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Analysis of Working Hours, Knowledge Management, and Employee Performance Appraisal on Employee Satisfaction at PLTU Asam-Asam

Ade Triyanto[a], Sriyono[b], Wisnu Panggah Setiyono[c]

[abc] *Program Studi Magister Manajemen, Fakultas Bisnis Hukum Dan Ilmu Sosial Universitas Muhammadiyah Sidoarjo*

* *Corresponding author e-mail: sriyono@umsida.ac.id*

A R T I C L E   I N F O

A B S T R A C T

PLTU Asam-Asam faces challenges in managing working hours, the effectiveness of knowledge management, and the transparency of performance appraisals, which can affect employee satisfaction. This study aims to analyze the impact of working hours, knowledge management, and performance appraisals on employee satisfaction at PLTU Asam-Asam. The research method employs a quantitative approach using the SEM-PLS analysis technique, with a sample of 183 employees collected through a Likert-scale-based questionnaire. The novelty of this research lies in the simultaneous analysis of the three variables within the steam power plant industry context, which has been relatively unexplored in previous studies. The results show that working hours ($\beta=0.222$, $T=2.507$, $p=0.012$), knowledge management ($\beta=0.258$, $T=2.577$, $p=0.010$), and performance appraisal ($\beta=0.319$, $T=3.070$, $p=0.002$) have a positive and significant impact on employee satisfaction, with performance appraisal being the most influential variable. The interaction of the three variables also shows a significant impact on employee satisfaction ($\beta=0.237$, $T=2.375$, $p=0.026$). These findings confirm that a combination of optimal working hours management, effective knowledge management systems, and transparent performance appraisal mechanisms can enhance employee well-being and satisfaction while encouraging more adaptive human resource management policies.

1. INTRODUCTION

PLTU Asam-Asam, as one of the strategic steam power plants in Indonesia, plays a crucial role in providing energy for the needs of both society and industry. PLTU Asam-Asam operates under a high workload with strict job demands, making the balance between working hours and rest time a critical factor for employee productivity and well-being. Additionally, the implementation of knowledge management in this work environment still faces challenges in the distribution of information and the optimal utilization of knowledge, which can impact employee work effectiveness. On the other hand, the performance appraisal system in place has the potential to create perceptions of unfairness among employees if not implemented objectively and transparently.

Employee satisfaction is one of the key elements that determine the productivity and effectiveness of an organization, including in the energy sector, such as coal-fired power plants (PLTU) (Anggi Anggriani & Muhammad Badar, 2022). The concept of job satisfaction refers to an individual's attitude or emotional response toward the tasks or work they perform (Sunarta, 2019). Every individual longs for a work environment that not only supports professional achievement but also provides a sense of happiness and emotional balance (Kurniawan Kurniawan & Natal Indra, 2024). The Asam-Asam Coal-Fired Power Plant faces several issues or gaps in human resource management that may impact employee satisfaction.

One of the main issues at the Asam-Asam Coal-Fired Power Plant (PLTU Asam-Asam) is the imbalance in working hours, where there are significant fluctuations in employees' working hours across different semesters. This can lead to work fatigue and decrease work effectiveness. Working hours refer to a specific period used to complete tasks, whether during the day or at night (Kurniawan Kurniawan & Natal Indra, 2024). The duration of work execution can be long or short, depending on the needs of the work environment determined by the relevant office, which is often sporadic in nature (Anggi Anggriani & Muhammad Badar, 2022). Without careful planning, there will be no guidelines to ensure that every effort made aligns with the desired goals (P. et al., 2023). Based on data from the first semester to the second semester of 2023, as well as the first semester of 2024, there are variations in employee working hours. These are presented in Table 1.

Table 1. Average Working Hours Data of PLTU Asam-Asam Employees

Semester	Average Working Hours	% of Standard (960 hours)	Difference from Standard
S1 2023	874.83	91,14%	-85,17
S2 2023	962.67	100,28%	+2,67
S1 2024	803.83	83,73%	-156,17

The data in Table 1 shows the average working hours of employees at the Asam-Asam coal-fired power plant (PLTU Asam-Asam). Based on the standard of 960 hours per semester, there

is a significant decline in the first semester of 2024, where the average working hours only reached 83.73% of the established standard (803.83 hours). This represents a decrease of 16.49% compared to the second semester of 2023. Research by (Kurniawan Kurniawan & Natal Indra, 2024)(Anggi Anggriani & Muhammad Badar, 2022)(Isni et al., 2022)(Chongyu, 2021)(Safitri & Kalis, 2023) it shows that working hours have a positive effect on employee satisfaction, where proper work hour arrangements can enhance employee well-being and reduce stress, ultimately increasing their level of satisfaction.

Knowledge management is the process that involves the creation, storage, sharing, and utilization of knowledge within an organization (Said et al., 2020). Organizations or companies that adopt this system are able to respond to the needs and desires of stakeholders, especially customers, in an effective and efficient manner (Asari et al., 2023). On the other hand, companies that fail to respond to their stakeholders risk being abandoned, which can ultimately hinder their survival and even make growth difficult (Akmalia, 2020).

