

THE INFLUENCE OF MOTIVATION, JOB EDUCATION, TOTAL PARTICIPATION, AND LEADERSHIP ON EMPLOYEE PERFORMANCE ASSESSMENT WITH JOB SATISFACTION AS AN INTERVENING VARIABLE AT PTPN 4 REGIONAL 1 RANTAUPRAPAT PROMISE GARDEN

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Abstract

This study analyzes the influence of work motivation, job education, total participation, and leadership on employee performance assessment, with job satisfaction as an intervening variable, at PTPN IV Regional 1 Janji Rantauprapat Garden. The labor-intensive plantation sector faces challenges in enhancing employee performance, which is influenced by factors such as motivation, training, employee involvement, and leadership styles. This research employs a quantitative approach, utilizing a census method that included all 127 permanent employees. Data analysis was conducted using Structural Equation Modeling (SEM) based on Partial Least Squares (PLS) with the aid of SmartPLS 4.0 software. The findings indicate that none of the exogenous variables (work motivation, job education, total participation, and leadership) had a significant direct or indirect influence on either job satisfaction or employee performance. Furthermore, job satisfaction was not found to significantly mediate the relationship between the exogenous variables and employee performance. Additionally, the research model demonstrated low predictive relevance (Q-Square value), suggesting that it does not adequately explain the variations in job satisfaction and employee performance within this specific context. This study concludes that the hypothesized relationships were not significant in this setting, highlighting the need for further research considering other factors or different methodologies to understand employee performance drivers.

Keywords: *Work Motivation, Job Education, Total Participation, Leadership, Job Satisfaction, Employee Performance, SEM-PLS.*

INTRODUCTION

A. Background

Improving employee performance is a strategic challenge faced by companies, particularly in the labor-intensive and target-oriented plantation sector. PTPN IV Regional 1 Kebun Janji Rantauprapat, as part of a State-Owned Enterprise (BUMN), plays a vital role in supporting the productivity of the national palm oil industry. However, challenges in human resource management remain common, particularly in motivation, the effectiveness of job training, employee involvement in decision-making, and leadership styles. Based on the results of a pre-survey of 30 employees, it was found that 43.3% of respondents assessed that leadership was not optimal in supporting work achievement, and 36.7% stated that job training was not conducted consistently. Furthermore, 40% of respondents felt insufficiently involved in decision-making, and 33.3% admitted that their level of job satisfaction was low. This situation reflects that there are organizational factors that do not work synergistically to support the achievement of optimal employee performance.

On the other hand, secondary data shows that the Rantauprapat unit's production achievement rate only reached 89% of its annual target in 2023, and employee absenteeism increased by 12% compared to the previous year. This indicates a gap between planning and actual work, which requires further psychological and structural analysis. Motivation is believed to significantly influence performance. Robbins & Judge (2020) state that motivation is a psychological force that directs employee behavior toward organizational goals. Occupational education or training also plays a crucial role in developing job competencies that align with organizational needs. Continuous vocational education positively impacts employee work quality. (Putri Rachmawati et al., 2024) Furthermore, total employee

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participation in the decision-making process can increase responsibility and a sense of ownership of tasks. Ijeoma (2020) emphasizes the importance of employee involvement in a healthy managerial system to improve organizational performance. Meanwhile, transformational leadership is believed to be able to build a supportive and productive work climate. Damarsari Ratnasahara Elisabeth **et al.** (2025) suggest that leadership that provides role models and inspiration can create loyalty and encourage better performance. In this case, job satisfaction acts as a mediating variable that bridges the relationship between the main variables and employee performance. Research by Fitria **et al.** (2024) shows that job satisfaction can strengthen the influence of motivation and leadership on individual performance. With this background, this study is relevant to empirically test the influence of motivation, job education, total participation, and leadership on employee performance assessment, with job satisfaction as a mediating variable. Focusing on the context of PTPN IV Regional 1 Kebun Janji Rantauprapat is expected to provide theoretical and practical contributions to the development of human resource management policies in the agribusiness sector of state-owned enterprises.

B. Formulation of the problem

Based on the background that has been explained, the problem formulation in this research is as follows:

1. Does work motivation have a direct influence on employee job satisfaction at PTPN IV Regional 1 Kebun Janji Rantauprapat?
2. Does work education have a direct influence on employee job satisfaction at PTPN IV Regional 1 Kebun Janji Rantauprapat?
3. Does total participation have a direct effect on employee job satisfaction at PTPN IV Regional 1 Kebun Janji Rantauprapat?
4. Does leadership have a direct influence on employee job satisfaction at PTPN IV Regional 1 Kebun Janji Rantauprapat?
5. Does job satisfaction have a direct effect on employee performance at PTPN IV Regional 1 Kebun Janji Rantauprapat?
6. Do work motivation, work education, total participation, and leadership have a direct influence on employee performance at PTPN IV Regional 1 Kebun Janji Rantauprapat?
7. Does job satisfaction mediate the influence of work motivation, work education, total participation, and leadership on employee performance at PTPN IV Regional 1 Kebun Janji Rantauprapat?

C. Research purposes

The objectives of this research are as follows:

1. Analyzing the influence of work motivation on employee job satisfaction at PTPN IV Regional 1 Kebun Janji Rantauprapat.
2. Analyzing the influence of work education on employee job satisfaction at PTPN IV Regional 1 Kebun Janji Rantauprapat.
3. Analyzing the influence of total participation on employee job satisfaction at PTPN IV Regional 1 Kebun Janji Rantauprapat.
4. Analyzing the influence of leadership on employee job satisfaction at PTPN IV Regional 1 Kebun Janji Rantauprapat.
5. Analyzing the influence of job satisfaction on employee performance at PTPN IV Regional 1 Kebun Janji Rantauprapat.
6. Analyzing the direct influence of work motivation, work education, total participation, and leadership on employee performance at PTPN IV Regional 1 Kebun Janji Rantauprapat.
7. Analyzing the indirect influence of work motivation, work education, total participation, and leadership on employee performance through job satisfaction as an intervening variable.

