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The Effect of Workload and Work-Life Balance on Employee Work Productivity at PT. PG Rajawali II Unit Jatitujuh Majalengka

Erika Uswatun Hasanah, Editya Nurdiana*
Universitas Swadaya Gunung Jati, Indonesia
Email: erika.122020217@ugj.ac.id, editya_nurdiana@ugj.ac.id*

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ABSTRACT

In the context of the agro-industrial sector, particularly in sugar manufacturing, employee work productivity is a critical determinant of business performance. PT PG Rajawali II Jatitujuh Unit, as one of the largest sugar industries in Indonesia, faces unique challenges related to high physical labor demands, shift work systems, and intense production target pressures, especially during the sugarcane milling season. These conditions often lead to an increased workload and potential disruption of work-life balance, which can directly affect employee productivity. However, empirical evidence examining the simultaneous influence of workload and work-life balance on productivity in this specific context remains limited. This research is aimed at examining in depth the relationship between workload and work-life balance in influencing employee work productivity at PT PG Rajawali II Jatitujuh Unit. The research uses structured survey-based data collection techniques with an associative quantitative approach to address this issue. The study involved 199 workers, with the Slovin method used to determine the number of respondents completing the survey, resulting in a research sample of 133 people. Data analysis was conducted using SmartPLS software 4. Empirical findings reveal that workload contributes positively and significantly to employee work productivity, as reflected in the original sample value of 0.565 and the significance level with a p-value of 0.000, which is below the threshold of 0.05. Furthermore, work-life balance showed a significant positive influence on employee work productivity, evidenced by the original sample of 0.399 with a p-value of 0.000, which is also below 0.05. Based on these findings, it can be concluded that both independent variables simultaneously increase employee productivity.

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INTRODUCTION

In the context of running a business, employee productivity is very important because it directly affects business performance, especially in industries such as agro-industry, which rely heavily on physical labor and technological expertise (Akimbekova et al., 2025; Detthamrong & Chansanam, 2023; Hardi et al., 2025; Junaedi et al., 2025; Tutuhatunewa et al., 2024). The sugar business is one of the areas where productivity increases are difficult to achieve. This is because this business requires a lot of manual labor, heavy equipment, and great pressure to achieve production targets. PT PG Rajawali II Jatitujuh Unit, located in Majalengka, is one of the largest sugar industries in Indonesia and is a perfect example of an agro-industrial company that has to deal with these challenges. The company had to increase its production capacity due to the growing demand for sugar, both locally and internationally. This situation means that

workers in the field have more work to do (Hemathilake & Gunathilake, 2022; Razak et al., 2024).

However, heavy workloads are generally associated with a decline in workers' physical and mental health (Chenarboo et al., 2022; Edikpa et al., 2022; Kua et al., 2022; Razak et al., 2024; Suresh et al., 2024). This problem is common in factories, suggesting that the demands of work can disrupt work-life balance. In this sugar mill unit, the problem is exacerbated by the fact that workers have to work shifts, long hours, and meet strict production targets at certain times, especially during the sugarcane milling season. This imbalance can worsen quality of life, increase stress levels, and lower motivation and work ethic, all of which can be detrimental to employee productivity.

In the framework of human resource management, workload is interpreted as a strategic component that describes the volume and level of difficulty of work that must be completed by the workforce in a certain period of time. Previous research explained that workload concerns the accumulation of tasks and obligations allocated to an organization or work unit, taking into account the time of execution and the availability of personnel (Mckee in Saputra & Marlius, 2023). The workload at this company increases significantly during the milling season, as can be seen from the use of overtime and shift rotation systems. This situation has a direct impact on the mental and physical health of workers. When workloads are not managed properly, the risk of chronic fatigue, burnout, and decreased motivation in the workplace increases.