Based on data from 2024, PLTU Asam Asam has implemented several knowledge management initiatives, such as the "National Vital Object Security System" and the "Community of Practice (CoP) for Troubleshooting Steam Drum." The implementation of knowledge management is not entirely uniform across all work units, which may influence employees' perceptions of the added value of these training programs. This was identified through initial observations collected from PLTU Asam Asam employees. On the other hand, a study conducted by (Akmalia, 2020)(Swandewi & Sari, 2024)(Obeng et al., 2024)(Gates, 2024)(Fadaie et al., 2023) emphasizing that knowledge management, which involves the creation, sharing, and utilization of knowledge within an organization, has a significant positive impact on employee satisfaction.

Performance appraisal is an essential process for evaluating and providing feedback on employee contributions (Sinollah & Hermawanto, 2020). Performance appraisal not only serves to assess the extent to which employees fulfill their responsibilities (Simatupang et al., 2021). But it also serves as a tool utilized by companies to measure the level of job satisfaction regarding the tasks performed and the working environment experienced (Davy Anggreana et al., 2024). Based on the data obtained from the company, it shows that in the first semester of 2024, the majority of employees at PLTU Asam Asam received a "C" rating, which means that overall employee performance is still at a level that needs improvement. A "C" rating generally indicates that employees have met the company's minimum standards but have not yet reached an optimal level of performance. The high number of employees with a "C" rating could serve as a signal for management to review the performance evaluation system, ensuring that the methodology is objective, transparent, and capable of providing constructive feedback to employees. As stated in the research by (Sinollah & Hermawanto, 2020)(Dewi & David, 2023)(Kurnia et al., 2020)(Saefullah, 2021)(Triono, 2022) which states that a fair and transparent performance appraisal system can provide constructive feedback, enhance motivation, and clarify areas for employee development, thereby increasing job satisfaction.

Although many studies have highlighted the influence of working hours, knowledge management, and performance appraisal on employee satisfaction, most of these studies remain sectoral in nature, and there is no prior research that specifically focuses on the steam power plant industry, such as PLTU Asam Asam. Therefore, the author is interested in conducting a study titled "The Influence of Working Hours, Knowledge Management, and Employee Performance Appraisal on Employee Satisfaction at PLTU Asam Asam." In this study, the independent variables examined are working hours, knowledge management, and employee performance appraisal, while the dependent variable is employee job satisfaction. Based on the theoretical framework and previous research findings, this study formulates the following hypotheses:

- H1: Working hours have a positive and significant effect on employee job satisfaction.
- H2: Knowledge management has a positive and significant effect on employee job satisfaction.
- H3: Employee performance appraisal has a positive and significant effect on employee job satisfaction.
- H4: The combination of working hours, knowledge management, and employee performance appraisal simultaneously has a positive and significant effect on employee job satisfaction.

RESEARCH METHODS

This study utilizes a quantitative approach with a research design centered on hypothesis testing. The main objective is to examine and elucidate the causal relationships among different variables by conducting a hypothesis testing process (Sugiyono, 2019). Employing a quantitative approach, this study aims to assess the impact of various factors, including working hours, knowledge management, and employee performance evaluation, on job satisfaction among employees at PLTU Asam Asam. By conducting hypothesis testing, this research seeks to determine significant correlations between these variables and gain a deeper insight into their interactions and effects on employee satisfaction levels. To ensure the data collected is quantitative and suitable for statistical analysis, questionnaires and specific measurement scales are utilized (Razali et al., 2023).

The study population comprises all employees of PLTU Asam Asam, totaling 183 individuals. Given the relatively small population size, the research employs a saturated sampling technique, where the entire population serves as the sample. The respondents in this study are PLTU Asam Asam employees, chosen for their relevance to the investigated phenomenon. Their selection ensures a direct link to the research topic and facilitates the collection of representative data aligned with the study's objectives. The number of respondents involved is deemed sufficient to represent the overall research sample. Data collection was conducted using a Likert scale with five rating levels: 1 (Very Poor), 2 (Poor), 3 (Fair), 4 (Good), and 5 (Very Good) (Priadana & Sunarsi, 2021). This scale is used to measure various aspects related to the researched variables, providing a clearer picture of respondents' perceptions of the factors influencing job satisfaction at PLTU Asam Asam.

The data analysis process in this study involves grouping data based on variables and types of respondents, creating tables for each measured variable, and presenting data for each variable under investigation. The analysis technique used is SEM PLS (Partial Least Squares). The PLS method does not rely on many assumptions and can be applied to both small and large samples. Moreover, PLS is effective for testing theories and identifying relationships between variables without requiring a highly rigid theoretical foundation. The measurement of the outer model aims to assess the quality of indicators in representing constructs or latent variables. This evaluation is conducted through several validity and reliability tests (Irwan & Adam, 2015): (1) Convergent Validity: Assessed through outer loading (>0.7) and Average Variance Extracted (AVE) (>0.5). AVE indicates the extent to which indicators can explain the measured latent variable. (2) Discriminant Validity: Evaluated using the Fornell-Larcker Criterion, where the square root of AVE for each variable must be greater than its correlation with other variables. (3) Composite Reliability and Cronbach's Alpha: Measured using Composite Reliability (CR) (>0.7) and Cronbach's Alpha (>0.7), which assess the extent to which indicators within a single variable consistently measure the same concept.