LITERATURE REVIEW

A. Theoretical Framework

1. Work motivation

a) Understanding Work Motivation

Work motivation is an internal force that drives a person to behave in a manner that achieves a specific goal. Robbins & Judge (2020) state that motivation is a process that explains an individual's intensity, direction,

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and persistence in achieving goals. In an organizational context, motivation plays a crucial role in encouraging employees to perform optimally to achieve company targets.

b) Factors that Influence Work Motivation

1) Leadership

The leadership style applied by managers significantly influences employee work motivation. Leaders who provide direction, emotional support, and appreciation for performance will increase employee morale. Damarsari Ratnasahara Elisabeth et al. (2025) stated that transformational leadership has a positive impact on increasing employee motivation and loyalty.

2) Work environment

A safe, comfortable, and harmonious work environment supports a positive work climate. A supportive environment reduces stress and increases intrinsic employee motivation. Laily et al. (2023) explain that a conducive organizational climate encourages psychological satisfaction, which triggers motivation.

3) Recognition and Appreciation

Motivation will increase if employee achievements are appreciated and recognized openly. According to Robbins & Judge, (2020) , rewards such as promotions, bonuses, or verbal praise can increase self-esteem and encourage individuals to work better.

4) Opportunity and Appreciation

Employees will be motivated when they perceive career advancement opportunities through training, transfers, or promotions. A study by Putri Rachmawati et al. (2024) showed that access to vocational education and competency development significantly increased employee motivation.

5) Fairness and Workload Balance

A fair distribution of tasks and responsibilities will foster a sense of trust in the organization. When employees perceive that management treats them fairly and equitably, their work motivation tends to increase. (PANCASILA et al., 2020)

6) Alignment of Individual Goals with Organizational Goals

Alignment between employees' personal goals and the organization's mission can strengthen work motivation. When employees perceive that their work adds value to their personal development, their drive to contribute increases. (Utami et al., 2023)

c) Work Motivation Indicators

Based on the theory of Robbins & Judge (2020) , work motivation indicators consist of:

1) Physiological Needs

Fulfillment of basic needs such as decent wages and work facilities.

2) Job Security

A sense of security regarding employment status and social security.

3) Social Relations

Positive interactions between fellow employees.

4) Appreciation (external needs)

Recognition and appreciation for work performance.

5) Self-Actualization

Opportunity to develop personal potential and career.

2. Work Education

a) Definition of Work Education

Occupational education encompasses training, learning, and improving employee competencies in the workplace. Putri Rachmawati et al. (2024) stated that continuous occupational education can increase work effectiveness, enrich skills, and improve employee productivity. Structured training will develop employees who are adaptive to changes in systems and technology in the workplace.

b) Factors that Influence Occupational Education

Some of the main factors that influence work education include:

1) Job Competency Requirements

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Each position requires different skills and knowledge. The more complex the task, the greater the need for relevant education and job training.

- 2) Training Program Planning
The effectiveness of vocational education depends heavily on clarity of objectives, content, training methods, and the availability of competent facilitators.
- 3) Management and Organizational Support
Management involvement in encouraging and facilitating work education will determine the success of knowledge transfer into work practice.
- 4) Program Evaluation and Sustainability
Job training must be conducted sustainably and measurably. Evaluation of training outcomes serves as the basis for improvements for the following period.
- 5) Availability of Resources (Facilities and Budget)
Budget and infrastructure limitations often become obstacles to the optimal implementation of work education.

c) Education and Work Indicators

According to Ahmad *et al.* (2022), occupational education indicators are:

- 1) Frequency of Training Attended
Measures how often employees participate in on-the-job training over a specific period. This frequency demonstrates the organization's commitment to sustainable human resource development, particularly in addressing the dynamic work environment in the agribusiness sector, such as palm oil plantations.
- 2) Relevance of Training Material to Jobs
Assess the extent to which training content aligns with employees' duties and responsibilities in the field. Relevance of the material is a key factor in ensuring the transfer of technical and procedural skills into daily work practices.
- 3) Implementation of Training Results in the Field
Measuring employees' ability to apply the knowledge and skills gained from training to real-world work contexts. This can be seen in increased productivity, reduced operational errors, or efficiency in task execution.
- 4) Training Evaluation by Participants
Assess perceptions of the quality and effectiveness of the training program. This feedback serves as an important reference for developing future training methods and materials.
- 5) Organizational Support for Training
Measures the extent to which the organization supports employees in participating in training, such as ease of access, budget allocation, and post-training incentives. This indicator reflects management's commitment to systematic employee competency development.

3. Total Participation

a) Definition of Total Participation

According to Ijeoma (2020), total participation is the degree to which employees are given the space and opportunity to participate in decision-making that impacts their work. Full participation creates a sense of responsibility, enhances a sense of belonging, and strengthens employee loyalty to the company. In an agribusiness company like PTPN IV Regional 1 Kebun Janji Rantauprapat, active involvement in operational discussions and work evaluations is a form of participation that impacts individual and collective performance.

b) Factors Affecting Total Participation

According to Prasetyo *et al.* (2023), there are three dominant factors that shape the level of total employee participation in organizational activities, namely:

- 1) Leadership Style
Participatory and open leadership will create a healthy dialogue between leaders and employees. Leaders who are able to listen to aspirations, provide feedback, and appreciate the contributions of their subordinates will encourage active employee involvement in the work process. In the context of field organizations such as plantations, democratic leadership plays a crucial role in increasing operational participation.
- 2) Organizational culture

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The values embedded within an organization will influence the extent to which employees feel empowered to contribute. A work culture that supports transparency, collaboration, and respect for individual initiative will foster a spirit of participation. Conversely, a bureaucratic and rigid culture will stifle the expression of ideas and decrease employee engagement.

3) Job satisfaction

Job satisfaction with the work environment, reward system, and relationships between employees are psychological factors that encourage or hinder participation. Satisfied employees tend to be more concerned about the organization's sustainability and are motivated to participate in decision-making and work system improvements. Conversely, dissatisfaction with the work system can lead to apathy and passivity in organizational processes.

c) Total Participation Indicator

Ijeoma's (2020) measurement model ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"wDq38JgV","properties":{"formattedCitation":"(Ijeoma, 2020)","plainCitation":"(Ijeoma, 2020)","noteIndex":0},"citationItems":[{"id":511,"uris":["http://zotero.org/users/local/j2V4fzFx/items/CWFQ VCCT"]},"itemData":{"id":511,"type":"article-journal","container-title":"SSRN Electronic Journal","DOI":"10.2139/ssrn.3667548","ISSN":"1556-5068","journalAbbreviation":"SSRN Journal","language":"en","note":"publisher: Elsevier BV","source":"Crossref","title":"Employee Participation in Decision Making and its impact on Organizational Performance: Evidence from Government Owned Enterprises, Port Harcourt, Nigeria","title-short":"Employee Participation in Decision Making and its impact on Organizational Performance","URL":"https://www.ssrn.com/abstract=3667548","author":[{"family":"Ijeoma","given":"Chim aobi"}],"accessed":{"date-parts":[["2025",7,22]]},"issued":{"date-parts":[["2020"]]}]},"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"} , the total participation indicator can be described as follows:

1) Involvement in Organizational Decisions

This indicator reflects the extent to which employees are involved in determining work methods, scheduling, and formulating technical procedures directly related to daily tasks. The higher the involvement, the greater the employee's contribution to the effectiveness of work execution.

