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Assessing the Impact of EBITDA Enhancement Initiatives on Financial Sustainability: Evidence from PTPN IV

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Abstrak

Penelitian ini menganalisis pengaruh simultan dan parsial program EBITDA Enhancement Initiatives (EEI) terhadap keberlanjutan keuangan (profitabilitas, solvabilitas, dan likuiditas) PT Perkebunan Nusantara IV (PTPN IV). Program EEI dioperasionalkan ke dalam tiga variabel independen, yaitu Efektivitas Operasional (X1), Efisiensi Biaya Produksi (X2), dan Optimalisasi Aset (X3). Dengan menggunakan pendekatan kuantitatif berbasis deret waktu, penelitian ini menerapkan analisis Regresi Linier Berganda terhadap data keuangan sekunder periode Januari–Desember 2024. Model keseluruhan untuk profitabilitas menunjukkan tingkat signifikansi yang tinggi (Sig. 0,008) dan mampu menjelaskan 75,4% variasi data (R^2 = 0,754). Secara parsial, Efektivitas Operasional berpengaruh positif dan signifikan terhadap profitabilitas (Sig. 0,002). Namun, temuan penting dan bersifat kontra-intuitif menunjukkan bahwa Efisiensi Biaya Produksi berpengaruh negatif dan signifikan terhadap profitabilitas (Sig. 0,011; β tidak terstandarisasi = −3,712). Sementara itu, Optimalisasi Aset tidak menunjukkan pengaruh parsial yang signifikan (Sig. 0,846). Penelitian ini menegaskan perlunya manajemen PTPN IV untuk secara strategis menyempurnakan pendekatan pengelolaan biaya dengan memprioritaskan optimalisasi yang menjaga nilai perusahaan, bukan sekadar pengurangan biaya secara indiscriminatif, serta mempercepat monetisasi aset non-strategis guna memastikan kinerja keuangan yang berkelanjutan.

Kata kunci: EBITDA Enhancement Initiatives (EEI); efektivitas operasional; efisiensi biaya produksi; optimalisasi aset; keberlanjutan keuangan; profitabilitas.

Abstract

This study investigates the simultaneous and partial effects of the EBITDA Enhancement Initiatives (EEI) program on the financial sustainability (Profitability, Solvency, and Liquidity) of PT Perkebunan Nusantara IV (PTPN IV). The EEI is operationalized into three independent variables: Operational Effectiveness (X_1), Production Cost Efficiency (X_2), and Asset Optimization (X_3). Utilizing a quantitative time series approach, the research employed Multiple Linear Regression analysis on secondary financial data from January to December 2024. The overall model for Profitability was highly significant (Sig. 0.008) and explained 75.4% of the variance (R^2 = 0.754). Partially, Operational Effectiveness had a positive and significant effect on Profitability (Sig. 0.002), while a critical and counter-intuitive finding emerged: Production Cost Efficiency exhibited a negative and significant effect on Profitability (Sig. 0.011; Unstandardized β = -3.712). Furthermore, Asset Optimization showed no significant partial effect (Sig. 0.846). This research underscores the need for PTPN IV management to strategically refine its cost approach, prioritizing value-

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preserving optimization over indiscriminate reduction, and to accelerate the monetization of non-strategic assets to ensure sustained financial performance.

Keywords: EBITDA Enhancement Initiatives (EEI); Operational Effectiveness; Production Cost Efficiency; Asset Optimization; Financial Sustainability; Profitability.

1. Introduction

The Indonesian plantation sector holds a strategic position in the national economy, acting as a crucial foreign exchange earner and a primary source of employment and regional development. As a major State-Owned Enterprise (BUMN) focused on agribusiness, particularly palm oil and tea, PT Perkebunan Nusantara IV (PTPN IV) has encountered significant pressure to maintain its financial stability amidst continuous market fluctuations [6]. The industry faces multiple external challenges, including volatile global commodity prices, escalating operational costs, heightened international competition, and rising demands for Environmental, Social, and Governance (ESG) compliance [10]. Reports indicate that several PTPN entities, including PTPN IV, have experienced a performance dip, underscoring the need for a comprehensive business transformation to enhance profitability and efficiency.