Setelah model luar memenuhi kriteria validitas dan reliabilitas, selanjutnya dilakukan analisis A structural model to assess the relationships between latent variables. This evaluation includes several tests as follows: (a) R-square (R^2): Indicates the extent to which independent variables can explain the dependent variable. An R^2 value of ≥ 0.75 is considered strong, 0.50–0.75 moderate, and 0.25–0.50 weak, (b) Q-square (Predictive Relevance / Q^2): Assesses the extent to which the model has predictive capability for the dependent variable. A Q^2 value greater than zero indicates that the model has good predictive ability, (c) Goodness of Fit (GoF): Combines the quality of the structural model and measurement to assess the overall model fit. A GoF value of ≥ 0.36 is considered good. After evaluating the structural model, the final step is hypothesis testing by examining the relationships between latent variables through statistical significance testing (Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, 2021):

- T-statistik dan P-value:
  - If T-statistic > 1.97 and P-value ≤ 0.05, then the hypothesis is accepted (significant relationship).
  - If T-statistic < 1.97 and P-value > 0.05, then the hypothesis is rejected (insignificant relationship).

2. RESULTS & DISCUSSION

Data collection in this study was conducted from January 6 to 10, 2025. The description of the research subjects includes gender, age, and length of employment. Table 2 presents the characteristics of the research sample.

Table 2. Characteristics of Research Sample

Characteristics	Amount
Gender	
Woman	1
Man	182
Total	183
Age	
20 - 30 years	83
31 – 40 years	96
41 – 50 years	1
> 50 years	4
Total	138

Source: Data is processed, 2025

The characteristics of respondents in this study can be viewed from two main categories: gender and age. Based on gender, the majority of respondents are male, totaling 182 individuals, while there is only 1 female respondent. In terms of age, the respondents involved in the study are distributed across several age groups. The 31–40 age group is the most dominant, with 96 individuals, followed by the 20–30 age group with 83 individuals. Meanwhile, there is only 1 respondent in the 41–50 age range and 4 respondents aged above 50. The total number of respondents based on age is 138 individuals.

Descriptive Analysis

Table 3. Descriptive Analysis

No	Variables	Average
1	Education	4,03
2	Job Analysis	3,99
3	Years of service	4,03
4	Employee Performance	4,17

Source: Data is processed, 2025

Based on Table 3, a descriptive analysis was conducted to understand how respondents assess the variables in this study, namely education, job analysis, work tenure, and employee performance. The education variable has an average score of 4.03, indicating that respondents generally have a positive view of the role of education in supporting their workplace performance. Similarly, the work tenure variable also received an average score of 4.03, reflecting that work experience is considered an influential factor in employee effectiveness and productivity. Meanwhile, the job analysis variable recorded an average score of 3.99, slightly lower than the other variables, but still demonstrating that respondents recognize the importance of job analysis in clearly and systematically defining employee duties and responsibilities. Employee per-

formance received the highest average score among all variables, at 4.17, indicating that employees generally have a good level of performance in carrying out their tasks. This score suggests that respondents are satisfied with the quality of work achieved, which may be the result of a combination of education, work experience, and effective job analysis.

Instrument Feasibility Test (Outer Model). The objective of SmartPLS measurement is to assess the connection between latent variables and their respective indicators. This measurement model consists of two types of testing: validity testing and reliability testing, as outlined below:

Validity Test. This validity test encompasses various aspects of data evaluation using the Smart-PLS 4 application to process data comprehensively, adhering to relevant references and the specific requirements of each test. The results of data processing are as follows: (a) Convergent Validity Test. This test assesses the accuracy of questionnaire statements. It involves a validity test comprising the convergent validity test and the AVE (Average Variance Extracted) score. The Convergent Validity Test evaluates the Outer Loading, while the AVE score is determined through Construct Reliability and Validity.

Table 4. Results of Convergent Validity Test (Outer Loading)

	Working Hours (X1)	Knowledge Management (X2)	Employee Performance Assessment (X3)	Employee Job Satisfaction (Y)
Working Hours (X1)	0.790			
Knowledge Management (X2)		0.819		
Employee Performance Assessment (X3)			0.746	
Employee Job Satisfaction (Y)				0.744

Source: Data is processed, 2025

According to the convergent validity test results shown in Table 4, the outer loading values for each indicator on the latent variables satisfy the requirements for convergent validity, which is greater than 0.7. The outer loading value for the variable Working Hours (X1) is 0.790, Knowledge Management (X2) is 0.819, Employee Performance Assessment (X3) is 0.746, and Employee Job Satisfaction (Y) is 0.744. These values indicate that the indicators used in this study have a strong enough relationship with their respective latent variables, leading to the conclusion that these indicators significantly represent the measured construct. Furthermore, the convergent validity is also reinforced by the results of the Average Variance Extracted (AVE) test, as shown in Table 5 below:

Table 5. Results of the Average Variance Extracted (AVE) Validity Test

	Average variance extracted (AVE)	Information
Working Hours (X1)	0.625	Valid
Employee Job Satisfaction (Y)	0.553	Valid
Knowledge Management (X2)	0.670	Valid
Employee Performance Assessment (X3)	0.557	Valid

Source: Data is processed, 2025

The AVE (Average Variance Extracted) values for all variables exceed the minimum threshold of 0.5, with the specific values as follows: Working Hours (X1) at 0.625, Knowledge Management (X2) at 0.670, Employee Performance Assessment (X3) at 0.557, and Employee Job Satisfaction (Y) at 0.553. An AVE value above 0.5 signifies that over 50% of the variance in the indicators is accounted for by the corresponding latent variable. Consequently, these findings confirm that the research model satisfies the criteria for adequate convergent validity.