2) Feeling Appreciated for Contribution

This indicator assesses the extent to which employee opinions and suggestions are received, considered, and implemented by management. Recognition for contributions drives employee motivation and loyalty.

3) Opportunity to Express Opinions

Measuring the availability of formal and informal spaces or forums for employees to voice aspirations, ideas, and complaints without pressure or fear of negative consequences.

4) Organizational Information Transparency

Employee participation is also influenced by management's transparency of information, including work objectives, operational plans, and evaluation results. The more transparent an organization is, the greater the opportunity for active employee participation.

4. Leadership

a) Definition of Leadership

Leadership in an organization is defined as the ability to guide, influence, and motivate others to work effectively toward achieving common goals. Damarsari Ratnasahara Elisabeth **et al.** (2025) emphasize that transformational leadership plays a crucial role in creating a positive work climate through an emotional and motivational approach to subordinates.

b) Factors Influencing Leadership

Tarigan, (2025) identified three main aspects that determine the success of this leadership style, especially in workplaces that demand adaptation and innovation:

1) Integrity and Moral Exemplary

Leaders who uphold ethical values and serve as role models for their younger subordinates build trust, loyalty, and create a work climate that supports shared commitment.

2) Ability to Motivate and Direct Vision

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The success of transformational leadership depends on the extent to which the leader is able to inspire his subordinates by conveying a clear vision and inspiring a collective work spirit.

3) Support for Innovation and Creativity

Leaders who make room for new ideas and encourage critical thinking will strengthen the spirit of innovation, increase employee confidence, and create an adaptive and participatory work culture.

c) Leadership Indicators

According to Yu & Xiang (2024) leadership indicators are:

1) Idealized Influence (Ideal Influence)

Leaders act as moral role models by demonstrating ethics, consistency, and integration in all their actions. This behavior strengthens trust and respect among subordinates and creates positive emotional bonds within the organization.

2) Inspirational Motivation

Leaders convey the organization's vision and mission convincingly and inspire work enthusiasm. An inspirational communication style fosters employee enthusiasm and commitment to achieving shared goals.

3) Intellectual Stimulation

Leaders encourage subordinates to think critically, question old procedures, and generate innovative ideas which are essential in a dynamic work environment.

4) Individualized Consideration

Leaders pay special attention to the personal development needs of each subordinate, both emotionally and professionally, through personal mentoring and coaching.

5. Job satisfaction

a) Understanding Job Satisfaction

Job satisfaction is a psychological state that reflects an employee's positive attitude toward their work, including the work environment, colleagues, superiors, and the organizational system as a whole. According to Laily et al. (2023) , job satisfaction is formed through an individual's perception of workload, role clarity, interpersonal relationships, and rewards received from the organization.

b) Factors Influencing Job Satisfaction

Laily et al. (2023) identified three main factors that significantly influence job satisfaction, which also strengthens its role as a mediating variable in this research model:

1) Work Life Balance

The balance between work and personal life, measured through the WIPL (Work Interference with Personal Life) and WPLE (Work Enhancement of Personal Life) indicators, has been shown to increase job satisfaction in the long term.

2) Burnout

Chronic stress, characterized by emotional and physical exhaustion, negatively impacts job satisfaction. However, an individual's resilience to burnout also determines their perceived level of satisfaction.

3) Job Insecurity

Uncertainty about the future of work reduces feelings of security and impacts job satisfaction, although its impact on performance is relatively indirect.

c) Job Satisfaction Indicators

Job satisfaction as a mediating variable is measured through five main dimensions based on Spector's (2022) research , which reflects employee perceptions of important aspects of work, namely:

1) Satisfaction with Salary

Employee perceptions of fairness and adequacy of income.

2) Satisfaction with Supervision

Quality of relationships and support from superiors.

3) Satisfaction with Coworkers

Comfort and social interaction with fellow employees.

4) Satisfaction with the Job Itself

Assessment of the content of the work, including the variety and meaning of the tasks.

5) Satisfaction with Career Opportunities

6. Employee Performance

a) Understanding Employee Performance

Employee performance refers to the work results achieved by individuals in carrying out their duties according to their responsibilities. According to Stephen & Rahardjo (2024), performance is the primary indicator of an organization's success in managing human resources. Commonly used aspects include effectiveness, efficiency, timeliness, and the ability to meet work targets.

b) Factors Affecting Employee Performance

According to Robbins & Judge (2020), the main factors that influence employee performance include:

- 1) Motivation

High motivation drives optimal work target achievement, as motivation plays a significant role in increasing employee productivity.

- 2) Education and Job Training

Ongoing training strengthens employees' technical skills and efficiency. Job training has a direct impact on improving performance, particularly in target-based sectors.

- 3) Total Participation

Active involvement in work processes and decision-making increases a sense of responsibility and ownership of tasks.

- 4) Leadership

Transformational leadership that provides consistent direction, support, and motivation has been proven to drive high performance.

c) Employee Performance Indicators

Aminah et al. (2024) identified three main indicators of employee performance, namely:

- 1) Quality of Work

Describes the accuracy and conformity of work results to established standards. In the plantation sector, this includes procedural accuracy and harvest quality.

