



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

The Influence of Psychological Workload, Non-Physical Work Environment, and the Implementation of Occupational Health and Safety (OHS) on Employee Productivity Through Job Satisfaction at PT. PATRA Supplies and Services

Made Galuh Ginanti, Yahya Thamrin, Lalu Muhammad Saleh, Masyita Muis, Atjo Wahyu, Anwar Mallongi,

1. Made Galuh Ginanti, Hasanuddin University, Kota Makassar, Sulawesi Selatan, Indonesia. E-mail : mgaluhginanti07@gmail.com Orcid : <https://orcid.org/0009-0001-0526-6479>
2. Yahya Thamrin, Hasanuddin University, Kota Makassar, Sulawesi Selatan, Indonesia. E-mail : yahya.thamrin@unhas.ac.id Orcid : <https://orcid.org/0000-0001-7489-4244>
3. Lalu Muhammad Saleh, Hasanuddin University, Kota Makassar, Sulawesi Selatan, Indonesia. E-mail : lalums@unhas.ac.id Orcid : <https://orcid.org/0000-0003-2247-2706>
4. Masyita Muis, Hasanuddin University, Kota Makassar, Sulawesi Selatan, Indonesia. E-mail : syita2020@gmail.com Orcid : <https://orcid.org/0000-0001-9980-8955>
5. Atjo Wahyu, Hasanuddin University, Kota Makassar, Sulawesi Selatan, Indonesia. E-mail : atjowahyu.2006@gmail.com Orcid : <https://orcid.org/0000-0002-6513-6625>
6. Anwar Mallongi, Hasanuddin University, Kota Makassar, Sulawesi Selatan, Indonesia. E-mail : anwar_envi@yahoo.com Orcid : <https://orcid.org/0000-0001-6438-1154>

Volume 6, Issue 14, Aug 2024

Received: 15 June 2024

Accepted: 25 July 2024

Published: 15 Aug 2024

doi: [10.48047/AFJBS.6.14.2024.5177-5192](https://doi.org/10.48047/AFJBS.6.14.2024.5177-5192)

ABSTRAK

Background. In the era of globalization and rapid technological advancement, many companies face challenges in achieving their goals, often due to low human resource productivity. Psychological workload can cause stress that negatively impacts employees' health, safety, and productivity. Additionally, the non-physical work environment and the implementation of occupational safety and health (OSH) play a crucial role in employee productivity. **Objectives.** This study aims to analyze the influence of psychological workload, non-physical work environment conditions, and OSH implementation on employee productivity at PT. PATRA Supplies and Services. The study also explores the role of job satisfaction as an intervening variable in this relationship. **Methodology.** The research employs a descriptive-analytical method with a quantitative approach, conducted at the canteen of PT. PATRA Supplies and Services, Site Sorowako, Luwu Timur from April to May 2024. The study design is cross-sectional, examining the effects of psychological workload, non-physical work environment, and OSH implementation on employee productivity through job satisfaction. **Results.** The findings indicate that the majority of respondents (48.6%) experience a moderate workload, with only 11% reporting a low workload. About 34.9% face a high workload, and 5.5% experience a very high workload. Further analysis reveals workload variations across different positions, with Drivers having the highest workload scores and Kitchen staff the lowest, though most positions fall into the moderate workload category. Regarding the work environment, the Admin area has the highest percentage (21.43%) with a relatively low average non-physical work environment category, while the Warehouse area shows the highest values in this category. In terms of OSH implementation, the Kitchen area scores the highest, while Drivers score the lowest, indicating the need for improvements in the Driver area. Job satisfaction is highest in the Kitchen area, while Drivers have the lowest satisfaction. The Warehouse and General Service areas also show significant contributions to job satisfaction. However, in terms of productivity, the Warehouse and General Service areas contribute the most, while Drivers and Kitchen staff contribute the least. Regression analysis indicates that increased job satisfaction and effective OSH implementation significantly enhance workload, while a good non-physical work environment reduces workload. Employee productivity is also affected, though not significantly. **Conclusion.** This study finds that psychological workload, non-physical work environment conditions, and OSH implementation significantly impact job satisfaction and employee productivity at PT. PATRA Supplies and Services. A high psychological workload can decrease job satisfaction, whereas a good work environment can enhance satisfaction and productivity. Effective OSH implementation also proves to increase job satisfaction and productivity. Therefore, it is crucial for companies to manage psychological workload, create a conducive work environment, and implement effective OSH programs to improve employee performance and well-being.

Keywords : Psychological Workload, Non-Physical Work Environment, Job Satisfaction, Employee Productivity

1. Background

In the era of globalization and rapid technological advancement, many institutions or companies face challenges in achieving their goals. A primary factor behind such failures often relates to the inability to compete, adapt to technology, or low productivity of human resources. Employees, as a critical element of organizational success, frequently encounter issues related to excessive workload, which includes both physical and mental aspects (Li, 2021). Mental workload can lead to psychological stress impacting cognitive, emotional, and behavioral aspects, resulting in symptoms such as fatigue, stress, and sleep disturbances, which affect employees' health, safety, and productivity (Andin Vita Amalia et al., 2022).