From a different point of view, work-life balance is developing as a concept that is receiving increasing attention in human resource management studies, considering that the harmonization between work demands and personal life has been proven to encourage increased employee work productivity as well as job satisfaction. A study by Marsenda et al. (n.d.) shows that people who are happy in their jobs are likely to stay longer, which can help companies save on new employee hiring and training costs. On the other hand, the imbalance between work and personal life can add stress to performing their work, causing the desire to change jobs or leave the organization (Wulandari et al., 2025). In the context of this agro-industrial unit, the problem of work-life balance is increasingly evident due to irregular shift rotation and heavy work pressure during the milling season. If this balance is not properly managed, workers may feel anxious, which can lower their productivity.

Employee productivity is related to the ability to convert various inputs into outputs and reflects the level of efficiency in completing tasks to achieve organizational goals (Singh & Chaudhary, 2022). Work productivity is not only measured by the quantity of work results but also by quality, timeliness, and sustainability of employee performance. In the context of agro-industry, work productivity is greatly influenced by physical working conditions, shift work patterns, production target pressures, and the balance between work demands and employees' personal lives. Therefore, workload management and work-life balance are strategic factors in maintaining sustainable productivity.

Previous studies have mostly focused on the service industry and the office environment, particularly how workload and work-life balance affect productivity. However, the manufacturing and agro-industrial sectors, which require intensive physical activity, are rarely the focus of comprehensive research. Most studies have shown that excessive workloads can worsen performance. However, there is a lack of research investigating the synergistic effects between workload and work-life balance within an integrated analytical framework to evaluate

their impact on employee productivity, especially in sectors that require technical expertise and physical resilience.

This study aims to address the shortcomings in the previous scientific literature by investigating the simultaneous relationship between workload and work-life balance on employee productivity at PT PG Rajawali II Jatitujuh Unit. The aim of this study is to help people understand how the demands of work and personal work-life balance affect each other in the agro-industrial sector. This study aims to outline the interaction between these two factors and their effect on overall employee performance. Ultimately, these findings can help managers make decisions about how to handle workloads and improve employee work-life balance, leading to a steady and sustained increase in productivity.

METHODS

Research Design

This research uses quantitative design with an associative approach to examine the influence of workload (X1) and *work-life balance* (X2) on employee work productivity (Y) at PT. PG Rajawali II Jatitujuh Unit.Quantitative design was used to quantitatively analyze population characteristics and samples (Sugiyono, 2023). This research aims to partially and simultaneously decipher the relationship and magnitude of the influence of independent variables on dependent variables.

Research Sample Population

The study subjects include all employees of PT. PG Rajawali II Jatitujuh Unit, totaling 199 permanent employees. The researchers used the Slovin methodology with a 5% error rate to determine the number of research samples. This resulted in a sample size of 133 employees. The methodology was used to select participants by simple random sampling, which means that every individual in the population has an equal opportunity to be selected regardless of rank or status. (Sugiyono, 2019).

Data types and sources

1. **Data primer**

   The study focused more on primary data, which was taken from the empirical record of primary status. It is a collection of basic information collected independently in the work area with direct contributions from related parties. This scientific study, data was collected through a face-to-face survey conducted at the work site to workers at PT. PG Rajawali II Jatitujuh Unit, which is located in the administrative area of Majalengka, to get a more comprehensive and accurate understanding of the real conditions. During business hours, questionnaires are given directly to the people who will fill them out. This makes it easier for them to do so and ensures that they understand the research instrument. The questionnaire tool is designed with every aspect in mind, such as workload, *work-life balance*, and employee productivity. We use the Likert scale to evaluate each aspect in order to process and analyze the answers numerically, which provides accurate and systematic numerical data.

2. **Data seconds**

   This study uses secondary data as complementary material obtained from pre-existing records and information. The study data includes an overview of the company's

structure, the number of workers, and the list of tasks and responsibilities of each position. To reinforce the conceptual foundation and framework, the researchers referred to a variety of scientific materials, including journal articles, academic books, previous findings, and other scientific publications relevant to the study topic.