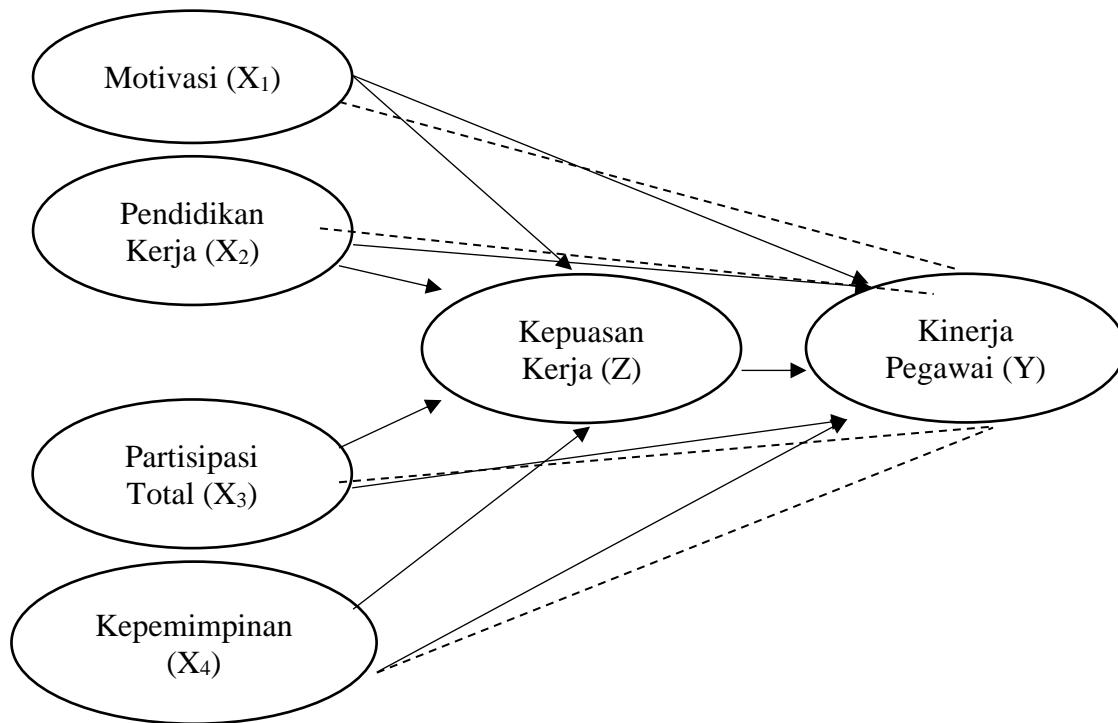
- 2) Quantity of Work

Shows the amount of work output in a certain period, such as harvest volume or work area coverage completed according to target.

- 3) Punctuality

Measuring the ability to complete tasks on schedule. Time discipline is a crucial indicator that influences the efficiency and continuity of work processes.

B. Conceptual Framework



Source: Processed by researchers, 2025

Figure 1 Conceptual Framework

C. Research Hypothesis

1) Direct (Partial) Hypothesis

- H_1 : Motivation has a positive and significant effect on employee performance.
- H_2 : Work education has a positive and significant effect on employee performance.
- H_3 : Total participation has a positive and significant effect on employee performance.
- H_4 : Leadership has a positive and significant influence on employee performance.
- H_5 : Job satisfaction has a positive and significant effect on employee performance.
- H_6 : Motivation has a positive and significant effect on job satisfaction.
- H_7 : Job education has a positive and significant effect on job satisfaction.
- H_8 : Total participation has a positive and significant effect on job satisfaction.
- H_9 : Leadership has a positive and significant influence on job satisfaction.

2) Indirect Hypothesis (Mediation through Job Satisfaction)

- H_{10} : Job satisfaction mediates the influence of motivation on employee performance.
- H_{11} : Job satisfaction mediates the influence of job education on employee performance.
- H_{12} : Job satisfaction mediates the effect of total participation on employee performance.
- H_{13} : Job satisfaction mediates the influence of leadership on employee performance.

CHAPTER III RESEARCH METHODS

A. Types of research

This type of research uses a quantitative approach, in accordance with the positivistic paradigm, with the aim of explaining the causal relationship between variables (motivation, work education, total participation, leadership) and employee performance assessments at PTPN IV Regional 1 Kebun Janji Rantauprapat, through the mediation mechanism of job satisfaction. This approach was chosen because it can test hypotheses using statistical techniques and standardized instruments. (Abdullah et al. 2025)

B. Research Location and Research Time

This research was conducted at PTPN IV Regional 1 Kebun Janji Rantauprapat, located in Labuhanbatu Regency, North Sumatra Province. This location was chosen because it is a strategic plantation unit for human resource management and palm oil production, and is relevant to the study's objective, employee performance variables. The research period, from instrument development to data collection to analysis, spanned March to June 2025.

C. Population and Sample

1. Population

The research population consists of all permanent employees of PTPN IV Regional 1 Kebun Janji Rantauprapat who are still actively working until May 2025. Based on the company's internal data, the population is 127 people spread across the production, processing, maintenance, security, and administration sections.

The selection of permanent employees as the population was based on the consideration that this group has more stable work experience, understands the company's operational systems and leadership patterns, and is directly involved in activities related to the research variables: motivation, job education, total participation, leadership, job satisfaction, and performance. Given these characteristics, this population is considered to best reflect the actual conditions being analyzed.

2. Sample

a. Sampling Determination Techniques

In the initial design, the study considered using a *probability sampling method* using *proportionate stratified random sampling* because each work unit had a different number of employees. This approach is commonly used when the population is divided into heterogeneous groups. However, after considering the relatively small population size and the fact that the sample was located within a single work area, this sampling technique was discontinued.

b. Number of Samples

The sample size was determined based on SEM-PLS requirements, which generally require a sample size of 5–10 times the number of indicators. With a total of 35 indicators, the theoretical sample size would be between 175 and 350 respondents. This number could not be met because the actual population consisted of only 127 permanent employees.

c. Sample Selection Conclusion

Based on these conditions, the study employed a census method. All 127 permanent employees were selected as respondents. The census approach was chosen to reduce selection bias and ensure that the structural analysis results accurately reflect the population.