Convergent validity in this study has important implications, namely ensuring that the indicators used truly reflect the measured concept and can serve as a basis for further analysis. With good convergent validity, it can be said that the measurements conducted have produced accurate and reliable data in explaining the relationship between variables in the study. This serves as a strong foundation for continuing the analysis of the structural model and hypothesis testing to understand the influence of independent variables on dependent variables within the context of this research.

The Convergent Validity Test, as described in the Data Analysis Techniques, requires that the Outer Loading values exceed the predefined critical threshold of >0.7. Based on Table 4, all Outer Loading values for each loading factor are marked in "Green," signifying that they surpass the required threshold (>0.7). Additionally, Table 5 shows that the Average Variance Extracted (AVE) values for each Latent Variable exceed the specified threshold (>0.5). Consequently, it can be concluded that all statement items are deemed "Convergent Valid." Moreover, the variables demonstrate strong convergent validity, as the AVE values exceed 50%, indicating that the variance produced by these indicators is effectively explained by the latent variable.

Discriminant Validity Test

Table 6. Discriminant Validity

	Working Hours (X1)	Knowledge Management (X2)	Employee Performance Assessment (X3)	Employee Job Satisfaction (Y)
Working Hours (X1)	0.790			
Knowledge Management (X2)	0.558	0.744		
Employee Performance Assessment (X3)	0.555	0.652	0.819	
Employee Job Satisfaction (Y)	0.547	0.619	0.622	0.746

Source: Data is processed, 2025

This Discriminant Validity Test applies the Fornell-Larcker criterion as a parameter in the data testing process. According to the requirements of the Discriminant Validity Test, each construct must have a square root of the AVE value that exceeds its correlation with other constructs. As shown in Table 6, the square root of the AVE values for each construct is higher than their correlation with other constructs. Consequently, it can be concluded that all variables exhibit "Discriminant Validity."

Reliability Test

Table 7. *Construct Reliability and Validity*

	Cronbach's alpha	Composite reliability (rho_c)
Working Hours (X1)	0.702	0.833
Knowledge Management (X2)	0.731	0.832
Employee Performance Assessment (X3)	0.836	0.890
Employee Job Satisfaction (Y)	0.735	0.834

Source: Data is processed, 2025

Reliability testing encompasses assessments that typically involve two key aspects, each with essential threshold values that must be satisfied: Cronbach's Alpha (>0.7) and Composite Reliability (>0.8). The table below confirms that the values for all variables have surpassed the designated threshold levels. Consequently, it can be concluded that all data are reliable and have successfully passed the reliability test.

Structural Model (Inner Model). Following the completion of the Instrument Feasibility Test (Outer Model) and the evaluation of its results, it has been confirmed that all variables have successfully passed the initial testing phase. The next step involves proceeding to the second phase, known as the Structural Model Test (Inner Model). In this stage, the testing process focuses on analyzing the relationships between latent variables, as illustrated in Figure 1.
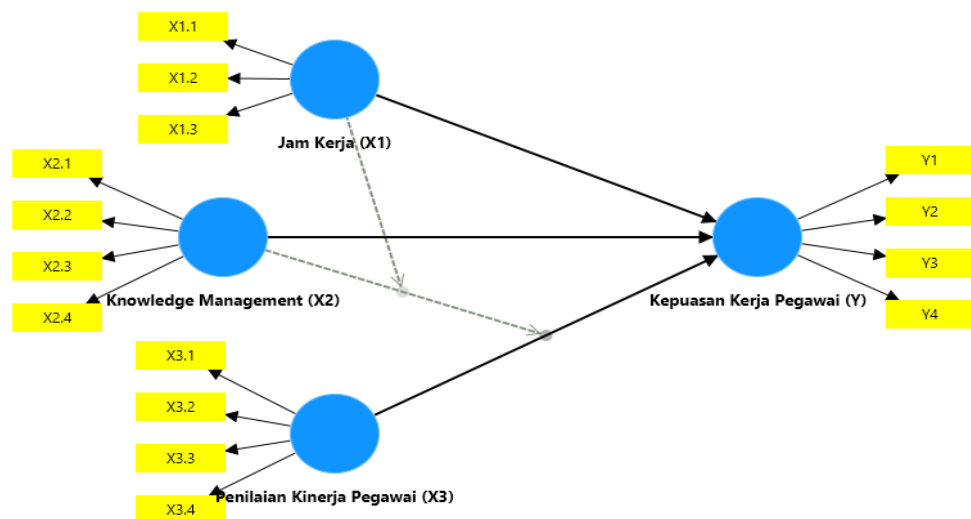

