice influenced by the potential economic, social, and environmental benefits it offers.

Demmallino et al. (2018) conducted a Phenomenological Study concerning the Effects of Policy Implementation on the Lives of Farmers in Morowali, specifically focusing on the Mining Ring Area in Bahodopi, Central Sulawesi, Indonesia. This study sought to comprehensively evaluate the living conditions of farming communities residing in the vicinity of the mining ring, particularly within Bahodopi. It aimed to analyze the repercussions of nickel mining and proffer policy recommendations for the sustainable management of natural resources beneficial to farming communities. Employing a descriptive qualitative approach, the study incorporated methods such as participant observation, in-depth interviews, and documentation. The research data collection process involved purposive sampling to select informants, followed by data reduction through data presentation, snowballing, and the derivation of conclusive insights.

METHOD

This study employed qualitative research to explore the phenomenology of agricultural extension activities for wetland rice in Serang, Indonesia. Qualitative research is a method that seeks to comprehend the meanings individuals or groups attribute to social and human issues. This investigative process entails significant steps, including posing questions, collecting specific data from participants, inductively analyzing data to identify specific themes and overarching patterns, and interpreting the significance of the data (Creswell, 2017).

The research was carried out in Serang, located in Banten, Indonesia, and encompassed three purposively selected sub-districts. Data collection took place from February to May 2022.

Both primary and secondary data were collected in this study. Primary data encompassed firsthand information directly obtained from key participants, which involved their explanations of agricultural extension activities within the research site.

The selection of informants was based on their extensive experience as rice farmers spanning a decade, their ability to articulate their insights and experiences related to agricultural extension activities, and their willingness to partake in recorded interviews and the publication of outcomes.

This phenomenological research employed four data collection techniques, namely interviews, observations, documentation reviews, and audio-visual materials (Creswell, 1998). Primary data were gathered through in-depth interviews conducted in an informal and interactive manner, using open-ended statements and questions (Moustakas, 1994). Data collection concluded when saturation was achieved during interviews, indicating that the data provided by informants exhibited commonalities and reached a saturation point despite diverse perspectives.

To validate the data, communicative validity was applied, and the research results' validity was tested through source triangulation, involving the examination of evidence from multiple sources to construct a coherent substantiation of themes (Creswell, 2013).

Data analysis adopted Husserl's transcendental phenomenology data analysis, as outlined in the interactive model data analysis components (Miles & Huberman, 2007). The data analysis process encompassed data preparation and organization, comprehensive data review, meticulous data coding, the application of coding to delineate settings, categories, and analyzed themes, the determination of strategies for restating descriptions and themes within qualitative narratives, and data interpretation (Creswell, 2013).

In qualitative research, data analysis proceeds concurrently with data collection, following the methodology described by Miles and Huberman. The components of the analysis process outlined by Miles and Huberman include:

a. Data Collection

The initial step involves the acquisition of data. Data collection is achieved through recorded interviews with informants, subsequently transcribed into interview transcripts for each participant.

b. Data Reduction

Data reduction encompasses the selection, concentration, simplification, abstraction, and transformation of the raw data collected during the research. This process commences by identifying specific statements within each interview transcript that pertain to the meaning of agricultural extension activities and how informants perceive them (horizontalization). These specific statements are distinctive in that they are non-repetitive, non-overlapping, convey complete ideas, and represent subjective inferences from the interview transcripts. Subsequently, an array of typifications and patterns within these significant statements, relating to the meaning of agricultural extension activities and the informants' experiences, is analyzed to create primary constructs based on specific themes or meaning units derived from the informants' perspective.

c. Data Display

Data presentation takes the form of a narrative text display, a structured representation of information facilitating the formulation of conclusions and action steps. This stage initiates by organizing themes or units of meaning pertaining to informants' experiences with agricultural extension activities into tables, allowing for a clear view of data typification. The terminology used by informants in these thematic units is elucidated using quotations from the relevant literature review.

d. Conclusion Drawing and Verification

The process of drawing and verifying conclusions involves interpreting the significance of each observation from the research field. This phase seeks to identify regularities, explanatory patterns, potential configurations, causal connections, and propositions. Each conclusion derived is provisional, open, and subject to ongoing scrutiny until a valid and well-grounded conclusion is reached. During this stage, the textural meaning of the significance of agricultural extension activities is articulated to describe what informant farmers experience, while the structural meaning defines how these activities are experienced, based on the thematic analysis. Both descriptions, portraying the essence of informant farmers' experiences with agricultural extension activities, are then synthesized into a comprehensive depiction (textural and structural) of the phenomenon's significance.

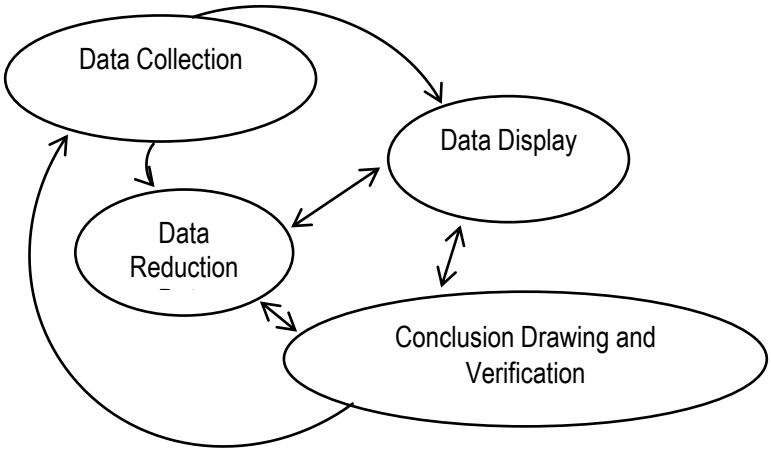

Figure 1: Components of interactive data analysis model
(Miles dan Huberman, 2007)

Each stage of data analysis is integral and interconnected, forming a continuous process that commences with the formulation of research problems prior to fieldwork. This process encompasses the compilation, categorization, review, and interpretation of research data, revealing patterns and relationships between concepts. These findings are then formulated into associations with other elements, rendering them easily comprehensible.

RESULTS AND DISCUSSION

The research was carried out in Serang, Banten, with a purposive selection of research sites in the Baros, Padarincang, and Pontang sub-districts. This study involved a total of six informants, with two informants from each sub-district. In-depth interviews pertaining to agricultural extension activities with these informants took place between February and May 2022.

The Significance of Agricultural Extension

The analysis of the significance of agricultural extension activities for wetland rice farmers followed Moustakas' systematic procedure of transcendental phenomenological data analysis. The process initiated with the practice of epoche, during which the researcher suspended personal biases and preconceptions concerning agricultural extension activities. This allowed the researcher to perceive the phenomenon of agricultural extension activities with fresh eyes and an open mind. Subsequently, the analysis involved the identification of meaningful statements made by the informants (horizonalization), the categorization of these statements into meaning units and themes, the synthesis of these themes to create both textural and structural descriptions of individual experiences, and finally, the development of a comprehensive account encapsulating the significance and essence of the informants' experiences (Moustakas, 1994).

Statement of Significance

To gather insights into the experiences of farmer informants regarding agricultural extension activities, an analysis of interview transcripts was conducted. A total of 133 distinct verbatim statements in the transcripts were identified. These statements were carefully selected, ensuring they were substantial, non-repetitive, and offered unique perspectives. Each of these statements represented complete sentences and conveyed subjective perspectives drawn from the interview transcripts. These statements were instrumental in providing a comprehensive understanding of how the informants conceptualized agricultural extension activities and the nuanced facets of their experiences (Nechully & Pokhriyal, 2019).

Themes (Units of Significance) of Agricultural Extension Activities

The essential facets of agricultural extension activities, as perceived by informant farmers, were distilled by filtering out statements that diverged from the research focus, were redundant, or overlapped. The resultant statements encapsulate the textural significance or horizons of agricultural extension activities based on the

experiences of the farmer informants. These discerned statements were then meticulously categorized into distinct themes, yielding three pivotal themes (units of significance) that encompassed agricultural extension activities and the manner in which the informants encountered them. These themes include (1) Extension as a source of assistance, (2) Extension as a source of information, and (3) Extension as a source of technology. To elucidate these units of significance, the terminology employed by farmer informants in each thematic context was expounded with reference to pertinent literature.

Agricultural extension activities: Extension as a source of assistance

In pursuit of elevating agricultural production, particularly in the realm of rice cultivation, to align with the escalating dietary demands of the populace, various agricultural development programs have been introduced since the 1960s. These programs encompass a spectrum of initiatives, commencing with the Rice Self-Sufficiency Mass Demonstration (Demas SSB), followed by Mass Assistance (Bimas), Special Intensification (Insus), and Supra Insus (an enhancement of the Insus program aimed at sustaining rice self-sufficiency achieved through the Bimas program in 1984), and so forth. These programs have been instrumental in the introduction of contemporary agricultural technologies, such as superior seeds, artificial fertilizers, and improved irrigation practices. Moreover, they have fostered a sense of unity among farmers, promoting proper crop cultivation and the establishment of farmer groups to facilitate effective communication between farmers and their supporting entities (BPLPP, 1978; Tim Faperta IPB, 1992 in Sadono 2008). The impetus behind these efforts was the national imperative to boost rice production and attain self-sufficiency. The necessity for increased rice production was driven not only by population growth but also by the burgeoning welfare of the populace, leading to a heightened per capita rice consumption. This urgency was further underscored by the shifting dietary preferences of communities across diverse regions, with rice becoming the primary staple alongside their improving economic well-being. Simultaneously, the landscape of agricultural extension evolved. It transitioned from primarily offering assistance for proficient farming practices to knowledge dissemination and technology transfer aimed at empowering farmers to enhance their productivity, with a pronounced emphasis on achieving national, regional, and local rice production targets (Tjitropranoto, 2003). This era is often referred to as the "*Revolusi Hijau* (Green Revolution)" and proved to be a pivotal phase that enabled Indonesia to attain rice self-sufficiency by 1984. This accomplishment marked a remarkable turnaround, as Indonesia had been one of the world's largest rice importers in 1974, importing over one million tons of rice (Rusli 1989).

Nevertheless, the notable achievements of the "*Revolusi Hijau* (Green Revolution)" have precipitated contemporary challenges. Farmers have become increasingly reliant on subsidies, and extension services accompanied by financial incentives tend to garner a more favorable response from them. As one informant expressed,

“Yang mau tanam 4:1 di selip saya bayar 350ribu, bayarnya sayakan dari bantuan yang 72 juta itu. Pupuk organik berapa sehari, sehektar seton. Setahun dijalanin siapa yang mau pupuk silahkan pake, banyak yang pake, saya minta satu ton campur, satu ton berapa hektar itu, saya minta ganti ini aja 100 ribu nurunin juga kan nurunin uang rokok saya juga”

"Those who want to plant in the 4:1 ratio, I pay 350,000, using the aid money of 72 million. How much organic fertilizer do they use per day? It's a ton per hectare. If someone needs fertilizer for a year, they can use it, and many do. I ask for one ton mixed. One ton is enough for how many hectares? I just ask for this compensation of 100 thousand, and I also reduce my cigarette expenses."

It has become a challenge to convene farmers for agricultural deliberations, primarily because they have grown accustomed to receiving incentives. Members inquire with their group leaders about the availability of envelopes, and leaders notify them of forthcoming assistance. As articulated by an informant,

"Kalo dulu mah gampang, kalo sekarang mah susah sih ngumpulin orang itu ini sih nyariinnya amplop aja”

"In the past, it was straightforward, but nowadays, it's challenging to gather people. They are just looking for the paycheck. "

Kottak (1988) and Uphoff (1988), drawing insights from various projects across countries, contend that development strategies that overlook the sociocultural and socioeconomic dimensions of the local population can impede or even jeopardize the functionality of local institutions, curtail farmers' autonomy, and undermine the sustainability of agricultural development initiatives.

Agricultural extension activities: Extension as a source of information

Agricultural extension represents an extracurricular educational system designed to empower farmers and their families. Its primary objective is to equip them with the knowledge, willingness, and self-sufficiency to enhance their agricultural practices, subsequently bolstering their income and overall welfare, thus contributing to the betterment of society at large. The advent of agricultural extension allows for effective mentoring and support for farmers, fostering robust communication and instilling in them the confidence to embrace and appreciate innovative methods and practices (Batlayeri et al., 2013). The practical implementation of agricultural extension is envisioned as a conduit for the dissemination of information pertaining to emerging scientific and technological advancements, as well as the elucidation of government regulations and policies. These regulations necessitate farmers' awareness and compliance, facilitating the realization of predetermined developmental objectives.

In the realm of agricultural development, extension activities serve as a vital link connecting the day-to-day practices of farmers with the ever-evolving domain of agricultural knowledge and technology. To equip farmers with the tools required to engage in practices conducive to agriculture, there is a pressing need for agricultural innovations. Information regarding these innovations is made accessible to farmers through Field Agricultural Extension Officers (PPL) via the implementation of agricultural extension activities. The fundamental goal of agricultural extension activities, as realized by PPL, is to empower farmers to propagate information pertinent to agricultural enhancement independently.

This assertion is harmonious with the sentiments expressed by farmer informants, as one conveyed,

“Enaknya atuh iya belajarnya gitu yah, kitakan tau kalo ini harus apa, harus apa yakan jadi ngasih tau yang ini yang bagus yakan gimana yakan cara tanamnya cara apanya gitu. kalo gada penyuluhan mungkin sulit bu, kitakan ga tau yang bagus gimana yang jelek gimana gitu jadi banyak pengaruhnya gitu bu ada penyuluh itu, banyak manfaatnya buat tani gtu".

"Learning is enjoyable, we comprehend what needs to be done, the right way to plant, and the essential steps. In the absence of extension services, the situation might become challenging. We remain uninformed about best practices and pitfalls, emphasizing the pivotal role of extension agents and the manifold benefits they confer upon farmers."

Similarly, another informant articulated,

“Penyuluhan mah yah yang penting kita lebih apa yah, penyuluhan dari PPL yang penting kita mah tiap mau mulai ada kumpulan, kalo ada hama - hama ada juga gropyokan gitu, klo mau panen juga ada kumpulan dimana maunya. Kadang-kadang kan ada dari penangkaran kerjasama, itu ada di fotonya kita waktu kerjasama dengan pihak lain itukan yang nyambungin penyuluh kita gak bisa sendiri harus dibimbing".

"Counseling is instrumental in bolstering our understanding and collaboration with PPL is paramount. Each time we commence a new endeavor, we establish a group, ensuring readiness for pest infestations and unifying during harvest. Additionally, collaborations with breeding programs are documented in photos, underscoring the indispensable role of extension agents in facilitating and guiding us in these collaborations."

Agricultural extension activities: Extension as a source of technology

Mosher (1985) underscores technology as an essential prerequisite for agricultural advancement. Moreover, Hernanto (1991) postulates that introducing novel technologies into farming hinges upon the consideration of four pivotal factors: (1) technical feasibility, (2) economic viability, (3) social acceptability, and (4) adherence to government regulations.

Meanwhile, Mardikanto (1993) divulges that the acceptance of new technologies or ideas by farmers is contingent on several key criteria. These include the technology's capacity to: (1) confer economic advantages when implemented (profitability); (2) align with the local cultural milieu; (3) coexist harmoniously with the physical environment (physical compatibility); (4) be user-friendly; (5) save labor and time; and (6) entail minimal financial outlays upon implementation.

Agricultural extension, functioning as a wellspring of technology, serves as an educational platform for instructing farmers in optimal rice cultivation techniques geared toward achieving heightened yields. This educational process equips farmers with the know-how required to enhance rice production. The information and technology disseminated through extension services can be practically implemented by farmers, as one informant attests,

"Kalo PPL tu yah biasanya dari benih dan penanaman, bedanya memang ada kesenjangan beda, kalo dari orang tua pengalaman dari jaman dulu tanam itu tidak teratur gitu loh, misal, kita kan kita pakai legowo, kalo jaman orangtua dulu engga pakai legowo. Sekarang sudah hampir pakai legowo, ternyata emang yang pertama legowo itu irit pupuk, yang kedua itu benih, kalo jaman dulu langsung main cabut main ini aja tidak terukur berapanya dan tidak pakai legowo juga dan hasil padinya pun ternyata yang saya dalami di padi itu kita tanam satu, tumbuhnya yah lebih dari satu kalo kita tanam banyak misal sepuluh biji kan, tanaman kan dikali sepuluh jadi seratus dengan area lahan yang dia tumbuh itu misalkan dua puluh kali dua puluh sentimeter apakah mungkin tumbuh semua. Akhirnya itu yang sering diamati petani sekarang"

"PPL agents primarily focus on seeds and planting. The key differentiation lies in the utilization of *legowo* (is a planting pattern featuring alternating rows of rice and empty spaces). This practice proves to be economically advantageous in terms of both fertilizer and seed usage. Our predecessors did not adopt *legowo*; they sowed seeds indiscriminately without regard for spacing. What I have learned is that, for instance, planting a single seed yields superior results compared to sowing multiple seeds. For instance, with a land area of twenty by twenty centimeters, a single seed can yield abundant produce. This observation resonates with what many farmers commonly discern nowadays."

Textural and Structural Descriptions

Thematic analysis was employed to compile a textual description, providing an account of the individual experiences of farmer informants concerning agricultural extension activities. This textual representation meticulously conveys their statements. The outcome of this textual depiction served as the foundation for constructing a structural description, elucidating the contextual and situational factors that shaped the informants' encounters with agricultural extension activities.

Textural Descriptions

Farmer informants employed various terms when discussing agricultural extension activities, including "*informasi dari pertanian* (information from agriculture)," "*kumpulan* (gatherings)," "*pertemuan di saung* (meetings in saung)," "*ngajarin mupuk* (teaching fertilization)," "*legowo* (*legowo* cultivation system)," "*bantuan benih* (seed assistance)," "*ikut pelatihan* (participation in training)," "*sharing dengan penyuluh* (interaction with extension officers)," "*ngajarin langsung terjun ke sawah* (on-field instruction)," "*kalo ada bantuan dirembugin* (having discussions on program proposed)," and " *kumpul saat gropyokan* (gathering during pest control), with pesticide and assistance." These terms underscore the close association between extension activities and the dissemination of information, technology, and government initiatives or aid. A participant emphasized the significance of collective efforts in pest control, especially when supported by programs or assistance, stating, "*Tapi iya kalo tani engga kompak, karena bikin jides ada duitnya, kan dibayar itu bu yang ngerjainnya, yang kerja dibayar biarpun kelompok kalo gak kerja gak dikasih duit* (Farmers must be unified; the expenses are covered when we work together, even if the group doesn't work, payments are still made). Another informant detailed their financial investment in agricultural practices and the role of assistance, saying, "*Yang mau tanam 4:1 di selip saya bayar 350 ribu, bayar nya saya kan dari bantuan yang 72 juta itu. Pupuk organik berapa sehari, sehektar seton. Setahun dijalanin siapa yang mau pupuk silahkan pake, banyak yang pake, saya minta satu ton campur, satu ton berapa hektar itu, saya minta ganti ini aja 100 ribu nurunin juga kan nurunin uang rokok saya juga* (Those who want to plant in the 4:1 ratio, I pay 350,000, using the aid money of 72 million. How much organic fertilizer do they use per day? It's a ton per hectare. If someone needs fertilizer for a year,

they can use it, and many do. I ask for one ton mixed. One ton is enough for how many hectares? I just ask for this compensation of 100 thousand, and I also reduce my cigarette expenses.").

Structural Descriptions

Economics significantly influences informants' participation in agricultural extension activities. Many informants emphasized the importance of various forms of assistance in boosting farmers' engagement in these activities. For instance, some mentioned that it's challenging to gather participants without incentives like monetary rewards or the provision of resources. This economic aspect is best encapsulated in their statements, such as "*yang mau tanam 4:1 di selip saya bayar 350 ribu* (those who want to plant 4:1 in a plot, I pay 350 thousand)," or "*Pemerintah kasih modal, kasih bantuan kasih segala gala bapak - bapak ibu - ibu ikut semua* (The government provides capital, offers assistance, and hosts various events – you all participate)." Kosam further illustrated the changing dynamics by saying, "*Sekarang mah bedanya dulu dan sekarang. Kalo sekarang suruh kumpul ada rokok ada kopi. Sekarang mah wih ada ininya ga (menunjukan tangan minta uang) kalo gada mah engga* (Nowadays, the difference between the past and present is that we are asked to gather, and we have cigarettes and coffee. Nowadays, if there's no incentive, there's no participation)." This highlights how farmers' responses to agricultural extension activities are influenced by economic considerations.

