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Is Chayote Farming Profitable? A Financial Performance Analysis in Fakfak Regency

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ABSTRACT

Chayote is one of the main sources of income for the majority of households in Kampung Mananmur, Kayauni District, Fakfak Regency. The village's location, approximately one hour from the center of Fakfak City, poses a challenge for farmers, particularly those lacking personal transportation, in marketing their harvests. This study aims to analyze the production costs, revenue, and the economic feasibility of chayote farming using the Revenue–Cost (R/C) Ratio in Kayauni District, Fakfak Regency. The research employed a quantitative descriptive approach with a census (saturated sampling) technique, where all farmers in the population were included as respondents. A total of 33 farmers residing in Kampung Mananmur participated. Data were collected through structured questionnaires distributed uniformly to all respondents. The results indicate that the average annual revenue of chayote farming is IDR 22,267,002, while the average annual production cost is IDR 8,277,998. The economic feasibility analysis shows an R/C Ratio of 3.68, suggesting that chayote farming in Kayauni District is profitable and feasible for further development, as the ratio exceeds one.

Keywords: *Chayote, Revenue, Production Cost, Farming, R/C Ratio*

INTRODUCTION

Indonesia is an agrarian country with substantial potential in the agricultural sector. This potential is distributed across nearly all regions, including Eastern Indonesia, which is well known for its abundant natural resources, particularly in West Papua Province, Fakfak Regency. One of the main drivers of national economic development is the optimization of resources available in rural areas, in line with the principles of a people-centered economy adopted by Indonesia. This system is expected to support economic stability, even in times of crisis.

One effort to utilize rural potential in the agricultural sector is through the cultivation of chayote (Sechium edule). Although this plant is generally still considered a backyard vegetable, its commercial potential is significant. According to Daryono (2012), the commercial utilization of chayote remains limited, despite its promising economic value. In Fakfak Regency, particularly in Mananmur Village, Kayauni District, the community has developed chayote as a leading commodity and has become a major producer in the area. The Head of the Department of Industry and Trade of Fakfak Regency, Mohjak Rengen, S.Sos., M.Sda, through the Head of the Trade Division, stated that the average production of chayote in the area reaches 20 tons per month. Mananmur Village covers an area of approximately 22 km² and is located about 22 km from the center of Fakfak City. The hilly topography does not hinder the community from developing the agricultural sector. Most farmers utilize their home gardens and farmland to cultivate chayote, which produces not only fruit but also young leaves and shoots that have market value. Thus, chayote has become one of the main sources of income for the community, in addition to rice (Warawarin et al., 2024).

The increase in chayote production has the potential to significantly contribute to farmers' income. This is due to the continuously growing market demand, especially from outside the region, such as Timika and Sorong. Economically, the demand function is derived from consumer behavior aimed at maximizing satisfaction through the consumption of goods and services within their income constraints. Chayote serves as one of the primary sources of income for the community in Mananmur Village, Kayauni District, Fakfak Regency. However, the location of the area, which is approximately one hour from the center of Fakfak City, presents challenges for farmers in marketing their harvest. The lack of private transportation forces farmers to consider round-trip transportation costs when using public transport. This condition directly affects distribution efficiency and the net income received. Some distributors are willing to purchase harvests directly from farms or farmers' residences, thereby reducing distribution burdens; however, this facility is not evenly accessible to all chayote farmers in Mananmur Village.

This inequality in market access affects overall farm income. Although the demand for chayote continues to increase, limitations in distribution and operational costs mean that the income potential of farmers has not been fully realized. Based on these conditions, this study aims to analyze the income and production costs of chayote farming in Mananmur Village, Kayauni District, Fakfak Regency. It is expected that this research will provide an overview of the economic conditions of chayote farmers and serve as a basis for formulating agricultural policies based on local potential.