Figure 1. Structural Model Analysis (Inner Model)
Source: Data is processed, 2025

Beta Coefficient Value. The Beta Coefficient (β) is a parameter that signifies the degree of influence the independent variable exerts on the dependent variable. It reflects both the strength and direction of the relationship between these two variables. The Beta Coefficient value is presented in the table below:

Table 8. Test Results of Beta Coefficient Value (β)

	Original sample (O)	Connection
Working Hours (X1) -> Employee Job Satisfaction (Y)	0.222	Positive
Knowledge Management (X2) -> Employee Job Satisfaction (Y)	0.258	Positive
Employee Performance Assessment (X3) -> Employee Job Satisfaction (Y)	0.319	Positive
Working Hours (X1) x Knowledge Management (X2) x Employee Performance Assessment (X3) -> Employee Job Satisfaction (Y)	0.237	Positive

Source: Data is processed, 2025

Based on the collected data, two key indications emerge from this study. All values exhibit positive figures, signifying a direct relationship, where an increase in the independent variable corresponds to an increase in the dependent variable.

T-Test. The T-Test is a statistical analysis method used to assess the significance of the Beta Coefficient. It is determined by calculating the T-statistic, which is the ratio of the Beta Coefficient to its Standard Error. The critical value for this T-statistic is 1.973, with a p-value of less than 0.05. If this threshold is exceeded, the Beta Coefficient demonstrates a significant impact. The findings of the T-Test are presented in Table 9 below:

Table 9. T-Test Results

	T statistics (|O/STDEV|)	P values
Working Hours (X1) -> Employee Job Satisfaction (Y)	2.507	0.012
Knowledge Management (X2) -> Employee Job Satisfaction (Y)	2.577	0.010
Employee Performance Assessment (X3) -> Employee Job Satisfaction (Y)	3.070	0.002
Working Hours (X1) x Knowledge Management (X2) x Employee Performance Assessment (X3) -> Employee Job Satisfaction (Y)	2.375	0.026

Source: Data Processing (2025)

Each variable relationship exhibits a T-statistic value exceeding the critical threshold of 1.973, along with a p-value below 0.05.

Coefficient of Determination (R²) Value. The coefficient of determination (R-square) measures the proportion of total variation in the dependent variable that is accounted for by the independent variables. The R^2 value ranges from 0 to 1. According to Chin, an R^2 value of 0.75 or higher for a latent dependent variable in a structural model signifies a "strong" influence of the independent variables on the dependent variable. An R^2 value of 0.50 indicates a "moderate"

effect, while an R² value of 0.25 is classified as "weak."

Based on the R-square (R²) test results, it can be concluded that the dependent variable, Employee Job Satisfaction, has an R² value greater than 0. This indicates that the independent variables can explain the dependent variable to some extent. The R² value for Employee Job Satisfaction is 0.555, or 55.5%, signifying that Working Hours, Knowledge Management, and Employee Performance Assessment collectively account for 55.5% of the variation in Employee Job Satisfaction. This falls within the Medium/Moderate category. The remaining 44.5% is attributed to other factors not examined in this study.

Goodness of Fit (GoF). The Goodness of Fit (GoF) is a metric that integrates the quality of both the structural and measurement models to evaluate the overall model fit in PLS-SEM. The model fit values range from 0 to 1 and are categorized as follows: 0.1 (low), 0.25 (moderate), and 0.36 (good). In the GoF testing process, it is necessary to determine the average Communality Index and the average R² (Coefficient of Determination) for the dependent variable in the model. The test results for the Communality Index and the GoF calculation produced a computed value of 0.577. Based on this, it can be concluded that the Goodness of Fit for this research model is classified as Good.

Q² (*Predictive Relevance*). Q², also known as Predictive Relevance, is a metric utilized in PLS-SEM to evaluate a model's predictive capability. It measures the extent to which the observed values can be reconstructed using the model and its estimated parameters. A variable or dataset is deemed to have strong predictive power if the Q² value exceeds 0. Conversely, if the Q² value is below 0, the variable or dataset is considered to have weak predictive ability. The results of the Q² (Predictive Relevance) test reveal that the Q² value for Employee Job Satisfaction is 0.432. This suggests that the Employee Job Satisfaction variable shaped by Working Hours, Knowledge Management, and Employee Performance Assessment exhibits strong predictive capability, aligning with the research model as it achieves a Q² value above 0.

Hypothesis Testing. Hypothesis testing consists of two types of effects: the first is Direct Effect Hypothesis Testing, and the second is Indirect Effect Hypothesis Testing. The test results are explained below: (1) Direct Effect Hypothesis Testing. Based on data processing using SmartPLS v4, the obtained results address the hypotheses outlined in this study. The hypothesis testing evaluates the outcomes of Path Coefficients, T-statistics, and P-values, which are generated through the Calculate function in SmartPLS using the Bootstrapping technique. A hypothesis is considered accepted if the P-value is less than 0.05. The results of the Direct Effect Hypothesis Testing are displayed in Table 10.

