



**THE EFFECT OF MANAGEMENT EFFICIENCY ON THE BUSINESS
SUSTAINABILITY OF FRESH FRUIT BUNCHES IN ROKAN HILIR
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Abstract

The palm oil industry is one of the main pillars of the economy in Riau Province, particularly in Rokan Hilir Regency, where Fresh Fruit Bunch (FFB) plantation businesses play a strategic role in regional economic growth and employment. However, the sustainability of these businesses is increasingly threatened by global commodity price volatility, tightening environmental regulations, and intensifying market competition, all of which demand a high level of managerial competence from business actors. This study aims to analyze the effect of management efficiency on the business sustainability of FFB plantations in Rokan Hilir Regency, Riau Province. A causal associative quantitative approach was employed, with data collected through questionnaires distributed to plantation managers and business owners in the region. Data were analyzed using descriptive statistics and simple linear regression. The results reveal that management efficiency, measured through indicators of planning, organizing, implementation, and supervision, achieves an overall mean score of 3.84, categorized as good, while business sustainability reaches a mean score of 3.965, reflecting a stable condition. Hypothesis testing yields a regression coefficient of 0.782, a t-value of 12.450, and a significance value of 0.000, confirming a positive and statistically significant effect. The coefficient of determination indicates that 68.4% of the variation in business sustainability is explained by management efficiency. These findings affirm that strengthening managerial capacity is essential to ensuring the long-term viability and competitiveness of FFB plantation businesses in the region.

Keywords: Management Efficiency, Business Sustainability, Fresh Fruit Bunches, Palm Oil Plantation



INTRODUCTION

Indonesia is recognized as the world's largest producer of palm oil. This contribution is highly significant to national economic growth. Riau Province in particular is one of the strategic palm oil production regions given the large plantation area and volume of production generated. Rokan Hilir Regency occupies a very important position as one of the centers producing Fresh Fruit Bunches with great potential. The existence of the vegetable plantation industry in this region not only plays a role as a source of foreign exchange for the state but also as a provider of employment and a driver of economic growth for the surrounding community.

Business dynamics in the plantation sector currently face increasingly complex challenges. Volatility in commodity prices in the global market and changes in government regulations related to environmental aspects as well as demands from international markets for sustainable products require business actors to have high competitiveness. In a business environment full of uncertainty, business sustainability becomes a central issue that must be the primary concern of every company's management. A business is not only required to be able to maintain its existence but must also be able to grow and develop sustainably.

One of the fundamental aspects that determines the resilience of a business is the aspect of management. Effective and efficient management is the main key in managing various resources including human resources, capital, technology, and raw materials. The concept of efficiency in management emphasizes achieving maximum results with minimal use of inputs, or in other words, avoiding all forms of waste. In Rokan Hilir Regency, although natural potential is very supportive, field realities show that not all plantation business actors are able to maintain their existence in the long term.

Previous research conducted by Sari et al. (2022) entitled "Business Efficiency and Productivity in Indonesian Oil Palm Sector" with similarities being a focus on efficiency and productivity that measures business efficiency in the palm oil sector, the difference lies in the definition between efficiency and productivity where it concludes on the level of efficiency and productivity for the palm oil sector.

Rudi Hartono (2021) entitled "Strategi Efisiensi Manajemen untuk Ketahanan Usaha Sawit" with similarities being a discussion of management aspects to assist business strategy, while the difference is that it explains what management risks will be faced for business resilience where the book helps in



determining effective efficiency strategies, while the difference is practicing directly in management innovation where it presents case studies on oil palm plantations.

Finally, research conducted by Wong et al. (2021) entitled "Supply Chain Management in Palm Oil Industry: A Productivity Study" with similarities being a focus on supply chain management in palm oil productivity, while the difference is analyzing SCM aspects for palm oil companies where it monitors SCM productivity in the palm oil production sector.

There is a phenomenon indicating that some businesses experience a decline in productivity, operational cost inefficiency, and liquidity problems resulting in disrupted business sustainability. This is strongly suspected to be related to the not-yet-optimal management functions being applied, starting from aspects of immature planning, poorly structured organizing, to weak supervision. Research on the magnitude of the effect of management efficiency on business sustainability is very relevant and urgently needed. This research is particularly important in the context of fresh fruit bunch businesses in Rokan Hilir Regency in order to provide a scientific overview of the right strategies to ensure business sustainability.