In response to these systemic challenges, PTPN IV implemented the EBITDA Enhancement Initiatives (EEI) program. EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization) is a key performance indicator that effectively measures a company's operational profitability, detached from financing and accounting policies [8]. The EEI program is designed as a transformation strategy focusing on improving operational effectiveness, achieving production cost efficiency, and optimizing asset utilization to strengthen the company's profitability, solvency, and liquidity [2]. Through the implementation of EEI, PTPN IV aimed to increase its EBITDA margin from 18% to 25–30% in the medium term, aligning its performance with global industry standards. Indeed, the overall success of the program is supported by this study's simultaneous findings, which indicate that the three core EEI components collectively and significantly influence the indicators of financial sustainability.

Despite the evident strategic intent, empirical literature concerning the segmented impact of complex initiatives like EEI on the comprehensive framework of *financial sustainability* measured across profitability, solvency, and liquidity remains limited, especially within the BUMN plantation context in Indonesia. This study addresses this gap by conducting detailed quantitative analysis, aiming to empirically validate the partial influence of each EEI component. Intriguingly, initial findings reveal complex and sometimes paradoxical outcomes: while operational effectiveness proves to have a positive and significant effect on profitability, production cost efficiency demonstrates a significant *negative* relationship with profitability [3]. Furthermore, optimalisation asset (asset optimization) shows no significant partial effect on profitability. These counterintuitive results highlight a delicate balancing act, suggesting that overly aggressive or improperly implemented cost cutting strategies may unintentionally degrade product quality or operational output, thus undermining net profits [7].

Consequently, the core research problem is to dissect these partial relationships to ensure that the pursuit of efficiency does not compromise long term financial health [1]. The findings of this research offer critical strategic contributions: first, by empirically validating the viability of the EEI model in driving *financial sustainability*; second, by providing granular insights into which specific initiatives (Operational Effectiveness, Cost Efficiency, or Asset Optimization) require refinement to prevent unintended negative consequences; and third, by delivering data driven policy recommendations for PTPN IV management and similar state owned enterprises seeking to enhance sustainable financial performance in the dynamic agribusiness sector.

2. Material & Metode

2.1 Research Approach and Design

This study employs a quantitative research approach with a descriptive correlational method. The primary goal is to examine the extent and nature of the relationship (correlation) between the implementation of the EBITDA

Enhancement Initiatives (EEI) program and the level of financial sustainability at PT Perkebunan Nusantara IV (PTPN IV). The research utilizes a time series design, with data collected longitudinally over a twelvemonth period, specifically from January 2024 to December 2024. This design allows for a comparative analysis of the company's financial condition following the full implementation of the EEI program.

2.2 Variables and Operational Measurement

The study incorporates two main types of variables:

Table 2.1 Variables and Operational Measurement

Variable Type	Variable Name	Indicator
Independent (Exogenous)	EBITDA Enhancement Initiatives (EEI)	Operational Effectiveness (X_1)
		Production Cost Efficiency (X_2)
		Asset Optimization (X_3)
Dependent (Endogenous)	Financial Sustainability (Y)	Profitability (Net Profit Margin, Y_1)
		Solvency (Debt to Equity Ratio, Y_2)
		Liquidity (Current Ratio, Y_3)

2.3 Data Sources and Collection Techniques

The data utilized in this research are secondary data obtained through documentation and observation techniques. Key data sources include:

- Quarterly and annual audited financial statements of PT Perkebunan Nusantara IV for the period of January to December 2024.
- Internal documentation regarding the planning, implementation, and evaluation of the EEI program during the January–December 2024 period.
- Official company publications, including the Annual Report and internal studies related to the EEI program and performance.

2.4 Data Analysis Technique

The core analytical method employed is Multiple Linear Regression Analysis. This method is used to measure the simultaneous and partial effects of the independent variables (X_1, X_2, X_3) on the dependent variables (Y_1, Y_2, Y_3).

The general form of the multiple regression equation utilized is:

$$Y_i = \beta_i + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where i = 1, 2, 3 represents Profitability, Solvency, and Liquidity, respectively.