Within the learning context, informants' experiences of participating in agricultural extension activities are underpinned by the desire to acquire knowledge and improve their farming practices. They discussed gaining insights into effective rice cultivation, sharing tips on farming without urea, and obtaining pest control information from extension workers. Yadi emphasized the value of learning and the benefits it brings, stating, "*Enaknya atuh iya belajarnya gitu yah. Kita kan tau kalo ini harus apa, harus apa ya kan jadi ngasih tau yang ini yang bagus yakan gimana yakan cara tanamnya cara apanya gitu. kalo gada penyuluhan mungkin sulit bu, kitakan ga tau yang bagus gimana yang jelek gimana gitu jadi banyak pengaruhnya gitu bu ada penyuluh itu, banyak manfaatnya buat tani gtu* (It's good to learn. We know what to do, what's best. If there is no counseling, it might be difficult, as we lack knowledge about good and bad practices)." When discussing the application of pest control technology, farmers primarily frame it in economic terms. For example, Kosam explained, "*Kalo kita ada serangan wereng, jadi kita langsung lapor ke pertanian, gimana ini ada serangga yakan,caranya gimana, langsung dia turun orang pertanian itu ngasih tau dia ini obatnya kita praktekin, beli obatnya langsung, kadang kadang dikasih ada sumbangan dari dia gratis dikasih sama pertanian* (When we face a leafhopper attack, we report it to the farm, and they advise us on the treatment. We buy the required medicine directly, sometimes receiving donations)." Another informant added, "I gave it for free ... starting with the many people who are willing to join in using legowo system"

The extent of participation significantly influences informants' experiences in agricultural extension activities. Some informants revealed a limited level of engagement in these activities. For instance, they expressed that involvement varied depending on the ease or complexity of the task. One informant shared, "*Ya gampang mah gampang, susah mah susah, kadang mah ada isitilahnya itu anggota lagi isitrahat kerja ada dirumah, kalo seandainya lagi susah ibu maya juga maklum. Paling isitilahnya satu atau dua orang jadi* (Yes, it's easier when it's easy, and more challenging when it's difficult. Sometimes, members are occupied with their personal work. Mrs. Maya understands that. Most of the time, only one or two people are available)." In contrast to earlier times when larger groups gathered, nowadays, participation tends to be smaller, with at most twenty people attending. This decrease is not necessarily negative, and in some cases, meetings may be attended by as few as five individuals.

This lower level of participation also correlates with reduced technology adoption, as exemplified by remarks such as "*iya, engga sama semua petani disini, disini mah jawabnya gini sih bu..kaya makannya sama aja, susah suruh serempaknya* (Not all farmers here respond the same way, ma'am. It's challenging to get them all on the same page, much like trying to make everyone eat the same food)." In this context, farmer participation is sometimes limited. Samhudi noted that his group had grown in size due to the attraction of assistance distributed to all members. However, during agricultural extension meetings, only a small number of members actively participate. This observation underscores the varying levels of engagement within different farmer groups and their implications for the effectiveness of these extension activities.

The Essence of Experience

The textural and structural descriptions, encapsulating the essence of agricultural extension experiences, are amalgamated into a comprehensive portrayal of each farmer informant's engagement with this agricultural extension. These activities center on farmers as the principal actors in agriculture, serving as a conduit for imparting knowledge on effective farming practices that can enhance their financial prospects and overall well-

being. In principle, agricultural extension endeavors to empower farmers, fishermen, and their families by enhancing their knowledge, skills, attitudes, and self-reliance. This, in turn, equips them with the willingness and ability to enhance their business competitiveness, individual welfare, and community prosperity.

Nonetheless, various studies have indicated that the effectiveness of agricultural extension activities is hampered by low farmer participation. Agricultural extension primarily functions as a vehicle for acquiring agricultural know-how for improved farming. The decision to apply these acquired skills is ultimately left to the farmers, who tend to adhere to established agricultural practices. Thus, farmer participation in these activities is often contingent on the provision of assistance, which either facilitates their participation in these activities or offers tangible benefits to meet their needs, reduce expenses, or mitigate farming-related risks.

This interpretation underscores the economic context within which farmer informants perceive agricultural extension activities. These activities extend beyond the mere acquisition of agricultural knowledge to include the provision of essential assistance, which is crucial for fostering farmer participation. Assistance may take the form of financial support, agricultural inputs (such as seeds, fertilizers, tools, and machinery), or concurrent learning and support in agricultural technology, all of which tend to elevate farmer engagement compared to activities solely focused on disseminating agricultural knowledge.

CONCLUSION

Farmer informants construe agricultural extension activities within an economic framework. Agricultural extension encompasses more than just the acquisition of agricultural knowledge; it also involves the provision of the necessary support for farmers to apply these insights. The sequencing of these two components significantly influences the extent of farmer engagement in agricultural extension activities. Farmer participation is more pronounced when agricultural extension activities offer comprehensive assistance, encompassing financial support and the provision of essential agricultural inputs, such as seeds, fertilizers, and farming equipment. Alternatively, when agricultural technology learning and support are delivered in tandem, as opposed to solely imparting agricultural knowledge, it elicits higher levels of participation from farmers. These activities, from the farmers' perspective, must offer direct benefits to address their needs, curtail expenses, and mitigate the risks associated with farming.

The role of agricultural extension activities within the economic context should undergo a gradual yet steadfast transformation, shifting from its current focus towards fostering learning and empowerment among farmers, their families, and agribusiness communities. This transformation is geared toward enabling them to attain self-reliance and achieve elevated income and welfare. In light of this, the following recommendations are put forward:

1. Agricultural extension officers should persist in conducting extension activities that align with their underlying philosophy.
2. Chairpersons of Farmer Groups should commence instilling in their members an understanding that extension activities serve as a platform for the exchange of information among stakeholders, primarily concerning the enhancement of agricultural practices. This should be done without the expectation of material assistance, as it may enhance member participation.
3. The Department of Agriculture in Serang, Banten, is advised to conduct a comprehensive evaluation of agricultural development programs that have not effectively contributed to the self-sufficiency, income, and welfare of farmers..

REFERENCES

Amanah, S. 2007. Makna Penyuluhan dan Transformasi Perilaku Manusia. Institut Pertanian Bogor. Bogor.

Batlayeri, M., Adam, F. P., & Far-Far, R. A. 2013. Tingkat Kepuasan Petani Terhadap Penyuluhan Pertanian pada Desa Waiheru Kecamatan Kota Ambon.

Budiman M. F., & Sadono D. 2016. Tingkat Partisipasi dan Kemandirian Petani Alumnsi Sekolah Lapang Pengelolaan Tanaman Terpadu (Kasus Desa Kebon Pedes, Kecamatan Kebon Pedes, Kabupaten Sukabumi, Provinsi Jawa Barat). Jurnal Penyuluhan. Vol *6* No. 2

Creswell, J.W. 2017. Research Design Pendekatan Kualitatif, Kuantitatif dan Mixed. Edisi Ketiga. Pustaka Pelajar. Jakarta.

Demmallino, E.B. Ibrahim, T. Karim, A. 2018. Petani di Tegah Tambang, Studi Fenomenologi Efek Implementasi Kebijakan Terhadap Kehidupan Petani di Morowali (Studi Kasus Pada Kawasan Lingkar

Tambang Kecamatan Bahodopi, Kabupaten Morowali, Provinsi Sulawesi Tengah). Universitas Hasanudin. Makasar

Fadamiro, A. O., Lawal, H. O., & Ogunti, E. O. (2022). Development of A Web Based Agricultural Extension Services Using Knowledge Management (Km). Futa Journal of Engineering and Engineering Technology, 16(1), 27–32. https://doi.org/10.51459/futajeet.2022.16.1.360

Ferguson, M., Tonkin, E., Brimblecombe, J., Lee, A., Fredericks, B., Cullerton, K., Mah, C. L., Brown, C., McMahon, E., Chatfield, M. D., Miles, E., & Cadet-James, Y. (2023). Communities Setting the Direction for Their Right to Nutritious, Affordable Food: Co-Design of the Remote Food Security Project in Australian Indigenous Communities. International Journal of Environmental Research and Public Health, 20(4), 2936. https://doi.org/10.3390/ijerph20042936

Hamyana, 2017. Motif Kerja Generasi Muda di Bidang Pertanian, Studi Fenomenologi Tentang Motif Kerja di Bidang Pertanian Pada Kelompok Pemuda Tani di Kota Batu. Malang.

Hernanto, F. 1991. *Ilmu Usaha Tani.* Penebar Swadaya. Jakarta.

Kottak, C.P. 1988. Bila Manusia yang Utama: Beberapa Hikmah Sosiologi dari ProyekProyek yang Telah Selesai dalam M.M. Cernea (eds). 1988. Mengutamakan Manusia di Dalam Pembangunan: Variabel-variabel Sosiologi di Dalam Pembangunan Pedesaan (Publikasi Bank Dunia). Penerjemah B.B. Teku. Jakarta: UI Press.

Mardikanto T, 1993. Penyuluhan Pembanguna Pertanian. Sebelas Maret University Press. Surakarta.

Miles, Mattew B dan Amichael Huberman. 2007. Analisis Data Kualitatif Buku Sumber tentang Metode-Metode Baru. Terjemahan Tjetjep Rohendi Rohisi. Jakarta: Universitas Indonesia.

Mosher, 1985. *Menciptakan Struktur Pedesaan Progresif.* Cv. Yasaguna. Jakarta.

Moustakas, Clark. 1994. Phenomenological Research Methods. New Delhi : Sage Publications.

Nechully, S., & Pokhriyal, S. K. (2019). Choosing Grounded Theory and Frame Work Analysis as The Appropriate Qualitative Methods for The Research. *Journal Of Management*, *6*(1). https://doi.org/10.34218/JOM.6.1.2019.014

Purukan, Brigita N dkk. 2021. Kinerja Penyuluh Pertanian Dalam Meningkatkan Swasembada Di Kecamatan Ranoyapo Kabupaten Minahasa Selatan. 2021. Jurnal Governance. Vol.1, No. 2, 2021. ISSN: 2088-2815.

Putri, C. A. dkk, 2019. Partisipasi Petani dalam Kegiatan Penyuluhan dan Adopsi Pemupukan Padi Sawah di Kecamatan Kersamanah Kabupaten Garut. Jurnal Agribisns Terpadu. Vol 12 No.1

Putri, E. dkk. 2019. Daya Saing Sektor Pertanian Tanaman Pangan di Provinsi Banten. Jurnal Agribisnis Terpadu. Untirta.

Rusli, S. 1989. Perkembangan Penduduk dan Masalah Swasembada Pangan di Indonesia. Jurnal Mimbar Sosek, Nomor 3 Desember 1989. Jurusan Ilmu-ilmu Sosial Ekonomi Pertanian, Fakultas Pertanian IPB. Bogor.

Sadono, Dwi. 2008. Pemberdayaan Petani : Paradigma Baru Penyuluhan Pertanian di Indonesia. Institut Pertanian Bogor. Bogor.

Setiawan, I Gede. 2005. Masalah-Masalah Penyuluhan Pertanian. Institut Pertanian Bogor. Bogor.

Tamsah, H., & Yusriadi, Y. (2022). Quality of agricultural extension on productivity of farmers: Human capital perspective. *Uncertain Supply Chain Management*, *10*(2), 625–636. https://doi.org/10.5267/j.uscm.2021.11.003

Tjitropranoto, P. 2003. Penyuluhan Pertanian: Masa Kini dan Masa Depan dalam I. Yustina dan A. Sudradjat (eds). Membentuk Pola Perilaku Manusia Pembangunan: Didedikasikan kepada Prof. Dr. H.R. Margono Slamet. Bogor: IPB Press.

Uphoff, N. 1988. Menyesuaikan Proyek pada Manusia. dalam M.M. Cernea (eds). 1988. Mengutamakan Manusia di Dalam Pembangunan: Variabel-variabel Sosiologi di Dalam Pembangunan Pedesaan (Publikasi Bank Dunia). Penerjemah B.B. Teku. Jakarta: UI Press.

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Research Article

Analysis on Food Security of Peatland Horticultural Farmer Households in Pontianak

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ABSTRACT

Food security, denoting the adequacy of food supply in terms of both quantity and quality for individuals within a given state, is a critical aspect of societal well-being. This research focuses on assessing the food security status of households engaged in peatland cultivation in Pontianak, West Kalimantan, Indonesia. The chosen research site, Siantan Hilir, was purposively selected due to its prominence as a hub for horticultural agricultural production within the sub-district. The study encompassed a population of 719 individuals, with a sample size of 42 respondents determined using the *slovin* formula. Primary data was procured through the observation and the administration of questionnaires to farmers, supplemented by secondary data. The findings unveiled a noteworthy trend where the household income of farmers exceeded their expenditures. However, a significant challenge emerged in the form of food expenditure constituting 64.86% of the total expenditures, thereby underscoring potential obstacles to maintaining food security. Furthermore, the moderate categorization of energy adequacy and the stark revelation that 88% of households lacked food security underscored the imperative for enhancements in managing food expenditures and refining consumption patterns in Siantan Hilir.

INTRODUCTION

In accordance with the Republic of Indonesia Law No. 18 of 2012 regarding food, the definition of food encompasses all items derived from biological sources, including agricultural products, plantations, forestry, fisheries, livestock, waters, and water—whether processed or unprocessed—intended for human consumption. This encompasses food additives, raw materials, and other substances utilized in the preparation, processing, or production of food and beverages. As posited by Hidayati et al. (2019), food security necessitates comprehensive coverage of availability, distribution, and consumption aspects. It denotes the state of ensuring an adequate and high-quality food supply, both quantitatively and qualitatively, for the nation and its populace (Bulog, 2023).

The establishment of food security hinges upon the household's ability to maintain a sufficient food supply. Consequently, food security is characterized by the fulfillment of food requirements within households, evidenced by the presence of ample and high-quality provisions that are safe, equitable, and economically accessible

(Elfida, 2020). The fulfillment of these requirements involves household expenditures encompassing both food and non-food categories (Nurhasibah, 2021; Utami, 2017). Notably, the extent of a household's food expenditure is intricately linked to its food security status, with a higher proportion of food expenditure indicative of a lower level of household welfare (Praza & Shamadiyah, 2020).

Farmers, as pivotal actors in agriculture, play a vital role in ensuring the adequacy and accessibility of food at national, regional, and household scales. Their significance stems from their dual role as both producers and consumers, underscoring their strategic position in the realm of food security. Essentially, farmers bear the responsibility of meeting their own nutritional requirements (Haryanti K & Rahmawiliyanti, 2015).

Horticulture assumes a pivotal and strategic role in the economic landscape of Pontianak, contributing significantly to the cultivation of vegetables and fruits essential for community consumption (Isnaeni & Ramadhan, 2021; Rahman et al., 2021; Sutariati et al., 2021). Among the horticultural crops with prospective development on peatlands, vegetables stand out. The conversion of peat soil into productive land for horticultural crops, particularly lowland vegetables, holds promise. Despite Siantan Hilir being a focal point for horticultural agricultural production in Pontianak, it grapples with challenges related to the food security of farming households. Specifically, the food-related issues in Siantan Hilir manifest as an unassured food supply for farmer households. This study aims to comprehensively investigate the food security status of horticultural farmer households on peatlands in Pontianak in light of the aforementioned conditions.

METHOD

This investigation was carried out in Siantan Hilir, situated in the North Pontianak sub-district, Pontianak. The selection of the research site followed a purposive approach, guided by the recognition that Siantan Hilir serves as a focal point for peat horticultural agricultural production in Pontianak, yet grapples with challenges related to the food security of farming households. Employing a quantitative descriptive method, this research utilized proportional random sampling to select respondents (Sugiyono, 2019). The study population comprised 719 farmers, and employing the Slovin formula resulted in a sample size of 42 respondents. Data collection involved observation and the distribution of questionnaires to farmers, followed by data tabulation.

a. Analysis on Expenditure of Farmer Households

The aggregate household expenditure is calculated by adding together both food and non-food expenditures (Mutawakkil et al., 2021). The expenditure equation for farmer households is expressed in the following formula:

$$TP = Pp + Pn \quad (1)$$

Where:
TP = Total Expenditure of Farmer Households (IDR)
Pp = Food Expenditure (IDR)
Pn = Non-food Expenditure (IDR)

b. Analysis on the Proportion of Food Expenditure to Total Expenditure of Farmer Households

The food expenditure proportion represents the relationship between the spending on food consumption and the overall household expenditure (Arida et al., 2015). The analysis of household expenditure involved both average figures and percentage analysis. The calculation of the food expenditure as a percentage of the total household expenditure was determined using the following formula.

$$PF = \frac{Pp}{Tp} \text{ X } 100\% \quad (2)$$

Where:
PF = Proportion of Food Expenditure (%)
Pp = Food Expenditure (IDR)
TP = Total Expenditure of Farmer Households (IDR)

c. Analysis on Food Consumption

The quantification of energy derived from food consumption is computed utilizing the following formula:

$$\text{Gej} = \left(\frac{Bj}{100} x \frac{Bddj}{100}\right) \text{ x KGij} \quad (3)$$

Where:
Gej = Energy from food or from food j consumed (kcal)
Bj = Weight of food j consumed (grams)
Bddj = Percent of the edible material of food j (%)
KGij = Specific energy content of food j consumed (kcal)

The assessment of food consumption quantity involves considering both the weight of the consumed food and its nutrient content (Dewi, 2018). These factors serve as indicators to determine if a family's food consumption meets the requirements for a healthy life, as per the Recommended Dietary Allowance (RDA). The quantitative measurement of food consumption employs the parameter of energy adequacy level (TKE), as calculated by the following formula:

$$\text{TKE} = \left(\frac{\sum Konsumsi\ Enerjo}{AKE\ yang\ dianjurkan}\right) \text{ x 100\%} \quad (4)$$

Where:
TKE = Energy Adequacy Level (%)
∑ Energy Consumption = Total energy consumption (kcal)
AKE = Energy Adequacy Rate (kcal)

The following is a list of AKE by age group and gender.

Table 1. List of AKE by Age Group and Gender

No	Age	AKE (kcal)
1.	**Infants/Children**	
	0-5 months	550
	6-11 months	800
	1-3 years	1350
	4-6 years	1400
	7-9 years	1650
2.	**Male**	
	10-12 years	2000
	13-15 years	2400
	16-18 years	.2650
	19-29 years	2650
	30-49 years	2550
	50-64 years	2150
	65-80 years	1800
	80+ years	1600
3.	**Female**	
	10-12 years	1900
	13-15 years	2050
	16-18 years	2100
	19-29 years	2250
	30-49 years	2150
	50-64 years	1800
	65-80 years	1550
	80+ years	1400
4.	**Pregnant**	
	First Trimester	+180
	Second Trimester	+300
	Third Trimester	+300
5.	**Breastfeeding**	
	First of 6 months	+330
	Second of 6 months	+400

Source: Ministry of Health No. 28 of 2019 and Putri I. (2013)

d. Analysis on Food Security of Farmer Households

To measure the food security status of farmer households, a cross-indicator is employed, examining both the proportion of food expenditure and the level of energy sufficiency (Arida et al., 2015). The ensuing table serves as a metric for assessing the extent of food security.

Table 2. Measuring the Food Degree of Farmer Households

Energy Adequacy Level	Proportion of Food Expenditure	
	Low (≤60% of Total Expenditure)	High (≥60% of Total Expenditure)
Sufficient (>80% of energy adequacy)	1. High Food Security	2. Marginal Food Security
Insufficient (≤80% of energy adequacy)	3. Low Food Security	4. Very Low Food Security

Source: Maxwel and Marisol (2000)

RESULTS AND DISCUSSION

1. Expenditure of Farmer Households

Expenditure of farmer households consists of food and non-food expenditures, then both are summed up to get the total expenditure of the household.

a. Food Expenditure of Farmer Households in Siantan Hilir

Food expenditure represents the monthly financial outlay of a household specifically allocated for food. This metric is calculated by aggregating expenses on various food items, encompassing grains, fish, meat, beverages, tubers, vegetables, fruits, nuts, seasonings, oils and fats, eggs and milk, processed foods and beverages, betel nut, and tobacco, expressed in IDR/household/month (Marpaung, 2018).