Table 10. Results of the Direct Effect Hypothesis Test

Hipotesis	Path Coefficient	T-values	P-values	Conclusion
Working Hours (X1) -> Employee Job Satisfaction (Y)	0.222	2.507	0.012	Supported
Knowledge Management (X2) -> Employee Job Satisfaction (Y)	0.258	2.577	0.010	Supported
Employee Performance Assessment (X3) -> Employee Job Satisfaction (Y)	0.319	3.070	0.002	Supported

Source: Data Processing (2025)

Working Hours on Employee Job Satisfaction. The statistical test results, presented in Table 10, reveal that the coefficient value of the Working Hours variable concerning Employee Job Satisfaction is 0.222. The T-value stands at 2.507, surpassing the T-table value of 1.97, while the P-value is 0.012, which is lower than the significance threshold of 0.05. These findings suggest that Working Hours have a positive and significant impact on Employee Job Satisfaction.

Knowledge Management on Employee Job Satisfaction. The statistical test results, as presented in Table 10, reveal that the coefficient value of the Knowledge Management variable on Employee Job Satisfaction is 0.258. The T-value is 2.577, which exceeds the T-table value of 1.97. Furthermore, the P-value stands at 0.010, which is below the significance threshold of 0.05. These findings suggest that Knowledge Management exerts a positive and significant influence on Employee Job Satisfaction.

Performance Assessment on Employee Job Satisfaction. The statistical test results presented in Table 10 reveal that the coefficient value of the Performance Assessment variable in relation to Employee Job Satisfaction is 0.319. The corresponding T-value is 3.070, which exceeds the T-table value of 1.97. Additionally, the obtained P-value is 0.002, which is below the significance threshold of 0.05. These findings suggest that Performance Assessment impacts Employee Job Satisfaction, indicating a positive and significant effect.

(2). Testing of Indirect Influence Hypothesis. The hypothesis testing for indirect influence (mediation) is carried out using the SmartPLS v4 software through the Bootstrapping Calculation method. The results of the Indirect Influence Hypothesis Test are available in the Specific Indirect Effects section, with the findings displayed in Table 11.

Table 11. Results of Indirect Effect Hypothesis Testing

Hipotesis	Path Coefficient	T-values	P-values	Conclusion
Working Hours (X1) x Knowledge Management (X2) x Employee Performance Assessment (X3) -> Employee Job Satisfaction (Y)	0.237	2.375	0.026	Supported

Source: Data Processing (2025)

Working Hours (X1) x Knowledge Management (X2) x Employee Performance Assessment (X3) on Employee Job Satisfaction (H4). The statistical test results are presented in Table 11, showing that the coefficient value for the interaction of Working Hours (X1), Knowledge Management (X2), and Employee Performance Assessment (X3) on Employee Job Satisfaction is 0.237. The corresponding T-value is 2.375, which exceeds the T-table value (1.97), while the P-value is 0.028, which is below the significance threshold of 0.05. These findings suggest that the combined effect of Working Hours (X1), Knowledge Management (X2), and Employee Performance Assessment (X3) has a positive and significant impact on Employee Job Satisfaction.

The Influence of Working Hours Analysis on Employee Satisfaction. The main issue addressed in this study concerns how the management of working hours affects employee satisfaction at PLTU Asam-Asam, considering the significant fluctuations in working hours and their impact on work-life balance and employee well-being. Data indicate that the average employee working hours in the first semester of 2024 decreased to only 83.73% of the established standard, which may affect workload and productivity. The results of the statistical test indicate that the Working Hours variable has a positive and significant effect on Employee Job Satisfaction. The coefficient value of 0.222, along with a T-value of 2.507 exceeding the T-table value of 1.97 and a P-value of 0.012, which is lower than the 0.05 significance threshold, confirms the existence of a significant relationship. This finding suggests that the better the management of employees' working hours, the higher their level of job satisfaction.

From the distribution of questionnaires at PLTU Asam-Asam, the indicator with the highest score was "The break time provided at my workplace is sufficient to help me recover energy and improve concentration when returning to work," which received a majority response in the "Strongly Agree" category. This indicates that adequate break time contributes to increasing employee job satisfaction, particularly in maintaining a balance between workload and energy recovery. Additionally, more flexible working hours that align with employees' needs can enhance their well-being and reduce stress levels caused by excessive workloads. The findings of this study are also consistent with job satisfaction theories, which state that the balance between work and personal life significantly determines employees' motivation and happiness. Thus, effective management of working hours not only impacts employee productivity but also creates a more conducive and harmonious work environment. Therefore, companies should consider aspects of working hours, including flexibility in scheduling and the provision of adequate break times, to enhance overall employee satisfaction and performance.

Although the statistical test results indicate that working hours have a positive and significant impact on job satisfaction, challenges remain in optimizing working hour policies to align with employee needs and the company's operational demands. The questionnaire results show that break time is a crucial factor in determining employee satisfaction, with the majority of respondents stating that the provided break time is sufficient to restore energy and improve concentration when returning to work. However, flexibility in working hours remains an issue that

needs to be addressed to reduce stress levels caused by excessive workloads and to enhance work-life balance. These findings suggest that companies need to consider more adaptive strategies in managing working hours, either through more flexible policies or by improving work-hour management systems so that employee satisfaction continues to increase and overall productivity is supported.