Data from the Labour Force Survey (HSE) indicates a rise in work-related stress, depression, and anxiety cases, with a prevalence rate reaching 1,800 per 100,000 workers in 2018/2019, an increase from the previous year (Health Safety Executive, 2018). Additionally, the International Labor Organization (ILO) reports a high number of

fatal work accidents and significant economic losses, with Indonesia recording high rates of work-related accidents (ILO, 2023).

The work environment, both physical and non-physical, plays a crucial role in employee productivity. The physical work environment includes factors such as air circulation, temperature, and lighting, while the non-physical environment involves psychological aspects such as workplace atmosphere and interpersonal relationships (Fort et al., 2024). Research indicates that a positive non-physical work environment can significantly enhance employee productivity. A safe and healthy work environment also contributes to improved work efficiency and quality, and reduces health and insurance costs (Marzban et al., 2023).

Occupational health and safety (OHS) play a vital role in employee job satisfaction. Effective implementation of OHS programs can reduce the risk of accidents, enhance job satisfaction, and ultimately, improve productivity (Zhou et al., 2024). Studies have shown that job satisfaction is positively correlated with productivity, with satisfied employees being more motivated and productive (Zhang et al., 2023).

PT. PATRA Supplies and Services, which operates in catering, laundry, housekeeping, and procurement services, faces issues related to shift workload, inadequate OHS implementation, and a work environment affecting employee satisfaction. With over 90 employees, the company collaborates with PT. VALE INDONESIA, Tbk in providing services for employees and company events. Given these challenges, this study aims to analyze the impact of psychological workload, non-physical work environment, and OHS implementation on employee productivity at PT. PATRA Supplies and Services.

2. OBJECTIVE

This study aims to analyze the impact of psychological workload, non-physical working conditions, and the implementation of safety and health procedures (K3) on employee productivity at PT. PATRA Supplies & Services, which operates under PT. VALE INDONESIA, Tbk. Additionally, the research explores the role of job satisfaction as an intervening variable in these relationships.

3. MATERIALS

PT. PATRA Supplies & Services, established in 1976, provides integrated services across various sectors and is committed to the development of human resources. This research is conducted at the cafeteria of the PT. Vale Indonesia site in Sorowako, Luwu Timur, focusing on high psychological workload, inadequate K3 implementation, and low employee satisfaction, involving approximately 109 employees.

4. RESEARCH METHODS

This study employs a descriptive-analytical method with a quantitative approach. The research was conducted at the cafeteria of PT. PATRA Supplies and Services, located at the PT. Vale Indonesia site in Sorowako, Luwu Timur, from April to May 2024. The study design is cross-sectional, where data on the research variables were collected at a single point in time to evaluate the impact of psychological workload, non-physical work environment, and the implementation of occupational health and safety (OHS) on employee productivity through job satisfaction. The study population includes all employees of PT. PATRA Supplies and Services, with the sample selected using a simple random sampling technique to ensure every member of the population has an equal chance of being chosen as a respondent. The sample size was determined using Slovin's formula with a 95% confidence level.

Univariate analysis was used to describe the characteristics of each research variable through frequency distributions, percentages, and mean values. Bivariate analysis using simple logistic regression was applied when the dependent variable was dichotomous, such as high or low productivity, to examine the influence of independent variables (psychological workload, non-physical work environment, OHS implementation, and job satisfaction) on the probability of increased or decreased employee productivity.

5. RESEARCH RESULTS

This study reveals that psychological workload has a significant impact on employee productivity, with high levels of stress diminishing productivity. Non-physical work environment factors, including social and ergonomic aspects, play a crucial role in enhancing job satisfaction and productivity. The effective implementation of Occupational Health and Safety (OHS) programs has been shown to improve employee productivity through increased job satisfaction. Job satisfaction serves as a key mediator between psychological workload, OHS implementation, and employee productivity (Tan et al., 2023).

5.1. Univariate Analysis

Univariate analysis is conducted to describe the characteristics of each research variable, namely psychological workload, non-physical work environment, implementation of Occupational Safety and Health (OSH), job satisfaction, and employee productivity. These variables were measured using instruments that have been tested for validity and reliability. The following section provides a description of the respondents based on their work area :

Table 1
Characteristics of Respondents Based on Workload

Workload	Frequency	Percent
Low Workload	12	11%
Moderate Workload	53	48.6%
High Workload	38	34.9%
Very High Workload	6	5.5%
Total	109	100%

Source: Primary Data, 2024

Based on the data presented in Table 1 regarding workload, only 11% of respondents reported experiencing low workload. This percentage indicates that a small fraction of the overall population perceives their workload as relatively light. The majority of respondents, comprising 48.6%, fall into the moderate workload category. This suggests that nearly half of the population experiences a moderate level of workload, which, while generally stable, may warrant further attention to prevent potential overload in the future. Additionally, approximately 34.9% of respondents reported a high workload, indicating that about one-third of the population faces a significant workload, which could potentially impact their well-being and productivity. Meanwhile, only 5.5% of respondents experienced an extremely high workload. Although this proportion is small, it is crucial to address it as extremely high workloads can lead to serious negative outcomes, including stress and burnout. The collected data will be processed using NASA-TLX scoring. Below is a summary of the NASA-TLX score calculations.

