

Demand Analysis of Young Coconuts in Pasar Pedati Village, Central Bengkulu

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ABSTRACT

Pasar Pedati Village in Central Bengkulu Regency is one of the regions with a relatively high production of young coconuts. The demand for young coconuts has been increasing yearly, driven by various factors, including population growth. This study aims to analyze the level of demand for young coconuts and assess the influence of factors such as the price of young coconuts, watermelon prices, traders' income, seasons, and sales systems on the demand for young coconuts in Pasar Pedati Village. This research employs a quantitative approach, utilizing questionnaires and interviews conducted with 65 young coconut traders selected using the census sampling technique. Data were analyzed using multiple coefficient of determination analysis (R^2) with the assistance of SPSS Statistics 25 software. Hypotheses were tested using both simultaneous regression analysis (F-test) and partial regression analysis (T-test). The findings reveal that the demand for young coconuts is high, with 60% of respondents reporting strong demand. Partial analysis indicates that the price of young coconuts and traders' income significantly influence demand, while simultaneous testing shows that all independent variables collectively have a significant impact on the dependent variable. The adjusted R-square value is 0.856, indicating that 85.6% of the variance in young coconut demand is explained by the independent variables, namely, the price of young coconuts, watermelon prices, traders' income, seasons, and sales systems, while the remaining 14.4% is explained by other factors not included in this study.

Keywords: young coconuts; demand; sales systems.

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INTRODUCTION

Young coconuts (*Cocos nucifera L.*) are a significant agricultural commodity with considerable economic value for farmers. In 2019, Indonesia had a coconut cultivation area of 3,500,726 hectares, yielding a total production of 2,992,190 tons (Nursin et al., 2021; Wisnujati et al., 2024). Field observations suggest that the increasing demand for young coconuts in Bengkulu City is driven by the growth of food and feed industries utilizing coconuts as raw materials, along with the rising demand for food products. Demand is the willingness and ability of individuals or consumers to purchase goods and services they need or desire. The increase in demand is influenced by various factors, including population growth, which drives a greater need for goods and services. Additionally, production levels significantly impact the demand for young coconuts. In general, the demand for agricultural commodities is affected by the price of the

commodity itself, the price of substitute or complementary goods, the number of consumers, and consumer income. A rise in prices typically results in a decrease in demand for the commodity, while an increase in population leads to higher overall demand due to the growing number of consumers. Furthermore, the expansion of industries using specific commodities as raw materials also amplifies the demand for those commodities (Radetzki & Wårell, 2020).

In recent years, young coconuts have gained popularity among consumers due to their refreshing taste, nutritional benefits, and versatility in food and beverage products (Espino, 2006; Kumar et al., 2024; Pandiselvam et al., 2024). Their water is a natural hydrating agent, while their flesh is used in various culinary applications. This increasing consumer preference, coupled with the growth of related industries, has driven a surge in demand for young coconuts in both domestic and international markets (Rethinam, 2019; Sairam & Jayasekhar, 2018). Despite the increasing demand, challenges persist in meeting this growing market need. Factors such as fluctuating prices, seasonal availability, and variations in production levels directly influence supply, thereby affecting the market equilibrium for young coconuts (Jayalath, 2018; Nyberg, 1968; Pathiraja et al., 2017, 2019). Additionally, consumer purchasing power and alternative options, such as watermelon or other tropical fruits, play a role in shaping demand patterns.

The case of Pasar Pedati Village in Central Bengkulu Regency provides a compelling example of these dynamics. The village is a notable producer of young coconuts, and its local economy relies heavily on the trade of this commodity. Understanding the factors that influence the demand for young coconuts in this area is critical for optimizing production, stabilizing market prices, and ensuring sustainable growth for local farmers and traders. Several studies have explored the determinants of agricultural commodity demand, emphasizing the interplay of economic, demographic, and market factors. However, limited research has focused specifically on young coconuts, especially in regions like Central Bengkulu. This study seeks to fill that gap by analyzing the demand for young coconuts in Pasar Pedati Village and examining the influence of key factors, including the price of young coconuts, the price of substitute goods (such as watermelon), trader income, seasonal variations, and the sales system employed. The research objectives are twofold:

1. To determine the level of demand for young coconuts in Pasar Pedati Village.
2. To identify and analyze the factors that influence the demand for young coconuts, including their relative significance and impact.

This study employs a quantitative approach to achieve these objectives, collecting primary data from 65 young coconut traders through questionnaires and interviews. The data is analyzed using statistical tools, including multiple regression analysis and hypothesis testing, to provide a comprehensive understanding of the determinants of demand in the context of Pasar Pedati Village.