Data Collection Techniques

The data acquisition stage was taken through the provision of questionnaires in printed form to respondents who met the research criteria. Questionnaires are understood as a means of collecting information by presenting a set of written questions that are arranged according to the focus of the research. The contents of the questionnaire include statements and questions directly related to workload, *work life balance*, and employee work productivity. The process of assessing respondents' responses was carried out by utilizing a Likert scale with a value of one to five, which was used to represent the extent to which participants showed an attitude of agreement or disagreement with all statements submitted in the research instrument, so that the results were able to reflect the variation in perception in more detail and measurably, in the format:

Table 1. Skala Likert

No	Answer	Value
1.	Strongly agree (SS)	5
2.	Agree (S)	4
3.	Neutral (N)	3
4.	Disagree (TS)	2
5.	Strongly Disagree (STS)	1

Source: Primary data processed (2026)

Data Analysis Techniques

The analysis technique applied uses SEM-PLS with the SmartPLS 4 program to process empirical data. Partial Least Squares is a fairly robust type of analysis and is often called "soft modeling" because it does not require rigorous statistical assumptions such as that of Ordinary Least Squares regression. This approach does not require data to follow a multivariate normal pattern, and can still be used despite the strong relationship between exogenous components. This makes it more useful in real-world research (Ghozali & Kusumadewi, 2023). The study of the analytical framework is carried out by dividing it into two main components: the outer model and the inner model. In the first part, this study analyzes how well the measurement tools for hidden structures are to ensure that each indicator is stable and sufficiently appropriate. This process involves using Convergent Validity to see how closely the indicators relate to the constructs they represent, Discriminant Validity to ensure that they are clearly different from each other, and Construct Reliability to test the internal reliability of the measuring tool. This is done to ensure that the results of the analysis are accurate and reliable. The second step focuses on analyzing the relationships between latent constructs and determining how strong and important those relationships are using tools such as R Square (R^2), Effect Size (f^2), and Prediction Relevance (Q^2):

Measurement Model

a. Outer Model/Measurement Model

The Outer Model describes the theoretical relationship between abstract latent variables and corresponding indicators. This method provides a detailed overview of the

extent to which each parameter represents the phenomenon under study, making it possible to fully evaluate the reliability of the measurement. In this research, independent causative variables, namely workload and work-life balance, were identified as factors that arise from external situations outside the analytical framework. On the other hand, employee work productivity is a reasonable outcome variable due to the presence and impact of these two external elements, which change the way people work in the workplace at the same time. Before evaluating the structural relationships in the Inner model, an examination is carried out on the Outer model to ensure that all indicators meet the standards of validity, consistency, and discriminating ability. There are several important tests that need to be performed at the Outer model analysis stage:

a.) Convergent Validity

Convergent validity is the cornerstone of the assessment to ensure that each measurement variable truly reflects the latent concept being measured. The measurement tool is considered valid if the external load is not less than 0.70 and the AVE score exceeds 0.50, ensuring that the fraction of variance described by the main construct is sufficient and statistically reliable.

b.) Discriminant Validity

Discriminative validity assesses the differences between indicators of several constructs, ensuring that indicators of one construct do not significantly measure another. The method of testing is:

- For cross loading to work, the weight of the indicators on the connected construct must be greater than the contribution they make to the other construct.
- *The Fornell–Larcker Criterion* states that the value of AVE in a mandatory construct is higher than the square value of the correlational relationship with another construct.
- The Heterotrait–Monotrait Ratio (HTMT) is another way to measure discrimination. An HTMT value below 0.90 means that the constructions are well separated.

c.) Composite Reliability

Each variable used is declared to pass the reliability test if:

The composite reliability value > 0.70

- Cronbach's alpha value > 0.70

b. Inner Model (Structural Model)

The Inner Model describes the pattern of causal relationships between latent variables, especially the impact of exogenous constructions on endogenous constructions. The analysis at this stage aims to determine how statistically significant, strong, and accurate the prediction of the study model is. Some of the criteria used in evaluating the Inner Model are:

a.) R-Square (R^2)

This R-Square (R^2) shows how much exogenous variables in the model can explain variations in employee work productivity, with an increased R^2 value signaling the model's predictive power.

b.) F-square (f^2)

F-Square (f²) which measures the extent to which each exogenous variable affects changes in the value of R^2, which allows an assessment of the relative strength of influence between independent constructs.

c.) Q-square Q^2

Q-Square (Q²) which is an indicator of the relevance of the model's prediction, with a positive Q^2 value indicates the model's ability to adequately predict endogenous variables.