Table 3. Average Expenditure of Farmer Households in Siantan Hilir

No	Food expenditure	Average (IDR/Month)	Percentage (%)
1	**Grains**	**301,929**	**15.91**
2	Tubers	20,357	1.07
3	Fish	288,310	15.20
4	Meat	101,714	5.36
5	Eggs and Milk	61,762	3.25
6	Vegetables	13,952	0.73
7	Nuts	74,810	3.94
8	Fruits	38,286	2.27
9	Oils and Fats	70,833	3.73
10	Beverage Ingredients	44,071	2.32
11	Condiments	36,238	1.91
12	Other consumption	45,571	2.40
13	Processed Food and Beverages	75,214	3.96
14	Tobacco and Betel	57,143	3.01
Total		1,230,190	65.13

Source: Primary data processed, 2022

As indicated by the data presented in Table 3, the average monthly food expenditure for farmer households in Siantan Hilir is IDR 1,230,190. Within this, the highest food expenditure is attributed to the category of grains, totaling IDR 301,929 and constituting 15.91% of the overall food expenditure. The grains category encompasses items such as rice, corn, and flour, with rice commanding the predominant portion of the total food expenditure due to its status as the primary staple in rural households (Emeria, 2023; Sugianto et al., 2019).

Analyzing the dietary patterns in Siantan Hilir reveals a predominant emphasis among farmer households on fulfilling the demand for rice compared to other food categories. These households typically consume between 20 to 30 kilograms of rice per month, priced between IDR 10,000 and IDR 11,000 per kilogram. The substantial consumption of rice underscores its crucial role in satisfying the daily nutritional requirements of farmers, manifesting as a primary focus in their budgetary allocations. Findings from research conducted by Hasniati et al., (2018) further substantiate this trend, highlighting that the proportion of expenditure on food in farmer households in the Gambut Subdistrict exceeds that of non-food expenditure. This underscores the substantial weight of food-related expenses in the budgetary considerations of farmer households within rural settings.

In summary, the data and findings presented emphasize the pivotal role of rice as a staple in the food expenditure of rural farming households (Sugianto et al., 2019). This influence shapes budgetary allocations, underscoring the significance of ensuring an accessible and affordable rice supply for the sustainability of farmer households and broader rural development.

b. Non-food expenditure of farmer households in Siantan Hilir

Non-food expenditure is the expenditure of a household for non-food needs per month.

Table 4. The Average Expenditure on Non-Food Products of Farmer Households in Siantan Hilir

No	Non-Food Expenditure	Average (IDR/Month)	Percentage (%)
1	Housing	150,810	7.95
2	**Variety of Goods and Services**	**216,762**	**11.42**
3	Education Costs	183,810	9.69
4	Health Costs	26,595	1.40
5	Clothing	10,643	0.56
6	Durable Goods	5,452	0.28
7	Taxes and Insurance	7,490	0.39
8	Social Needs	64,881	3.42
Total		666,443	34.87

Source: Primary data processed, 2022

Table 4 reveals that the average monthly non-food expenditure for farmer households in Siantan Hilir is IDR 666,443. The primary component of non-food expenditure is the outlay on various goods and services, totaling IDR 216,762 or 11.42% of the total non-food expenditure. This substantial spending in the goods and services category is attributable to the daily necessities used by respondents' family members, including bath soap, laundry soap, toothpaste, toothbrushes, shampoo, and transportation costs. Furthermore, all farmer households possess motorized vehicles, incurring significant expenses for gasoline and maintenance. This aligns with research conducted by Susanti et. al, (2015), which asserts that heightened expenditures in non-food categories result from factors beyond food, encompassing costs related to electricity, vehicle fuel, education, and other miscellaneous expenses. The elevated spending in this category is attributed to the necessity and daily use of goods by all households. Additionally, each household typically owns a vehicle, leading to increased expenditures on gasoline for transportation, a sentiment echoed by Akbar et al., (2018), who identify goods and services as the predominant category for expenditure.

The second-highest expenditure, constituting 9.69% of the total non-food expenditure, is attributed to education costs. This category encompasses fees for tuition, miscellaneous charges, books, stationery, and other educational expenses, including school pocket money. The notable proportion of expenditure on education is a consequence of the majority of children within households attending school, resulting in elevated spending on educational needs. This underscores the significance of education as a pivotal priority for rural farming families (Susanti et al., 2015), given its potential to enhance the quality of life and create improved job opportunities in the future (Kodriah, 2019).

2. Proportion of Food Expenditure to Total Expenditure of Farmer Households

Household expenditure refers to the costs borne by households to fulfill the consumption needs of all members within the household (Sutrisma et al., 2022). The expenditures considered in this study pertain to the preceding month. Total household expenditure is categorized into two main types: food expenditure and non-food expenditure (Kalaba et al., 2022). An essential metric for gauging food security involves assessing the proportion of household expenditure allocated to food. This proportion is defined as the ratio between household food expenditure and the overall household expenditure. The correlation between food expenditure and household food security exists in an inversely proportional manner, signifying that a higher proportion of food expenditure corresponds to lower household resilience. A household is deemed food-secure when the proportion of food expenditure is low (Praza & Shamadiyah, 2020). Table 5 presents the details of the proportion of food expenditure in relation to the expenditures of farmer households in Siantan Hilir.

Table 5. Proportion of Food Expenditure to Total Expenditure of Farmer Households in Siantan Hilir

Type of Expenditure	Nominal (IDR/Month)	Proportion (%)
Food Expenditure	1,230,190	64.86
Non-food Expenditure	666,443	35.14
Total Expenditure	1,896,633	100

Source: Primary data processed, 2022

According to the data presented in Table 5, the average monthly food expenditure for farmer households in Siantan Hilir is IDR 1,230,190. Among the various food categories, the highest expenditure is observed in the grains category, totaling IDR 301,929 and accounting for 15.91% of the overall food expenditure. This underscores the substantial contribution of the grains category to the overall food expenditure of farmer households in the region. The proportion of food expenditure in relation to the total expenditure of farmer households in Siantan Hilir is detailed as follows:

$$PF = \frac{Pp}{TP} \text{ X } 100\%$$

$$= \frac{1.230.190}{1.896.633} \text{ X } 100\%$$

$$= 64{,}86\ \%$$

Through the computations and details presented in Table 5, it is evident that the average total monthly expenditure for farmer households in Siantan Hilir amounts to IDR 1,896,633. This expenditure composition delineates 64.86% allocated to food expenditure and 35.14% to non-food expenditure. This data leads to the inference that the financial outlay on food surpasses that on non-food necessities (Mutawakkil et al., 2021).

Engel's Law posits that as income increases, the proportion of expenditure allocated to food decreases. Conversely, in the context of farmers in Siantan Hilir who possess lower incomes, the proportion of food expenditure exceeds that of non-food expenditure.

The prevalence of food expenditure dominance in the household budgets of farmers in Siantan Hilir, with this percentage falling within the high category, is apparent. This aligns with findings from other studies, indicating a trend where food expenditures tend to outweigh non-food expenditures. Such a pattern signifies that the prosperity level of the respondents' farmer households has not yet attained adequacy (Agustina, 2015). This underscores that the majority of their income is primarily channeled towards meeting food needs to ensure survival and alleviate hunger. Moreover, it is asserted that farmers with higher incomes are likely to experience greater prosperity, given their enhanced capacity to fulfill both food and non-food requirements compared to farmers with lower incomes. As highlighted by Praza and Shamadiyah (2020), the well-being of the population significantly impacts households' ability to access food, consequently influencing the quality and quantity of food consumed.

3. Food Consumption

Food consumption refers to the quantity of food and beverages ingested by an individual to satisfy their physiological requirements. Measurement involves determining the daily food requirements for a family in grams, subsequently converting this to energy in kcal (Aziz & Muharni, 2018). The assessment of food consumption quantity encompasses both the volume of food consumed and the nutritional content, providing a gauge of whether family food consumption aligns with the Recommended Dietary Allowance (RDA) for a healthy life.

The determination of a household's food security level is facilitated through the assessment of its energy adequacy level (TKE). A household is deemed food-secure if its energy consumption exceeds 80% of the energy adequacy rate (Arida et al., 2015). Table 6 provides a detailed overview of the actual energy consumption, energy adequacy lift, and energy adequacy level for farmer households in Siantan Hilir.

Table 6. Average Actual Energy Consumption, Energy Adequacy Rate, and Energy Adequacy Level of Farmer Households

Description	Energy (Kcal)	
	Individual (kcal/person/day)	Household (kcal/Capita/day)
Actual Energy Consumption	1,851.90	7,407.62
Recommended RDA	2,096.71	8,692.86
TKG (%)	86%	86%

Source: Primary data processed, 2022

Table 6 reveals that the average actual energy consumption per person per day for respondent households is 7,407.62 kcal, which falls below the average Energy Adequacy Rate (AKE) of 8,692.86. This disparity arises due to limited diversity in food consumption, as food items rich in energy, such as nuts, coconut milk, and fatty fruits, are infrequently consumed by respondents. Notably, the study's respondents, with an average age of 47 years for husbands and 44 years for wives, fall within the Adult Labor Force category, influencing dietary patterns that may impact individual energy requirements.

Variations exist in the TKE category among each farmer respondent household in Siantan Hilir, categorized as deficit, deficient, moderate, and good. The subsequent section presents data on the distribution of energy adequacy levels among farmer households in Siantan Hilir.

Table 7. Category Distribution of Energy Adequacy Levels of Farmer Households

Category	Nutrition Consumption Level	Energy (kcal/Capita/day)	
		Number of Household	%
Deficit	TKG ≥100% AKG	7	16.66
Insufficient	TKG 80–99% AKG	6	14.28
Moderate	TKG 70–80% AKG	24	57.14
Good	TKG <70% AKG	5	11.90
	Total	42	100

Source: Primary data processed, 2022

Table 7 displays that the predominant category in terms of energy adequacy level is moderate, encompassing 57% of all farmer households in Siantan Hilir. The majority of farmer households fall within the moderate category, signifying an energy adequacy level ranging from 80% to 99% of the Energy Adequacy Rate (AKE). This suggests that most farmers have effectively met their energy requirements. The attainment of energy adequacy in moderate-category households is attributed to the adept regulation of food ingredient compositions by housewives, who are attentive to both the quantity and quality of food served to household members, ensuring the fulfillment of nutritional intake. However, it falls short of being categorized as 'good' as it remains below 100% AKE. This observation aligns with Rahmawati et al., (2020) research, indicating that the majority of farmer households are positioned in the medium category, indicative of their successful fulfillment of energy needs.

The distribution of household energy consumption adequacy categories reflects varying nutritional statuses, encompassing deficit, insufficient, moderate, and good. This divergence arises from distinct consumption patterns observed during field research, with each respondent exhibiting unique dietary habits. The disparities in consumption patterns stem from differing income levels (Arida et al., 2015; Pratama, 2021). When household income is minimal or insufficient, respondents prioritize quantity over quality in their food purchases, often opting for budget-friendly items, resulting in lower energy content. Conversely, higher incomes prompt a greater emphasis on the quality of food products (Minta et al., 2022). This observation aligns with the findings of Zakari et al., (2022), who posit a positive correlation between energy consumption and household food security. Specifically, households with limited incomes, such as farmers, prioritize quantity in their food expenditures, while considerations of food quality are often secondary.

Variations in categories are further attributed to disparities in the composition of household members concerning age and gender. Prastiwi et al., (2022), found in their research that energy consumption exhibits a significant and positive relationship with household food security, underscoring the necessity for farmer households to fulfill their energy requirements to attain food security. The pivotal role of housewives in possessing nutritional knowledge about daily food consumption is crucial for achieving nutritional adequacy and ensuring food security.

4. Food Security of Farmer Households

Examining food security through the lens of consumption gauges each household's capacity to obtain adequate food for all family members, ensuring a healthy life. This research assesses the food security of farmer households in Siantan Hilir by employing a cross-classification approach, considering both the proportion of food expenditure (%) and the Energy Adequacy Level (TKE) expressed as a percentage (%).

Table 8. Distribution of Food Security Level of Farmer Households

No	Food Security Category	Proportion of Food Expenditure (%)	Total Proportion of Food Expenditure (%)	Energy Consumption Level (%)	Total Energy Consumption Level (%)	Number of Households	%
1	**High Food Security,** if Proportion of Food Expenditure is Low (≤60%), TKE is Sufficient (>80%)	86%	93.83%	57%	58%	6	14%
		95%		59%			
		92%		60%			
		107%		54%			
		93%		60%			
		90%		58%			
2	**Marginal Food Security,** if Proportion of Food Expenditure is High (>60%), TKE is Fair (>80%)	85%	94.83%	65%	68.35%	23	55%
		99%		66%			
		87%		66%			
		97%		66%			
		110%		72%			
		89%		64%			
		91%		71%			
		89%		61%			
		91%		66%			
		96%		72%			
		93%		68%			
		110%		62%			
		94%		65%			
		99%		73%			
		84%		77%			
		83%		64%			
		99%		69%			
		99%		66%			
		102%		74%			
		97%		65%			
		104%		74%			
		86%		68%			
		97%		78%			
3	**Low Food Security,** if Proportion of Food Expenditure Low (≤60%), TKE is Insufficient (≤80%)	52%	68%	58%	57.50%	4	10%
		79%		55%			
		62%		58%			
		79%		59%			
4	**Very Low Food Security,** if Proportion of Food Expenditure High (>60%), TKE is Insufficient (≤80%)	79%	66%	67%	65.11%	9	21%
		74%		68%			
		79%		63%			
		48%		62%			
		52%		66%			
		54%		69%			
		70%		63%			
		69%		63%			
		69%		65%			
			Total			42	100%

Source: Primary data processed, 2022

Table 8 reveals that the predominant food security status among farmer households in Siantan Hilir is categorized as marginal, constituting the largest percentage at 55%, while households with low food security status represent the smallest percentage at 10% of the total. The findings indicate that the majority of farmer households in Siantan Hilir fall within the marginal food security category. This aligns with the research of, which also identifies the marginal food security category as the most prevalent, accounting for 53%. This implies that

the proportion of food expenditure is high (≥60%) relative to total expenditure, and the energy adequacy level is sufficient (>80% AKE). The heightened proportion of food expenditure suggests that farmer households in Siantan Hilir prioritize meeting food needs and may encounter challenges in allocating their income effectively. Nonetheless, the energy consumption within this category meets the energy adequacy rate, indicating that the types of food consumed by farmer households with marginal food security in Siantan Hilir are diverse and fulfill nutritional adequacy requirements. The Total Energy Consumption (TKE) exceeds 80% of the recommended nutritional adequacy rate. Farmer households with marginal food security in Siantan Hilir prioritize the consumption of energy-rich foods such as rice, vegetables, meat, eggs, fruits, and nuts, ensuring a sufficient level of energy adequacy (Iskandar, 2012).

The category of marginal food security claims the largest percentage due to the low income of farmer households in Siantan Hilir. This reflects the overall lower welfare level of farmers in this region, positioning their households within the marginal food security category (Dirhamsyah et al., 2016). To improve their food security status, farmer households in Siantan Hilir with marginal food security are advised to enhance their income, as a higher income correlates with a smaller proportion of food expenditure. A reduced proportion of food expenditure, in turn, corresponds to an elevated level of household welfare. This aligns with findings from research conducted by Arida et al., (2015), which indicate that a high proportion of food expenditure leads to lower energy consumption (TKE) in farmer households, resulting in very low food security.

The findings of this study reveal that 88% of farmer households in Siantan Hilir experience food insecurity. This can be attributed to their low-income status, as these households possess limited land, leading to a diminished welfare level. Additionally, these farmer households allocate a substantial portion of their expenditure to food, primarily focusing on achieving fullness rather than considering nutritional content (Marpaung, 2018). Several factors contribute to food insecurity in these households, including a lack of knowledge about the nutritional value of consumed food, heightened levels of rainfall, diseases, and pest attacks. These environmental factors lead to a reduction in vegetable production, limiting the available supply for consumption, as farmers are compelled to sell their produce to fulfill other essential needs. The study conducted by Abdurahman et al., (2013) underscores the influence of farmer household income on overall welfare, emphasizing that a stagnant or decreasing income negatively impacts the welfare and, subsequently, the food security of farmers.

CONCLUSION

The analysis of food security among horticultural farmer households in Siantan Hilir, Pontianak, reveals that, despite a relatively higher average income compared to expenditures, a notable challenge persists in maintaining food security. The substantial proportion of food expenditure, reaching 64.86% of the total expenditure, underscores this challenge. Moreover, while the overall energy consumption per capita and per household tends to be sufficient, the fact that 88% of households fall into the food-insecure category, with a medium-level energy adequacy, indicates the need for attention to enhance food security. Addressing food expenditure management and consumption patterns is crucial for improving the food security situation in Siantan Hilir.

REFERENCES

Abdurahman, S., Imran, S., & Boekoesoe, Y. (2020). Analisis Pendapatan Dan Kesejahteraan Rumah Tangga Petani Jagung Di Desa Karyamukti Kecamatan Mootilango. *Agrinesia, 5(1)*, 65-72. https://doi.org/10.37046/agr.v5i1.11818

Akbar, A. K., Yusra, A. H. A., & Dewi, Y. S. K. (2018). Dampak Program Kawasan Rumah Pangan Lestari Terhadap Pendapatan Dan Pengeluaran Pangan Di Kabupaten Mempawah. *Jurnal Social Economic of Agriculture*, *7*(1), 9–17. https://doi.org/10.26418/j.sea.v7i1.30748

Arida, A., Sofyan, & Fadhiela, K. (2015). Analisis Ketahanan Pangan Rumah Tangga Berdasarkan Proporsi Pengeluaran Pangan Dan Konsumsi Energi (Studi Kasus Pada Rumah Tangga Petani Peserta Program Desa Mandiri Pangan Di Kecamatan Indrapuri Kabupaten Aceh Besar). *Agrisep*, *16*(1), 1–15. https://jurnal.unsyiah.ac.id/index.php/agrisep/article/view/3028

Aziz, A., & Muharni. (2018). Analisis Ketahanan Pangan Rumah Tangga Pada Keluarga Pra Sejahtera Dengan Status Gizi Balita Di Kelurahan Sri Meranti Kecamatan Rumbai Kota Pekanbaru. *JPK (Jurnal Proteksi Kesehatan)*, *5*(1), 60–66. https://doi.org/https://doi.org/10.36929/jpk.v5i1.51

Bulog. (2023). *Ketahanan Pangan*. Bulog.Co.Id. https://www.bulog.co.id/beraspangan/ketahanan-pangan/

Dewi, M. S. (2018). *Analisis Pola Konsumsi Pangan Rumah Tangga Peserta Program Model Pengembangan*

Pangan Pokok Lokal (Mp3l) Di Provinsi Lampung [Universitas Lampung]. http://digilib.unila.ac.id/31331/10/SKRIPSI TANPA BAB PEMBAHASAN.pdf

Dirhamsyah, T., Mulyo, J. H., & Darwanto, Dwijono Hadi Hartono, S. (2016). *Ketahanan pangan : kemandirian pangan dan kesejahteraan masyarakat daerah rawan pangan di Jawa*. Yogyakarta : Plantaxia.

Elfida. (2020). *Urban Farming : Solusi Ketahanan Pangan Rumah Tangga Perkotaan*. Babelprov.go.id. https://babelprov.go.id/artikel_detil/urban-farming-solusi-ketahanan-pangan-rumah-tangga-perkotaan

Emeria, D. C. (2023). *Beras Makin Mahal, Anehnya Orang RI Tambah Doyan, Tanda Apa?*. Cnbcindonesia.com. https://www.cnbcindonesia.com/news/20230705131904-4-451533/beras-makin-mahal-anehnya-orang-ri-tambah-doyan-tanda-apa

Haryanti K, E., & Rahmawiliyanti. (2015). Perilaku Petani Pelaku Backward Bending Supply Dalam Berusahatani. *Agrise*, *XV*(1). https://agrise.ub.ac.id/index.php/agrise/article/view/146/159

Hasniati, Adyatma, S., & Kumalawati, R. (2018). Analisis Proporsi Pengeluaran Dan Konsumsi Pangan Dengan Ketahanan Pangan Rumah Tangga Petani Di Kecamatan Gambut Kabupaten Banjar. *JPG (Jurnal Pendidikan Geografi)*, *5*(1), 1–7. https://doi.org/10.20527/jpg.v5i1.4983

Hidayati, M., Luthfi, & Husaini, M. (2019). Daerah Kabupaten Tanah Laut Contribution of Palm Oil Plantation to Householf Food Security and Regional Economy in Tanah Laut Regency. *Frontier Agribisnis*, *3*(4), 31–36. https://doi.org/https://doi.org/10.20527/frontbiz.v3i4.1938

Iskandar, A. (2012). *Sosiologi Kesehatan*. Bogor: IPB Press.