The findings of this study are expected to contribute valuable insights for policymakers, farmers, and traders in optimizing the supply chain, improving market accessibility, and enhancing the economic resilience of young coconut producers in Central Bengkulu. By understanding the demand dynamics and their influencing factors, stakeholders can implement targeted strategies to address challenges, capitalize on opportunities, and ensure the sustainable development of the young coconut industry.

LITERATURE REVIEW

Bergstrom & Goodman (1973) defines demand as the quantity of goods or services requested by the market, which originates from the assumption that every individual has needs. The existence of these needs drives demand for goods that fulfill them. From an economic perspective, demand is described as a function that details planned purchase levels. Similarly, Wertenbroch & Skiera (2002) views demand as a consumer's willingness to buy goods at various price levels over a specific period. Demand is further conceptualized as the desire of consumers for specific goods or services, coupled with their ability to purchase those goods, commonly referred to as purchasing power. Without this purchasing power, the demand cannot manifest into actual transactions within the market.

Several factors influence consumer demand, as noted by Munira (2018) and (Rozi et al. (2020). The price of a good itself is one of the primary determinants; as the price rises, the quantity demanded tends to decrease, assuming all other factors remain constant. This inverse relationship is a cornerstone of economic theory. The price of substitute goods also affects demand. For example, when the price of a substitute good increases, the demand for the primary good rises as consumers seek alternatives. Similarly, consumer income plays a crucial role in determining demand. Higher income levels generally lead to increased demand for normal goods, while demand for inferior goods may decline as purchasing power improves.

Consumer preferences and tastes significantly shape demand patterns, often influenced by cultural, social, and psychological factors (Furnols & Guerrero, 2014; Gurnani & Gupta, 2024; Kimmel & Kimmel, 2018; Rachwal-Mueller & Fedotova, 2024). Additionally, the number of consumers or market size directly impacts aggregate demand, with an increase in population or market expansion resulting in higher demand for goods and services. Marketing strategies, such as advertising and promotion, also influence consumer behavior by increasing awareness and preference, which often translates into higher demand. The distribution of income within a society can create disparities in purchasing power, affecting demand across different consumer groups. Furthermore, consumer expectations regarding future prices or product availability can alter current demand; for instance, anticipated price increases may lead consumers to

purchase goods sooner. The availability of products also influences demand; when goods are scarce, demand often rises due to competition among consumers, and conversely, when products are abundant, demand may decrease.



Figure 1. Young coconuts ready for harvest and coconut fields in Pasar Pedati Village

Young coconuts (*Cocos nucifera*), a versatile agricultural commodity, hold significant economic value, particularly in tropical regions. They are widely utilized for their water and flesh, which are increasingly popular for their nutritional benefits and culinary versatility. Historically, coconuts are believed to have originated along the coastal regions of the Indian Ocean in Asia, but they have since spread across tropical coasts worldwide (Chan & Elevitch, 2006; Nayar, 2016). Young coconuts are particularly valued for their role in food and beverage products, making them a key component of agricultural markets.

This study is guided by two hypotheses. First, the demand for young coconuts is significantly influenced by factors such as the price of young coconuts, the price of substitute goods (e.g., watermelon), trader income, seasonal variations, and the sales system. Second, trader income is hypothesized to be the most dominant factor affecting purchasing decisions.