Hypothesis Testing

The researchers used SmartPLS to test the hypothesis and see if the relationships between the components in the structural framework were really supported by the data. The *bootstrapping* stage is used to obtain statistical measures in the form of *t-statistical* values, *p-values*, and confidence interval ranges, each variable is said to be significant if the statistical T-value is > 1.96 and the P values are < 0.05. So that the variable is said to be accepted.

RESULTS AND DISCUSSION

A. Outer Model

The assessment of the outer model is carried out to ensure that the instrument used to represent the latent variable meets the standards of accuracy and consistency of the measurement. There are assessments in this study, namely:

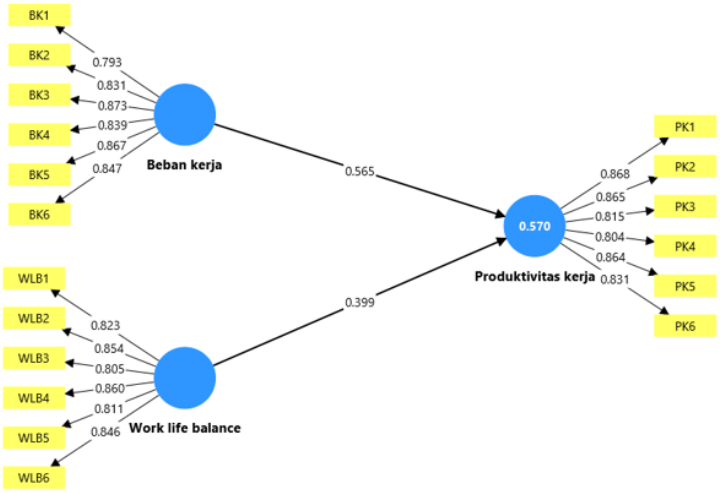

Figure 1. Algorithm Test Results

Source: Output SmartPLS 4.0 (2026)

a. Convergent validity

The assessment of *Convergent Validity* can be carried out through two quantitative approaches, namely by examining the amount of *the loading factor* value and through the *Average Variance Extracted* (AVE) value in each construct.

1.) Outer loading

Outer loading testing is a value that determines how large the indicator is in measuring latent variables. The indicator can be said to be valid if the outer loading value of each variable is above 0.70.

Table 2. Outer Loading Test Results

	Workload	Work productivity	Work life balance	Remarks
BK1	0.793			Valid
BK2	0.831			Valid
BK3	0.873			Valid
BK4	0.839			Valid
BK5	0.867			Valid
BK6	0.847			Valid
PK1		0.868		Valid
PK2		0.865		Valid
PK3		0.815		Valid
PK4		0.804		Valid
PK5		0.864		Valid
PK6		0.831		Valid
WLB1			0.823	Valid
WLB2			0.854	Valid
WLB3			0.805	Valid
WLB4			0.860	Valid
WLB5			0.811	Valid
WLB6			0.846	Valid

Source: Output SmartPLS 4.0 (2026)

External loading analysis shows that all indicators of each variable have a value of more than 0.70. This means that the indicators are able to strongly reflect latent variables. This shows that the concept meets the requirements of convergent validity, because the correlation between the indicator and the variable it measures is quite adequate (Hair et al., 2021) These findings show that the study instrument is suitable for use and that its testing can be continued at an advanced stage.

2.) Average Variance Extracted (AVE)

The Average Variance Extracted (AVE) result can be declared valid if the variable has a value greater than 0.5.