This study specifically aims to analyze production costs, income, and the feasibility level of chayote (Sechium edule) farming in Kayauni District, Fakfak Regency. In particular, this research is expected to: (1) identify the production costs incurred in chayote farming, (2) determine the income generated from such farming activities, and (3) calculate the Revenue–Cost (R/C) Ratio to assess the economic feasibility of chayote farming in the region.

RESEARCH METHODS

Research Time and Location

T This study was conducted from January to February 2025 and took place in Mananmur Village, located along the Fakfak–Bomberay Road, Kayauni District, Fakfak Regency, West Papua Province. The selection of Mananmur Village as the research site was based on several considerations. First, the village is one of the largest centers of chayote production in Fakfak Regency, with a relatively high level of cultivation intensity compared to surrounding areas. Second, the local community actively cultivates chayote as a primary agricultural commodity, which plays a significant role in supporting household income, both at subsistence and commercial levels.

Sampling Method

This study employed a quantitative descriptive approach to provide a systematic overview of the income of chayote farming in Mananmur Village, Kayauni District, Fakfak Regency. A saturated sampling (census) technique was applied, in which the entire population was included as respondents, due to the relatively small population size of 33 farmers. Data were collected using structured questionnaires designed to obtain information on income, production costs, and the constraints faced by farmers. This sample size meets the minimum standard for descriptive research as suggested by Sugiyono (2017), which requires at least 30 respondents, thereby ensuring that the results are representative and suitable for statistical analysis.

Types and Sources of Data

This study employed a quantitative descriptive approach, as the data obtained were in numerical form and analyzed statistically. The data sources consisted of both primary and secondary data. Primary data were collected directly from the research site through observation and interviews with respondents, while secondary data were obtained from various sources, including relevant institutions that provide supporting information for the study.

Data Collection Techniques

Data collection in this study on income analysis and production costs (R/C Ratio) of chayote farming in Kayauni District, Fakfak Regency was conducted through observation, documentation, questionnaires, and literature review. Observation was used to directly examine chayote farming practices, while documentation involved recording and photographing activities during the research process. Open-ended questionnaires were administered to respondents to obtain information based on their experiences and personal perspectives, using instruments adapted from Siasaun (2023). The farmers' income and expenditure data analyzed in this study were collected during the period from January to December 2024. In addition, a literature review was conducted by

examining and citing data from various secondary sources, including journals, undergraduate theses, and related online literature, to support the research analysis.

Data Analysis Technique

The data obtained in this study were processed using a quantitative descriptive method, with a focus on analyzing income, production costs, and the feasibility of chayote farming using the Revenue–Cost (R/C) Ratio approach. Total production cost was calculated as the sum of fixed costs (FC) and variable costs (VC) in accordance with Suradinata (2017), while total revenue (TR) was obtained by multiplying the selling price (P) by the quantity of production (Q) (Pribadi et al., 2017). Farm income was calculated as the difference between total revenue and total production cost (Suratiyah, 2009), whereas business feasibility was analyzed using the R/C Ratio, defined as the ratio of total revenue to total production cost (Suradinata, 2017; Nainggolan, 2021).

RESULTS AND DISCUSSION

Characteristics of Chayote Farmers in Kayauni District, Fakfak Regency

Respondent characteristics provide a general overview of the overall condition of the respondents, including age and primary occupation. The respondents in this study were chayote farmers located in Kayauni District, Fakfak Regency. The identities of the respondents are presented as follows:

a. Age of Respondents

Productive age is one of the key factors contributing to the success of farming activities. Farmers within the productive age range tend to work more effectively and optimally compared to those in the non-productive age group. Therefore, age differences can serve as an indicator in assessing work capacity. Older farmers may have relatively lower adaptability, but they often possess advantages in understanding and recognizing the conditions of their farmland (Novia, 2011).