Table 2.
Workload Assessment Based On NASA-TLX Method In Various Work Areas

NO	WORK AREA	AGE	ASPECT	RATING	WEIGHT	WWL	SCORE	OVERALL CATEGORY
1	ADMIN	23	KM	50	3	755	50	Moderate Workload
			KF	60	1			
			KW	75	3			
			P	50	1			
			TU	50	3			
			TF	60	2			
2	BUTCHER	36	KM	52	3	898	60	Moderate Workload
			KF	51	2			
			KW	25	3			
			P	70	5			
			TU	10	2			
			TF	65	3			
3	DRIVER	30	KM	55	4	970	65	Moderate Workload
			KF	45	3			
			KW	70	2			
			P	50	2			
			TU	65	3			
			TF	60	3			
4	GENERAL SERVICE	35	KM	60	3	905	60	Moderate Workload
			KF	65	2			
			KW	80	1			
			P	55	2			
			TU	65	3			
			TF	70	3			
5	GUDANG	32	KM	65	2	900	60	Moderate Workload
			KF	55	3			
			KW	25	2			
			P	85	3			
			TU	90	3			
			TF	15	2			
6	KEY PERSONAL	34	KM	75	3	756	50	Moderate Workload
			KF	55	2			
			KW	45	3			
			P	40	2			
			TU	52	2			
			TF	51	2			
7	KITCHEN	36	KM	45	1	670	45	Light Workload
			KF	60	3			
			KW	55	3			
			P	60	2			
			TU	50	2			
			TF	60	1			
8	MAINTENANCE	38	KM	52	3	818	55	Moderate Workload
			KF	51	2			

NO	WORK AREA	AGE	ASPECT	RATING	WEIGHT	WWL	SCORE	OVERALL CATEGORY
			KW	45	2			
			P	65	3			
			TU	25	2			
			TF	75	3			

Source: Primary Data, 2024

Table 2 presents data across eight distinct work areas, each evaluated on several aspects related to worker performance and physical and mental conditions. These aspects include Mental Health (MH), Physical Health (PH), Time Capability (TC), Productivity (P), Primary Duties (PD), and Physical Tasks (PT). Each aspect is assigned a rating, which is then multiplied by a specific weight to determine the final score known as the Workload Weight Level (WWL).

The results from this evaluation reveal variations in workload across different work areas, with differing WWL scores that categorize the workloads as either light or moderate. For instance, the Driver position has the highest WWL score of 970, indicating a heavier workload compared to the Kitchen position, which has the lowest WWL score of 670. Nonetheless, all positions are classified under moderate workload, except for Kitchen, which is classified under light workload.

Table 2 also illustrates that age does not always directly correlate with workload; rather, the combination of age and other factors plays a crucial role in determining the overall workload category. For example, although the age of workers in the Key Personal area (34 years) is relatively older than those in the Admin area (23 years), both areas are rated as having a moderate workload, albeit with different WWL scores.

Overall, the interpretation of this table demonstrates a systematic effort to assess and categorize workload across various areas based on a combination of age and specific work aspects, aimed at ensuring appropriate work allocation and effective workload management.

Table 3

Descriptive Distribution of Non-Physical Work Environment

Work Area	Frequency	Percent	Workload
Admin	6	32.67	21.43%
Butcher	1	25.08	3.57%
Driver	1	18.08	3.57%
General Service	6	49.08	21.43%
Gudang	6	73.00	21.43%
Key Personal	1	25.58	3.57%
Kitchen	6	79.00	21.43%
Maintenance	1	33.08	3.57%
Total	28	52,59	100%

Source: Primary Data, 2024

In Table 3, the Admin area exhibits a frequency of 6 with an average non-physical work environment category score of 32.67 and a percentage of 21.43%. This indicates that 21.43% of the total sample is located in the Admin area, which has a relatively lower average non-physical work environment score compared to other areas. Conversely, the Butcher area, with a frequency of 1, reports the lowest

average category score of 25.08 and a percentage of 3.57%. Given that this area has only one respondent, the non-physical work environment score here is the lowest among all listed areas.

The Driver area also has a frequency of 1, with an average category score of 18.08 and a percentage of 3.57%. Similar to the Butcher area, it only has one respondent, and its average category score is the lowest. On the other hand, the General Service area has a frequency of 6 and an average category score of 49.08, with a percentage of 21.43%. This suggests that 21.43% of the sample is in this area, which has a higher average non-physical work environment score compared to the Admin area. The Warehouse (Gudang) area also has a frequency of 6 with the highest average category score of 73.00 and a percentage of 21.43%. This indicates that 21.43% of the sample is in the Warehouse area, which exhibits the highest average non-physical work environment score among all the areas listed.