Table 3. Average Variance Extracted (AVE)

	Average variance extracted (AVE)	Remarks
Workload	0.709	Valid
Work productivity	0.709	Valid
Work life balance	0.695	Valid

Source: Output SmartPLS 4.0 (2026)

In addition, the AVE value obtained for the workload variable was 0.709, work life balance was 0.695, and work productivity was 0.709. All of these values exceeded the

minimum limit of 0.50, so the conclusion was that the three variables met the measurement validity criteria.

b. Discriminant Validity

The concept *of discriminant validity* is applied to assert that any construct or variable that is within the measurement framework actually represents a different concept and does not intersect with each other. Essentially, *discriminant validity* functions to assess the ability of each construct in a model so that it can be clearly distinguished from one another. Assessment of this aspect can be carried out through three evaluative approaches, namely the examination of *cross loading values*, the Fornell–Larcker criteria, and *the Heterotrait–Monotrait Ratio of Correlation (HTMT)* which is used as a comparison between constructs

1) Cross loading

The discriminant validity test can be seen from the results of the cross loading test if the cross loading value of all indicators and variables is higher than other variables, then it can be said to have a good discriminant.

Table 4. Cross Loading Test

	Workload	Work productivity	Work life balance
BK1	0.793	0.523	0.177
BK2	0.831	0.515	0.092
BK3	0.873	0.593	0.221
BK4	0.839	0.550	0.147
BK5	0.867	0.549	0.174
BK6	0.847	0.529	0.207
PK1	0.547	0.868	0.455
PK2	0.585	0.865	0.457
PK3	0.503	0.815	0.348
PK4	0.501	0.804	0.493
PK5	0.559	0.864	0.444
PK6	0.562	0.831	0.385
WLB1	0.122	0.337	0.823
WLB2	0.218	0.521	0.854
WLB3	0.130	0.440	0.805
WLB4	0.225	0.445	0.860
WLB5	0.091	0.364	0.811
WLB6	0.197	0.415	0.846

Source: Output SmartPLS 4.0 (2026)

The test results using *a cross loading* approach showed that each research indicator had a very dominant loading score for the variables it represented compared to other variables in the model. The findings reveal that each indicator has reflected its construct appropriately, so that it can be stated that the research design meets the requirements of *adequate discriminant validity*.

2) Fornell larcker

The following is a fornell larckerr test of discriminant validity, if the root value of AVE with a variable is greater than the correlation between other variables so that each variable can be said to have a good discriminant.

Table 5. Fornell-Larcker Criterion

	Workload	Work productivity	Work life balance
Workload	0.842		
Work productivity	0.646	0.842	
Work life balance	0.203	0.514	0.833

Source: Output SmartPLS 4.0 (2026)

Furthermore, based on the information presented in the table, it is understood that the root of the AVE variable workload is 0.842, work life balance is 0.833, and employee work productivity is 0.842. All of these values are proven to exceed the correlation coefficient between other variables, so it can be affirmed that each variable has met the *criteria of discriminant validity* as a whole.

3) Heterotruit Monotriat Ratio of Correlation (HTMT)

Heterotruit Monotriate Ratio of Correlation (HTMT) is the next measurement of discriminant validity if each htmt value is less than 0.9, it is declared to have a good discriminant.

Table 6. Heterotrait-Monotrait Ratio (HTMT)

	Workload	Work productivity	Work life balance
Workload			
Work productivity	0.702		
Work life balance	0.214	0.549	

Source: Output SmartPLS 4.0 (2026)

In addition, tests using the *Heterotrait–Monotrait Ratio of Correlation (HTMT)* approach showed that all HTMT values did not exceed the set threshold of 0.90. This situation reflects that each constructed tested has met the conditions for the separation of variables optimally, so that its discriminant characteristics can be assessed strongly.

c. Construct Reliability

Analysis of *construct reliability* can be carried out through 2 evaluation methods, namely by examining Cronbach's Alpha value and *composite reliability*. The two indicators are determined in looking at the value of the internal consistency level of each indicator that forms a variable in the study

1) Cronbach'Alpha dan Composite Reliability

Table 7. Construct Reliability Test (Cronbach's Alpha & Composite Reliability)

	Cronbach's alpha	Composite reliability (rho_c)
Workload	0.918	0.936
Work productivity	0.918	0.936
Work life balance	0.912	0.932

Source: Output SmartPLS 4.0 (2026)

From the reliability test, it can be seen that the Cronbach's Alpha value and composite reliability on all variables exceeded the minimum standard of 0.70. The findings of this study ensure that each variable shows good reliability, which indicates that the instrument has met the requirements for consistency in measuring constructs.