Table 1. Average Age Distribution of Chayote Farmers in Kayauni District, Fakfak Regency

No	Age (Years)	Number of Respondents (Persons)	Percentage (%)
1	22 - 29	10	30
2	30 - 40	14	42
3	42 - 70	9	28
Total		**33**	**100**

Source: Processed Primary Data, 2025

Based on Table 1, the total number of respondents, consisting of 33 chayote farmers, indicates that the most dominant age group in farming activities is the 32–40 years category, with 14 respondents (42%). This figure suggests that the majority of farmers fall within the productive age group of 32–40 years. Based on interviews conducted with all 33 respondents, it was found that chayote farmers in Kayauni District primarily engage in farming as their main occupation.

b. Land Size

The results of interviews with 33 respondents involved in chayote farming indicate that all respondents (33 individuals or 100%) own their land. This land ownership is generally inherited, meaning that the land is passed down through family generations. The land area owned by each respondent for chayote cultivation is approximately 1 hectare.

Table 2. Average Land Size of Chayote Farming in Kayauni District, Fakfak Regency

No	Land Size (Ha)	Number of Respondents (Persons)	Percentage (%)
1	1.0	7	22
2	1.5	26	78
Total		**33**	**100**

Source: Processed Primary Data, 2025

Based on Table 2, the distribution of land size among the 33 respondents indicates that the majority of chayote farmers operate on relatively larger plots, with 26 farmers (78%) cultivating 1.5 hectares, while only 7 farmers (22%) manage 1 hectare of land. This finding suggests that most farmers in Kayauni District have access to moderately extensive agricultural land, which may support higher production capacity and economies of scale in farming activities. The dominance of larger land ownership also reflects the potential for increased

productivity and income, as broader land areas generally allow for greater output, provided that they are managed efficiently.

Cost Analysis of Chayote Farming in Kayauni District

Production cost refers to the total expenditure incurred to produce goods within one production cycle. Production costs can be classified based on their relationship with changes in production volume into fixed costs and variable costs. Fixed costs are expenses that remain constant and are continuously incurred in the farming operation, regardless of whether the production volume is low or even zero. In contrast, variable costs are expenses that change proportionally with production volume, although the cost per unit remains constant, such as labor costs and input costs (Suratiyah, 2021).

Table 3. Average Cost of Chayote Farming in Kayauni District, 2025

No	Description	Cost (IDR)
1	*Fixed Cost (FC)*	
	Hoe	1,500,000
	Machete	300,606
	Sickle	50,000
	Chainsaw	1,466,666
	Axe	79,696
	Crowbar	70,303
	Total Fixed Cost	**3,467,271**
2	*Variable Cost (VC)*	
	Transportation	3,720,727
	Labor	1,090,000
	Total Variable Cost	**4,810,272**
	Total Farminf Cost (FC +VC)	**8,277,988**

Source: Processed Primary Data, 2025

The farming costs incurred by each respondent vary depending on factors such as transportation usage, labor, and the size of the land cultivated. These differences directly affect the total costs borne by each farmer. The average cost of chayote farming in Kayauni District over one year is presented in Table 3. Based on Table 3, the average total cost of chayote farming for farmers in Kayauni District during the period January–December 2024 is IDR 8,277,998, which is derived from the sum of total fixed costs amounting to IDR 3,467,271 and total variable costs amounting to IDR 4,810,727.

Income Analysis of Chayote Farming in Kayauni District

Income refers to the returns obtained by individuals or groups through business activities or work performed. The level of income reflects the economic progress of a community, as it indicates their ability to generate economic value from available resources. In the context of farming, income is calculated as the difference between total revenue and total production costs, thereby providing an overview of the net profit earned by farmers from chayote cultivation. Based on Table 4, the average income of chayote farmers in Kayauni District per year is IDR 22,267,002. This value represents the difference between total revenue and total production costs.