Isnaeni, S., & Ramadhan, A. M. (2021). penggunaan vertikultur teras bangku untuk pengembangan budidaya sayuran di KWT Mawar Bodas Tasikmalaya. *Jurnal Abdimas Kartika Wijayakusuma*, *2*(1), 32–39. https://doi.org/10.26874/jakw.v2i1.92

Kalaba, Y., H, W. P. S., Erny, Damayanti, L., Akrab, A., Yusuf, R., Nurdin, M. F., & Walalangi, J. Y. (2022). Analysis of household food security based on the share of food expenditure in central Sulawesi Indonesia. *IOP Conference Series: Earth and Environmental Science*, *1107*(1). https://doi.org/10.1088/1755-1315/1107/1/012090

Kodriah, I. (2019). *Struktur Pendapatan Dan Pengeluaran Rumah Tangga Petani Ikan Lele Di Kecamatan Rumbai Pesisir Kota Pekanbaru* [Universitas Islam Riau]. https://repository.uir.ac.id/8361/1/144210258.pdf

Marpaung, T. (2018). *Analisis Pendapatan dan Pangsa Pengeluaran Pangan di Kecamatan Rawang Panca Arga, Kabupaten Asahan* [Universitas HKBP Nommesen]. http://repository.uhn.ac.id/handle/123456789/1272

Minta, S., Suriani, & Meutia, R. (2022). Pengaruh Pendapatan dan Jumlah Penduduk Terhadap Konsumsi Masyarakat di Provinsi Aceh dengan Regresi Data Panel. *Jurnal Ilmiah Basis Ekonomi Dan Bisnis*, *1*(1), 1–17. https://doi.org/10.22373/jibes.v1i1.1577

Mutawakkil, N., Susanti, E., & Safrida, S. (2021). Analisis Perbandingan Proporsi Pengeluaran Pangan dan Tingkat Kecukupan Energi dan Protein Berdasarkan Konsep Pengukuran Ketahanan Pangan pada Rumah Tangga Program dan Rumah Tangga Non-Program Kawasan Mandiri Pangan di Kecamatan Seulimeum Kabupaten Aceh B. *Jurnal Ilmiah Mahasiswa Pertanian*, *6*(4), 305–315. https://doi.org/10.17969/jimfp.v6i4.18289

Nurhasibah. (2021). *Analisis Pola Perbandingan Konsumsi Pangan Dan Non Pangan Rumah Tangga Kaya Dan Miskin Di Kelurahan Minasa Upa Kecamatan Rappocini Kota Makassar* [Universitas Muhammadiyah Makasar]. https://digilibadmin.unismuh.ac.id/upload/18154-Full_Text.pdf

Pratama, L. S. (2021). Studi Pola Perbandingan Pola Konsumsi Rumah Tangga Kaya Dan Miskin Di Kota Kisaran. *Journal of Science and Social Research*, *4*(1), 87–95. http://jurnal.goretanpena.com/index.php/JSSR

Praza, R., & Shamadiyah, N. (2020). Analisis Hubungan Pengeluaran Dengan Ketahanan Pangan Rumah Tangga Petani Di Kabupaten Aceh Utara. *Agrifo : Jurnal Agribisnis Universitas Malikussaleh*, *5*(1), 23–34. https://doi.org/10.29103/ag.v5i1.2735

Prastiwi, A. D., Rahayu, E. S., & Marwanti S. (2022). Analisis Ketahanan Pangan Rumah Tangga Petani Berdasarkan Proporsi Pengeluaran Dan Konsumsi Energi Di Das Samin Kabupaten Karanganyar. *Agrista, 10(1)*, 58-72. https://jurnal.uns.ac.id/agrista/article/view/61983/35863

Rahman, M. R., Pratiwi, A. D. Y., Mardiati, A. U., Ideatami, D., Udlhi, L. R., Hakim, L. A. R., Putri, P. A., Ariyaningsih, P., Purnamasari, S. A., Ummami, Y., & Rohyani, I. S. (2021). Budidaya Tanaman Hortikultura

Menggunakan Metode Vertikultur dan Vertical Garden Sebagai Alternatif Usaha Pemanfaatan Lahan Masyarakat Kelurahan Sekarteja. *Jurnal Pengabdian Magister Pendidikan IPA*, *4*(2), 0–5. https://doi.org/10.29303/jpmpi.v4i2.690

Rahmawati, M., Noor, T. I., & Yusuf, M. N. (2020). Analisis Ketahanan Pangan Rumah Tangga Petani Padi Di Desa Pawindan Kecamatan Ciamis Kabupaten. *Jurnal Ilmiah Mahasiswa Agroinfo Galuh*, *7*(3), 777. https://doi.org/10.25157/jimag.v7i3.4016

Sugianto, E., Mukhtar, & Zani, M. (2019). Analisis Pengeluaran Rumah Tangga Petani Tidak Miskin Dan Miskin (Studi Kasus Di Desa Raimuna Kecamatan Maligano Kabupaten Muna). *Jurnal Ilmiah Membangun Desa Dan Pertanian*, *4*(1), 23–28. https://doi.org/http://dx.doi.org/ 10.33772/jimdp.v4i1.6412

Sugiyono. (2019). *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Bandung: Alfabeta.

Susanti, E., Fauzi, T., & Taufiqurrahman. (2015). Analisis Ketahanan Pangan Rumah Tangga Petani di Desa Ulee Lhat Kecamatan Montasik Kabupaten Aceh Besar. *Jurnal Bisnis Tani*, *1*(1), 11–23. https://doi.org/https://doi.org/10.35308/jbt.v1i1.568

Sutariati, G. A. K., Safuan, L. O., Leomo, S., Rahni, N. M., & Wibawa, G. N. A. (2021). Bimbingan Teknis Budidaya Tanaman Hortikultura Di Desa Jati Bali Kabupaten Konawe Selatan. *Jurnal Pengabdian Masyarakat Ilmu Terapan*, *3*(2), 179–184. https://doi.org/http://dx.doi.org/10.33772/jpmit.v3i2.21421

Sutrisma, Fahrial, Zulhelmy, & Marliati. (2022). Analisis Pendapatan , Pengeluaran Rumah Tangga. *Jurnal Economica*, *X*(1), 76–90.

Utami, J. P. (2017). *Pengeluaran Konsumsi Pangan dan Non Pangan Rumah Tangga Di Kota Medan Dan Faktor Yang Mempengaruhinya (Studi Kasus Suku Jawa dan Batak)* [Universitas Sumatera Utara]. http://repositori.usu.ac.id/handle/123456789/2853

Zakari, A., Toplak, J., Tomaži˘c, L.M. (2022). Exploring the Relationship between Energy and Food Security in Africa with Instrumental Variables Analysis. *Energies, 15,* 5473. https:// doi.org/10.3390/en15155473

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Research Article

The Effect of Social Capital on Farmer Welfare

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ABSTRACT

The agricultural sector significantly contributes to the national income, warranting focused attention for its continuous development and enhanced productivity to positively effect farmer welfare. Farmer groups, pivotal in harnessing the potential and knowledge of farmers in agriculture, play a crucial role in fostering competitive productivity. The establishment of farmer interactions is facilitated by the presence of social capital within farming communities, underscoring its vital role in realizing farmer welfare. This study seeks to analyze the effect of social capital variables on the welfare of farmers within Gapoktan Agro Mandiri, situated in Selur, Ngrayun, Ponorogo, Indonesia. Employing quantitative methods and utilizing the SmartPLS analysis tool, the research gathered data from 84 respondents, determined through calculations using the Slovin formula. The findings reveal a substantial 72.4% influence of social capital on farmers' welfare within GAPOKTAN Agro Mandiri. This underscores that components of social capital, including trust, networks, and social norms, collectively contribute positively to the welfare of farmers. The demonstrated significance of social capital in this context emphasizes its pivotal role in supporting farmer development and enhancing welfare within the specified region.

INTRODUCTION

In 2022, the agricultural sector contributed significantly to the Gross Domestic Product (GDP), comprising 12.91% of the total. This underscores its substantial role as a major contributor to the national income. To enhance productivity, farmers are urged to actively engage in innovative farming practices, particularly in regions where a significant portion of the population is involved in agriculture (Puspita, 2020). Recognizing the importance of agricultural development as a standard imperative, effective communication among farmers serves as a foundational element (Fauzi, N.F, 2018). The establishment of communication networks is crucial for fostering collaboration aimed at elevating agricultural quality. This collaborative effort manifests as a social relationship or interaction, necessitating the creation of farmer groups to serve as platforms facilitating these interactions (Afriliansyah, 2019).

Farmer groups, comprised of a collective of farmers, ranchers, or planters, coalesce around shared interests, akin environmental conditions, and familiarity, with the overarching aim of enhancing and advancing the businesses of their members. These groups serve three primary functions: as forums for collective learning, as platforms for cooperative endeavors, and as cohesive production units. Farmer groups actively contribute to

the development of agricultural potential and awareness, fostering competitive productivity among their members. Importantly, the interaction among farmers within these groups is facilitated by the intrinsic social capital embedded in the farming community. These groups transcend mere institutional roles, serving as ongoing mediums for the exchange and cultivation of social capital among farmers (Harahap M, 2018). The close interplay between social capital and the developmental trajectory of farmer groups is evident, where the presence of social capital empowers farmers to establish networks and sustain agricultural growth within a given area. This dynamic, in turn, leads to an enhancement in the welfare of farmer groups, optimizing their agricultural activities (Bakri et al., 2021). Recognizing the significance of social capital is pivotal for understanding how farmers acquire, recognize, accept, and apply information crucial for the sustained vitality of a group (Ermawati et al., 2021).

Social capital, as articulated by a group's shared values and norms, is characterized by mutual trust and serves as the foundation for establishing interpersonal relationships among group members (Puspita, 2019). The evolution and maturation of social capital within society align with human development, underscoring its pivotal role in implementation. Within farmer groups, social capital encompasses assets, values, and collaborative efforts grounded in shared interests and environmental conditions (social, economic, and resource-related), thereby shaping the trajectory of activities within these groups. The sustainability of such groups is paramount, not only for preparing subsequent generations but also for leveraging additional resources that bolster business endeavors (Angreny, et al., 2022). An indispensable element for the sustainable development of agriculture is the cultivation of robust social interactions, complemented by the presence of skilled human resources. This holistic approach to sustainable agricultural development necessitates the optimal management of all resources, encompassing natural elements, human capital, technology, and institutional frameworks (Ibrahim JT, 2021).

Social capital significantly contributes to a nation's development, expanding the understanding beyond the conventional trio of natural capital, produced capital, and human capital that initially characterized developmental concepts (Sayifullah S, 2018). While these three capitals offer partial explanations for the overall process of economic growth, the holistic fulfillment of fundamental social needs, including food, shelter, health, and education, is contingent upon the elements of social capital. Local communities benefit immensely from the presence of social rank and values, which play a pivotal role in meeting diverse community needs (Yanti et al., 2020). The establishment of farmer groups serves as a mechanism to address these fundamental needs, with social capital weaving through the fabric of daily life to fortify community social resilience. This resilience is evident in the community's ability to meet basic social needs, address social problems, and strengthen social bonds among various groups within the community (Word bank, 2006). The influence of social capital extends beyond the social realm, indirectly impacting agricultural productivity, economic sustainability, and regional social sustainability. This influence is manifested through its effect on the availability of labor, facilitated by proximity, kinship, and social relations (Subangkit et al., 2020).

The agricultural sector constitutes a substantial portion of the Indonesian workforce, with 28.61% engaged in agricultural activities within the agriculture, forestry, and fisheries business sector. In the East Java Province, this figure rises significantly to 92.69%, while in the Ponorogo Regency, it stands at 45.28%. These statistics underscore the imperative for prioritized attention to the agricultural sector's development, ensuring sustained productivity growth and consequential improvements in the welfare of farmers. Organized under various entities, farmer groups, such as the GAPOKTAN (Farmer Group Union), play a pivotal role in facilitating collaborative business activities across the entire agricultural value chain. This collaboration spans from upstream to downstream sectors, emphasizing a commercial and market-oriented approach.

Ernanda et al. (2019) conducted a comprehensive analysis of the social capital characteristics among kopay chili farmers in Payakumbuh City. Employing a descriptive approach, the study scrutinized the social capital attributes of 53 kopay curly chili farmers, selected through snowball sampling, each possessing substantial experience in kopay curly chili cultivation in Payakumbuh. Descriptive analysis, employed to systematically and accurately illustrate the facts, properties, and relationships among the phenomena investigated, focused on variables such as trust, social norms, and social networks. The findings revealed a notably positive assessment of the social capital among kopay curly chili farmers, with social norms, particularly mutual assistance activities among farmers, standing out as a high-perception variable. In a related investigation, R.S. Sidiq et al. (2021) explored the effect of social capital on the welfare of watershed communities in Buluh Cina, Siak Hulu, Kampar, Riau, utilizing quantitative methods and path analysis statistical tests. Employing cluster random sampling, the study included 28 families with 56 respondents, encompassing both husbands and wives. Variables under examination included participation, reciprocity, trust, social norms, values, and proactive actions. The results demonstrated that social capital exerted a substantial influence,

accounting for 53.5% of the community welfare in Buluh Cina. This suggests a positive contribution from all variables, as measured by the subjective life satisfaction index for everyone, indicating an overall positive effect on community well-being.

Ponorogo, situated in the East Java Province, harbors a substantial agricultural workforce, accounting for 45.28% of the population. Within this region, Gapoktan Argo Mandiri, located in Selur, oversees 18 farmer groups with a particular focus on cultivating *empon-empon* (rhizomes and spices), rice, and livestock. The farmers associated with Gapoktan Agro Mandiri exhibit diverse age groups, with a prevalence of individuals in productive and elderly age brackets. Given the predominance of agriculture as the primary occupation in this area, the productive age demographic presents untapped potential for development. Farmers in this category are poised to significantly enhance agricultural quality. However, challenges arise from a tendency towards lower educational levels and a dearth of knowledge concerning agricultural development, impecting the overall welfare of the farmers.

This study aims to investigate the influence of social capital on the welfare of farmers affiliated with Gapoktan Agro Mandiri. The research seeks to assess the extent to which social capital contributes to enhancing agricultural quality in the village, recognizing the pivotal role it plays in the context of agricultural development and farmer welfare.

METHOD

The study, spanning from June to August 2023, was executed in Selur, Ngrayun, Ponorogo. The research site selection was deliberate, with the specific choice of Gapoktan in Selur, Ngrayun, Ponorogo, East Java, motivated by the perceived potential for enhancing the welfare of farmer groups through social capital. The envisaged potential holds promise for cultivating the human resources of Gapoktan members, reflecting an opportunity to leverage social capital for the advancement of farmer well-being.

The employed research methodology is quantitative, utilizing numerical data and statistical stages for analysis purposes (Ibrahim, JT 2020). This study is structured to ascertain and elucidate the influence of social capital on the welfare of farmers within GAPOKTAN. Predominantly reliant on quantitative data, the research employs the Smart PLS analysis tool, renowned for its capacity to test causality, validity, and reliability, and to discern both direct and indirect effects between variables. Simple Random Sampling, a technique involving the random selection of sample members without consideration of population strata, determines the sample size. The determination of the sample size utilizes the Slovin formula with a 10% margin of error. Following these calculations, 84 respondents were selected from a population of 540 farmers affiliated with Gapoktan Agro Mandiri.

This study employs a combination of primary and secondary data sources. Primary data, directly collected by the researcher, is acquired through observations, interviews, and the distribution of questionnaires among members of the farmer group (Maulidya et al., 2021). Secondary data, drawn from pertinent literature such as books, journals, and references, serves as a complementary and supportive element for the primary data and the overall research framework. The measurement approach in this study utilizes a Likert scale, a tool designed to gauge attitudes, opinions, and perceptions of individuals or groups regarding social events or phenomena. Likert scale items are amalgamated to generate scores or values that encapsulate individual characteristics within the research context.

RESULTS AND DISCUSSION

Overview of the Research Area

Ponorogo, situated in the East Java Province, is a regency encompassing 21 sub-districts and comprising 307 villages. Geographically, Ponorogo shares its boundaries with Magetan, Madiun, and Nganjuk to the north; Pacitan to the south; Pacitan and Wonogiri of the Central Java Province to the west; and Tulungagung and Trenggalek to the east. The topography of Ponorogo is diverse, ranging from lowlands to mountains.

Overview of Respondent Characteristics

The study encompassed 84 respondents from 18 farmer groups, identified through the distribution of questionnaires. Those respondents who provided the requisite data met the defined criteria of being members

of Gapoktan Agro Mandiri. The classification of respondent characteristics involved an examination of gender, age, education, and income for each member within Gapoktan Agro Mandiri.

Table 1. Respondent Characteristics

Characteristics	Classification	Number of Respondent	Percentage (%)
Gender	Male	84	100
Age	20-34	15	17
	35-55	36	42
	> 56	33	39
Education	Elementary School	30	35
	Junior High School	26	30
	Senior High School	25	29
	Higher Education (S1)	3	3
Income	< IDR 500,000	9	10
	IDR 500,000 - IDR 1,000,000	33	39
	IDR 1,000,000 - IDR 1,500,000	23	27
	IDR 1,500,000 - IDR 2,000,000	8	9
	> IDR 2,000,000	11	13

Source: Primary data processed (2023)

The study incorporated 84 farmers as respondents, all of whom were members of Gapoktan Agro Mandiri in Selur, Ngrayun, Ponorogo. The gender composition of the respondents was exclusively male, as outlined in Table 1. Notably, the absence of female members within Gapoktan can be attributed to the cultural norms of Gapoktan Agro Mandiri, where participation in the farmer group is traditionally restricted to the heads of households. This prevailing cultural practice does not extend membership possibilities to women in the absence of male representation within the family.

Age constitutes a determinant factor intertwined with both physical and psychological capabilities. The examination of respondent age revealed a predominant presence in the mature productive age category, specifically 35-55 years old, encompassing 42% of the respondents (n=36). Additionally, individuals above 56 years old constituted 39% of the respondents (n=33), while those aged 18-34 comprised 17% of the total respondents (n=15). This demographic distribution signifies a predominantly mature and experienced cohort within the membership of Gapoktan Agro Mandiri. The relatively balanced representation of members in both the productive and elderly age brackets underscores the importance of sustained physical abilities and responsive engagement in supporting agricultural endeavors among the farmer group. However, the comparable numbers in the productive and elderly age groups suggest a potential challenge, indicating a relatively gradual pace of agricultural development and a scarcity of new innovations in the area.

The educational profile of respondents indicates that the majority hold elementary school qualifications, constituting 35% of the sample (n=30). Following closely, 30% of respondents possess education at the junior high school level (n=26), while 29% completed their education at the senior high school level (n=25). Higher education (S1) is represented by a smaller proportion, with only 3% of respondents holding this qualification (n=3). This assessment reveals a relatively low educational attainment among members of Gapoktan Agro Mandiri. Notably, a significant percentage of respondents completed their education at the elementary and junior high school levels, signifying a prevalent trend of limited educational background within the group. The observed lack of educational diversity is attributed to the diminished interest among the younger demographic in pursuing advanced education while engaging in agricultural activities within the region.

The predominant income bracket among respondents is within the range of IDR 500,000 - IDR 1,000,000, encompassing 39% of the sample (n=33). Following this, farmers earning IDR 1,000,000 - IDR 1,500,000 constitute 27% of respondents (n=23), while those earning above IDR 2,000,000 account for 23% (n=11). Respondents with an income below IDR 500,000 represent 10% of the sample (n=9), and those earning between IDR 1,500,000 - IDR 2,000,000 constitute 9% of the respondents (n=8). While income is integral to sustaining livelihoods, the study notes that the majority of Gapoktan Agro Mandiri members earn incomes significantly below the locally defined minimum wage. The heightened reliance of Gapoktan members on the agricultural sector remains notable, yet the underutilization of available natural resources and a deficit in knowledge hinder their overall development.