3. Sample Characteristics

Respondent characteristics are presented to provide an overview of the employee profiles involved in the study, ensuring a clear context for the analysis. The sample characteristics include:

a. Division or Work Unit

Respondents came from several work units, namely:

- 1) Production
- 2) Security
- 3) Maintenance
- 4) Processing
- 5) Administration

This grouping shows differences in responsibilities and work patterns that can influence perceptions of research variables.

b. Employee Status

All respondents were permanent employees. This group was selected because of their longer work experience and better understanding of organizational processes.

c. Years of service

Years of service are grouped into four categories:

- 1) 1–5 years
- 2) 6–10 years
- 3) 11–20 years

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4) More than 20 years

The range helps to see the variation in levels of experience in dealing with job demands and leadership patterns.

d. Age

Respondents' ages are grouped into:

- 1) 21–30 years
- 2) 31-40 years
- 3) 41-50 years
- 4) 51-58 years

Variations in education levels indicate differences in competency readiness and ability to participate in training.

e. Gender

Respondents are divided into:

- 1) Man
- 2) Woman

This data provides an overview of employee composition based on gender and its relevance to research variables.

D. Research Data Sources

This research uses two types of data sources, namely:

1) Primary Data

Primary data was obtained directly from respondents by distributing closed questionnaires to all employees of PTPN IV Regional 1 Kebun Janji Rantauprapat.

2) Secondary Data

Secondary data was obtained from internal company documents, annual reports, organizational structures, and relevant personnel data to support the analysis of the organizational context.

E. Operational Definition of Research Variables

Table 1. Operational Definition of Variables

No	Definition	Indicator
1	<p>Motivation (X_1)</p> <p>Motivation is an internal or external drive that drives employees to achieve organizational goals optimally. (Utami et al., 2023) (Robins and Judge (2020)</p>	<p>1) Drive to achieve</p> <p>2) Desire to grow</p> <p>3) Perseverance in work</p> <p>4) Satisfaction with work results</p> <p>(Utami et al., 2023) 12/23/2025 10:25:00 AM</p>
2	<p>Work Education (X_2)</p> <p>work knowledge, skills and attitudes through training and development. (Graduation of Putri & Astuti, 2022)</p>	<p>1) Suitability of training to job needs</p> <p>2) Training frequency</p> <p>3) Impact of training on competency</p> <p>4) Application of training results in work</p> <p>(Graduation of Putri & Astuti, 2022)</p>

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3	Total Participation (X ₃) Total participation is the active involvement of employees in decision-making and the overall execution of work processes. (Ijeoma, 2020)	1) Involvement in work planning 2) Providing input into decisions 3) Involvement in problem solving 4) Sense of ownership of work (Ijeoma, 2020)
4	Leadership (X ₄) Leadership is the ability of a superior to influence, guide, and direct employees to achieve organizational goals. { DAMARSAHARA ET AL 2025 }	1) Exemplary leadership 2) Effective communication 3) Ability to motivate subordinates 4) Strategic decision making (damarsahara, 2025)12/23/2025 10:25:00 AM
5	Job Satisfaction (Z) Job satisfaction is a pleasant or unpleasant emotional state for employees in assessing their work. (Fitria, et al., 2024)	1) Job satisfaction 2) Satisfaction with superiors 3) Satisfaction with the work environment 4) Satisfaction with compensation (Fitria, et al., 2024)
6	Employee Performance (Y) Performance is the work results in terms of quality and quantity achieved by employees in	1) Quality of work 2) Quantity of work

No	Definition	Indicator
	carry out tasks according to the responsibilities given. (Stephen & Rahardjo, 2024)	3) Punctuality of work 4) Teamwork (Stephen & Rahardjo, 2024)

Source: Processed by Researchers, 2025

F. Data Analysis Techniques

The analysis technique used in this study is Structural Equation Modeling (SEM) based on Partial Least Square (PLS) with the help of SmartPLS 4.0 software. This method was chosen because it is able to handle models with complex latent variables as well as a relatively small sample size and strictly non-normal data distribution.

Analysis is carried out through three main stages:

- 1) Evaluation of Measurement Model (Outer Model):

Assessing the reliability and validity of the construct through the outer loading value (>0.70), Composite Reliability, Cronbach's Alpha (>0.70), AVE (>0.50), and discriminant validity.

- 2) Structural Model Evaluation (Inner Model)

Using R-square, Q-square, path coefficient, as well as t-statistic and p-value to test the strength and significance of the relationship between variables.

- 3) Mediation Effect Analysis:

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Testing the role of job satisfaction as an intervening variable using bootstrapping indirect effect and Sobel test as confirmation.

CHAPTER IV RESULTS AND DISCUSSION

A. Outer Model Analysis

Outer model analysis was conducted to ensure that each indicator forming the latent variable in this study accurately represents the construct being measured. Testing included convergent validity, discriminant validity, and construct reliability. The entire process was conducted using SmartPLS 4 in accordance with PLS-SEM evaluation standards (Hair et al., 2021).

1. Convergent Validity

Convergent validity testing was conducted by assessing the *loading factor* and the *Average Variance Extracted* (AVE) value. Indicators were declared valid if the loading factor was above 0.70 and the AVE exceeded 0.50. Based on the SmartPLS 4 processing results, all indicators for each construct met these eligibility limits. The loading value for the Work Motivation variable is between 0.765–0.834, while the Work Education variable recorded a value of 0.815–0.875. The Total Participation indicator shows a value of 0.733–0.822, and the Leadership variable is in the range of 0.752–0.863. For Job Satisfaction, the loading value is recorded between 0.752–0.829, while Employee Performance Assessment has a value of 0.826 and 0.876. All indicators are above the minimum limit so that each construct is declared representative.

The AVE results also show consistency with these findings. Work Motivation has an AVE of 0.661, Job Education 0.732, Total Participation 0.604, Leadership 0.639, Job Satisfaction 0.634, and Employee Performance Assessment 0.724. All are above 0.50, indicating that each construct is able to adequately explain the indicator variance. Thus, all variables in this study have met the convergent validity requirements and are suitable for use in the structural model analysis stage.