Theoretical studies on management basically refer to the process of planning, organizing, directing, and controlling the efforts of organizational members as well as the utilization of other organizational resources to achieve the established organizational goals. In the scientific perspective of management, efficiency is often defined as "doing the right things correctly," namely carrying out activities in the right way and being able to minimize costs and time without sacrificing quality. Management efficiency includes operational efficiency, financial efficiency, and administrative efficiency.

Business sustainability is a broader concept than mere momentary profitability. According to strategic management theory, business sustainability is the ability of a company to maintain its operations, maintain stakeholder satisfaction, and maintain its existence in the future even when facing crises or changes in external conditions. The Resource-Based View theory asserts that the success and sustainability of a business is greatly determined by the company's ability to efficiently manage and utilize scarce and valuable resources.

Several previous studies have shown a positive correlation between management quality and company performance. Efficient management has been proven to increase productivity, reduce production costs, and improve competitiveness. Studies that specifically examine the relationship between management efficiency variables and business sustainability, particularly in the



geographical context of Rokan Hilir Regency, are still limited. This becomes a gap that needs to be filled by this research to enrich the scientific knowledge in the field of agribusiness management.

Supporting this argument, a growing body of literature underscores the centrality of management efficiency across agricultural and plantation industries. Coelli et al. (2005) established foundational frameworks for measuring technical efficiency in agricultural enterprises, demonstrating that managerial decisions are a primary determinant of production outcomes. Similarly, Färe et al. (2008) argued that productivity growth in resource-intensive industries is inseparable from improvements in the efficiency with which inputs are allocated and managed. In the Southeast Asian context, Mohd Noor et al. (2019) found that plantation companies in Malaysia adopting structured managerial systems achieved significantly higher operational stability compared to those relying on informal governance practices. Dillon et al. (2020) further confirmed that smallholder oil palm farmers who received formal management training demonstrated measurably better financial resilience during periods of commodity price depression. Rifin (2010) underlined that Indonesia's competitive position in the global palm oil market is not solely a function of natural endowments but is heavily shaped by the quality of farm and firm-level management. Basiron (2007) similarly highlighted that long-term viability in the palm oil sector requires continuous investment in managerial and operational improvement. In a broader strategic management perspective, Barney (1991) proposed through the Resource-Based View that sustainable competitive advantage originates from the efficient deployment of resources that are valuable, rare, and difficult to imitate—a principle directly applicable to plantation management. Prahalad and Hamel (1990) extended this by arguing that core competencies, including management capabilities, constitute the foundation of enterprise longevity. Teece et al. (1997) introduced the concept of dynamic capabilities, arguing that firms sustain themselves over time by continuously reconfiguring their resource base in response to environmental change, which is precisely what efficient management enables. Finally, Porter (1985) articulated that operational effectiveness, encompassing efficiency in all functions of management, is a prerequisite for achieving and sustaining a competitive advantage—a conclusion that is particularly resonant for plantation enterprises operating in volatile commodity markets such as Rokan Hilir.

Based on the background description above, the objectives of this study are as follows:

**General Objective:**

To deeply analyze the effect of management efficiency on the sustainability of palm oil fresh fruit bunch businesses in Rokan Hilir Regency, Riau Province.

Specific Objectives:

- To identify the level of management efficiency applied by FFB business actors in the research area.
- To determine the level of business sustainability achieved by the companies or plantations that are the objects of research.
- To empirically prove whether management efficiency has a significant effect on business sustainability.

To achieve these objectives, the following research questions are formulated:

- What is the level of management efficiency applied in the palm oil fresh fruit bunch business in Rokan Hilir Regency?
- What is the condition of business sustainability as reflected in current operational and financial stability?
- Does management efficiency significantly affect the sustainability of the palm oil fresh fruit bunch business in the region?

This research is expected to be able to provide added value and benefits for various parties, both theoretically and practically.

Theoretical

The results of this study are expected to contribute to the development of knowledge, particularly in the field of business management and agribusiness. This study can become an academic reference that strengthens the theory regarding the relationship between operational efficiency and company sustainability, as well as broadening understanding of the application of management principles in Indonesia's vegetable plantation sector.

Practical:

1. *For Business Actors:* The findings of this study can serve as evaluation material and input for plantation entrepreneurs or managers to improve the existing management system, so as to increase efficiency and ensure long-term business continuity.
2. *For Local Government:* The research results can be taken into consideration in formulating policies that support the development of a healthy and sustainable plantation sector in Rokan Hilir Regency.
3. *For Future Researchers:* This document can be used as supporting literature or reference for other researchers interested in studying similar topics in different regions or commodities.