The Effect of Social Capital on Farmer Welfare
Outer Model Test (Measurement Model)

1. Test of Discriminant Validity

Discriminant validity serves as a crucial test to ascertain the distinctiveness of a construct from other constructs (Purwanto et al., 2021). Evaluating the cross-loading values proves instrumental in determining the adequacy of discriminant validity. This involves comparing the loading value of a specific construct with those of other constructs, ensuring that the loading value on the intended construct surpasses that of other constructs (Pering, 2020).

Table 2. Value of Cross Loadings

	Trust	Network	Social Norms	Welfare
Honesty (X1.1)	0.882	0.712	0.707	0.765
Attention (X1.2)	0.910	0.734	0.625	0.748
Security (X1.3)	0.867	0.606	0.582	0.638
Individual (X2.1)	0.703	0.836	0.566	0.628
Community group (X2.1)	0.617	0.856	0.691	0.650
Government institutions (X2.3)	0.646	0.839	0.597	0.661
Behavior (X3.1)	0.530	0.518	0.787	0.529
Habits (X3.2)	0.523	0.529	0.761	0.544
Culture (X3.3)	0.630	0.671	0.793	0.631
Income (Y1.1)	0.712	0.654	0.604	0.888
Facilities (Y1.2)	0.744	0.671	0.613	0.853
Education (Y1.3)	0.655	0.666	0.688	0.859

Source: Primary data processed (2023)

In Table 2, each research indicator exhibits higher outer loading values with its corresponding variables compared to outer loading values with other variables. The table presents valid values, indicating that the utilized data possess distinct attributes and are not unidimensional. This attests to the good discriminant validity of the indicators in this study concerning the effect of forming their respective variables.

Discriminant validity can also be evaluated through a comparison between the Average Variance Extracted (AVE) and the correlation values between different constructs within the model. Adequate validity of the model is indicated when each latent variable achieves an AVE value exceeding 0.50 (Budi et al., 2020).

Table 3. Value of *Average Variance Extracted* (AVE)

Variable	AVE
Trust	0.788
Network	0.712
Social Norms	0.609
Farmer Welfare	0.751

Source: Primary data processed (2023)

Table 3 reveals that the Average Variance Extracted (AVE) values for trust, network, social norms, and farmer welfare are all greater than 0.50. Specifically, trust has a value of 0.788, network 0.712, social norms 0.609, and farmer welfare 0.751. This signifies the successful attainment of good discriminant validity for each variable.

Inner Model Test

1. R-Square

The R-Square, or coefficient of determination, quantifies the extent to which the independent variable can elucidate the variability in the dependent variable. This metric is instrumental in measuring the influence wielded by the independent latent variable on the dependent latent variable (Artanto et al., 2021).

Table 4. R-Square

	R-square	R-square Adjusted
Farmer Welfare (Y)	0.724	0.714

Source: Primary data processed (2023)

Table 6 indicates an R-square value of 0.724, equivalent to 72.4%. This denotes that the independent variables of trust, networks, and social norms effectively elucidate the variation in the dependent variable of farmer welfare. Specifically, 72.4% of the farmer welfare variation can be attributed to the independent variable of social capital, leaving the remaining 27.6% potentially influenced by variables not addressed in this study.

2. Path *Coefficient*

The path coefficient test is employed to assess the magnitude of the influence or effect of the independent variable on the dependent variable. A higher path coefficient value in the relationship between variables indicates a stronger connection (Wulandari et al., 2022). The outcomes of the data processing unveil the inner model, as illustrated in the figure:

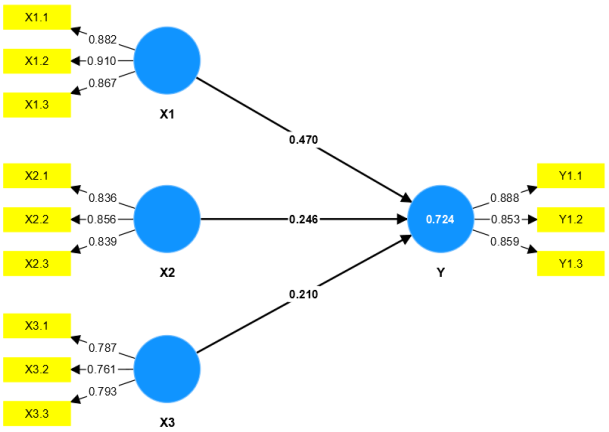

Figure 1. *Inner Model*

The figure above illustrates that the trust variable possesses the highest path coefficient value at 0.910, indicating its predominant influence on the welfare of farmers in Gapoktan Agro Mandiri. Following this, the network variable exerts the second-highest effect with a path coefficient value of 0.246, while the social norm variable exhibits the smallest influence with a value of 0.210.

3. Hypothesis Test

The examination of the effect and correlations among variables is conducted through hypothesis testing. This testing relies on the outcomes derived from assessing the inner model and mediation via the SmartPLS output results. Hypothesis testing involves evaluating the path coefficient and P-Value. A t-statistic value for the path coefficient score, exceeding 1.96, signifies a direct influence of the independent variable on the dependent variable (Widyastuti & Prastitya, 2020). Furthermore, a P-Value < 0.05 (5%) establishes the presence of a positive and statistically significant effect between variables (Sisvanka & Aziz, 2022).

Table5. Hypothesis Test

Effect	*Original Sample* (O)	*T- Statistic*	*P-Value*
Trust ➔ Farmer Welfare	0.470	3.727	0.000
Network ➔ Farmer Welfare	0.248	2.049	0.040
Social Norms ➔ Farmer Welfare	0.210	1.970	0.049

Source: Primary data processed (2023)

Table 8 reveals that the trust variable significantly impacts farmer welfare variables by 47%, exhibiting an error rate of 0% and a t-statistic value of 3.727, indicating a substantial effect. Similarly, the network variable significantly influences the welfare of farmers, demonstrating a significant effect of 24.8%, with an error rate of 4% and a t-statistic value of 2.049. The Social Norms variable also significantly affects the welfare of farmers, indicating a significant effect at 21%, with an error rate of 4.9% and a t-statistic value of

1.970. These findings lead to the conclusion that social capital (X) significantly influences the welfare of farmers (Y). This assertion aligns with earlier research by Kusumayanti, N.M.D, et al (2018), affirming a positive correlation between social capital and the welfare of fishermen. Therefore, an enhancement in the quality of social capital tends to parallel an increase in welfare levels.

The Smart PLS analysis reveals that trust, networks, and social norms exert a significant and positive influence on farmer welfare. This finding aligns with prior research conducted by R. S. Sidiq, et al. (2021), asserting that social capital significantly contributes to community welfare. These outcomes are in harmony with the insights gathered from respondent interviews, affirming the pivotal role of trust, networks, and social norms in attaining welfare. Social capital emerges as the primary asset in pursuing diverse achievements. Corroborating this, Harahap and Agusta's (2018) research underscores a significant correlation between social capital and welfare. The results of the correlation test elucidate a robust and positive interrelation among each variable. Interestingly, this study diverges from Kayadoe, et al.'s (2019) research, which posits a correlation between social capital and farmer group welfare but without statistical significance.

This examination reveals that among the variables (X) tested, trust emerges as the most influential factor on the dependent variable (Y), boasting the highest value compared to other variables. These findings underscore the significance of trust as the primary foundation for mutual reliance among farmer group members in all their activities. This trust facilitates the establishment of robust networks, fostering the exchange of information and mutual assistance. Additionally, the presence of norms, expressed through binding rules within the group, contributes to a more cohesive and cooperative environment. In the context of social capital, trust represents a willingness to engage in social relationships, rooted in the confidence that others will fulfill expectations and act in a mutually supportive manner. This aligns with the definition emphasizing trust as a key element that prevents actions detrimental to individuals and the group. These results find resonance in the research of Antou, et al. (2022), which underscores the pivotal role of trust in farmer groups. Conversely, it deviates from the perspective presented by Ernanda, et al. (2019), which emphasizes the importance of social norms, specifically the active assistance among farmers within the group, as the perception with the highest level.

CONCLUSION

The findings underscore the pivotal role of social capital in shaping farmer groups, emanating from social elements that facilitate connections within the community or association. This study reveals a substantial impact of social capital, comprising trust, networks, and social norms, accounting for 72.4% of the variance in the welfare of farmers affiliated with GAPOKTAN Agro Mandiri in Selur, Ngrayun, Ponorogo. It implies that fostering and enhancing social capital in Gapoktan Agro Mandiri is imperative for the ongoing development of agriculture and the overall welfare of farmers in the region.

REFERENCES

Afriliansyah, Bima, and Bahrein T. Sugihen. (2019). "Analisa Modal Sosial pada Kelompok Tani (Studi Pada Kelompok Tani di Kecamatan Bukit, Kabupaten Bener Meriah)." *Jurnal Ilmiah Mahasiswa Fakultas Ilmu Sosial & Ilmu Politik* 4.1.

Angreny, W. R. S., Sumekar, W., & Prasetyo, A. S. (2022). Keberlanjutan UMKM Berdasarkan Modal Sosial dan Triple Bottom Line. *Jurnal Agribest*, *6*(1), 64-75.

Antou, J. I., Jocom, S. G., & Moniaga, V. R. B. (2022). Peranan Modal Sosial pada Kelompok Tani Padi Sawah di Desa Tatengesan Kecamatan Pusomaen Kabupaten Mihahasa Tenggara. *Agri-Sosioekonomi*, *18*(2), 461-468.

Artanto, F. A., Fahlevi, R., & Rachmayani, N. A. (2021). Partial Least Square - Structural Equation Modeling (Pls-Sem) Pada Hubungan Kepuasan Konsumen Terhadap Produk (Studi Kasus Perkumpulan Penggiat Programmer Indonesia). Jurnal Surya Informatika, 11(2477-3042), 40-45.

Bakri, S., Qurniati, R., Safe', R., Hilmanto, R., Kehutanan, J., Pertanian, F., Lampung, U., Sumanteri, J., Nomor, B., & Lampung, B. (2021). Kinerja Modal Sosial dalam Kaitannya dengan Pendapatan Masyarakat Agroforestry: Studi Di Desa Karang Rejo Kecamatan Jati Agung Lampung Selatan. In *Jurnal Hutan Tropis* (Vol. 9, Issue 1).

Budi, D. A., Sudarma, I. M., & Agung, I. D. (2020). Preferensi Konsumen Terhadap Kedai Kopi di Kota Denpasar. Jurnal Agribisnis Dan Agrowisata, 09(2685-3809), 286-293.

Ernanda, R., Burhanuddin, B., & Purwiono, J. (2019). Karakteristik Modal Sosial Petani Cabai Kopay Di Kota Payakumbuh. *Jurnal AGRISEP: Kajian Masalah Sosial Ekonomi Pertanian dan Agribisnis*, 41-52.

Ermawati, T., Dalmiyatun, T., & Prayoga, K. (2021). *Pengaruh Modal Sosial terhadap Keberlanjutan Gapoktan Ngudi Rukun di Kabupaten Wonogiri*. *3*(1).

Fauzi, N. F. (2018). Potensi Dan Strategi Pengembangan Pertanian Pada Kelompok Tani Sumber Klopo I. *Jurnal Agribest*, *2*(2), 159-177.

Harahap, D. Y., & Agusta, I. (2018). Peran Modal Sosial Terhadap Kesejahteraan Pengusaha Sektor Informal (Kasus Pengusaha Sektor Informal di Pasar Jl. Dewi Sartika, Bogor). *Jurnal Sains Komunikasi Dan Pengembangan Masyarakat [JSKPM]*, *2*(2), 207–222. https://doi.org/10.29244/jskpm.2.2.207-222

Harahap, M., & Herman, S. (2018). Hubungan modal sosial dengan produktivitas petani sayur (studi kasus pada kelompok tani barokah kelurahan tanah enam ratus kecamatan medan marelan). *AGRIUM: Jurnal Ilmu Pertanian*, *21*(2), 157-165.

Ibrahim, J. T., & Mufriantie, F. (2021). Sumber Daya Manusia Sektor Pertanian Dalam Berbagai Perspektif. In *Penerbit Psychology Forum bekerjasama dengan DPPs UMM*. Psychology Forum bekerjasama dengan DPPs UMM.

Ibrahim, J.T. (2020). Metode Penelitian Sosial Ekonomi Pertanian. Malang. UMM Press.

Kayadoe, A. S., Girsang, W., & Adam, F. P. (2019). Modal sosial dan kesejahteraan kelompok tani di Negeri Soya Kecamatan Sirimau Kota Ambon. *Agrilan: Jurnal Agribisnis Kepulauan*, *7*(2), 135-148.

Kusumayanti, N. M. D., Setiawina, I. N. D., & Utama, I. M. S. (2018). Analisis Faktor-Faktor Yang Mempengaruhi Kesejahteraan Nelayan Di Kabupaten Jembrana. *E-Jurnal Ekonomi Dan Bisnis Universitas Udayana*, *2437*.

Maulidya, Ayu, Siti Saroh, and Daris Zunaida. (2021). "Pengaruh experiential marketing dan marketing mix terhadap minat beli ulang konsumen (Studi kasus pada konsumen semusim cafe Kota Malang)." *JIAGABI (Jurnal Ilmu Administrasi Niaga/Bisnis)* 10.2 : 205-212.

Pering, I. M. (2020). Kajian Analisis Jalur Dengan Structural Equation Modeling (Sem) Smart-Pls 3.0. Jurnal Satyagraha, 03(2620-6358), 28-48.

Puspita, Yeni. (2020). "Modal sosial dan kesejahteraan kelompok tani tebu (studi kasus pada kelompok tani tebu di Desa Wringin Anom, Kecamatan Asembagus, Kabupaten Situbondo)."

Sayifullah, S., & Emmalian, E. (2018). Pengaruh tenaga kerja sektor pertanian dan pengeluaran pemerintah sektor pertanian terhadap produk domestik bruto sektor pertanian di Indonesia. *Jurnal ekonomi-qu*, *8*(1).

Sisvanka, A., & Aziz, F. (2022). Pengaruh Perceived Value Terhadap Kepuasan Konsumen Carne Smoked BBQ Bandung. *Journal of Management & Business*, *5*(2),203–212. https://doi.org/https://doi.org/10.37531/sejaman.v5i1.1883

Subangkit, A., Yanti, D. F., Kusnadi, L. M., & Sonuari, M. I. (2020). Modal Sosial Dalam Pengembangan Urban Farming Di Kampung Hidroponik Kelurahan Pengadegan, Jakarta Selatan. *EMPATI: Jurnal Ilmu Kesejahteraan Sosial*, *8*(2), 154-160.

Puspita, Nindya Tria. (2019). "Modal sosial masyarakat pengelola hutan kemasyarakatan di Kesatuan Pengelolaan Hutan Batutegi."

Purwanto, A. (2021). Education research quantitative analysis for little respondents: comparing of Lisrel, Tetrad, GSCA, Amos, SmartPLS, WarpPLS, and SPSS. *Jurnal Studi Guru Dan Pembelajaran*, *4*(2).

R. S. Sidiq, A. Sulistyani, and S. Achgnes. (2021). "Modal Sosial dan Kesejahteraan Masyarakat Daerah Aliran Sungai di Kabupaten Kampar", *Jurnal Education and Development*, vol. 9, no. 2, pp. 358-368, May

Widyastuti, H., & Prastitya, T. A. (2020). Preferensi Konsumen Pengguna E-Commerce Yang Memengaruhi Kesadaran Akan Perlindungan Konsumen Pada Generasi X. Jurnal Sistem Informasi Bisnis, 01, 10-19.

Wulandari, W., Japarianto, E., & Tandijaya, T. N. (2022). Penerapan Technology Acceptance Model (Tam) Terhadap Perilaku Konsumen Mobile Banking Di Surabaya. Jurnal Manajemen Pemasaran, 16(1907-235), 126-132.

Yanti, V., Sekolah, U., Ilmu, T., & Mataram, A. (2020). *Dinamika Modal Sosial dalam Pemberdayaan Masyarakat pada Desa Wisata Halal Setanggor: Kepercayaan, Jaringan Sosial Dan Norma*. *Volume 10 Nomor 1*. https://jurnal.unitri.ac.id/index.php/reformasi/index

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Research Article

Farm Income Analysis of Shallot Farmers in Dulang, Enrekang, South Sulawesi

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ABSTRACT

Shallot, recognized primarily as a spice vegetable, serves a pivotal role within the realm of vegetables. This study, undertaken in Dulang, Malua, Enrekang, South Sulawesi, Indonesia, a prominent hub for shallot production in the Enrekang Regency, involved 90 respondents comprising shallot farmers. The principal objective of this research is to ascertain the income generated by these farmers. Employing a survey method, the study gathered data through direct interviews with shallot farmers, selected through a simple random sampling approach. The findings revealed that the average yield from shallot cultivation ranged between IDR 40,000,000 and IDR 50,000,000 per harvest. This outcome suggests the economic viability of shallot production in Dulang, Malua, Enrekang, South Sulawesi, Indonesia.

INTRODUCTION

The agricultural sector constitutes a pivotal element in national development, serving as a cornerstone for addressing food requirements essential to sustaining human life (Panurat, 2014). The overarching goal is to signify national food security, ensuring the fulfillment of food demands within the Indonesian state (Panurat, 2014). Notably, shallots assume a significant role in commerce due to their widespread popularity, as they feature prominently in nearly every culinary preparation (Muhammad Idrus, 2013).

The paramount sector in any developing economy is agriculture, serving as a crucial source for providing sustenance to the majority of the population and offering employment opportunities (Thamrin et al., 2018). Thamrin et al., (2018) underscore the significance of the agricultural sector in contributing to Indonesia's economic development. This sector, being the primary livelihood source for a substantial proportion of the Indonesian populace, assumes a pivotal role (Shodiq, 20. Through the commodities it yields, the agricultural sector holds significant potential for augmenting the income of farming communities in Indonesia.

The shallot industry constitutes a segment of the agriculture and food sector, encompassing the processes of production, distribution, and marketing of shallots (Allium cepa var. aggregatum) distinguished by its red outer skin and a sweeter flavor profile compared to garlic, shallots are cultivable in both lowlands and highlands. In Enrekang, farmers engage in the cultivation of shallots across varying elevations, with agricultural practices documented by Arham *et al,* (2015).

Cultivation of shallots represents a significant facet of horticultural practices, extensively adopted as a means of livelihood within the Enrekang Regency community. Beyond primary cultivators, individuals engaged in farm labor also derive income from shallot cultivation (Rahim et al., 2022). Emphasizing the augmentation of yield, production quality, and income, shallot cultivation in Enrekang Regency holds a prominent position among horticultural endeavors (Rahim et al., 2022). This cultivation not only enjoys widespread adoption but has also evolved into a vital source of livelihood for the inhabitants of Enrekang Regency.

Farmers play a pivotal role in shallot productivity, assuming a central position in this agricultural endeavor. Their significant contribution holds paramount importance for regional economic development, manifesting in the enhancement of living standards, creation of employment opportunities, reduction of unemployment rates, utilization of natural resources while ensuring environmental sustainability, and the provision of food surpluses (Arniati, *et al*, 2023).

Income strategies assume a crucial role in the realm of agriculture, extending beyond the realms of crop or livestock production. Agriculture, in essence, involves the cultivation of sustainable and sufficient income avenues for farmers. The endeavor to amplify shallot production necessitates a parallel effort to augment the income of farmers, thereby fostering an expansion of employment opportunities within the agricultural sector. This imperative arises from the fact that a substantial portion of the Indonesian populace resides in rural areas, with farming constituting the primary occupation (Muhammad Idrus, 2013).

The operational methodology of shallot farmers in Enrekang, encompassing the Baraka Subdistrict, remains rooted in conventional production principles, wherein augmenting yields is contingent upon escalating inputs. The primary recourse for farmers aiming to enhance shallot production involves elevating the quantities of fertilizer, seeds, and labor.