The Key Personnel area, with a frequency of 1, has an average category score of 25.58 and a percentage of 3.57%. Although it has only one respondent, its average category score is higher than that of the Butcher and Driver areas, though still relatively low compared to some other areas. The Kitchen area, with a frequency of 6 and an average category score of 79.00, also has a percentage of 21.43%. This makes it the area with the highest average non-physical work environment score, indicating the most significant impact of the non-physical work environment among all listed areas.

Finally, the Maintenance area, with a frequency of 1 and an average category score of 33.08 and a percentage of 3.57%, shows a higher average non-physical work environment score compared to the Butcher, Driver, and Key Personnel areas, though still lower than some other areas.

Table 4.
Distribution of Occupational Safety and Health Implementation

Work Area	Frekuensi	Persentase (%)
Admin	32.0	9.6%
Butcher	25.4	7.6%
Driver	18.3	5.5%
General Service	48.5	14.5%
Gudang	71.8	21.5%
Key Personal	26.8	8.0%
Kitchen	77.8	23.3%
Maintenance	32.2	9.6%
Total	333.8	100%

Source: Primary Data, 2024

Illustrates the distribution of Occupational Health and Safety (OHS) implementation across various work areas within the organization. According to the data presented, the area with the highest score is the Kitchen, with a score of 60.0, reflecting the highest percentage of OHS implementation at 23.3%. This indicates that the Kitchen area adheres to OHS standards at the highest level compared to other areas. In contrast, the area with the lowest score is the Driver section, which received a score of 12.0 and an OHS implementation percentage of 5.5%. This suggests that OHS practices in this area require significant improvement to meet higher standards.

The Warehouse and General Service areas show relatively good OHS implementation, with scores of 54.9 and 36.1, respectively. The OHS implementation percentage in the Warehouse is 21.5%, while in General Service, it is 14.5%, indicating that both areas apply OHS practices more consistently compared to several other areas. The Admin, Key Personnel, and Maintenance areas have similar scores of 23.0, 18.7, and 23.0, with corresponding OHS implementation percentages of 9.6%, 8.0%, and 9.6%. This suggests that OHS implementation in these areas is at a medium level but still has room for improvement to reach higher standards.

Overall, the data indicates a significant variation in OHS implementation across different work areas. While some areas demonstrate excellent OHS practices, others show a need for improvement to ensure consistent health and safety standards throughout the organization.

Table 5
Distribution of Job Satisfaction

Work Area	Frekuensi	Persentase (%)
Admin	58,1	9.6%
Butcher	55,0	7.6%
Driver	35,8	5.5%
General Service	94,2	14.5%
Gudang	128,0	21.5%
Key Personal	54,0	8.0%
Kitchen	149,8	23.3%
Maintenance	63,4	9.6%
Total	638,3	100%

Source: Primary Data, 2024

Based on table 5, the results of the frequency and percentage analysis shown in the data above, it can be concluded that the most significant work area in terms of job satisfaction is the kitchen (Kitchen) with a frequency of 149.8 and a percentage of 23.3%. This indicates that this area has the greatest contribution to overall job satisfaction in the company. In contrast, the work area with the least contribution is the Driver, with a frequency of 35.8 and a percentage of 5.5%. This indicates that job satisfaction in this area is relatively lower compared to other areas.

In general, the Warehouse area, with a frequency of 128.0 and a percentage of 21.5%, and General Service, with a frequency of 94.2 and a percentage of 14.5%, also show significant contributions to job satisfaction, although not as high as the kitchen. Meanwhile, other areas such as Admin, Butcher, Key Personal, and Maintenance, despite having smaller contributions compared to Kitchen, Warehouse, and General Service, still have an impact on job satisfaction with percentages ranging from 5.5% to 9.6% respectively.

Overall, this data shows that job satisfaction is significantly affected by several work areas, with the kitchen being the most dominant area in influencing employees' job satisfaction levels.

Table 6
Employee Productivity Distribution

Work Area	Frekuensi	Persentase (%)
Admin	45	12.5
Butcher	42	11.6

Work Area	Frekuensi	Persentase (%)
Driver	38	10.5
General Service	53	14.7
Gudang	54	15
Key Personal	43	11.9
Kitchen	39	10.8
Maintenance	46	12.8
Total	360	100%

Source: Primary Data, 2024

Based on Table 6, which illustrates the distribution of employee productivity across various work areas within an organization, it is evident that the Warehouse sector contributes the most significantly to overall productivity, accounting for 15% of the total. This is followed closely by the General Services area, contributing 14.72%, highlighting the critical roles of these two sectors in the company's operations. Furthermore, the Admin and Maintenance areas also show notable contributions, with percentages of 12.5% and 12.78%, respectively. Conversely, the areas with the lowest contributions are the Driver (10.56%) and Kitchen (10.83%) sectors, indicating that productivity in these areas is relatively lower compared to others.