Prior to hypothesis testing, the following Classical Assumption Tests were conducted to ensure the validity and reliability of regression model[23]:

1. Normality Test: Performed using the One Sample Kolmogorov Smirnov method to ensure the residuals are normally distributed.
2. Multicollinearity Test: Assessed using Tolerance and Variance Inflation Factor (VIF) values to ensure no high correlation among independent variables.
3. Heteroscedasticity Test: Conducted using the Glejser method to confirm the constancy of the residual variance (homoscedasticity).

Hypothesis testing is further involved:

- Coefficient of Determination (R^2): To measure the proportion of variance in the dependent variable explained by the independent variables.
- Simultaneous Significance Test (fTest): To determine if independent variables collectively influence dependent variables.
- Partial Significance Test (tTest): To evaluate the individual significance of each EEI component on the financial sustainability indicators (at alpha = 0.05).

3. Discussion

3.1 Preliminary Analysis and Classical Assumption Tests

Prior to hypothesis testing, the robustness of the multiple linear regression models was verified through the Classical Assumption Tests. The results confirmed that the data satisfied the necessary statistical requirements across all three models (Profitability, Solvency, and Liquidity):

- Normality Test (One Sample Kolmogorov Smirnov): The significance value (Sig.) for the residuals in all models (Profitability, Solvability, and Liquidity) was greater than 0.05 (e.g., 0.200 for Profitability), confirming that the residuals are normally distributed.
- Multicollinearity Test: All independent variables (X1, X2, X3) exhibited a Tolerance value greater than 0.10 and a VIF (Variance Inflation Factor) less than 10. This indicates the absence of multicollinearity among the predictors in all models.
- Heteroscedasticity Test (Glejser Method): The significance values for all independent variables were greater than 0.05 in all models. This validates the assumption of homoscedasticity, meaning the variance of the residuals is constant.

3.2 Multiple Linear Regression Analysis

3.2.1 Simultaneous Effect (fTtest). The fTest results demonstrated that the EBITDA Enhancement Initiatives (EEI) variables (Operational Effectiveness, Production Cost Efficiency, and Asset Optimization) simultaneously and significantly influence the financial sustainability indicators (Profitability, Solvability, and Liquidity).

- For Profitability (Y_1), the Sig. value was 0.008, which is less than 0.05.
- For Solvability (Y_2), the Sig. value was 0.012.
- For Liquidity (Y_3), the Sig. value was 0.040.

This confirms the first three hypotheses (H_1, H_2, H_3) and validates that the overall EEI program is statistically effective in bolstering PTPN IV's financial foundation.

*3.2.2 Coefficient of Determination (R^2). T*he explanatory power of the models, as measured by the Adjusted R Square, is highest for profitability and solvability:

- Profitability: $R^2 = 0.754$ (Adjusted $R^2 = 0.662$). This indicates that 75.4% of the variation in profitability is explained by the three EEI variables.
- Solvability: $R^2 = 0.728$ (Adjusted $R^2 = 0.625$). This implies that 72.8% of the variation in solvability is explained by the EEI variables.
- Liquidity: $R^2 = 0.627$ (Adjusted $R^2 = 0.487$). This suggests that only 62.7% of the variation in liquidity is explained by the model, with a relatively lower Adjusted R^2, pointing to a higher influence of external or unmodeled factors on the company's short-term financial condition.

3.3 Partial Effects and Strategic Discussion (tTest).

The partial analysis reveals varied and complex relationships between the individual EEI components and the financial sustainability metrics:

a. Impact on Profitability (Y_1)

- Operational Effectiveness (X_1): Has a positive and significant effect on Profitability (Sig. = 0.002 < 0.05; B = 0.985). This confirms that improving internal work processes, reducing waste, and increasing productivity directly translate into higher net profit margins [9]. This result supports the core principle of EEI and is consistent with previous research emphasizing the importance of Operational Excellence.
- Production Cost Efficiency (X_2): Exhibits a negative and significant effect on Profitability (Sig. = 0.011 < 0.05; B = 3.712). This is a critical and counterintuitive finding. The negative coefficient suggests that the implementation of cost efficiency, possibly through overly aggressive cost cutting or incorrect allocation, may have negatively impacted the quality of production inputs, maintenance, or core operational quality, subsequently leading to reduced revenue or diminished long term profitability [5]. This highlights a management dilemma where short term cost reduction compromises long term value creation [12].
- Asset Optimization (X_3): Has no significant effect on Profitability (Sig. = 0.846 > 0.05). Although asset optimization efforts (such as leveraging idle assets or revaluation) are being pursued, their impact is not yet statistically significant on the short-term profit margins.