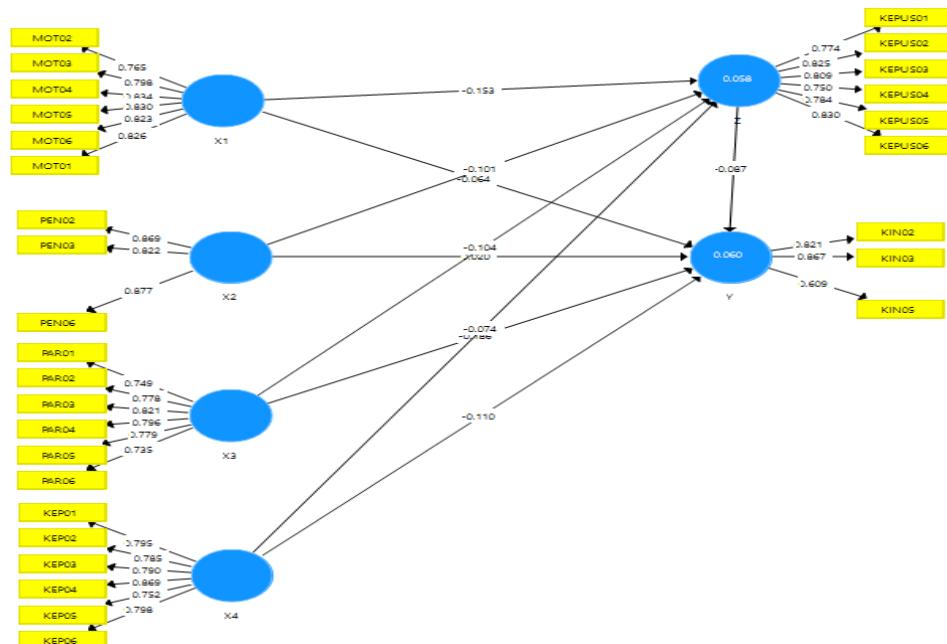


Figure 2 Outer Model Results (Convergent Validity)

Source: SmartPLS 4 Data Processing Results (2025)

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The Smart PLS output for loading factor gives the results in the following table: Outer Loading

Table 2. Outer Loading

Variables	Indicator	Outer Loading	Provision	Status
Work Motivation (X ₁)	X _{1.1}	0.827	0.70	Valid
	X _{1.2}	0.765	0.70	Valid
	X _{1.3}	0.796	0.70	Valid
	X _{1.4}	0.834	0.70	Valid
	X _{1.5}	0.828	0.70	Valid
	X _{1.6}	0.826	0.70	Valid
Work Education (X ₂)	X _{1.1}	0.875	0.70	Valid
	X _{2.2}	0.815	0.70	Valid
	X _{2.3}	0.875	0.70	Valid
Total Participation (X ₃)	X _{3.1}	0.752	0.70	Valid
	X _{3.2}	0.774	0.70	Valid
	X _{3.3}	0.822	0.70	Valid
	X _{3.4}	0.798	0.70	Valid
	X _{3.5}	0.780	0.70	Valid
	X _{3.6}	0.733	0.70	Valid
Leadership (X ₄)	X _{4.1}	0.805	0.70	Valid
	X _{4.2}	0.784	0.70	Valid
	X _{4.3}	0.792	0.70	Valid
	X _{4.4}	0.863	0.70	Valid
	X _{4.5}	0.752	0.70	Valid
	X _{4.6}	0.796	0.70	Valid
Job Satisfaction (Z)	Z ₁	0.775	0.70	Valid
	Z ₂	0.825	0.70	Valid
	Z ₃	0.809	0.70	Valid
	Z ₄	0.752	0.70	Valid
	Z ₅	0.784	0.70	Valid
	Z ₆	0.829	0.70	Valid
Employee Performance Assessment (Y)	Y ₁	0.826	0.70	Valid
	Y ₂	0.876	0.70	Valid

Source: SmartPLS 4 Data Processing Results (2025)

The table shows that all indicators for the variables Work Motivation, Work Education, Total Participation, Leadership, Job Satisfaction, and Employee Performance Assessment have *loading factor values* above 0.70. Thus, all indicators can be declared valid and suitable for use as construct measures because they are able to adequately represent their latent variables.

2. **Construct Reliability and Validity**

Construct reliability and validity testing was conducted to ensure that each construct in the model has internal consistency and the ability to adequately explain indicator variance. Evaluation was conducted using four parameters: Cronbach's Alpha, rho_A, Composite Reliability (CR), and Average Variance Extracted (AVE). A construct is considered reliable if the Cronbach's Alpha and Composite Reliability values are above 0.70, while convergent validity is met if the AVE value exceeds 0.50.

Table 3. Construct Reliability and Validity

Variables	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Work Motivation (X ₁)	0.899	0.914	0.921	0.661
Work Education (X ₂)	0.820	0.848	0.891	0.732
Total Participation (X ₃)	0.871	0.898	0.901	0.604
Leadership (X ₄)	0.888	0.905	0.914	0.639
Performance Assessment (Y)	0.622	0.631	0.840	0.724
Job Satisfaction (Z)	0.885	0.895	0.912	0.634

Source: SmartPLS 4 Data Processing Results (2025)

All constructs in the model demonstrate good reliability. The Work Motivation variable (X₁) has a Cronbach's Alpha value of 0.899 and a Composite Reliability of 0.921, indicating very strong indicator consistency. Occupational Education (X₂) and Total Participation (X₃) also demonstrate a good level of reliability with Composite Reliability values of 0.891 and 0.901, respectively. Similar conditions are seen in the Leadership (X₄) and Job Satisfaction (Z) variables, both of which have Composite Reliability values above 0.90.

The Employee Performance Assessment (Y) variable obtained a Composite Reliability value of 0.840, thus still meeting the reliability criteria even though the Cronbach's Alpha value was recorded as lower than the other constructs. All variables had an AVE in the range of 0.604–0.732, which means each construct was able to adequately explain the variance of its indicator. Based on these results, all constructs in the study have met the requirements for reliability and convergent validity. Therefore, these variables can be used in the next stage of testing the structural model.

B. Structural Model Analysis (Inner Model)

1. R-Square

The R-square value is used to determine how much exogenous variables can explain endogenous variables in a structural model. The higher the R-square value, the better the model's predictive ability. The results of SmartPLS processing of the endogenous variables in this study are shown in the following table .

**Table 4.14
R-Square**

Variables	R-Square	R-Square Adjusted
Employee Performance Assessment (Y)	0.066	0.027
Job Satisfaction (Z)	0.058	0.026

Source: SmartPLS 4 Data Processing Results (2025)

The Employee Performance Assessment variable (Y) has an R-Square value of 0.066. This means that the constructs of Work Motivation, Work Education, Total Participation, Leadership, and Job Satisfaction only contribute 6.6% in explaining variations in employee performance changes, while the remaining 93.4% is influenced by other factors outside the model. This value is in the weak category, but is still acceptable in human resource research which is generally influenced by many external factors. The Job Satisfaction (Z) variable shows an R-Square value of 0.058, which illustrates that the constructs of Work Motivation, Job Education, Total Participation, and Leadership together explain 5.8% of the variation in job satisfaction levels. The remaining 94.2% comes from variables outside the research model. This value is also in the low category, but still reflects the psychological dynamics and employee perceptions that are often influenced by other factors such as organizational culture, compensation systems, workload, and work environment. Overall, the R-

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squared value indicates that the model used is partially explanatory and unable to describe all the determinants of employee satisfaction and performance. However, this value still provides an empirical picture of the direction of the contribution of exogenous variables to the endogenous variables in the research model.