The results of this study align with the research conducted by Febriyanti & Sulastri (2024) which found that, in the Working Hours variable, the indicator with the highest score was "The company implements an 8.5-hour workday", with an average score of 3.75. This finding indicates that, according to employees' perceptions, the implemented working hours exceed the standard normal working hours. Therefore, PT Berkait Mandiri Prima needs to ensure compliance with government regulations regarding employee working hours. If there is an excess of working hours, it should be counted as overtime to comply with applicable regulations. A different result was found by Kurniawan Kurniawan & Natal Indra (2024) who reported that, based on calculations, the obtained t-value was 0.299, while the t-table value with df = 82 at a 5% significance level was 1.989. Since the t-value (0.299) is smaller than the t-table value (1.989) and the significance value is greater than 0.05 (0.765 > 0.05), H0 is accepted, and H1 is rejected. This indicates that the X1 variable does not have a significant partial effect on the Y variable.

The Influence of Knowledge Management on Employee Satisfaction. The main issue in this study concerns how the implementation of knowledge management at PLTU Asam-Asam still faces obstacles in information distribution and optimal knowledge utilization, which can impact employee job satisfaction. Although knowledge management has great potential to enhance work efficiency and employee well-being, its uneven implementation across all work units makes it difficult for employees to access relevant information and obtain continuous learning. This can hinder employees from developing their competencies and reduce their work motivation, ultimately affecting their level of satisfaction. Based on the results of statistical tests, it can be understood that Knowledge Management has a positive and significant influence on Employee Job Satisfaction at PLTU Asam-Asam. A coefficient of 0.258 signifies a positive correlation between the two variables, indicating that enhancements in knowledge management lead to higher employee job satisfaction. Furthermore, the T-value of 2.577 exceeds the T-table value (1.97), confirming the statistical significance of this relationship. Additionally, the P-value of 0.010, which is below the 0.05 significance threshold, reinforces the conclusion that knowledge management significantly influences employee job satisfaction.

Furthermore, the results of the questionnaire collected from employees of PLTU Asam-Asam support this finding, where the indicator "I can effectively apply the knowledge I have in completing daily tasks" received the highest score. The majority of respondents stated "Strongly Agree" with this statement, indicating that employees experience direct benefits from the implementation of Knowledge Management in their work environment. This suggests that effective knowledge management, including access to information, continuous learning, and knowledge sharing among employees, is a crucial factor in enhancing job satisfaction. Therefore, it can be concluded that an effective Knowledge Management strategy can be one of the

key approaches to improving employee satisfaction and productivity at PLTU Asam-Asam.

The results of this study are in line with the research conducted by Prabowo (2014) which presented findings indicating that the hypothesis testing for the Knowledge Management variable showed a significance value of 0.045, which is lower than 0.05. This suggests that, partially, Knowledge Management has an influence on employee job satisfaction. Research conducted at Chevron Geothermal Indonesia revealed that Knowledge Management, particularly in the dimensions of rules and culture, has a fairly strong correlation with employee job satisfaction, at 0.489 or 48.9%. On the other hand, research by Agustina et al. (2022) found that Knowledge Management's effect on job satisfaction had a T-Statistics value of 1.060, which is lower than the critical threshold of 1.96. Moreover, the obtained P-value was 0.290, which is higher than the significance threshold of 0.05 or 5%. These results indicate that Knowledge Management does not have a significant influence on job satisfaction.

The Influence of Employee Performance Appraisal on Employee Satisfaction. The main issue in this study relates to the employee performance appraisal system at PLTU Asam-Asam, which still faces challenges in terms of transparency, objectivity, and employees' understanding of the evaluation criteria used. This study found that although the performance appraisal system has been implemented, there is still a perception among employees that the evaluation process is not entirely fair and consistent, which has the potential to decrease their motivation and job satisfaction. The results of the statistical test reveal that employee performance appraisal has a significant impact on job satisfaction. As shown in Table 12, the coefficient value is 0.319, with a T-Statistics value of 3.070, which exceeds the T-table value of 1.97. Furthermore, the P-value of 0.002 is lower than the 0.05 significance level, thereby supporting the hypothesis. This suggests that a well-implemented performance appraisal system within an organization leads to higher employee job satisfaction. A transparent and objective appraisal system, based on well-defined indicators, fosters a sense of fairness and provides employees with opportunities for self-improvement, ultimately boosting their motivation and overall job satisfaction.

Based on data collected from employees at PLTU Asam-Asam, the indicator with the highest value in supporting job satisfaction is "There is a clear mutual understanding between employees and supervisors regarding the criteria used to assess performance." The majority of respondents strongly agreed with this statement, indicating that mutual understanding between employees and supervisors in the performance evaluation process is a crucial factor in creating a positive work environment. When employees feel that performance evaluation criteria are clearly defined and consistently applied, they are more motivated to perform well and achieve set targets. However, if this understanding is not established, employees tend to perceive performance evaluations as subjective or non-transparent, which can lead to dissatisfaction. This issue is further supported by previous studies, which show that an unclear and non-transparent performance evaluation system can result in employee dissatisfaction and decreased work productivity. Therefore, this study aims to identify the extent to which performance evaluation affects

employee job satisfaction and how the company can develop a more objective, transparent evaluation mechanism based on clear indicators to enhance employee satisfaction and motivation at PLTU Asam-Asam.