Farmers are compelled to optimize production to prevent imbalances in their agricultural endeavors. Fundamentally, the primary objective for farmers is to realize anticipated income when selling their products, marking income as the pivotal goal in agricultural activities. Amidst unstable economic conditions, particularly evident in Indonesia, the livelihoods of individuals, particularly farmers, may decline. This necessitates shallot farmers to exhibit increased creativity and efficiency in the shallot production process (Indriani, *et al* 2022).

Drawing from the aforementioned background, the researcher is motivated to investigate the income dynamics of shallot farmers in Dulang, Malua, Enrekang, South Sulawesi, Indonesia, under the title "Farm Income Analysis of Shallot Farmers in Dulang, Enrekang, South Sulawesi."

METHOD

This research was carried out in Dulang, Malua, Enrekang, South Sulawesi, Indonesia, recognized as a prominent shallot production hub in the Enrekang region. Employing a survey methodology, data collection involved direct interviews with shallot farmers, selected through a simple random sampling approach. The respondent profiles to be outlined encompass (1) age, (2) education level, (3) farming experience, (4) number of family members, and (5) cultivated land area. The dataset utilized for analysis comprises exclusively of primary data.

RESULTS AND DISCUSSION

Age of Shallot Farmers

Age constitutes a crucial determinant influencing an individual's performance and productivity, particularly within the context of shallot farming (Farianto et al., 2021). The age of farmers emerges as a pivotal aspect influencing their actions and decisions in the ongoing agricultural processes. As posited by Farianto et al. (2021), an individual typically witnesses an increase in work ability with advancing age, followed by a subsequent decline due to diminishing strength. The average age of farmers exhibits considerable variability contingent upon factors encompassing country of residence, farming type, lifestyle, access to healthcare, and various other determinants.

Table 1. Respondents by age on shallot farming in Dulang, Enrekang

No	Age (year)	Number (person)	Percentage (%)
1	15-25	7	7.77
2	26-36	27	30
3	36-45	32	35.55
4	46-45	15	16.66
5	>56 and above	9	10
	Total	90	100

Source: Primary Data Processed, 2023

Table 1 presents the age distribution of shallot farmers in Dulang, Malua, Enrekang, South Sulawesi, Indonesia. The majority of shallot farmers fall within the productive age range of 36-45 years, constituting 35.55 percent of the sample, totaling 32 individuals. The age group of 56 years and above exhibits the highest variation, while the lowest age group is 15-25 years. Nine farmers, accounting for 10 percent of the sample, are categorized as less or unproductive due to surpassing the productive age. Farmers aged 36-45 years represent the largest proportion at 35.55 percent, comprising 32 individuals. The age range of 26-36 years includes 27 farmers, constituting 30 percent of the sample, whereas the smallest cohort consists of seven farmers aged 15-25 years, making up 7.77 percent. This demographic distribution underscores the potential for shallot farmers to optimize efforts for increased yields and profits, thereby enhancing their economic status.

Education Level of Shallot Farmer

Education stands out as a pivotal factor influencing both development and the quality of human resources (Farianto et al., 2021). The level of education plays a crucial role in a farmer's capacity to embrace significant innovations and information, fostering advancements and adding value to agricultural practices. A farmer's higher educational attainment facilitates a more facile comprehension and acceptance of the latest innovations. Additionally, education serves as a noteworthy investment, contributing to the enhancement of knowledge for improved agricultural practices.

Table 2. Respondents by Education Level on shallot farming in Dulang, Enrekang, 2023

No	Education Level	Number (person)	Percentage (%)
1	Not graduated from elementary school	10	11.11
2	Elementary school	13	14.44
3	Junior high school	22	19.8
4	Senior high school	35	31.5
5	Diploma	3	2.7
6	Undergraduate	7	6.3
	Total	**90**	**100**

Source: Primary Data Processed, 2023

Table 2 reveals the educational background of shallot farmers, indicating that the predominant group possesses a secondary education. Specifically, 35 individuals, constituting 31.5 percent, completed their education at the junior high school level, followed by 22 individuals (19.8 percent) who graduated from high school. A smaller proportion pursued higher education, with 7 individuals (6.3 percent) having completed college, and 3 individuals (2.7 percent) holding a Diploma. Additionally, 13 farmers (14.44 percent) graduated from elementary school, while 10 individuals (11.11 percent) did not complete elementary school.

Farming Experience of Shallot Farmer

The farming experience of shallot farmers is quantified by the duration dedicated to shallot farming, measured in years. Experience emerges as a pivotal factor influencing the success of farmers. A discernible trend suggests that as farmers accumulate more time managing a farm, their knowledge deepens regarding its viability, potential challenges, and suitability. Moreover, extensive farming experience correlates with a heightened propensity to adopt relevant agricultural technologies (Arham., 2015).

Table 3. Respondents by Farming Experience on shallot farming in Dulang, Enrekang, 2023

No	Farming Experience (year)	Number (person)	Percentage (%)
1	1-5	5	5.55
2	6-10	29	32.22
3	11-15	35	38.88
4	16-20	9	10
5	21-50	7	7.77
6	>25	5	5.55
	Total	90	100

Source: Primary Data Processed, 2023

Table 3 illustrates the average farming experience of shallot farmers in terms of years. Farmers with 1-5 years of farming experience constitute 5 individuals, representing 5.55 percent of the sample. Those with 6-10 years of experience amount to 29 farmers, comprising 32.22 percent, while 35 farmers, constituting 38.88 percent, fall within the 11-15 years category. A total of 9 farmers, or 10 percent, possess 16-20 years of farming experience. Furthermore, the range of farming experience spans 21-50 years, encompassing 7.77 percent of the sample. This indicates a considerable longevity of experience among shallot farmers. The accumulation of such substantial experience facilitates informed decision-making in selecting suitable innovations and technologies for shallot plant cultivation.

Number of Family Members of Shallot Farmer

Table 4. Respondents by Number of Family Members on shallot farming in Dulang, Enrekang, 2023

No	Number of Family Members (person)	Number (person)	Percentage (%)
1	1-3	22	24.44
2	4-6	61	67.77
3	7-10	7	7.77
	Total	90	100

Source: Primary Data Processed, 2023

Table 4 delineates the distribution of shallot farmers based on the number of family members. The category spanning from the lowest to the highest comprises farmers with 1-3 family members, totaling 22 individuals, representing 24.44 percent. Subsequently, farmers with 2-6 family members constitute the majority, with a total of 61 individuals, accounting for 67.77 percent. The final category encompasses farmers with 7-12 family members, totaling 7 individuals, comprising 7.77 percent of the sample. The findings underscore that, predominantly, shallot farmers tend to have 4-6 family members, representing 67.77 percent. This observation indicates that labor availability is not a limiting factor for shallot farmers, as work can be efficiently managed within the family unit.

Cultivated Land Area owned by Shallot Farmer

Land area stands out as a pivotal factor in the shallot production process, specifically referring to the extent of land under the control of shallot farmers. The average land area controlled by shallot farmers is detailed in the subsequent table:

Table 5. Respondents by Cultivated Land Area on shallot farming in Dulang, Enrekang, 2023

No	Cultivated Land Area (ha)	Number (person)	Percentage (%)
1	0,10-0,40	25	27.77
2	0,41-0,80	52	57.77
3	0,81-1,20	10	11.11
4	>1,21	3	3.33
	Total	**90**	**100**

Source: Primary Data Processed, 2023

Table 5 illustrates that the distribution of land cultivated by farmers ranges from the highest to the lowest, with more than 1.21 hectares being controlled by 3 individuals, representing 3.33 percent. Following this, the land area cultivated in the range of 0.81-1.20 hectares is managed by 10 farmers, constituting 11.11 percent. Moreover, the land area cultivated in the range of 0.41-0.80 hectares involves 52 farmers, comprising 57.77 percent. The smallest land area cultivated, falling within the range of 0.10-0.40 hectares, is tended by 25 farmers, representing 27.77 percent. Consequently, the average cultivated land area of shallots controlled by farmers is relatively limited, posing a potential hindrance to enhancing the production capacity of their farms.

Income of Shallot Farmer

Income calculation involves determining the yield in a single harvest, a variable contingent upon factors such as the managed land area, the quantity of seeds planted, and the application of pesticides and fertilizers. The forthcoming table will outline the shallot production quantities of individual farmers.

Table 6. Respondents by Production on shallot farming in Dulang, Enrekang, 2023

No	Total Production (Ton)	Number (person)	Percentage (%)
1	1-5	28	31.11
2	5-10	33	36.66
3	10-15	15	16.66
4	>15	14	15.55
	Total	**90**	**100**

Source: Primary Data Processed, 2023

The table presented above indicates that the majority of respondents obtained shallot production ranging between 5 to 10 tons, involving 33 farmers, constituting 36.66 percent.

Production Costs Incurred by Shallot Farmers

Shallot farmers in Dulang, Malua, Enrekang, South Sulawesi, Indonesia, experience varying production costs, influenced by the cultivated land area. The larger the cultivated land area, the higher the incurred production costs. Fixed costs, those that remain constant irrespective of production quantity, contrast with variable costs, which fluctuate based on production levels. The calculation of fixed costs employs a depreciation calculation tool, as outlined by Adetya et al. (2021).

Table 7. Respondents by production costs incurred by shallot farmers on shallot farming in Dulang, Enrekang, 2023

No	Production Costs (IDR)	Number (person)	Percentage (%)
1	<20,000,000	5	5.55
2	20,000,000-30,000,000	23	25.55
3	30,000,000-40,000,000	38	42.22
4	40,0000,000-50,000,000	14	15.55
5	>50,000,000	10	11.11
	Total	**90**	**100**

Source: Primary Data Processed, 2023

Table 7 provides insights into the production costs of respondents, revealing that 5 farmers, or 5.55%, incur costs less than IDR 20,000,000. Additionally, 23 farmers, representing 25.55%, utilize costs ranging from IDR 20,000,000 to IDR 30,000,000. The category of costs between IDR 30,000,000 and IDR 40,000,000 is employed by 38 farmers, constituting 42.22%, while 14 farmers, or 15.55%, utilize costs within the range of IDR 40,000,000 to IDR 50,000,000. The remaining 10 farmers, with a percentage of 11.11%, bear production costs below IDR 50,000,000. Variations in cultivated land area and labor utilization account for these differences. It's worth noting that the research by Arham (2015) suggests variable costs for shallot farmers in the Enrekang district at IDR 48,081,617.38 per area of cultivated land.

Determining the revenue generated from farmers' endeavors is intrinsically tied to the quantity of shallot production. The market price of shallots exhibits dynamic fluctuations, influenced by shifts in demand and supply. When the demand for shallots surges, and the supply diminishes, prices tend to rise. Similarly, superior-quality shallots, characterized by larger size and vibrant red color, command higher prices, reaching IDR 25,000 per kilogram. Conversely, in situations where demand is low and the shallots are of inferior quality, they are traded at a lower price, around IDR 10,000 per kilogram.

Net Income Obtained by Shallot Farmers

According to Farianto et al., (2021), farm income is calculated by subtracting the total input costs or overall costs from the production yield. This variable is subsequently incorporated into the second stage of the model, as expressed in the following equation:

$$\pi = TR - TC$$

Where:
π : Income (IDR/Ha)
TR : Total revenue or total income (IDR/Ha)
TC : Total cost (IDR/Ha)

Arniati *et al* (2023) assert that income is influenced by both the selling price and the quantity of production. Beyond these factors, the production costs play a crucial role in the overall production process. Farmers are compelled to optimize their production to maintain equilibrium in their agricultural endeavors. The fundamental objective for farmers, when selling their products, is to attain income aligned with their expectations, as income stands as the primary goal in agricultural activities.

Table 8. Respondents by net income obtained by shallot farmers on shallot farming in Dulang, Enrekang, 2023

No	Net Income (IDR)	Number (person)	Percentage (%)
1	<30,000,000	5	5.55
2	30,000,000-40,000,000	27	30
3	40,000,000-50,000,000	36	40
4	50,0000,000-60,000,000	15	16.66
5	>60,000,000	7	7.77
	Total	**90**	**100**

Source: Primary Data Processed, 2023

Table 8 presents a clear overview of the income distribution among respondents. Notably, 36 farmers, constituting 40%, report the highest income falling within the range of IDR 40,000,000 to IDR 50,000,000 per harvest, whereas 5 farmers, or 5.55%, report the least income exceeding IDR 30,000,000. This contrasts with the findings of Maru et al. (2020), whose research indicates that the majority, 34.37%, earn income ranging from IDR 10,000,000 to IDR 20,000,000, while the minority, 9.37%, report income surpassing IDR 30,000,000 per harvest.

CONCLUSION

In Dulang, Malua, Enrekang, South Sulawesi, Indonesia, the majority of shallot farmers possess an education level equivalent to senior high school (SMA). Among the 90 respondents, 52 farmers manage land areas ranging from 0.41 to 0.80 hectares, while the average work experience falls between 11 to 15 years for 35 farmers. Analyzing the income from shallot farming in Dulang, Malua, indicates that the income level of shallot farmers is categorized as medium.

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REFERENCES

Adetya, A., Program, I. S., & Agribisnis, S. (2021). Analisis Produksi, Pendapatan Dan Risiko Usahatani Bawang Merah Di Kecamatan Sokobanah Kabupaten Sampang Provinsi Jawa Timur. *Jurnal Agriscience*, *2*, 17–31. http://journal.trunojoyo.ac.id/agriscience

Arham, Nurhapsa Kartini. (2015). Analisis Pendapatan Dan Kelayakan Usahatani Bawang Merah Di Kecamatan Anggeraja Kabupaten Enrekang. *Jurnal Galung Tropika*, *4*(3), 137–143.

Arniati, M. I. I. M. A. I. (2023). Analisis Pendapatan Petani Bawang Merah Di Desa Masalle Kecamatan Masalle Kabupaten Enrekang. *JUMADI*, *1 No 2*, 107–123. https://doi.org/10.56314/jumabi.v1i2

Farianto, A., Karyani, T., & Trimo, L. (2021). Komparasi Pendapatan Usahatani Bawang Merah Berdasarkan Sumber Pembiayaan di Kabupaten Nganjuk. *Jurnal Agribisnis Indonesia*, *9*(2), 88–104. https://doi.org/10.29244/jai.2021.9.2.88-104

Indriani, Jabal Tarik Ibrahim, B. Y. A. (2022). Strategi pemasaran untuk meningkatkan pendapatan pengrajin keripik tempe di sanan. *Jurnal Cemara*, *19*(2021), 43–52.

Rahim, A., Mk, P., & Soci, E. (2022). Pengaruh Penggunaan Lampu LED sebagai Perangkap Hama terhadap Pendapatan The Effect of Using LED Lights as Pest Traps on the Income of Shallot Farmers in Kolai Village, Malua District, Enrekang Regency. In *Jurnal Daun* (Vol. 9, Issue 2).

Shodiq, W. M. (2022). Model CPRV (Cost, Productivity, Risk dan Value-Added) dalam Upaya Meningkatkan Pendapatan Petani Indonesia: A Review. *Jurnal Hexagro*, *6*(2), 115–127. https://doi.org/10.36423/hexagro.v6i2.657

Thamrin, M., Novita, D., & Hasanah, U. (2018). *Kontribusi Pendapatan Pengupas Bawang Merah Terhadap Pendapatan Keluarga Contribution of Shallot Peeler Revenue to Family Income*.

Muhammad Idrus. (2013). Analisis Pendapatan Usaha Tani Bawang Merah Di Kelurahan Mataran Kecamatan Anggeraja Kabupaten Enrekang. *Jurnal Economix* , *1*(2), 94–103.

Panurat, S. M. (2014). *Faktor-Faktor Yang Mempengaruhi Minat Petani Berusahatani Padi Di Desa Sendangan Kecamatan Kakas Kabupaten Minahasa*.

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Research Article

Implementing the Quality Function to Improve the Organic Vegetable Quality

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ABSTRACT

This research delves into the pivotal role of quality management in sustaining organic vegetable production, underscoring its profound connection to consumer satisfaction and subsequent impact on purchasing decisions. Within the organic market, predominantly catering to the upper to middle-class demographic in Batu, East Java, Indonesia, consumer preferences dictate heightened product specifications and, consequently, necessitate a focus on quality. To fortify market presence, this study advocates for the direct involvement of organic farmers throughout the entire production-to-marketing continuum, transforming them into not just cultivators but entrepreneurs. In the face of escalating competition, product quality emerges as a paramount subsystem requiring prioritization. The study employs the quality function method for planning and developing pertinent organic vegetable products aligned with consumer interests, identifying areas for improvement. The primary objective is to ascertain consumer demands and devise corrective measures to augment satisfaction. Employing the online survey method, participants were limited to consumers who had purchased organic vegetable products from Batu-based farmers in East Java at least twice. Analyzing the data revealed that consumer prioritized quality attributes encompassed vegetable cleanliness, product pricing, and ease of accessibility. Notably, technical interventions such as the implementation of Good Handling Practices, Internal Control System (ICS), and enhancing service quality during organic vegetable cultivation significantly influenced consumer interest attributes, fostering heightened satisfaction. This study contributes valuable insights for organic farmers and stakeholders seeking to optimize product quality in response to evolving consumer demands.

INTRODUCTION

The burgeoning potential for the development of organic vegetable agribusiness in Batu, Malang, East Java, Indonesia, has generated considerable interest among practitioners in this agricultural domain. According to statistical data from the Statistics Center of Batu, illustrated in the accompanying figures, the agriculture,

forestry, and fisheries sector in Batu held the second position in the economy in 2020. Over the period spanning 2012 to 2021, a total of 22 organic areas were established. The recorded count of organic farmers in Batu reached 461 individuals in 2021, marking an increase from 365 individuals in the preceding year. An inspection conducted by LeSOS revealed that, as of 2021, 84 distinct crop types are cultivated organically within the designated farming areas in Batu. This growth underscores the thriving landscape of organic agriculture in the region.

Presently, the organic market is predominantly associated with the middle to upper class market segment, where consumer preferences demand superior quality and consistent adherence to product standards. The Indonesian Organic Agriculture Statistics Survey (2019) delineates several factors influencing consumers' inclination toward organic vegetable consumption, encompassing the absence of synthetic pesticides, health and nutritional benefits, non-existence of Genetically Modified Organisms (GMOs), heightened food safety, enhanced taste, and environmental friendliness. Furthermore, consumers envisage organic vegetables possessing commendable attributes, unblemished quality, and sustained availability, all while ensuring product safety (Yuarini et al., 2015). Regarding the consumption of organic products, the embracement of a health-oriented lifestyle is emerging as a pervasive global trend. The proliferation of organic products has prompted individuals to adopt a more discerning and judicious approach in selecting the commodities they incorporate into their consumption patterns (Teng & Wang, 2015).

Consumer attitudes toward purchasing organic vegetables are shaped by factors such as health awareness, knowledge, price considerations, availability, and subjective norms. Additionally, socio-demographic characteristics, including age, education, and income, indirectly impact the acquisition of organic products (Singh & Verma, 2017). The visual appeal of organic vegetables has been identified as a significant factor influencing consumer purchasing decisions (Tangkulung et al., 2015). Notably, the year 2020 witnessed a substantial increase in demand for organic rice and vegetable products compared to the preceding year, attributed to the impact of the COVID-19 pandemic in Indonesia (Firman & David, 2019).

This surge in demand has led to a growth in the organic vegetable industry, resulting in heightened competition among businesses. Amidst this intensified competition, the imperative of prioritizing product quality becomes evident. Assessing customer satisfaction necessitates the examination of various attributes and metrics, as consumer satisfaction significantly shapes their mindset and attitude toward future purchases. In this dynamic market environment, manufacturers must prioritize both quality and price to ensure customer retention (Engel et al., 1993).

The assessment of product quality involves evaluating the overall capacity of a product to align with consumer needs, as perceived by customers (Gaspersz, 2003). Consumer-perceived quality stands as a pivotal criterion in gauging satisfaction among consumers. To enhance the quality of organic fresh vegetable products at CV. Peternakan Daun Emas Bali, research on consumer expectations and satisfaction levels was conducted (Yuarini et al., 2015). Anggiasari et al. (2016) explored the impact of consumer evaluations of organic vegetable attributes on purchasing decisions in Bandar Lampung, Lampung, Indonesia. Similarly, Astuti et al. (2019) investigated consumer attitudes toward organic vegetables in Supermarkets in Surakarta, Central Java, Indonesia, focusing on attributes such as quality, freshness, cleanliness, durability, and price.