2. *Q-Square (Predictive Relevance)*

The Q-Square test is used to assess the predictive ability of a structural model against endogenous variables. The calculation is performed using a *blindfolding procedure* by comparing *the sum of squares of observations* (SSO) and *the sum of squares of prediction errors* (SSE). A variable is considered to have predictive relevance if the Q-Square value is greater than zero.

Table 4.15
Q-Square (Predictive Relevance)

Variables	SSO	SSE	Q ² (=1-SSE/SSO)
X ₁	750,000	750,000	0.000
X ₂	375,000	375,000	0.000
X ₃	750,000	750,000	0.000
X ₄	750,000	750,000	0.000
Y	250,000	250,504	-0.002
Z	750,000	733,285	0.002

Source: SmartPLS 4 Data Processing Results (2025)

The Q-Square value for the Employee Performance Assessment (Y) variable was recorded at -0.002. This negative number indicates that the model lacks predictive ability for this variable, so the predictions produced by the model are no better than those using the average value as a basis for comparison. The Job Satisfaction variable (Z) recorded a Q-Square value of 0.002. Although positive, this figure is still very small and indicates that the model's predictive power regarding job satisfaction is relatively weak. This is understandable, as job satisfaction is influenced by many external factors not included in the structural model.

Overall, the Q-Square results indicate that the research model has limited predictive power, particularly in explaining variations in employee performance and job satisfaction. However, these values still provide insight into the direction of the contribution of exogenous variables in influencing changes in endogenous variables within an organizational context.

C. Mediation Effect

1. *Direct Effect*

Direct effect analysis was conducted to assess the extent to which each exogenous variable influences the endogenous variable before considering the role of Job Satisfaction (Z) as a mediator. Evaluation was conducted using *path coefficients*, *t-statistics*, and *p-values* obtained from the *bootstrapping process* in SmartPLS.

Table 4.16
Direct Effect

Variable Relationship	Original Sample	Sample Mean (M)	Standard Deviation (STDEV)	t-Statistics	P-Value
X ₁ → Z	-0.153	-0.155	0.102	1,500	0.134
X ₂ → Z	-0.100	-0.090	0.124	0.807	0.420
X ₃ → Z	-0.103	-0.124	0.116	0.892	0.373
X ₄ → Z	-0.077	-0.090	0.122	0.626	0.532
X ₁ → Y	-0.076	-0.074	0.113	0.676	0.499
X ₂ → Y	0.022	0.015	0.144	0.150	0.881
X ₃ → Y	-0.199	-0.213	0.107	1,863	0.063
X ₄ → Y	-0.101	-0.112	0.112	0.903	0.367
Z → Y	-0.93	-0.092	0.097	0.960	0.338

Source: SmartPLS 4 Data Processing Results (2025)

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The test results showed that none of the direct relationships between variables reached a statistically significant level. All *p-values* were > 0.05 , indicating that the four exogenous variables were not proven to have a direct influence on either Job Satisfaction (Z) or Employee Performance Assessment (Y). On the path to Job Satisfaction, the coefficient value is in the range of -0.077 to -0.153 with a weak level of significance, so it cannot be concluded that Work Motivation, Job Education, Total Participation, and Leadership have a direct influence on job satisfaction.

The same condition is seen in the path leading to Employee Performance Assessment. Although the coefficient of the Total Participation path ($X_3 \rightarrow Y$) shows a tendency to approach the significance limit ($p = 0.063$), the results still do not meet the requirements for statistical significance. These findings indicate that the pattern of influence between variables does not occur directly. Therefore, the possibility of an indirect influence through the mediation pathway of Job Satisfaction (Z) is important to test in the next stage through *indirect effect* and *total effect analyses*.

2. *Indirect Effect*

Indirect effect analysis was conducted to assess whether the Job Satisfaction variable (Z) acts as a mediator in the relationship between exogenous variables (Work Motivation, Job Education, Total Participation, and Leadership) and the main endogenous variable, namely Employee Performance Assessment (Y). Testing was conducted based on the indirect path coefficient value, t-statistic, and p-value from the bootstrapping process in SmartPLS.

Table 4.17
Indirect Effect

Variable Relationship	Original Sample	Sample Mean (M)	Standard Deviation (STDEV)	t-Statistics	P-Value
$X_1 \rightarrow Z \rightarrow Y$	0.014	0.014	0.021	0.667	0.505
$X_2 \rightarrow Z \rightarrow Y$	0.009	0.009	0.016	0.534	0.594
$X_3 \rightarrow Z \rightarrow Y$	0.010	0.011	0.019	0.526	0.599
$X_4 \rightarrow Z \rightarrow Y$	0.007	0.008	0.014	0.517	0.605

Source: SmartPLS 4 Data Processing Results (2025)

The analysis results show that there is no significant mediation pathway through Job Satisfaction (Z) to Employee Performance Assessment (Y). All p-values are well above the 0.05 significance threshold, with a range of 0.505 to 0.605. Thus, Job Satisfaction is not proven to be a mediator in the relationship between exogenous and endogenous variables. The Work Motivation Path ($X_1 \rightarrow Z \rightarrow Y$) produces an indirect coefficient of 0.014 with a t-statistic of 0.667, indicating that changes in motivation are not passed on through increased job satisfaction to influence employee performance. Occupational Education ($X_2 \rightarrow Z \rightarrow Y$) also did not show a significant indirect effect, with a coefficient value of 0.009 and a p-value of 0.594. A similar condition occurred in Total Participation ($X_3 \rightarrow Z \rightarrow Y$), which recorded a coefficient of 0.010 and a *t-statistic* of 0.526, thus not indicating a mediating relationship. The Leadership Path ($X_4 \rightarrow Z \rightarrow Y$) also did not meet the significance criteria with a coefficient value of 0.007 and a p-value of 0.605. This means that in this study, the role of leadership is not transmitted through job satisfaction to influence performance assessment. Overall, these findings align with the results of the previous direct effects analysis, where the relationship between exogenous variables and Employee Performance Assessment was insignificant. Thus, the constructed mediation model found no evidence of Job Satisfaction as a mediator in the relationship between the research variables.