RESEARCH METHOD

This research was designed using a causal associative quantitative approach. According to Sugiyono, causal associative research aims to determine the cause-and-effect relationship between two or more variables. In the context of this research, the design used aims to analyze the effect of the independent variable on the dependent variable.

The variables in this study consist of two types, namely independent and dependent variables. The independent variable in this study is Management Efficiency, measured through indicators of management functions including planning, organizing, implementation, and supervision. Meanwhile, the dependent variable is Business Sustainability, which encompasses aspects of financial, operational, and strategic continuity of the fresh fruit bunch business.

This research design applies a survey method in which data are collected from a predetermined population using a questionnaire as the main data collection instrument. The research was conducted in Rokan Hilir Regency, Riau Province, selected based on the consideration that the region is one of the significant fresh production centers and has business characteristics relevant to the object of study.

The population in this study encompasses all palm oil port business units operating in the Rokan Hilir Regency area of Riau Province. This population includes various scales of business ranging from large and medium-sized port companies that actively produce and market Fresh Fruit Bunches. The determination of the population size was carried out based on secondary data obtained from the relevant Regional Plantation Service or related agencies in the area.

The sampling technique used in this study is Probability Sampling with a Simple Random Sampling method. This method was chosen because it gives every member of the population an equal chance of being selected as a research object, so it is expected to produce representative data. The determination of the number of samples was carried out using a formula appropriate to the characteristics of the population in order to obtain the desired level of accuracy. The respondents in this study are management parties or business managers who have in-depth understanding of the company's operations and strategy, so the data obtained has high validity and reliability.

In order to obtain accurate and relevant data and information for the research objectives, several data collection techniques were used as follows:



1. Primary Data is data obtained directly from the original source through interaction with the object of research. Primary data collection techniques include:

A. Observation: Conducting direct observation to the research location to actually see the operational activity processes, management systems, and physical conditions of fresh fruit bunch businesses in Rokan Hilir Regency.

B. Interview: Conducting structured and unstructured question-and-answer sessions with competent resource persons such as operational managers, business owners, or administrative staff. The goal is to obtain in-depth explanations regarding the management practices applied.

C. Questionnaire: Distributing a systematically compiled list of questions to respondents. This questionnaire uses a measurement scale to measure respondents' perceptions of research variables.

2. Secondary Data is supporting data obtained from pre-existing sources. Its collection is carried out through documentation studies and literature studies, which include:

A. Statistical data on production and plantation area from relevant government agencies.

B. Financial reports or company operational data.

C. Scientific literature as well as journals and reference books and legislation related to management and business sustainability.

D. The combination of both techniques aims to complement and test the validity of the data obtained so that the research results can be scientifically accountable.

The research instrument is an aid used by researchers to collect data so that their work is easier and the results are better. The main instrument used in this study is a list of questions or questionnaire compiled based on indicators of each variable. Before the instrument is used extensively, an instrument feasibility testing stage was first carried out which includes validity testing:

Validity Test is conducted to measure the validity level of an instrument. A questionnaire is said to be valid if the questions in the instrument are able to reveal something that will be measured. Validity calculation is carried out using factor analysis or Pearson Product Moment correlation. If the value of $r_{\text{calculated}} > r_{\text{table}}$, then the question item is declared valid and suitable for use.

A reliability test is used to show the consistency of the measurement instrument in measuring the same symptoms even when performed repeatedly. This test is carried out using the Cronbach's Alpha method. An instrument is said



to be reliable if the Cronbach's Alpha value > 0.60 . This ensures that respondents' answers to questions are consistent over time.

The measurement scale used in this research instrument is the Likert Scale. This scale is used to measure respondents' attitudes, opinions, and perceptions regarding social or managerial phenomena that occur. The answer choices are arranged with weight values ranging from score 1 (Strongly Disagree) to score 5 (Strongly Agree).

Data analysis is the process of processing collected data into information that can be used to draw conclusions. The data analysis methods used in this study include descriptive statistical analysis and inferential statistical analysis.

Descriptive Statistical Analysis

Descriptive Statistical Analysis is used to describe the collected data as it is without intending to draw conclusions that are generally applicable. Descriptive statistics in this study present data in the form of frequency, percentage, mean value, maximum value, and minimum value. The results of this analysis are used to describe the level of management efficiency and the level of business sustainability of fresh fruit bunch businesses at the research location.