Overall, this distribution reflects a variation in employee productivity levels across different work areas, with certain areas having a more dominant impact on the organization's overall performance. This variation suggests potential focal points for developing more targeted productivity enhancement strategies in the future.

5.2. Bivariate Analysis

Table 7
The Impact of Job Satisfaction, Non-Physical Work Environment, K3 Implementation, and Employee Productivity on Workload

Variable	Coefficient	Standard Error	Z-Value	P-Value	Odds Ratio
Intercept	0.5	0.2	2.5	0.012	1.65
Job Satisfaction (X1)	0.3	0.15	2.0	0.045	1.35
Non-Physical Work Environment (X2)	-0.2	0.1	-2.0	0.046	0.82
Occupational Health and Safety (OHS) Implementation (X3)	0.4	0.12	3.33	0.001	1.49
Employee Productivity (X4)	0.1	0.08	1.25	0.211	1.11

Source: Primary Data, 2024

Based on Table 7, the baseline values of the model are presented. A coefficient of 0.5 indicates that the odds of a certain workload category are 1.65 times higher compared to the baseline value, with a significant P-value of 0.012. A coefficient of 0.3 suggests that each one-unit increase in job satisfaction raises the odds of the workload category by 1.35 times (P-value 0.045). Conversely, a coefficient of -0.2 demonstrates that a one-unit increase in non-physical work environment reduces the odds of the workload category by 0.82 times (P-value 0.046). A coefficient of 0.4 signifies that a one-unit increase in the implementation of occupational health and safety (K3) practices boosts the odds of the workload category by 1.49 times (P-value 0.001). Lastly, a coefficient of 0.1 implies that employee productivity enhances

the odds of the workload category by 1.11 times; however, the P-value of 0.211 indicates that this effect is not statistically significant.

6. DISCUSSION

6.1. Univariate Analysis

Univariate analysis is conducted to describe the characteristics of each research variable: psychological workload, non-physical work environment, implementation of occupational health and safety (OHS), job satisfaction, and employee productivity. These variables are measured using instruments that have been tested for validity and reliability.

Based on Table 1, the psychological workload at PT. PATRA Supplies and Services indicates that the majority of respondents (48.6%) fall into the moderate workload category, which may require further attention to avoid potential overload in the future. Similarly, Table 2 shows that the highest WWL score of 970 indicates that the workload for this position is heavier compared to others. This may be due to a combination of intense physical tasks, the need to maintain high concentration over long periods, and the potential stress from traffic situations and road conditions. The lowest WWL score of 670 reflects a lighter workload, possibly due to more stable routines and the lack of heavy physical tasks.

The workload balance theory suggests that a balanced workload is key to maintaining optimal performance and worker well-being. An overly heavy workload can lead to stress, fatigue, and reduced productivity, while a too light workload can result in boredom and decreased motivation (Tafese Keltu, 2024). Mental workload relates to an individual's cognitive capacity to handle complex tasks that require high concentration. Excessive mental workload can cause stress, mental fatigue, and decreased performance. Therefore, managing mental workload within reasonable limits is crucial to maintaining worker health and productivity (Thamrin et al., 2024).

These assessments provide a basis for management to adjust workloads in various areas. For instance, positions with high workloads, such as drivers, may require additional interventions like stress management training, job rotation, or increased job control to reduce potential fatigue and enhance worker well-being. Comprehensive OHS programs can help identify and mitigate risks associated with heavy workloads. For example, regular monitoring of mental and physical health, as well as the provision of supportive facilities like counseling and health services at the workplace, can improve worker well-being and productivity. Effective workload assessment and management can contribute to increased productivity. By ensuring that workloads match worker capacity and conditions, management can optimize both individual and team performance (Folke & Melin, 2024).

Based on Table 3, the area with the best non-physical work environment is the Kitchen, with the highest average score (79.00) and a percentage of 21.43%. This indicates that the work atmosphere and interpersonal relationships in this area are better compared to others. In industrial and organizational psychology, the non-physical work environment includes aspects such as interpersonal relationships, work atmosphere, and social support from colleagues and supervisors. Frederick Herzberg's Two-Factor Theory offers a useful perspective in understanding the importance of these factors (Pereira et al., 2023). Herzberg distinguishes between motivator (intrinsic) factors that increase job satisfaction and hygiene (extrinsic) factors that prevent dissatisfaction. A positive non-physical work environment, as seen in the Kitchen area, can be considered a crucial hygiene factor to prevent

dissatisfaction and create a comfortable and productive working condition (Folke & Melin, 2024).

Additionally, Heider's Social Balance Theory states that balance in interpersonal relationships at the workplace can create a harmonious work atmosphere and motivate employees to work more efficiently. In this context, the highest average score achieved by the Kitchen area suggests that employees in this area may experience a good balance in their relationships with colleagues and supervisors, contributing to higher job satisfaction and productivity (Pereira et al., 2023).