3. *Total Effect*

Total effect analysis was conducted to obtain a comprehensive overview of the influence of exogenous variables on endogenous variables, considering the combination of direct and indirect effects through mediating variables. Path coefficients, t-statistics, and p-values were obtained through a bootstrapping process in SmartPLS to assess whether the relationships formed showed a significant influence.

Table 4.18
Total Effect

Variable Relationship	Original Sample	Sample Mean (M)	Standard Deviation (STDEV)	t-Statistics	P-Value
$X_1 \rightarrow Z$	-0.153	-0.155	0.102	1,500	0.134
$X_2 \rightarrow Z$	-0.100	-0.090	0.124	0.807	0.420
$X_3 \rightarrow Z$	-0.103	-0.124	0.116	0.892	0.373
$X_4 \rightarrow Z$	-0.077	-0.090	0.122	0.626	0.532
$X_1 \rightarrow Y$	-0.090	-0.089	0.116	0.773	0.440
$X_2 \rightarrow Y$	0.014	0.010	0.145	0.097	0.923
$X_3 \rightarrow Y$	-0.209	-0.223	0.110	1,906	0.057
$X_4 \rightarrow Y$	-0.108	-0.120	0.114	0.944	0.346
$Z \rightarrow Y$	-0.093	-0.092	0.097	0.960	0.338

Source: SmartPLS 4 Data Processing Results (2025)

the *total effect* test show that there is no significant relationship between the exogenous and endogenous variables, either on the path to Job Satisfaction (Z) or on the path to Employee Performance Assessment (Y). All p-values are above the significance threshold of 0.05, so there is no statistical relationship that can be stated with confidence.

In the relationship to Job Satisfaction (Z), the four exogenous variables — Work Motivation, Work Education, Total Participation, and Leadership — all show weak coefficient values and significance levels. This is consistent with the findings at the direct and indirect effect stages, which both provide no evidence of a strong causal relationship. Meanwhile, in the relationship to Employee Performance Assessment (Y), the test results also showed insignificance for all exogenous variables. Total Participation ($X_3 \rightarrow Y$) had a t-statistic of 1.906 and a p-value of 0.057, approaching the significance limit but still not meeting the criteria. Other exogenous variables showed significance values even further beyond the test limit. Overall, the results of the total effect analysis confirm that neither the direct nor indirect influence of the exogenous variables forms a significant relationship with the mediating variables nor the final endogenous variable. Thus, the study's structural model does not show any strong causal influence between the variables, and Job Satisfaction is not proven to act as a mediator in this relationship.

D. Conclusion

This study aims to analyze the influence of Work Motivation, Work Education, Total Participation, and Leadership on Employee Performance Assessment with Job Satisfaction as a mediating variable at PTPN IV Regional 1 Kebun Janji Rantauprapat. Based on the results of data processing through SmartPLS, several conclusions can be outlined as follows:

1. Work Motivation, Job Education, Total Participation, and Leadership do not have a direct effect on Job Satisfaction. All exogenous relationship paths to the mediating variables show p-values above the significance limit, so there is no empirical evidence that these four variables can directly increase job satisfaction.
2. Work Motivation, Job Education, Total Participation, and Leadership did not directly influence Employee Performance Assessments. This finding indicates that increased motivation, job education levels, employee involvement, and leadership styles have not significantly contributed to performance assessment results in the corporate environment.
3. Job satisfaction has no significant effect on employee performance assessments. Test results indicate that employee job satisfaction levels are not a determining factor in their performance assessments.
4. Job satisfaction did not act as a mediator. The indirect effect results show that the mediating variable was unable to bridge the influence of the four exogenous variables on Employee Performance Assessment. Thus, an indirect relationship mechanism was not established in the model.
5. The predictive relevance (Q^2) value indicates low predictive ability. This indicates that the structural model is not yet able to adequately explain variations in Job Satisfaction and Employee Performance Assessment, thus requiring model development in further research.

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Overall, this study shows that the four exogenous variables Work Motivation, Work Education, Total Participation, and Leadership are not significant determinant factors for employee satisfaction or performance assessment at PTPN IV Regional 1 Kebun Janji Rantauprapat.

E. Suggestion

Based on research findings that show that the variables of Work Motivation, Work Education, Total Participation, and Leadership have not had a significant influence on Job Satisfaction or Employee Performance Assessment, several suggestions that can be given are as follows:

1. Practical Advice
 - a. Companies need to evaluate factors that have the potential to significantly impact employee satisfaction and performance. Based on field conditions, aspects such as compensation systems, welfare, workload, and task clarity are likely more dominant than the variables tested in this study. Improvements in these aspects could be the first step in driving improved performance.
 - b. A review of the performance appraisal system is necessary. To make assessments more objective and motivate employees to perform optimally, assessment indicators should be made clearer, more measurable, and linked to rewards or career development opportunities.
 - c. Employee education and training need to be mapped to job requirements. Although the Job Education variable does not have a significant influence in the model, targeted training remains crucial for strengthening employees' technical and non-technical competencies.
 - d. Communication between superiors and subordinates needs to be strengthened. Research shows that leadership has not significantly impacted employee satisfaction or performance. This finding should serve as input for plantation-level leaders to provide more frequent direction, feedback, and dialogue with employees.
 - e. Employee involvement in operational activities can be directed toward activities that have a real impact. Employee participation remains crucial, but it needs to be accompanied by structural support so that their contributions can be measured and the organization can feel the benefits.
2. Academic Advice
 - a. Further research could include other variables more relevant to the context of work in the plantation sector. Potentially influential variables include job stress, financial satisfaction, organizational support, work climate, and organizational commitment.
 - b. Research models can be developed by incorporating moderating variables, such as working age, job type, or work unit characteristics, to better understand the relationships between variables.
 - c. Future research can use mixed methods to obtain a more complete picture of the factors that influence employee performance, especially by exploring employees' direct experiences through interviews.
 - d. It is necessary to consider using a broader sample or across plantations so that the research results have a higher reach and can describe the overall condition of employee performance at PTPN IV.

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