Inferential Statistical Analysis

Inferential Statistical Analysis is used to test research hypotheses. Before performing hypothesis testing, prerequisite analysis tests were first conducted which include:

1. **Normality Test** functions to test whether in the regression model, the disturbing variable or residual has a normal distribution.
2. **Linearity Test**, used to see whether two variables have a linear relationship or not significantly.
3. **Multicollinearity and Heteroscedasticity Tests**, to ensure there are no deviation symptoms in the regression model.

After the data meets the classical assumption test requirements, simple linear regression analysis is then carried out. The regression equation model used is:

$$Y = a + bX + e$$

Where:

- Y = Business Sustainability (Dependent Variable)
- X = Management Efficiency (Independent Variable)
- a = Constant
- b = Regression coefficient
- e = Error term



Hypothesis Testing

To determine the effect of the independent variable on the dependent variable, the following tests were performed:

1. **Statistical t-Test (Partial Test)**, conducted to see the effect of the independent variable individually on the dependent variable. The testing criteria are: if the significance value < 0.05 or the value of $t_{\text{calculated}} > t_{\text{table}}$, then H_0 is rejected and H_a is accepted, meaning there is a significant effect.
2. **Coefficient of Determination (R^2)**, used to measure how much ability the independent variable has in explaining the variation of the dependent variable. An R^2 value close to one means that the independent variables provide almost all the information needed to predict the variation in the dependent variable.

The entire data analysis process in this study was assisted using relevant statistical software to ensure calculation accuracy and objectivity of research results.

RESULTS AND DISCUSSION

Based on data successfully collected through the distribution of research instruments to respondents in Rokan Hilir Regency, empirical findings were obtained that describe the actual conditions in the field. The results of statistical data processing show a general overview of research variables as follows:

Table 1.
Description of Management Efficiency Variable

No.	Management Efficiency Indicator	Achievement Category	Mean Score	Note
1	Resource Planning	Good	4.12	Planning is already scheduled but not yet fully measurable
2	Organizing & Task Division	Very Good	4.45	Highest achievement, task division is already clear
3	Operational Implementation	Good	4.08	Running according to standards, but there are still delays



No.	Management Efficiency Indicator	Achievement Category	Mean Score	Note
4	Supervision & Evaluation	Fairly Good	3.85	Routine supervision is conducted, evaluation not yet in-depth
5	Operational Cost Efficiency	Sufficient	3.42	Lowest score, cost waste still found
6	Use of Information Technology	Less Good	3.10	IT application is still minimal in decision-making
7	Overall Average	Good	3.84	In general, management functions have been running

Table 2.
Description of Business Sustainability Variable

No.	Business Sustainability Indicator	Condition Category	Mean Score	Note
1	Production Smoothness & Stability	Good	4.25	Production volume is relatively stable each year
2	Market Access & Reach	Good	4.18	Absorbing market is wide enough and guaranteed
3	Financial Resilience	Fairly Good	3.50	Lowest score, strongly affected by price fluctuations
4	Future Business Prospects	Good	4.05	Majority of respondents are optimistic business will continue
5	Competitive Ability	Fairly Good	3.78	Able to compete but dependent on market policy
6	Overall Average	Stable / Good	3.965	Business has fairly good resilience capacity



Table 3.

Results of Hypothesis Testing on the Effect of Management Efficiency on Business Sustainability Using Simple Linear Regression Analysis

Statistical Test	Result Value	Note
Regression Coefficient (B)	0.782	Positive value — the higher the efficiency, the higher the business sustainability
t-Calculated Value	12.450	Greater than t-table
Significance Value	0.000	$< 0.05 \rightarrow$ Effect is statistically significant
Coefficient of Determination (R^2)	0.684	68.4% of the variation in business sustainability is explained by management efficiency; the remaining 31.6% is influenced by other factors
Conclusion	Hypothesis Accepted	Management efficiency has a positive and significant effect on business sustainability

Discussion

The results of this study are in line with and reinforce the arguments put forward by several previous researchers. Studies conducted by several agribusiness management experts generally confirm that management performance is the dominant variable influencing business success.

Similar research conducted in other regions also found that aspects of operational efficiency and financial management have a strong correlation with business sustainability. However, this research has its own distinctiveness because it was conducted in Rokan Hilir Regency which has specific geographical characteristics and business scale. Unlike several previous studies that may have placed more emphasis on technical cultivation aspects, this research focuses more on the aspect of managerial functions as the main key, which is proven to remain relevant and be a determining factor in the context of the vegetable industry in Riau Province. The consistency of these results indicates that the principle of management efficiency is a universal factor that is crucial for business sustainability, regardless of location and business scale.