Table 4. Average Production, Total Cost, Selling Price, Revenue, and Income of Chayote Farming in Kayauni District, 2025

Description	Production (Kg)	Total Cost (IDR)	Selling Price (IDR)	Revenue (IDR)	Income (IDR)
Total	6,109	8,277,988	5,000	30,545,000	22,267,002

Source: Primary data on income of chayote farming, 2026

Based on Table 4, the average production of chayote farming in Kayauni District reaches 6,109 kg per year, with a selling price of IDR 5,000 per kilogram, resulting in total revenue of IDR 30,545,000. After deducting the average total production cost of IDR 8,277,998, farmers obtain an average income of IDR 22,267,002 annually. This indicates that chayote farming provides a relatively substantial economic return and has strong potential to support household income. The considerable difference between revenue and production costs also suggests that this farming activity is profitable and economically viable to be further developed.

Cost Analysis of Chayote Farming in Kayauni District

Production costs in chayote farming encompass all expenditures incurred by farmers to obtain output, including goods and services utilized throughout the entire cultivation process. These costs are generally classified into fixed costs and variable costs. Fixed costs refer to expenditures that remain relatively constant and must be incurred regardless of whether the level of production is low or even nonexistent. In the context of chayote farming in Kayauni District, fixed costs include the use of agricultural tools such as hoes, machetes, sickles, chainsaws, axes, and crowbars. Hoes are used for loosening and turning the soil as well as clearing land from plant residues, with an average annual cost of IDR 1,500,000 per unit. Machetes are used for clearing shrubs, opening land, cutting wood, and construction purposes, with an average annual cost of IDR 300,606. Sickles are utilized for cutting grass and maintaining the field, with an average annual cost of IDR 50,000. Chainsaws serve as a substitute for axes in felling trees, cutting trunks, and clearing branches, with an average annual cost of IDR 1,466,666. Axes are used for tree cutting with an average cost of IDR 79,696, while crowbars are used for digging soil and preparing planting areas, with an average annual cost of IDR 70,303. Overall, the average total fixed cost incurred by chayote farmers in Kayauni District reaches IDR 3,467,271 per year, reflecting the initial investment and commitment of farmers in sustaining their farming activities.

On the other hand, variable costs are those that change in proportion to the level of production. In this study, variable costs include transportation and labor. Transportation costs are incurred by farmers to transport harvested products from the farm to distribution points or markets, and the amount varies depending on the production volume. The average annual transportation cost incurred by farmers is IDR 3,720,727. Labor costs represent wages paid to additional workers who assist in cultivation activities, typically one worker per week, with an average annual expenditure of IDR 1,090,000. Therefore, the total production cost of chayote farming is a combination of fixed and variable costs, representing the overall expenditure borne by farmers to operate and develop their farming activities optimally. A detailed analysis of these cost components not only provides an overview of the cost structure in chayote farming but also serves as an important basis for assessing efficiency, profitability, and the economic feasibility of farming in Kayauni District, Fakfak Regency

Income Analysis of Chayote Farming in Kayauni District

Farm income is defined as the difference between total revenue obtained from production and the total production costs, calculated in Indonesian Rupiah per planting season. Income is a crucial aspect for farmers as it reflects the level of profit generated from farming activities. Total revenue is obtained by multiplying the quantity of production by the selling price per unit, which varies among respondents depending on factors such as labor utilization, transportation, and the size of the cultivated land. Based on the research findings, the average selling price of chayote in Kayauni District in 2024 was IDR 5,000 per kilogram, with an average production of 6,109 kilograms per year. Consequently, the average total revenue reached IDR 30,545,000 per year, while the net income, after deducting production costs, amounted to IDR 22,267,002 per year, or approximately IDR 1,855,583 per month.

However, this level of income can still be categorized as relatively low, indicating that chayote farmers in Kayauni District have not yet fully achieved a satisfactory level of welfare. This condition differs from a previous study conducted by Haris (2012) in Hausan Village, Amuntai Tengah District, Hulu Sungai Utara Regency, South Kalimantan, which reported higher and more economically viable income levels for chayote farmers. In that study, the average production per planting season reached 209.44 kilograms, with a selling price of IDR 7,000 per kilogram, production costs of IDR 852,281.39, total revenue of IDR 1,466,111.11, and net income of IDR 1,381,179.67 per season.