B. Inner Model

In the framework *of Partial Least Squares–Structural Equation Modeling (PLS-SEM),* the inner model plays a role in describing the pattern of relationships between latent variables that are analyzed to determine the strength and level of significance of these relationships. The internal model evaluation process includes three main components, namely hypothesis testing to assess the significance of the relationship, R Square values, Q Square, and *effect size measurements.*

a. R Square

The R square test contained in *PLS-SEM* is used to measure the feasibility of the free variable (X) in the model in order to be able to expose the variability of the bound variable (Y).

Table 8. R Square Test

	R-square	R-square adjusted
Work productivity	0.570	0.564

Source: Output SmartPLS 4.0 (2026)

Based on the results of the R Square evaluation, a value of 0.570 was obtained on the dependent variable of employee work productivity. The scores obtained indicated that 57% of the performance changes were explained by workload and work-life balance, while the rest came from external factors of the research model with a medium level of explanation.

b. Effect size (F)

Table 9. Effect Size (f^2) Test

	f-square
Workload -> Work productivity	0.713
Work-life balance -> Work productivity	0.355

Source: Output SmartPLS 4.0 (2026)

Based on the calculation of *effect size* (f^2), the workload variable was obtained with a figure of 0.713 in relation to work productivity. This amount is classified as high, so it can be interpreted as a workload that plays a dominant role and has a very strong driving force in shaping employee work productivity achievements. On the other hand, the work-life balance variable produces an *effect size* value of 0.355 on work productivity. This figure is classified as a medium category, indicating the real contribution of work-life balance to employee work productivity, although its influence is still lower than that of workload.

c. Q-square Q^2

Table 10. Q-Square Predictive Relevance Test

	Q²predict	RMSE	MAE
Work productivity	0.551	0.681	0.517

Source: Output SmartPLS 4.0 (2026)

The results of the evaluation through *the Q-Square* (Q²) test on the work productivity construct explained a value of 0.551. These findings demonstrate the power of the predictive function of the study framework in describing the diversity of work productivity achievements as a whole. Thus, in conclusion, the independent variables included in the analysis framework are able to contribute to the adequate prediction accuracy of changes in employee work productivity.

d. Significance (Hypothesis Testing)

Table 11. Hypothesis Testing

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Workload -> Work productivity	0.565	0.567	0.053	10.671	0.000
Work-life balance -> Work productivity	0.399	0.402	0.057	6.969	0.000

Source: Output SmartPLS 4.0 (2026)

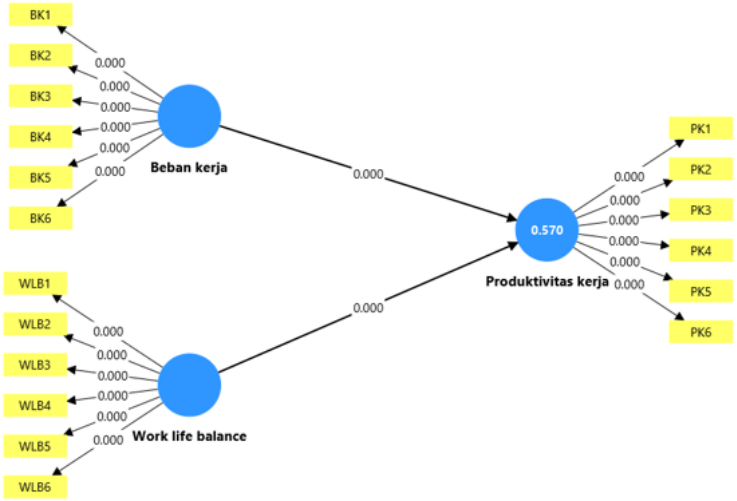

Figure 2. Bootstrapping Test Results

Source: Output SmartPLS 4.0 (2026)