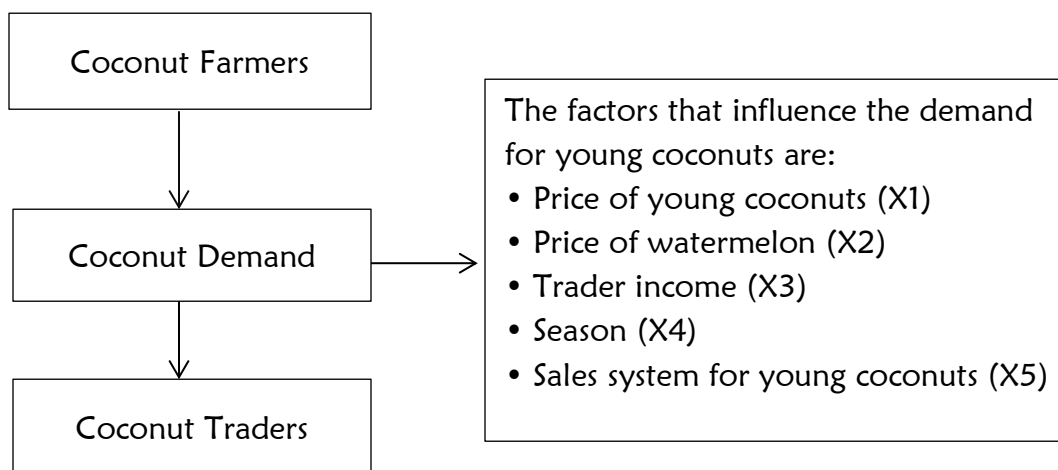


Figure 2. Research Framework

The conceptual framework of this research employs path analysis, an extension of multiple linear regression, to examine causal relationships between variables. This method identifies both direct and indirect effects of independent variables on the dependent variable, with intervening variables acting as mediators. The framework is informed by extensive literature and previous studies, focusing on key factors such as the price of young coconuts, substitute goods prices, trader income, seasonal factors, and sales systems. These factors collectively shape the demand for young coconuts, offering a structured basis for understanding their dynamics. This comprehensive approach aims to elucidate the relationships between variables, ultimately contributing to a deeper understanding of the factors driving young coconut demand.

METHOD

This study employs a quantitative research design, conducted in Pasar Pedati Village, Pondok Kelapa District, Central Bengkulu Regency. The sampling technique used is census sampling, where all members of the population are included as the sample. According to Sugiyono (2017), census sampling is appropriate when the entire population is manageable and can be surveyed directly. In this case, the sample consists of 65 young coconut traders in Pasar Pedati Village. The data were collected through questionnaires and interviews to gather information on various factors that influence the demand for young coconuts in the area.

To analyze the data, several statistical techniques were applied, including descriptive statistics, multiple linear regression analysis, coefficient of determination (R^2), and hypothesis testing using the T-test and F-test. All statistical analyses were performed using SPSS Statistics version 25. The multiple regression analysis was used to examine the simultaneous effect of independent variables (such as the price of young coconuts, watermelon prices, traders' income, seasonality, and sales systems) on the dependent variable, which is the demand for young coconuts. The coefficient of determination (R^2) was calculated to assess the proportion of the variance in demand explained by the independent variables. The formula for calculating the coefficient of determination (KD) is:

$$KD = r^2 \times 100\%$$

Where KD represents the coefficient of determination, and r^2 is the square of the correlation coefficient. To examine the joint effect of all independent variables on demand, the F-test was employed. This test evaluates whether the independent variables collectively have a significant impact on the dependent variable. The null hypothesis (H_0) posits that the independent variables do not significantly affect the dependent variable, while the alternative hypothesis (H_1) suggests that they do. The F-test was conducted using Analysis of Variance (ANOVA), with a significance level (α) of 5% and degrees of

freedom calculated as $n - 1 - k$, where n is the sample size and k is the number of independent variables. The formula for calculating the F-statistic is:

$$F = \frac{R^2/k}{(1 - R^2) - (n - k - 1)}$$

Where F is the F-statistic, R^2 is the coefficient of determination, k is the number of independent variables, and n is the sample size. If the calculated F-value is greater than the critical F-value from the F-table, the null hypothesis is rejected, indicating that the independent variables have a significant collective impact on demand (Supriatin et al., 2022).

The T-test was also used to examine the individual effect of each independent variable on the dependent variable. This test determines whether each independent variable significantly influences the demand for young coconuts. The formula for the T-test is:

$$t = \frac{r \sqrt{n-2}}{1-r^2}$$

RESULTS AND DISCUSSION

Demand for Young Coconuts

The level of demand for young coconuts was analyzed using a Likert scale method. According to Sugiyono (2010), the Likert scale is used to assess individual or group opinions toward a specific object or commodity. Table 1 presents the demand for young coconuts in Pasar Pedati, Central Bengkulu Regency, categorized into three levels: low, medium, and high. The results reveal that 60% of the respondents fall into the high-demand category, with the demand ranging from 1,701 to 2,200 coconuts. The medium demand category, with a range of 1,201 to 1,700 coconuts, accounted for 28% of the respondents, while the low-demand category (700 to 1,200 coconuts) made up 12% of the total.

Table 1. Demand for Young Coconuts

No	Category	Demand (Fruit)	Consumers (People)	Percentage (%)
1	Low	700-1,200	8	12%
2	Medium	1,201-1,700	18	28%
3	High	1,701-2,200	39	60%

Source: Primary Data Processed, 2024.

The results indicate that the demand for young coconuts in Pasar Pedati Village is predominantly high, with 60% of consumers in this category. This finding highlights a significant market for young coconuts in the area, reflecting the growing consumption and trade of this commodity.