The results of this study are in line with the research conducted by Hariani & Irfan (2019) which found that performance appraisal has a significant impact on the job satisfaction of agricultural extension workers. The performance of extension workers is influenced by various factors, including individual characteristics and diverse situational conditions, such as differences in the management and implementation of agricultural extension programs in each district. Performance appraisal serves as a key instrument in assessing the work results of extension workers based on their capabilities. Additionally, this assessment helps organizations design career development plans for extension workers, including determining promotions or advancements for those who demonstrate outstanding performance through evaluations of their skills, competencies, and work achievements. On the other hand, a study by Sinollah & Hermawanto (2020) produced contrasting results, finding that the implementation of performance appraisal (X1) had no significant impact on employee job satisfaction at the Head Office of PT Tolan Tiga Indonesia Medan. Based on respondents' feedback, around 30.6% stated that many employees still do not fully understand the guidelines used as a reference in implementing the performance appraisal program. This is possibly due to a lack of socialization and limited transparency in conveying information about performance appraisal guidelines. Moreover, employees have not yet fully recognized that performance appraisals can serve as an effective tool for receiving feedback from the company.

The Influence of Working Hours Analysis, Knowledge Management, and Employee Performance Appraisal on Employee Satisfaction. The main issue raised in the analysis of the influence of working hours, knowledge management, and employee performance appraisal on employee satisfaction at PLTU Asam-Asam is how these three variables simultaneously affect employee well-being and work motivation in an environment with a high operational workload. PLTU Asam-Asam faces challenges in balancing employees' working hours to prevent excessive fatigue. At the same time, knowledge management has not been optimally implemented, leading to uneven distribution of information and learning among employees. Additionally, the performance appraisal system currently in use creates perceptions of unfairness and a lack of transparency in employee evaluations, which can reduce work motivation.

Based on the statistical test results, the coefficient value for the interaction between working hours (X1), knowledge management (X2), and employee performance appraisal (X3) on employee job satisfaction is 0.237. Furthermore, the obtained T-value of 2.375 exceeds the critical T-table value of 1.97. These findings suggest a significant relationship between the combination of these three variables and employee job satisfaction. This conclusion is further reinforced by the P-value of 0.028, which is lower than the significance threshold of 0.05. In summary, this study confirms that working hours, knowledge management, and employee performance appraisal positively and significantly impact employee job satisfaction at PLTU Asam-Asam. Furthermore, based on the questionnaire analysis distributed to PLTU Asam-Asam employees,

the highest-scoring indicator in this study was the statement, "I feel a great responsibility to complete my work to the best of my ability." Most respondents answered "Strongly Agree" to this statement, indicating that a sense of responsibility in work significantly contributes to job satisfaction levels. This finding suggests that job satisfaction is not only influenced by technical aspects such as working hours and performance appraisal but also by intrinsic factors such as a sense of ownership and responsibility for assigned tasks. Therefore, improving knowledge management strategies and conducting more objective performance evaluations can further enhance employee job satisfaction, ultimately impacting overall organizational effectiveness and productivity.

3. CONCLUSION AND SUGGESTIONS

Based on the research findings, it was discovered that working hours, knowledge management, and employee performance appraisal have a significant influence on employee job satisfaction at PLTU Asam-Asam. Better management of working hours has been proven to enhance employee job satisfaction, particularly by considering the balance between workload and adequate rest time. In addition, the knowledge management system implemented in the company also contributes positively to employee job satisfaction, as easier access to information and resources supports their work effectiveness. On the other hand, an objective, transparent, and fair employee performance appraisal system has a stronger impact on job satisfaction by fostering motivation and a sense of fairness in the workplace. Furthermore, this study also shows that the interaction between working hours, knowledge management, and employee performance appraisal simultaneously contributes to increasing overall job satisfaction. This indicates that employee job satisfaction is not solely determined by a single factor but results from the synergy of various elements that help create a comfortable and productive work environment while providing opportunities for career development. Therefore, the company should consider more strategic policies in managing working hours, optimizing the knowledge management system, and improving the effectiveness of the performance appraisal system to enhance employee well-being and job satisfaction.

Based on the research findings, it is recommended that companies pay attention to aspects such as working hours, knowledge management, and employee performance evaluation systems to enhance job satisfaction. Companies can implement flexibility in managing working hours to maintain a balance between workload and adequate rest time, thereby improving employee productivity. Additionally, optimizing knowledge management by providing broader access to information and a continuous learning system will help employees enhance their competencies and work effectiveness. On the other hand, a transparent, objective performance evaluation system based on clear indicators should continue to be developed to foster a sense of fairness and higher work motivation. With this combination of strategies, employee job satisfaction is expected to increase significantly, ultimately having a positive impact on overall organizational performance.

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