The potential surge in demand for organic vegetables hinges on customers' willingness to pay the expected price for such products. Thus, adopting a consumer-centric approach is imperative to comprehend the organic food product market effectively, supervise organic farming, and enhance the management of organic food products (Sriwaranun et al., 2015). This study aligns with prior research by emphasizing the utilization of product features to enhance the competitiveness of product quality. However, what distinguishes this study from previous ones is its coverage of the initial stage of product planning, combining intrinsic and extrinsic quality aspects. Employing the concept of Quality Function Deployment (QFD), this study analyzes consumer desires and formulates strategies to elevate consumer satisfaction with organic vegetable products sourced from farmers in Batu. The study draws on theoretical foundations and insights from previous research.

To meet consumer expectations, enhancing product quality necessitates rigorous control over the production process—from seeds, irrigation water, and post-harvest storage warehouses to harvesting methods, transportation vehicles, and distribution storage warehouses. In the era of Industry 4.0, farmers are envisioned as productive and competitive entities, crucial in addressing the demands of the global market. Digitalization serves as a transformative force, reshaping farmers' perspectives to leverage technology and communication for innovation and creativity in agriculture. This transformation enables farmers to actively participate throughout the entire production and marketing continuum, assuming roles not only as farmers but also as entrepreneurs. The aspiration is for organic farmers in Batu to emerge as formidable players, both as contributors and products, in comparison to other regions and even against imported goods from foreign

nations. This forward-looking objective underscores the necessity of formulating strategies geared towards aligning organic product offerings with market demands.

METHOD

This study was conducted from July to September 2022. Consumer survey observations were conducted as an initial assessment to identify the quality characteristics of organic vegetables to be quality checked. Research participants consisted of consumers who have purchased organic vegetables at least twice. Because the exact population of organic vegetable consumers is unknown, the Lemeshow and Levy (1997) formula is used to obtain the sample size, with the following formula:

$$n = \frac{z^2 \times P\,(1-P)}{d^2}$$

$$n = \frac{1{,}96\ 2x\ 0{,}5}{(0{,}1)^2}$$

$$n = \frac{3{,}8416 \times 0{,}25}{(0{,}01)}$$

$$n = 96{,}04 = 100 \text{ (rounded to 100 respondents)}$$

Where:
n = number of samples
z = z score at 95% confidence = 1.96
p = maximum estimate = 0.5
d = alpha or sampling error = 10% = 0.1

A hundred consumers were purposefully sampled based on specific criteria, namely, individuals who purchase organic vegetables from Batu farmers at least twice and reside in East Java. Concurrently, 12 farmers were selected as technical respondents using a purposive sampling method. These 12 respondents, who are organic farmers from Batu, are instrumental in enhancing production parameters to elevate the quality of organic vegetables in accordance with consumer expectations. The chosen farmers are those engaged in cultivating organic vegetables and have successfully obtained organic certification from Lesos. Organic certification is a procedural step to validate that the cultivation process and the resulting organic products adhere to established organic standards and regulations. Upon compliance with these principles and regulations, farmers or producers receive an organic certificate, permitting them to affix the organic label on their products.

The distribution of the questionnaire occurred via an online survey utilizing the Google Form format, disseminated through the WhatsApp social media platform. This distribution was conducted in Batu, East Java, the designated market for locally produced organic vegetable products. Quality Function Deployment (QFD) serves as a valuable tool in the advancement of organic vegetable product development, facilitating the acquisition of crucial insights pertaining to consumer preferences, producer requisites, and product specifications. Figure 1 depicts the research framework.

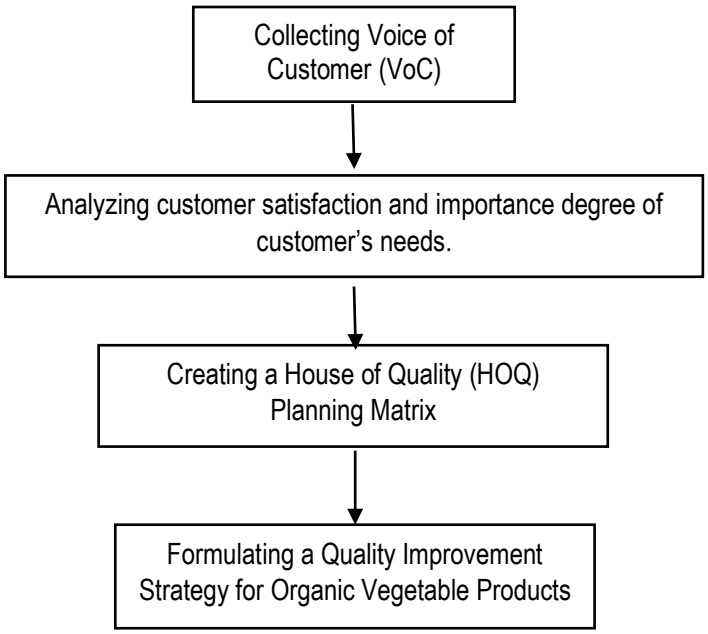

Figure 1. Research Framework

QFD Implementation Stages

Voice of the Customer (VoC)

Voice of the Customer (VoC) pertains to the systematic identification of customer needs, essential for shaping the quality elements incorporated into the questionnaire. This process involves conducting interviews with 25 customers who regularly purchase organic products, including edible plants. The primary aim at this stage is to gather data pertaining to customer needs, specifically focusing on product attributes. Data on the varying levels of product attributes is acquired through consumer surveys or qualitative market research, conducted via direct interviews with customers.

Identification of Customer's Needs

The initial and paramount step in the Quality Function Deployment (QFD) process is the identification of customer needs (Tjiptono & Diana, 1995). These needs are systematically addressed and prioritized in the planning cycle. Tjiptono (2011) posits that quality, as an attribute, permeates all dimensions of a product offering, ultimately yielding benefits for consumers. The determination of a product's quality is contingent upon the various dimensions of its quality attributes.

Importance level of customer's need and satisfaction

The significance of product quality for each consumer's needs is reflected at the customer level. Customer satisfaction hinges on the evaluation of the extent to which existing goods fulfill their requirements (Ridwanda, 2020). A sample of 100 respondents participated in the study, providing data through a consumer questionnaire. The survey, employing a Likert scale ranging from 1 to 4, involved assessing consumer expectations and their perceptions of product satisfaction. A score of 4 on this scale indicates a high level of significance or satisfaction, while a score of 1 represents the lowest level, signifying insignificance or dissatisfaction. The data obtained from the questionnaire were utilized to complete the House of Quality (HoQ) planning matrix.

Creating a House of Quality (HOQ) Planning Matrix

The House of Quality (HoQ) illustrates the voice of the customer, representing customer needs and wants (Voice of Customer) in the left matrix. Simultaneously, the top matrix displays the development and response of the technical team in addressing these needs and wants. The reference matrix comprises multiple sections or submatrices that collaboratively convey interrelated information. Figure 2 visually outlines the connections between these matrices.

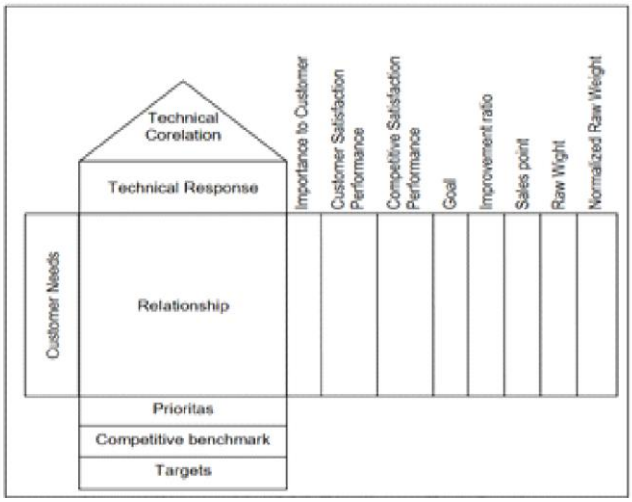

Figure 2. Relationship Between Matrices in HoQ (Source: Cohen, 1995)

Overall, the QFD method has four stages, where each stage produces a matrix (Cohen, 1995). The four stages are product planning, design planning, process planning, and production planning. However, this research was carried out until the first stage, namely the product planning stage so the stages in this study were based on the steps required in making the HoQ matrix.

RESULTS AND DISCUSSION

Identification of Customer's Needs

The aim of quality identification is to ascertain the necessary quality attributes essential for formulating the questionnaire. This phase involved conducting interviews with 25 customers who regularly purchase organic vegetables to discern their expectations regarding the quality of the produced organic vegetables. The identification of customer needs revealed eight dimensions of product quality specific to organic vegetables, as detailed in Table 1.

Table 1. Identification of quality attributes of organic vegetables

Dimensions		Quality Attributes	Indicator
Performance	Intrinsic Quality	The freshness of vegetables	The physical appearance of organic vegetables is fresh and good when they are marketed to consumers
		Vegetable cleanliness	The appearance of vegetables is clean from dirt, pests, and grass
		Uniformity of vegetable size	The appearance of vegetables has a uniform size
		The color of the leaves	Appearance bright leaf color or fresh green
		Perfect condition and shape	Good appearance of vegetables without defects and damage such as holes, torn, spots
Features	Extrinsic Quality	Food safety	Labeled organic logo display according to product characteristics
		The product packaging contains SNI Organic Standards (6729-2016)	Information listed on the packaging
Reliability	Extrinsic Quality	Include a registration number stating that the product has been certified organic by an organic Certification Agency	Information listed on the packaging
Conformance	Extrinsic Quality	Willing to pay more expensive following the quality provided	Prices match the quality of vegetables
Durability	Intrinsic Quality	It does not quickly wither	It does not quickly wither, turn yellow and rot when marketed to consumers
Serviceability	Extrinsic Quality	Available and easy to get	The availability of many organic vegetables and easy to find in the market
		Available service channels (via calls and social media)	Listed order number, criticism and suggestions
Aesthetics	Extrinsic	Attractive packaging design	Neat product packaging

Dimensions		Quality Attributes	Indicator
	Quality	Safe and environmentally friendly packaging	Product packaging materials are guaranteed safe
Perceived quality	Extrinsic Quality	Own a brand	The packaging contains the product name or trademark
		Product price	The affordability of organic products

Source: Processed data (2022)

Table 1 underscores the pivotal role of performance as a crucial component within the spectrum of quality attributes associated with organic vegetable commodities. Consumers, when making vegetable purchases, predominantly prioritize the freshness of vegetables, as it serves as an indirect indicator of nutritional content. The freshness of vegetables correlates with a shorter post-harvest age and less maturity, leading to minimal nutrient loss attributed to physical damage and prolonged storage. These findings align with the conclusions drawn by Rahayuningsih and Anas (2021), emphasizing consumers' willingness to pay premium prices for superior quality and benefits associated with organic vegetables. Additionally, Astuti et al. (2019) revealed that buyers of organic vegetables in Surakarta's supermarkets emphasize the importance of aspects such as quality, freshness, cleanliness, durability, and price. Septiadi and Mundiyah's (2020) research affirms the significant role of high-quality vegetables as an internal element in organic vegetable farming. Santoso (2012) identifies appearance quality, taste quality, nutritional quality, texture, and product safety as the five primary components constituting the quality of horticultural products, including vegetables.

Importance level of customer's need and satisfaction

Determining the importance to customers and evaluating customer satisfaction performance involves multiplying the number of respondents indicating a specific level of importance by the corresponding performance score, then dividing this product by the total number of respondents who received the questionnaire. Table 2 presents the calculated values of customer interests and customer satisfaction performance, highlighting attributes starting from those with the highest values.

Table 2. Importance level of customer's need and satisfaction

Attributes	Quality attributes	Importance to customer	Customer satisfaction performance
1	Vegetable cleanliness	3.93	3.30
2	The freshness of vegetables	3.91	3.66
3	Product price	3.88	3.37
4	Available and easy to get	3.79	3.25
5	It does not quickly wither	3.77	3.52
6	Safe and environmentally friendly packaging	3.77	3.23
7	Perfect condition and shape	3.69	3.32
8	The color of the leaves	3.66	3.54
9	Available service channels (via calls and social media)	3.66	3.34
10	Include a registration number stating that the product has been certified organic by an Organic Certification agency	3.63	3.26
11	Food safety	3.59	3.37
12	The product packaging contains SNI Organic Standards (6729-2016)	3.57	3.27
13	Attractive packaging design	3.42	3.18
14	Willing to pay more per the quality provided	3.42	3.29
15	Uniform size of vegetables	3.37	3.07
16	Own a brand	3.18	3.00

Source: Processed data (2022)

Table 2 illustrates the correlation between the importance value of quality attributes and consumers' choices of organic vegetables for consumption. The calculation outcomes reveal that pivotal quality attributes for consumers include the cleanliness of vegetables, freshness at the point of sale, vegetable pricing, and the availability and ease of access. Higher values of these attributes correspond to greater consumer satisfaction

with the quality of the organic vegetables. Notably, the most satisfactory performance among organic vegetables from Batu farmers is observed in the cleanliness attribute. This aligns with previous research emphasizing consumer interest in the physical appearance of organic vegetables, as demonstrated by the hygiene variable earning the highest value (0.799) in the decision-making process (Rahayuningsih and Anas, 2021).

Consistent with studies by Anggiasari et al. (2016), which highlight the significant role of cleanliness and freshness in influencing consumer decisions to purchase organic vegetables, our study finds that consumers in Batu prioritize vegetable hygiene (score 3.93), vegetable freshness (score 3.91), and product price (score 3.88). These factors collectively influence their purchasing decisions. Additionally, the research by Aufanada et al. (2017) concurs, revealing that the price of organic vegetables impacts customer behavior, influencing purchasing decisions and their willingness to pay higher prices. The strong influence of quality characteristics on consumer willingness to pay for organic vegetable products is consistent with Rodriguez et al.'s (2007) findings, indicating that customers are willing to pay higher prices for organic food products due to their superior quality and inherent superiority.

In line with Saidi et al.'s (2021) assertion regarding prioritized quality attributes, this study affirms that the cleanliness, freshness, and leaf color brightness of leaf vegetables collectively define their overall quality.

Creating House of Quality (HoQ) Planning Matrix

The planning matrix encompasses objectives, improvement ratios, sales points, raw weights, and normalized raw weights for 16 attributes based on the determination of customer needs. The target value for all attributes is set at 4, indicating a satisfactory level of consumer satisfaction with the produced organic vegetables. This perfection in consumer satisfaction serves as the goal value for each attribute. The Improvement Ratio is employed to prioritize consumer needs, offering insight to farmers on the immediate focus areas for meeting customer requirements. A higher Improvement Ratio signifies an elevated level of improvement in addressing customer satisfaction. Notably, the 15th attribute, the presence of a brand, exhibits the highest improvement ratio at 1.33. The absence of a brand in most organic farmer products, primarily sold through intermediaries, underscores an underutilization of resources in establishing a distinctive brand image. Creating a recognizable brand image is essential for facilitating consumer recognition and recall, aligning with the efforts of organic producers to enhance marketability, as emphasized by Hasan et al. (2019).

Attributes such as price, physical perfection, vegetable freshness, and vegetable color are also significant considerations for consumers when purchasing organic vegetables. Tjiptono (2011) supports the notion that brands serve as promotional tools, enhancing product attractiveness, distinguishing identity from competitors, and building an image by assuring quality to consumers. Conversely, the lowest value, pertaining to vegetable freshness as the first attribute, is 1.09. Customer evaluations in Batu reveal satisfactory findings regarding the freshness of organic vegetables, indicating that this attribute does not necessitate immediate attention. Quality improvement in vegetable freshness correlates with the application of Good Handling Practices throughout the stages of harvesting, collection, transportation, packaging, storage, and delivery. As asserted by Saidi et al. (2021), maintaining vegetable freshness involves morning harvesting to avoid sun exposure, shaded collection and transportation, and immediate transport to the production site. Subsequently, packaging serves the dual purpose of shielding organic vegetables from physical and mechanical damage while facilitating the distribution process.

The development of the House of Quality (HoQ) matrix involves the creation of a planning matrix table, as illustrated in Table 3.

Table 3. Planning matrix values

Attributes	Customer needs	Goal	Improvement ratio	Sales point score	Raw weight	Normalized raw weight
1	Vegetable cleanliness	4	1.21	1.5	7.15	0.07
2	The freshness of vegetables	4	1.09	1.5	6.41	0.06
3	Product price	4	1.19	1.5	6.91	0.07
4	Available and easy to get	4	1.23	1.5	7.00	0.07
5	It does not quickly withe	4	1.14	1.5	6.43	0.06
6	Safe and environmentally friendly packaging	4	1.24	1.2	5.60	0.06
7	Perfect condition and shape	4	1.20	1.5	6.67	0.07
8	The color of the leaves	4	1.13	1.5	6.20	0.06
9	Available service channels (via calls and social media)	4	1.20	1.5	6.57	0.07
10	Include a registration number stating that the product has been certified organic by an Organic Certification agency	4	1.23	1.2	5.34	0.05
11	Food safety	4	1.19	1.5	6.39	0.06
12	The product packaging contains SNI Organic Standards (6729-2016)	4	1.22	1.2	5.24	0.05
13	Attractive packaging design	4	1.26	1.5	6.49	0.07
14	Willing to pay more per the quality provided	4	1.22	1.2	4.99	0.05
15	Uniform size of vegetables	4	1.30	1.5	6.59	0.07
16	Own a brand	4	1.33	1.2	5.09	0.05

Source: Processed data (2022)

Table 3 reveals sales point values ranging from 1.2 to 1.5, indicating that the product holds a medium to strong selling position for each attribute of consumer interest. Discussions with farmers underscore those attributes such as fresh vegetables, cleanliness, uniform size, leaf color, perfect condition, food safety, longevity, availability, service channels (telephone and social media), packaging design, and pricing exhibit the highest selling point values at 1.5. Fulfilling these quality attributes with high values is crucial for achieving consumer satisfaction, subsequently elevating the selling value of organic vegetables. Anggiasari et al. (2016) support this notion, identifying characteristics like freshness, cleanliness, durability, vegetable type, color, leaf quality, packaging, and price as influencing consumer satisfaction and intent to purchase organic vegetables.

The raw weight value represents the level of consumer satisfaction fulfillment, and its order aligns with the normalized raw weight value. The higher the raw weight value for an attribute, the greater the priority for farmers to enhance and develop these attributes in meeting customer satisfaction. Notably, Table 3 highlights the largest raw weight value for the attribute of vegetable hygiene, reaching 7.15. This emphasizes the imperative for farmers to diligently enhance the quality attributes of vegetable cleanliness, a critical physical characteristic in preserving the overall quality of organic vegetables. The emphasis on vegetable cleanliness reflects buyers' prioritization of this aspect in their organic vegetable purchases. Astuti et al. (2019) note that visually appealing organic vegetables have the potential to foster consumer loyalty, as consumers prioritize quality and benefits over price. Hygiene variables, as found by Yuarini et al. (2015), play a crucial role in influencing customer purchasing decisions for organic vegetables. Rahayuningsih and Anas (2021) highlight the significant impact of quality aspects such as vegetable cleanliness, freshness, packaging, and color on consumer decisions to purchase organic vegetables. Furthermore, Hasan et al. (2019) affirm that customers express a preference for aesthetically pleasing organic vegetables. These findings echo consistent trends in organic vegetable consumption across diverse regions, providing a reliable reference for producers to assess and maintain the quality of organic vegetables, ensuring consumers can make informed and consistent decisions when purchasing organic products.

The technical response is a strategic approach employed by organic vegetable producers to align their products with consumer preferences, utilizing available farmer resources. Through an identification process, 13 distinct technical responses were identified, aiming to meet the quality attributes aligned with consumer needs. These responses include adherence to organic agriculture standards (SOP/SNI 01-6729-2016),

implementation of the Internal Control System (ICS), compliance with SNI ISO 9001:2015, development and adherence to planting and harvest schedules for each commodity, enhancement of care quality, provision of special prices based on quality and produced commodities, construction of bulkhead houses, utilization of environmentally friendly plastic packaging, incorporation of organic logos, labels/brands reflecting product excellence on packaging, disciplined execution of control schedules, maintenance of price stability, and ensuring product availability to meet consumer demand. Additionally, the implementation of Good Handling Practices and the provision of contact information for consumer feedback are crucial aspects, as depicted in Figure 3.