The relatively low income of chayote farmers in Kayauni District is influenced by several factors, including relatively small land size, the location of farmland in highland areas, and unstable and extreme weather conditions, such as low temperatures and strong winds that damage crops and hinder growth. In addition, low selling prices and high transportation costs further affect farmers' income (Latifa et al., 2023). Farmers' welfare can be improved through increased income; however, this remains constrained by external factors such as price determination by middlemen and limited land availability, which are important indicators in assessing the overall welfare of farmers.

Income Feasibility Analysis Using the R/C Ratio of Chayote Farming in Kayauni District

Income analysis in farming aims to assess the extent to which an agricultural activity is feasible to be undertaken and capable of providing economic benefits to farmers. In the case of chayote farmers in Kayauni District, income analysis is conducted using the Revenue–Cost (R/C) Ratio. The R/C Ratio is a method used to compare total revenue earned by farmers with the total production costs incurred, thereby serving as an indicator of farming feasibility. Based on the research findings, the total revenue obtained by chayote farmers in Kayauni District reaches IDR 30,545,000 per year, while the average total production cost amounts to IDR 8,277,998 per

year. From these calculations, the R/C Ratio is 3.68, indicating that total revenue significantly exceeds production costs (R/C > 1). This value suggests that chayote farming in Kayauni District is economically efficient and feasible to be further developed, as every unit of cost incurred generates substantially higher returns.

These findings are consistent with previous studies, such as Astuti et al. (2019), which reported that rice farming in Wonomulyo District, Polewali Mandar Regency, was economically feasible with an income of IDR 6,200,712 and an R/C Ratio of 3.4, as well as Mayangsari (2019), which found that watermelon farming was feasible with an income of IDR 9,089,470 and an R/C Ratio of 2.08. The consistency of these findings confirms that the R/C Ratio is a valid analytical tool for assessing farming feasibility, where a ratio greater than one indicates significant profit potential for farmers.

CONCLUSION

Conclusion

Based on the results of the analysis and discussion, it can be concluded that chayote farming in Kayauni District, Fakfak Regency, demonstrates a promising economic performance. The annual production cost incurred by farmers amounts to IDR 8,277,998, while the average annual income generated from this farming activity reaches IDR 22,267,002. The feasibility analysis using the R/C Ratio yields a value of 3.68, which clearly indicates that every unit of cost invested generates more than three times the return, confirming that chayote farming in this area is highly feasible for further development. These findings highlight that chayote cultivation not only serves as a source of additional income but also holds strategic potential in supporting the local economy, particularly for the community of Mananmur Village. With the increasing market demand, both within and outside Fakfak Regency, the development of chayote farming can enhance farmers' welfare and promote sustainable rural economic growth. However, despite its profitability, factors such as distribution efficiency, market access, and product quality improvement remain critical aspects that need to be addressed to maximize farmers' income and ensure the long-term sustainability of this farming activity.

Future research is recommended to explore broader aspects influencing the sustainability and competitiveness of chayote farming, such as supply chain management, digital marketing adoption, value-added product development, and the role of government support in improving farmers' market access and production capacity. Additionally, comparative studies across different regions may provide deeper insights into the economic potential and development strategies of chayote farming in Indonesia.

Recommendations

Based on the research findings, several recommendations can be proposed:

1. For Local Government: Greater attention should be given to chayote farmers in Kayauni District, particularly in terms of marketing support and the provision of more representative selling facilities, in order to improve the effectiveness and convenience of distribution and sales processes.
2. For Farmers: Farmers are encouraged to improve the quality and standard of chayote production to enhance market competitiveness, while also building consumer trust in local products.
3. For Future Research: This study has certain limitations, one of which is the exclusion of depreciation costs in the calculation of production costs. Therefore, future studies are recommended to incorporate this component to achieve a more comprehensive analysis of farming feasibility.

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