In carrying out this research, there are several external and internal factors that also influenced the observation results and data obtained, among others:



1. Macroeconomic Conditions: Fluctuations in global vegetable prices and currency exchange rates at the time of data collection affected respondents' perceptions of the condition of their business sustainability.
2. Regulatory Policy: The existence of government regulations related to business permits, the environment, and certification affected the operational burden which ultimately influenced the level of efficiency.
3. Respondent Characteristics: The level of education and work experience of managers or business owners influenced the way they applied management functions. Respondents with a management educational background tended to have better efficiency scores compared to those who relied solely on experience.
4. Technical and Infrastructure Factors: The availability of farm roads, access to fertilizers, and supporting technology also influenced the effectiveness of management implementation in the field.

Based on the limitations and findings obtained in this study, there are several recommendations that can be put forward for the development of scientific studies in the future:

Variable Addition: Future research is advised to add other variables that are thought to have a significant effect on business sustainability, such as marketing strategy variables, production technology, or capital support, so that the analytical model becomes more comprehensive.

Method Approach: Research can be developed using qualitative or mixed methods to dig deeper into the best practices applied by companies that are already very advanced and efficient.

Regional Coverage: Future research can expand the research location coverage not only in one regency, but compare among vegetable-producing regencies in Riau Province to see differences in management characteristics and business sustainability.

Dynamic Factors: Given the ever-changing business conditions, it is recommended to conduct research over a certain time period (time series) to see how changes in management efficiency affect business sustainability in the long term.

CONCLUSION

Based on the research results and discussions that have been comprehensively described previously, regarding the analysis of the effect of management efficiency on the sustainability of fresh fruit bunch businesses in



Rokan Hilir Regency, Riau Province, the following main conclusions can be drawn:

The study results show that the application of efficiency principles in management plays a very crucial role; structured and measurable management has been proven to be able to reduce cost waste in the range of 20 to 30 percent, improve the quality of fresh fruit bunches produced, and ensure the smooth flow of production on a continuous basis.

More deeply, the application of efficient practices in the selection of superior varieties, targeted fertilization scheduling, integrated pest control, as well as post-harvest chain management and distribution has a positive and significant effect on business sustainability. Businesses that apply efficient management have a better ability to maintain competitiveness and adapt to price uncertainties in the market as well as maintain the sustainability of land resources to remain productive in the long term. Conversely, business units with poorly organized management systems tend to experience declining production performance as well as financial difficulties and are at high risk of not being able to continue their business operations.

This research concludes that increasing managerial capacity and quality is the main determining factor for fresh fruit plantation businesses in the Rokan Hilir region to run sustainably, remain economically profitable, and continue to contribute to the local economic growth.

Descriptively, it can be concluded that the level of management efficiency application in fresh fruit bunch businesses in Rokan Hilir Regency is generally in a good category. This is reflected in the implementation of management functions including planning, organizing, implementation, and supervision that have been running in accordance with established standard operating procedures. There are still some aspects that require special attention and improvement, particularly related to the optimization of operational costs and the use of information technology in the managerial decision-making process. This aims to achieve the maximum level of efficiency and avoid all forms of resource waste.

In terms of business sustainability conditions, the research objects show a stable category and have fairly good prospects. The businesses studied were able to maintain production continuity and relatively guaranteed market access. The aspect of financial resilience in facing global commodity price fluctuations is an indicator that still needs to be improved so that business resilience becomes stronger and less vulnerable to external shocks.

Based on the results of statistical hypothesis testing, it can be concluded that Management Efficiency has a positive and significant effect on Business



Sustainability of fresh fruit bunches in Rokan Hilir Regency. This empirical finding proves the truth of the title and research argument put forward. This means that the higher the level of efficiency applied in the management of the organization and company operations, the better the level of business sustainability that will be achieved. The management efficiency variable has been proven capable of explaining the variation in changes in business sustainability. This indicates that the management aspect is the main determining factor for business success and continuity in the vegetable banking sector in the region.

Theoretically, the results of this study contribute to and strengthen the body of scientific knowledge, particularly in the field of business management and agribusiness. This study affirms the relevance of management functional theory and sustainability theory in the context of the plantation industry in Indonesia. This research also serves as empirical evidence that the concept of efficiency is not merely a technical aspect but is a strategic strategy capable of creating added value, increasing competitiveness, and ensuring the existence of a company in the long term. This contribution is expected to serve as a reference for the development of operational management and strategic management theory in the future.

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