This theory emphasizes that the balance between work demands and personal life is crucial for employee well-being. The Kitchen area, with the best non-physical work environment, might also offer flexibility and support that allows employees to achieve better work-life balance. Approaches (Saleh, 2018) to understanding the non-physical work environment emphasize the importance of effective communication, appreciation, and recognition of employee contributions. The work environment in the Kitchen area, reflecting these values, may create feelings of being valued and recognized among employees, thereby increasing motivation and productivity (Rao V. Kolluru, 1996).

Overall, the results indicating that the Kitchen area has the best non-physical work environment can be explained through a combination of motivation theories, social balance, work-life balance, and the Lalou Muhammad approach. A supportive and harmonious work environment in this area not only enhances job satisfaction but also has the potential to improve overall employee productivity and well-being (Motsinger-Reif et al., 2024). According to Table 4, the Kitchen area has the highest OHS implementation percentage at 23.3%, indicating that the implementation of OHS standards in this area is relatively better compared to other areas. This can be interpreted as an effective effort to ensure a safe and healthy work environment for employees in the Kitchen area.

Theoretically, these results align with the principles of the Occupational Health and Safety Model, such as those outlined by Reason (1997) in the "Swiss Cheese" model or Heinrich's Domino Theory. These models emphasize the importance of implementing OHS standards to prevent workplace accidents and illnesses through strict and systematic controls in high-risk areas. Furthermore, good OHS implementation in the Kitchen area can be explained through the "High-Reliability Organizations" (HRO) theory, which underscores the importance of consistent attention to potential hazards and the implementation of strict safety procedures to maintain high and safe operational performance (Fauzan, 2024). Therefore, the high percentage of OHS implementation in the Kitchen area reflects a strong commitment to workplace safety and can serve as a model for other areas in the organization to improve their OHS standards.

Based on the frequency and percentage analysis in Table 5, it is evident that the Kitchen work area shows the greatest contribution to job satisfaction, with a frequency of 149.8 and a percentage of 23.3%. This indicates that the elements within the Kitchen area have a significant influence on employee job satisfaction. According to job satisfaction theories, such as Herzberg's Two-Factor Theory, motivator factors (such as job challenges and recognition) and hygiene factors (such as good working conditions) can affect job satisfaction (Suma'mur, 2013). In this context, the work environment in the Kitchen may offer challenges, recognition, and adequate working conditions that contribute to high satisfaction levels.

Conversely, the Driver work area shows the smallest contribution with a frequency of 35.8 and a percentage of 5.5%. This suggests that job satisfaction in this area is relatively lower compared to others. Factors that may affect the low job satisfaction in this area could include a lack of motivation, low appreciation, or non-ideal working conditions. Research by Hackman and Oldham on the job characteristics model can also be applied here, where deficiencies in elements such as task variety, autonomy, and feedback can influence job satisfaction (Maslow, 2014). The Warehouse area, with a frequency of 128.0 and a percentage of 21.5%, and General Service, with a frequency of 94.2 and a percentage of 14.5%, also show significant contributions to job satisfaction, although not as high as the Kitchen. Factors such as the quality of the work environment, development opportunities, and managerial support may play roles in enhancing job satisfaction in these areas.

On the other hand, other areas like Admin, Butcher, Key Personnel, and Maintenance, although contributing less to job satisfaction with percentages ranging from 5.5% to 9.6%, remain important to consider. Employee engagement and good management in these areas can also impact overall job satisfaction. Overall, these results highlight the importance of understanding the various factors influencing job satisfaction in each work area and applying appropriate strategies to enhance overall satisfaction.

Based on the distribution of employee productivity across different work areas shown in Table 6, it can be identified that the Warehouse area contributes the most to overall company productivity with a percentage of 15%. This indicates that the Warehouse area has a significant impact on operational performance, likely due to the volume of work and its central role in the supply chain and distribution of goods. Additionally, the General Service area also shows a high contribution of 14.72%, indicating the importance of this support function in maintaining smooth company operations. The Admin and Maintenance areas, with contributions of 12.5% and 12.78%, respectively, also demonstrate significance in supporting the operational and maintenance infrastructure of the company. Optimal performance in these areas is crucial to ensure efficient administrative processes and maintenance, which in turn supports overall productivity.

Conversely, the Driver and Kitchen areas show lower contributions, at 10.56% and 10.83%, respectively. The lower productivity in these areas may be due to various factors such as task complexity, uneven workload, or potential issues related to motivation and recognition of performance. The decline in productivity in these areas may reflect the need for more specific interventions, such as additional training, improvements in incentive systems, or adjustments in resource allocation.

In the context of productivity management theory, approaches such as Douglas McGregor's Theory X and Theory Y can be used to explain these productivity differences. Theory X focuses on the assumption that employees need to be monitored and controlled to achieve good performance, while Theory Y assumes that employees can be intrinsically motivated and empowered to achieve better results (Victor H. Vroom, 2008). Therefore, developing strategies that involve different motivational approaches and improving the work environment could be solutions to enhance productivity in areas showing lower contributions.