Consumer emphasis on the cleanliness of purchased organic vegetables is evident, aligning with the findings of Astuti et al. (2019), emphasizing the visual appeal's role in fostering consumer loyalty. Consumers prioritize the quality and benefits derived from organic vegetables over price considerations. Hygiene variables, as highlighted by Yuarini et al. (2015), play a pivotal role in shaping customer purchasing decisions for organic vegetables. Rahayuningsih and Anas (2021) underscore the significant influence of quality attributes such as vegetable cleanliness, freshness, packaging, and color on consumer decisions when buying organic vegetables. Hasan et al. (2019) further support this, indicating that customers exhibit a preference for aesthetically pleasing organic vegetables. Consistent patterns in organic vegetable consumption decisions among respondents across various regions suggest a uniform decision-making process in opting for organic products. This consistency provides producers with a reliable reference point for evaluating the quality of organic vegetables, enabling consumers to make informed and consistent decisions when purchasing organic products.

The House of Quality (HoQ) serves as the foundational framework for enhancing the quality of organic vegetable products, aligning with consumer preferences in the selection of organic vegetables. Consumer-driven improvements are directly derived from the preferences of individuals who consume organic vegetables sourced from farmers in Batu. Subsequently, Batu farmers employ technical responses to enhance attribute satisfaction, thereby ensuring the production of high-quality organic vegetable products. The formulation of technical responses is guided by the specific needs articulated by consumers for the organic vegetables they consume.

To establish a coherent connection between consumer needs and technical responses, a comprehensive analysis is conducted to determine the relationships between each consumer need and the corresponding technical response. These relationships are portrayed on a scale, with weak connections denoted by (1), moderate connections by (3), and strong connections by (9). The strength of these relationships directly influences the effectiveness of technical responses in fulfilling consumer desires (Abuzid, 2017). The matrix depicting these relationships is an integral component of the House of Quality framework, exemplified in Figure 3.

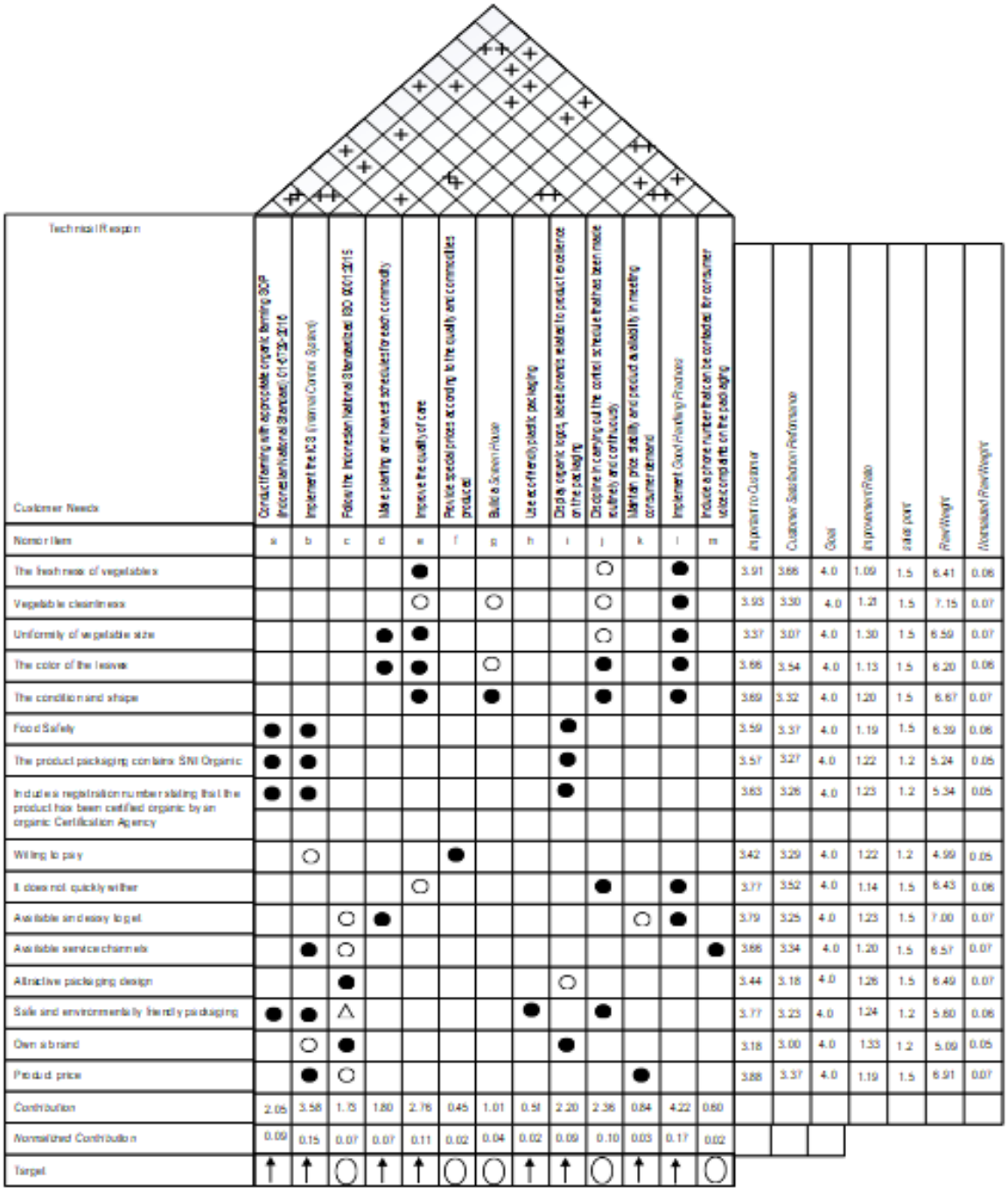

Figure 3. HoQ of Organic Vegetable Products Produced by Farmers in Batu

Information:

: Strong Relationship (9)
: Moderate Relationship (3)
: Weak Relationship (1)
++: Positive Strong Relationship
\+ : Positive Moderate Relationship
-- : Negative Strong Relationship
\- : Negative Moderate Relationship

The relationship matrix, situated within the framework of the House of Quality, delineates the intricate connections between consumer-centric attributes and the strategic technical responses executed by farmers in Batu. This analytical depiction elucidates the strengths and weaknesses inherent in the relationship matrix, derived from comprehensive discussions and brainstorming sessions with local farmers. The findings of this analysis underscore that attributes such as cleanliness, freshness, size uniformity, leaf color, adherence to standardized shapes, and durability significantly benefit from the implementation of Good Handling Practices, enhanced quality care, and disciplined adherence to regular and continuous control schedules. Conversely, attributes related to food safety, packaging compliance with Organic SNI Standards (6729-2016), inclusion of a certified organic registration number, attractive packaging design, and appropriate branding are strongly influenced by the adoption of organic farming SOPs in accordance with (SNI) 01-6729-2016, the implementation of Internal Control Systems (ICS), and the prominent display of organic logos and labels/brands in the product packaging section.

This strategic approach aligns with the post-harvest handling practices observed by CV Kurnia Kitri Ayu Farm, as highlighted in the research conducted by Rahayuningsih and Anas (2021). The farm's hygiene measures encompass washing vegetables post-harvest, followed by meticulous sorting and packaging, thereby preserving the quality of the vegetables. Timely harvesting further ensures the maintenance of organic vegetable quality, instilling consumer confidence in the products offered. The influence of harvesting, cleaning, packaging, and storage on the color of vegetables is corroborated by Saidi et al. (2021), emphasizing that the adherence to proper procedures throughout these stages is pivotal in achieving the standard color expected for vegetables.

Moreover, the correlation matrix facilitates a comprehensive correlation analysis among technical responses situated atop the quality house. This matrix serves to unveil potential conflicts, enabling farmers to ascertain the optimal conditions for producing products with desired characteristics. The understanding and implementation of quality policies by all organic farmers are imperative, ensuring the sustainability of organic products through rigorous production quality control and adherence to comprehensive standards for maintaining the quality of organic vegetable products. The application of the Internal Control System (ICS) exhibits a close relationship with various other technical responses, such as adhering to organic farming SOPs (SNI) 01-6729-2016, complying with SNI ISO 9001:2015 standards, establishing planting and harvest schedules for each commodity, enhancing the quality of care, maintaining discipline in regularly and continuously executing control schedules, and adopting Good Handling Practices.

According to Wibowo and Husnain (2018), organic certification serves as a mechanism to ensure that the produced items align with stipulated regulations. Certification procedures encompass inspection stages, including food control activities for raw materials, processing, distribution, and product testing throughout the production process. In the realm of organic labeling, products endorsed with an organic certificate must feature the Indonesian organic logo. Practical application involves laboratory testing to determine the organic nature of products, serving as the basis for granting organic certificates. This includes investigations into alleged practices violating organic agriculture principles during the cultivation process, encompassing post-harvest procedures. Laboratory tests cover various elements, including water, soil utilized in cultivation, and materials involved in both cultivation and post-harvest processes. These tests occur at different stages and undergo annual reviews to ensure compliance with established standards.

The House of Quality matrix represents a synthesis of various matrices elucidating the intricate relationship between consumer preferences and the technical responses of farmers in fulfilling consumer satisfaction, as illustrated in Figure 3. The analysis reveals that the technical response with the highest contribution value, and thus requiring prioritization in the enhancement of organic products to augment consumer satisfaction, is the implementation of good handling methods. This is imperative because organic vegetables undergo rapid changes in physical quality, including wilting, yellowing, and leaf rot, without proper post-harvest handling.

The second pivotal technical response is the application of the Internal Control System (ICS). The ICS, besides serving as a liaison between farmer groups and certification bodies, assumes a vital role in overseeing the internal control system of the group. In comparison to prior research by Yuarini et al. (2015), the strategies employed for enhancing the quality of organic vegetables in this study place a greater emphasis on production processes such as harvesting, cleaning, sorting, packaging, and storage. This aligns with the perspective of Marimin and Muspitawati (2002), emphasizing the critical significance of raw material handling, storage, and packaging in achieving the quality of fresh vegetables in accordance with consumer expectations.

Saidi et al. (2021) underscore the association between the implementation of good handling practices and the quality and technical factors entailed at various stages of the process, encompassing harvesting, collection, transportation, cleaning, sorting, packaging, storage, and delivery. Furthermore, in line with the assertions of Wibowo and Husnain (2018), the cultivation, processing, storage, handling, and transportation of organic products must adhere to established organic product engineering standards and regulations. These regulations encompass specific technical requirements such as seed quality, pest control methods, plant nutrient management, input materials, product composition, product protection, pest control measures, packaging materials, and storage conditions.

CONCLUSION

Consumers prioritize certain quality attributes of organic vegetables, namely vegetable cleanliness, product price, and availability and ease of access. In enhancing the quality of organic vegetables to align with consumer expectations, the focal technical priorities for improvement encompass the implementation of Good Handling Practices, spanning activities such as cleaning, washing, sorting, grading, packaging, storage, and distribution to end-users. Additionally, technical enhancements should involve the application of the Internal Control System (ICS) and the refinement of care quality throughout the cultivation of organic vegetables, encompassing activities like weeding, grazing, fertilizing, and integrated pest or disease control.

REFERENCES

Abuzid, H.F.T. (2017). Applying QFD tools for quality improvements in curriculum design and teaching strategies to meet with the customer (learner) needs. *Journal of Engineering and Applied Sciences*, Vol 12 No. 3, pp 684–690. https://doi.org/10.36478/jeasci.2017.684.690

Acebron, L.B., & Dopico, D.C. (2000). *The Importance of Intrinsic and Extrinsic Cues to Expected and Experienced Quality: An Emperical Application for Beef.* Food Quality and Preference 11. 229-238

Anggiasari, N., Indriani, Y., & Endaryanto, T. (2016). Sikap Dan Pengambilan Keputusanpembelian Sayuran Organik Oleh Konsumen Di Kota Bandar Lampung. *Jurnal Ilmu-Ilmu Agribisnis*, 4(4), 98894.

Astuti, E. P., Masyhuri, M., & Mulyo, J. H. (2019). Analisis Sikap Konsumen Pasar Swalayan Terhadap Sayuran Organik. *Jurnal Ekonomi Pertanian Dan Agribisnis*, 3(1), 183–194.Https://Doi.Org/10.21776/Ub.Jepa.2019.003.01.18

Aufanada, V., Ekowati, T., & Prastiwi, W. D. (2017). Kesediaan Membayar (Willingness To Pay) Konsumen Terhadap Produk Sayur Organik Di Pasar Modern Jakarta Selatan. *Agraris: Journal Of Agribusiness And Rural Development Research*, 3(2). Https://Doi.Org/10.18196/Agr.3246

Cohen L.(1995). *Quality Function Deployment, How to Make QFD Work for You*. Addition Wesley Publishing Company.

Chrysanthini, B., Sumarwan, U., & Rifin, A. (2018). Preferensi Konsumen Terhadap Produk Sayuran Organik (Studi Kasus Konsumen Ud Fabela-Myfarm) Di Bogor Jawa Barat. Manajemen Ikm: *Jurnal Manajemen Pengembangan Industri Kecil Menengah*, 12(2), 151. Https://Doi.Org/10.29244/Mikm.12.2.151-160

Dewi, S. K., Putri A.R.C., dan Rahmawatie, L. (2020). The implementation of quality function deployment (QFD) method to improve pasteurized milk product quality. *Industria: Jurnal Teknologi dan Manajemen Agroindustri*, vol. 9, no. 1, 2020, pp. 64–72. DOI: 10.21776/ub.industria.2020.009.01.8.

Engel, J. F., Blackwell, R. D., and Miniard, P.W. (1993). *Perilaku Konsumen*. Jilid I. Alih Bahasa: FX Budyanto.

Firman, A.R., dan David W. (2019). *Statistik Pertanian Organik Indonesia 2019*. Aliansi Organis Indonesia (AOI), vol. 10, no. Organic Institute, Yayasan Alifa dan Kombas.id ISBN: 978-602-72067-2-4, Aliansi Organis Indonesia (AOI), 2019, https://aoi.ngo/spoi-2019/.

Gaspersz, V. (2003). *Total Quality Management.* Jakarta: PT. Gramedia Pustaka Utama

Ghozali, Imam. (2009). *Aplikasi Analisis Multivariate dengan Program SPSS*. Semarang : UNDIP

Hasan, H., Muis, A., & Christoporus. (2019). Preferensi Konsumen Terhadap Pembelian Sayuran Organik Di Kota Palu. J. Agroland vol. 26, no. 1, 2019, pp. 39–48.

Kotler, Philip. (2005). *Manajemen Pemasaran*. Edisi Kesebelas. Jakarta. Index.

Larasati, A. I. D., Anoraga, S.B, Falah, M.AF., Laksono, A.H., Padantya, L.A., Windiputri, L.A., dan Sabariman, I. (2021). Packaging Development for Fresh Avocado (Persea Americana) Using Quality

Function Deployment Method. *IOP Conference Series: Earth and Environmental Science*, vol. 733, no. 1, 2021, doi:10.1088/1755-1315/733 /1/012065.

Lemeshow, S., dan Levy, P.S. 1997. *Sampling of Populations Methods and Application*.New York: Wiley Publisher

Maligan, J. M., Dwisaputra, M.A, dan Mustaniroh, S.A. (2020). Pengembangan Produk Kopi Premium Dengan Metode Qfd Sebagai Produk Unggulan Kelompok Tani Kopi Makmur Abadi.*Jurnal Pangan Dan Agroindustri*, vol. 8, no. 4, 2020, pp. 185–96, doi:10.21776/ub.jpa.2020.008.04.2.

Rahayuningsih, Sholvia Dwi, and Anas Tain. (2021). Consumers Willingness to Pay and Factors Affecting Organic Vegetable Purchasing Decisions. *Agriecobis : Journal of Agricultural Socioeconomics and Business*, vol. 4, no. 1, 2021, pp. 01–12, doi:10.22219/agriecobis.v4i1.15506.

Ridwanda, AD.(2020). "*Aplikasi Metode Quality Function Deployment (QFD) Dalam Upaya Meningkatkan Kualitas produk Kaos Oblong (Studi Kasus CV. Zero Heroes Malang)*". eprints.umm. ac.id,2020,https://eprints.umm.ac.id /62210/.

Rucitra, A., L. (2020).The Implementation of Integrated Quality Function Deployment (QFD) and SWOT Analysis in the Quality Improvement Strategy of Jackfruit Chips. *Industria: Jurnal Teknologi Dan Manajemen Agroindustri*, vol. 9, no. 1, Apr. 2020, pp. 35–42, doi:10.21776/ub.industria.2020. 009.01.5.

Rodriguez, E., Lacaze, V., & Lupin, B. (2007). Willingness to Pay for Organic Food in Argentina: Evidence from a Consumer Survey. 105th EAAE *Seminar 'International Marketing and International Trade of Quality Food Products*'. Italy: Bologna.

Saidi, I. A., Azara, R., dan Yanti, E. (2021). *Buku Ajar Pasca Panen Dan Pengolahan Sayuran Daun*. Diterbitkan Oleh Jl . Mojopahit 666 B Sidoarjo ISBN : 978-623-6292-21-1 Copyright © 2021 . Authors All Rights Reserved. 2021.

Santoso, B.,B. (2012). *Standarisasi Mutu Produk Pasca Panen*. https://www.academia.edu/11246846/Standarisasi_Mutu_Produk_Pasca_Panen

Septiadi, Dudi, and Andi Iva Mundiyah. (2020). Strategi Pengembangan Usaha Tani Sayuran Berbasis Pertanian Organik. *Agrifo: Jurnal Agribisnis Universitas Malikussaleh*, vol. 5, no. 1, 2020, p. 35, doi:10.29103/ag.v5i1.2743.

Singh, A., and Verma, P. (2017). Factors influencing Indian consumers' actual buying behaviour towards organic food products. *Journal of Cleaner Production*, 167, 473–483. https://doi.org/10.1016/j.jclepro.2017. 08.106

Sriwaranun, Y., Gan, C., Minsoo, L., & Cohen, D. A. (2015). Consumers' Willingness to Pay for Organic Products in Thailand. *International Journal of Social Economics*, 42(5), 480–510.

Suryaningrat, Ida Bagus, Amalia W, Mayasari FR, dan Rusdianto, AS. 2020. Product Quality Analysis of Pia Edamame Using Quality Function Deployment Method. *Industria: Jurnal Teknologi Dan Manajemen Agroindustri* 2020, pp. 109–18, doi:10.21776/ub.industria.2020.009. 02.4.

Tangkulung, C.M., Pangemanan, L.R.J., dan Ngangi, C.R. (2015). Analisis Kepuasan Konsumen Terhadap Atribut Sayuran Organik Di Hypermart Manado. Cocos *Jurnal Ilmiah Fakultas Pertanian UNSRAT*, vol. 6, no. 14, 2015, pp. 73–78,doi:https://doi.org/10.35791/cocos. v6i14.8787.

Teng, Chih Ching and Yu Mei Wang. (2015). Decisional Factors Driving Organic Food Consumption: Generation of Consumer Purchase Intentions. *British Food Journal* 117(3):1066–81

Tjiptono, F. (2011). *Strategi Bisnis Pemasaran*. Yogyakarta : Andi.

Tjiptono, F., dan Diana, A. (1995). *Total Quality Management*. Yogyakarta : Andi Offset

Wibowo Heri dan Husnain (2018). *Sertifikasi dan Pasar Pertanian Organik*. Peneliti Balitbangtan. esearchgate.net/profile/Husnain-Husnain/publication/303119686_Sertifikasi_dan_Pasar_Pertanian_ Organik / links/5737b07908ae298602e1a821/Sertifikasi-dan-Pasar-Pertanian-Organik.pdf

Yuarini, Dewa Ayu AnomSatriawan, I. Ketut, and I. Dewa Putu Oka Suardi. (2015). Strategi Peningkatan Kualitas Produk Sayuran Segar Organik Pada CV. Golden Leaf Farm Bali. *JURNAL MANAJEMEN AGRIBISNIS (Journal Of Agribusiness Management*), vol. 3, no. 2, 2015, pp. 93–109, https://ojs.unud.ac.id/index.php /agribisnis/article/view/17097.

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