The results of the hypothesis test show the following:

1. The workload variable (X1) obtained a *T-statistical* value of 10.671 accompanied by *p values* of 0.000. These conditions meet the test criteria, namely *T-statistic* exceeding 1.96 and *p values* below the threshold of 0.05, so that the first hypothesis is declared acceptable. This means that the workload contributes significantly to employee work productivity.
2. The work-life balance variable (X2) explains the *T-statistic* value of 6.969 with *p values* of 0.000. This result also met the test criteria, namely *T-statistic* exceeding 1.96 and *p values* below the threshold of 0.05, so the second hypothesis is acceptable. This means that work-

life balance has been proven to have a significant influence in shaping and increasing employee work productivity.

The effect of workload on employee work productivity

As a result of data processing the original sample value was 0.565, the t-statistic was 10.671 (greater than 1.96), and the p-value was 0.000 (less than 0.05). This indicates that H1 is accepted. The results of the study found a strong and positive correlation between workload and employee productivity at PT PG Rajawali II Jatitujuh Unit. The higher the workload an employee receives, their productivity tends to increase. This is especially noticeable during the milling season, where employees are willing to work overtime to handle the increased volume of work. For this overtime work, the company provides additional compensation, in the form of overtime pay and other incentives, so that employees remain motivated and productive even though the working hours are longer.

Additionally, a clear and objectively measurable workload helps employees understand the targets to be achieved, especially during the busy milling season. The awareness that their extra effort will be rewarded through overtime compensation reinforces internal motivation and responsibility towards work. This motivation allows employees to manage time, energy, and resources more efficiently, so they are able to work more effectively and optimally. These findings are consistent with other studies (Ariyanto;Heriyanti, 2023) explained that "workload has a positive influence on employee work productivity"

The Effect of Work Life Balance on Work Productivity

The next test produced an *original sample* of 0.399 with a *t-statistic* of 6.969 which again exceeded the criterion of 1.96, and *a p-value* of 0.000 which was smaller than 0.05. Based on these factors, H2 is accepted. This condition shows that work-life balance has a significant positive association with employee work productivity at PT PG Rajawali II Jatitujuh Unit. When the balance between professional demands and personal needs of employees is more aligned, employee work productivity achievements will increase consistently.

Individuals who are able to manage aspects of personal life proportionately generally have good psychological stability and low levels of stress. This situation makes employees better prepared to face the workload, maintain concentration, and reduce the risk of excessive fatigue. In addition, the implementation of a healthy work-life balance also increases motivational drive, because employees feel that their time and energy allocation is not fully absorbed by work alone. This conclusion is related to the findings (Fauziah et al., 2024), which confirms that "there is a significant positive influence between work-life balance and work productivity".

CONCLUSION

This research proves that workload and work-life balance have a positive influence on worker productivity at PT PG Rajawali II Jatitujuh Unit. These findings indicate that workload, when managed proportionately and accompanied by a clear compensation system, can increase employee motivation and responsibility in completing tasks, thereby having an impact on increasing productivity. Additionally, a good balance between work life and personal life can enhance employees' psychological well-being, motivation, and focus. This result is suggested

to PT PG Rajawali II Jatitujuh Unit to help manage workload proportionally and facilitate a balance between work and personal life for workers to increase productivity in a sustainable manner.

This study has limitations in terms of the scope of contexts, as it includes only a single unit of a company in the agro-industrial sector, as well as the use of a cross-sectional design that does not capture changes in productivity over a given time frame. For further research, this study can be expanded by adding other relevant variables, such as job satisfaction, motivation, or work environment, to make the model more comprehensive. To further enrich the understanding of the mechanisms that affect productivity, it is also recommended to use research subjects from different fields or employ research methods that include mediation or moderation variables.

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