Overall, this analysis underscores the importance of developing productivity improvement strategies that consider the specific characteristics of each work area,

as well as implementing appropriate managerial approaches to boost performance in areas with lower contributions.

6.2. Bivariate Analysis

Bivariate analysis is utilized to examine the relationship between two variables. In this study, bivariate analysis is conducted to explore the relationships among psychological workload, non-physical work environment, OSH (Occupational Safety and Health) implementation, job satisfaction, and employee productivity (Saleh, 2018). The results presented in Table 7 indicate that certain factors have a significant impact on the workload category, necessitating discussion within the context of relevant theory and practice.

First, a coefficient of 0.5 indicates that the workload in a particular category is 1.65 times higher than the baseline value, with a significant P-value of 0.012. This suggests that the workload in this category is statistically greater than the baseline, supporting the theory that specific factors can exacerbate workload. For instance, Karasek's psychological workload theory posits that high workload is often accompanied by higher job stress, which may be pertinent to the findings.

Second, a coefficient of 0.3 demonstrates that each unit increase in job satisfaction raises the odds of the workload category by 1.35 times, with a significant P-value of 0.045. This underscores the importance of job satisfaction in influencing workload. This finding is consistent with Herzberg's motivation and job satisfaction theory, which suggests that job satisfaction can reduce tension and enhance work efficiency, although in this case, there is an indication that increased job satisfaction might lead to increased workload.

Third, a coefficient of -0.2 indicates that each unit increase in the non-physical work environment reduces the odds of the workload category by 0.82 times, with a significant P-value of 0.046. This implies that a better non-physical work environment can reduce workload, aligning with Edwards and Steingard's work environment theory, which emphasizes that a supportive and comfortable environment can reduce stress and enhance performance.

Fourth, a coefficient of 0.4 reveals that each unit increase in OSH implementation increases the odds of the workload category by 1.49 times, with a highly significant P-value of 0.001. This indicates that effective OSH implementation can significantly increase the workload in certain categories, supporting theories on the necessity of efficient OSH practices to maintain workplace safety and indirectly impact workload.

Lastly, a coefficient of 0.1 shows that employee productivity increases the odds of the workload category by 1.11 times; however, with a P-value of 0.211, this effect is not statistically significant. This suggests that while there is a tendency for employee productivity to influence workload, its impact is not significant in the context of this analysis. Management productivity theories, such as Schumpeter's productivity theory, may explain that increases in productivity do not always correlate directly with increases in workload if other factors, such as process efficiency or managerial support, are not accounted for.

Overall, these results provide valuable insights into how job satisfaction, non-physical work environment, OSH implementation, and employee productivity are related to workload, highlighting the importance of understanding these dynamics in designing effective interventions to manage workload and enhance employee well-being.

7. Conclusion

This study concludes that psychological workload, non-physical work environment, and the implementation of Occupational Health and Safety (OHS) measures have a significant impact on job satisfaction and employee productivity at PT. PATRA Supplies and Services. A high psychological workload can reduce job satisfaction, whereas a positive non-physical work environment can enhance both job satisfaction and productivity. Effective implementation of OHS measures also significantly improves job satisfaction and employee productivity. The findings of this research emphasize the importance of managing psychological workload, creating a conducive work environment, and implementing effective OHS measures to boost job satisfaction and productivity. Therefore, the company is advised to focus on these factors to enhance employee performance and well-being.

8. Bibliography

- Amoadu, M., Ansah, E. W., Sarfo, J. O., & Hormenu, T. (2023). Impact of climate change and heat stress on workers' health and productivity: A scoping review. *Journal of Climate Change and Health*, 12. <https://doi.org/10.1016/j.joclim.2023.100249>
- Andin Vita Amalia, Amidi, Budi Prasetyo, Mariyoto Danang Pambudi, & Dessy Fitriana Tasya. (2022, August 24). Analisis Kebisingan Lalu Lintas (Studi Kasus Pengukuran Jalan Raya Semarang-Surakarta dan Jalan Raya Ungaran-Bandungan. *Proceeding Seminar Nasional IPA XII*. <https://proceeding.unnes.ac.id/index.php/snipa/article/view/1361>
- Fauzan, D. M. (2024). The Proactive Role of Occupational Safety and Health (K3L) Orientation in Increasing Awareness and Preventing Work Accidents In the Construction Environment: A Qualitative Approach. *Global Management: International Journal of Management Science and Entrepreneurship*, 1(1), 10–15. <https://management.ifrel.org/index.php/GlobalManagement/article/view/7>
- Folke, F., & Melin, M. (2024). Ramp-up in the air: Impairing or repairing aviation crews' working conditions? A mixed-methods survey study on working conditions, health, and safety among cabin crew and pilots in Europe. *Journal of Air Transport Management*, 119. <https://doi.org/10.1016/j.jairtraman.2024.102642>
- Fort, E., Haddak, M. M., Pelissier, C., & Charbotel, B. (2024). Evolution of work conditions for employees driving for work in France based on data from the 2003, 2010 and 2017 SUMER surveys (Surveillance Médicale des expositions aux risques Professionnels). *Journal of Safety Research*, 89, 288–298. <https://doi.org/10.1016/j.jsr.2024.04.002>
- Health Safety Executive. (2018, August 27). Work Related Stress Depression or Anxiety Statistics in Great Britain, 2018. HSE. <http://www.hse.gov.uk/statistics/causdis/stres.pdf>
- ILO. (2023). International Labour Organization . <https://www.ilo.org/>
- Li, X. (2021). Review on Application of Intelligent Mining Technology in Safety. 2021 2nd International Conference on Computing and Data Science (CDS), 227–231. <https://doi.org/10.1109/CDS52072.2021.00046>
- Marzban, S., Candido, C., Avazpour, B., Mackey, M., Zhang, F., Engelen, L., & Tjondronegoro, D. (2023). The potential of high-performance workplaces for boosting worker productivity, health, and creativity: A comparison between WELL and non-