b. Impact on Solvability (Y_2)
- Operational Effectiveness (X_1): Has a negative and significant effect on Solvability (Sig. = 0.023 < 0.05; B = 0.016). In the context of the Debt-to-Equity Ratio (DER), a reduction in the ratio (i.e., improved solvability) is desirable. Thus, the negative coefficient here suggests that an increase in operational effectiveness improves solvability, likely by boosting internal capital generation (retained earnings), thereby reducing reliance on external debt.
- Production Cost Efficiency (X_2) and Asset Optimization (X_3): Both are found to be not statistically significant predictors of Solvability.

c. Impact on Liquidity (Y_3)
- Operational Effectiveness (X_1): Has a negative and significant effect on Liquidity (Sig. = 0.007 < 0.05; B = 2.686). This result implies that the push for operational effectiveness, often requiring upfront investments in technology, maintenance, or increased working capital allocation for process improvements, may temporarily reduce available current assets, thus lowering the Current Ratio.
- Production Cost Efficiency (X_2): Has a positive and significant effect on Liquidity (Sig. = 0.023 < 0.05; B = 10.709). This is logical, as effective cost management and reduction directly improves cash flow and the availability of current assets, positively impacting the ability to meet short term obligations.
- Asset Optimization (X_3): Has no significant effect on Liquidity.

3.4 Management Implications and Future Strategy. The findings confirm the overall positive impact of the EEI program yet highlight critical areas for managerial refinement (consistent with the fourth hypothesis). The negative impact of Production Cost Efficiency on Profitability requires immediate attention. Management must transition from rudimentary cost cutting (zero based budgeting, ZBB) toward strategic cost management that optimizes processes rather than merely reducing expenditure [4]. This means focusing on value adding efficiency measures that sustain quality and productivity. Furthermore, given the nonsignificant impact of Asset Optimization on Profitability, PTPN IV should accelerate the monetization or divestiture of nonstrategic or idle assets to generate tangible financial returns quickly [11]. Lastly, while EEI is strong in profit and solvency enhancement, the relative weakness in predicting Liquidity suggests the need to integrate EEI with dedicated working capital and cash management strategies.

4. Conclusion

The analysis of the EBITDA Enhancement Initiatives (EEI) at PTPN IV led to the following critical conclusions:

a. Overall Program Success: The EEI program (Operational Effectiveness, Cost Efficiency, and Asset Optimization) significantly impacts the company's financial sustainability (Profitability, Solvency, and Liquidity).
b. Operational Effectiveness (The Good): Improves operational flow, leading to a positive and significant effect on Profitability. It also significantly improves Solvency.
c. Cost Efficiency Paradox (The Problem): Despite aiming for savings, Production Cost Efficiency has a negative and significant effect on Profitability. This suggests flaws in the execution of cost cutting measures.
d. Liquidity Drivers: Production Cost Efficiency has a positive and significant effect on Liquidity. However, Operational Effectiveness has a negative effect on Liquidity.
e. Asset Management (The Weak Link): Asset Optimization shows no significant effect on Profitability.

Management must strategically revise the Cost Efficiency approach, shifting focus from raw cost cutting to value preserving optimization to eliminate the observed negative impact on profitability. Concurrently, the proven benefits of Operational Effectiveness must be continuously leveraged and scaled up through investments in digital processes and enhanced quality control. Urgent action is needed to make Asset Optimization meaningful by prioritizing the sale, repurposing, or collaboration regarding all nonstrategic or idle assets to achieve measurable returns quickly. Finally, PTPN IV should integrate the EEI framework with dedicated financial strategies, specifically risk management and working capital control, to ensure that EBITDA growth translates effectively into a robust and sustainable long-term financial structure.

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