Factors Influencing Demand for Young Coconuts

To understand the factors influencing the demand for young coconuts in Pasar Pedati, a multiple linear regression analysis was conducted using IBM SPSS Statistics 25. The analysis identified several key factors that significantly affect demand, including the price of young coconuts (X1), the price of substitutes (X2), traders' income (X3), seasonality (X4), and the sales system (X5).

1. Influence of Young Coconut Price (X1) on Demand

The regression coefficient table shows a significant value for the price of young coconuts, with a significance value (Sig.) of 0.003, which is less than the alpha level ($\alpha = 5\%$) of 0.05. Additionally, the t-value for the price variable is 3.068, which is greater than the critical t-value of 1.99834. These results indicate that the price of young coconuts has a significant positive effect on demand. As the price of young coconuts increases, the demand also rises, suggesting that consumers may perceive higher-priced coconuts as more valuable or are willing to pay more for higher-quality products.

2. Influence of Substitute Prices (X2) on Demand

The price of substitutes (such as watermelon) was found to have no significant effect on the demand for young coconuts. The significance value for the price of substitutes was 0.083, which is greater than 0.05, indicating that changes in substitute prices do not significantly influence young coconut demand. The t-value of -1.766, which is smaller than the critical value of -1.99834, further supports this conclusion.

3. Influence of Traders' Income (X3) on Demand

Traders' income had a highly significant positive effect on demand, with a significance value of 0.000, which is less than 0.05. The t-value of 17.996 is significantly greater than the critical t-value of 1.99834. This indicates that as traders' income increases, they are more likely to stock and sell larger quantities of young coconuts, thereby contributing to higher demand.

4. Influence of Seasonality (X4) on Demand

The effect of seasonality on the demand for young coconuts was not statistically significant. The significance value for seasonality was 0.154, which is greater than 0.05, and the t-value (1.444) was smaller than the critical value (1.99834). This suggests that the seasonality factor does not have a meaningful impact on young coconut demand in the studied area.

5. Influence of Sales System (X5) on Demand

The sales system also did not show a significant effect on demand. The significance value for the sales system was 0.583, which is greater than 0.05, and the t-value (0.552) was lower than the critical value of 1.99834. This implies that the way young coconuts are sold (whether in bulk, retail, or through other sales methods) does not significantly influence overall demand.

Table 2. SPSS Analysis of F-Test Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	6,683,769.742	5	1,336,753.948	70.067	0.000
Residual	1,125,614.873	59	19,078.218		
Total	7,809,384.615	64			

Source: Primary Data Processed, 2024.

Based on the results from the F-test, the model indicates that the factors—young coconut price, substitute price, traders' income, seasonality, and sales system—together significantly influence the demand for young coconuts. The calculated F-value (70.067) is greater than the critical F-value (2.515), and the significance value (p-value = 0.000) is less than 0.05. This leads to the rejection of the null hypothesis (H0) and acceptance of the alternative hypothesis (H1), confirming that these factors collectively have a statistically significant impact on demand.

Table 3. SPSS Analysis of Coefficient of Determination (R²) Results

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	0.925	0.856	0.844	138.12392

Source: Primary Data Processed, 2024.

The R² value of 0.856 indicates that 85.6% of the variation in the demand for young coconuts is explained by the independent variables (price of young coconuts, price of substitutes, traders' income, seasonality, and sales system). This suggests a strong relationship between these factors and demand, with the model providing a good fit for the data.

CONCLUSION AND MANAGERIAL IMPLICATIONS

Based on the analysis conducted, it can be concluded that the demand for young coconuts in Pasar Pedati Village, Pondok Kelapa District, Central Bengkulu Regency, is categorized as high, with an average demand level of 1,703.03, representing approximately 60% of total demand. This indicates a strong market for young coconuts in the region. Furthermore, the study found that the price of young coconuts and traders' income are the key factors that significantly influence demand. In contrast, factors such as the price of watermelon, seasonal variations, and the sales system were found to have no significant impact on the demand for young coconuts.

The findings have important managerial implications. For coconut farmers and traders, maintaining a competitive price for young coconuts and improving the income of traders can play a crucial role in sustaining and increasing demand. Price fluctuations

should be carefully monitored, as they directly affect demand. Additionally, since traders' income is a key determinant, improving their economic conditions through better market access and fair-trade practices could lead to enhanced sales. On the other hand, factors like the price of watermelon and the sales system may not require immediate attention, as they do not have a significant effect on the demand for young coconuts in this specific market. For policymakers and industry stakeholders, these insights can help guide strategies aimed at boosting the local coconut economy, ensuring that pricing policies and support programs align with the factors that drive demand. Overall, the study provides valuable information for decision-making and the sustainable development of the young coconut trade in Pasar Pedati Village and similar regions.

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