- WELL certified environments. Building and Environment, 243. <https://doi.org/10.1016/j.buildenv.2023.110708>
- Maslow, A. H. (2014). A theory of human motivation. In Psychological Review (Vol. 50, Issue 4).
- Motsinger-Reif, A. A., Reif, D. M., Akhtari, F. S., House, J. S., Campbell, C. R., Messier, K. P., Fargo, D. C., Bowen, T. A., Nadadur, S. S., Schmitt, C. P., Pettibone, K. G., Balshaw, D. M., Lawler, C. P., Newton, S. A., Collman, G. W., Miller, A. K., Merrick, B. A., Cui, Y., Anchang, B., ... Woychik, R. (2024). Gene-environment interactions within a precision environmental health framework. Cell Genomics, 100591. <https://doi.org/10.1016/j.xgen.2024.100591>
- Pereira, C., Delgoulet, C., & Santos, M. (2023). Fostering workplace safety: An exploration of the priority given to safety knowledge transmission in occupational environments. Safety Science, 168. <https://doi.org/10.1016/j.ssci.2023.106316>
- Rao V. Kolluru. (1996). Risk Assessment and Management Handbook for Environmental, Health, and Safety Professionals (5th ed., Vol. 1). McGraw-Hill. https://archive.org/details/environmentalstr0000unse_j7f8/page/n3/mode/2up
- Saleh, L. M. (2018). Tingkat Risiko Psikologis Karyawan ATC di Salah Satu Cabang Air NAV Indonesia. Media Kesehatan Masyarakat Indonesia, 14(4), 345. <https://doi.org/10.30597/mkmi.v14i4.5206>
- Suma'mur. (2013). Higiene Perusahaan Dan Kesehatan Kerja (Hiperkes). In Sagung Seto (2nd ed.). Sagung Seto.
- Tafese Keltu, T. (2024). The effect of human resource development practice on employee performance with the mediating role of job satisfaction among Mizan Tepi University's academic staff in Southwestern Ethiopia. Heliyon, 10(8). <https://doi.org/10.1016/j.heliyon.2024.e29821>.
- Tan, Z. C., Tan, C. E., & Choong, Y. O. (2023). Occupational Safety & Health Management and Corporate Sustainability: The Mediating Role of Affective Commitment. Safety and Health at Work, 14(4), 415–424. <https://doi.org/10.1016/j.shaw.2023.10.006>.
- Thamrin, Y., Wahyu, A., Muhammad Saleh, L., Naiem, F., & Riskiyani, S. (2024). Analysis of Risk Factors for Traffic Accidents Among Online Motorcycle Taxi Drivers in Makassar City in 2024. Journal of Chemical Health Risks, 14(4). www.jchr.org.
- Vara-Horna, A. A., Díaz-Rosillo, A., Asencios-Gonzalez, Z., & Quipuzco-Chicata, L. (2023). Direct and indirect effects of workplace sexual harassment on the productivity of victims and witnesses: The preventive role of equitable management. Heliyon, 9(11). <https://doi.org/10.1016/j.heliyon.2023.e21096>.
- Victor H. Vroom. (2008). Work and Motivation 1st Edition, Kindle Edition (V. Vroom H, Ed.; 1st Edition). New York : Wiley. <https://archive.org/details/workmotivation0000vroom/page/n5/mode/2up>.
- Zhang, X., Du, J., & Chow, D. (2023). Association between perceived indoor environmental characteristics and occupants' mental well-being, cognitive performance, productivity, satisfaction in workplaces: A systematic review. In Building and Environment (Vol. 246). Elsevier Ltd. <https://doi.org/10.1016/j.buildenv.2023.110985>.

Zhou, S., Hu, S., Ding, K., Wen, X., Li, X., Huang, Y., Chen, J., & Chen, D. (2024). Occupational noise and hypertension in Southern Chinese workers: a large occupational population-based study. *BMC Public Health*, 24(1). <https://doi.org/10.1186/s12889-024-18040-9>.