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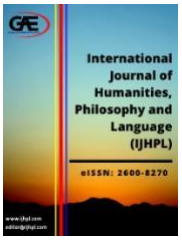

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THE RELATIONSHIP BETWEEN OCCUPATIONAL STRESS, WORKING ENVIRONMENT, WORKLOAD AND JOB PERFORMANCE AMONG PALM OIL WORKERS IN KOTA TINGGI, JOHOR

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Abstract:

Palm oil workers are operating in physically demanding tasks, challenging working conditions, and high job demands, which may influence their job performance. Occupational stress, working environment, and excessive workload are among the key factors that influence workers' ability to perform effectively in labour-intensive plantation settings. This study examines the relationships among occupational stress, the working environment, and workload and job performance among palm oil workers in Kota Tinggi, Johor. A quantitative research approach, data were collected from 113 palm oil workers employed under the Federal Land Development Authority Federal Land Development Authority (FELDA) through structured questionnaires. The findings revealed that occupational stress has a significant positive relationship with job performance ($r = 0.764$, $p = 0.001$), indicating that manageable levels of stress may enhance workers' focus and performance. Similarly, workload is positively and significantly associated with job performance ($r = 0.752$, $p = 0.001$), suggesting that an appropriate workload level can motivate workers to perform effectively. Moreover, the working environment demonstrates a significant positive relationship with job performance ($r = 0.778$, $p = 0.001$). Collectively, occupational stress, working environment, and workload explain a substantial proportion of the variance in job performance ($R2 = 0.663$). The findings highlight the importance of maintaining a supportive working environment, appropriately managing occupational stress,

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and regulating workload levels to enhance job performance. This study provides practical insights for plantation managers and policymakers on developing effective strategies to improve workers' performance, safety, and well-being.

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Keyword:

Job Performance, Occupational Stress, Palm Oil Workers, Workload, Working Environment

Introduction

The palm oil industry plays a significant role in Malaysia's agricultural sector and contributes substantially to national economic development. Malaysia is one of the world's leading palm oil producers, and the industry provides employment opportunities for thousands of workers, particularly in plantation operations. Among the major plantation organizations in Malaysia is the Federal Land Development Authority (FELDA), which manages extensive palm oil plantations and employs a large workforce to perform labour-intensive tasks. These workers are responsible for activities such as harvesting, pruning, fertilizing, and transporting fresh fruit bunches, all of which require considerable physical effort and endurance. The effectiveness of plantation operations is therefore closely related to the job performance of the workers involved (Campbell, 1990; Motowidlo & Van, 1994).

Despite the industry's economic importance, palm oil plantation workers often face challenging working conditions. Workers are frequently exposed to tropical heat and high humidity, as well as physically demanding tasks that require repetitive movements and prolonged physical exertion. Such conditions may contribute to occupational stress, fatigue, and physical strain among workers. Previous studies have indicated that workers engaged in physically demanding agricultural activities are at greater risk of stress and fatigue, which may affect their work performance and overall productivity (Yusoff et al., 2016). In addition, ergonomic risk factors such as repetitive motions, awkward postures, and heavy manual handling have been identified as common issues among plantation workers. These conditions may increase the risk of musculoskeletal disorders and negatively influence workers' ability to perform tasks efficiently (Nor et al., 2024). Furthermore, psychological and ergonomic risks in plantation environments may also affect workers' safety, health, and productivity (Istisya et al., 2024).

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Apart from physical demands, other factors such as workload pressure and workplace environment may also influence employee performance. A supportive working environment that provides adequate tools, proper safety measures, and suitable working conditions can help improve employee motivation and efficiency. Conversely, excessive workload and poor working conditions may lead to increased stress levels, reduced job satisfaction, and lower productivity among workers (Noor et al., 2024). Employee performance may also be influenced by behavioural factors such as cooperation, reliability, and proactive work attitudes within the workplace (Rahim et al., 2023). Therefore, understanding the factors that influence job performance among plantation workers is essential in improving workplace conditions and ensuring sustainable productivity in the palm oil industry. Correspondingly, this study aims to determine the relationships among occupational stress, the working environment, and workload on job performance among palm oil workers in Kota Tinggi, Johor.

Literature Review

The literature review discusses several crucial factors related to job performance among workers in labour-intensive industries. Previous studies have highlighted that occupational stress, working environment, and workload are significant factors that may influence employee productivity and overall organizational performance. In plantation sectors such as the palm oil industry, workers are frequently exposed to physically demanding tasks and challenging environmental conditions that may affect their work efficiency and well-being. Therefore, understanding the relationship between these factors and job performance is essential for improving workplace conditions and enhancing productivity among palm oil workers. Occupational stress refers to the psychological and physiological condition that occurs when job demands exceed an individual's ability to cope. According to Chirico (2016), occupational stress arises when individuals perceive an imbalance between work demands and their available coping resources. Stress can manifest in both positive and negative forms depending on how individuals evaluate and respond to stressful situations (Undie et al., 2018). Daniel (2019) further explained that stress is a normal part of human life experienced by individuals regardless of age, occupation, or cultural background.

Relationship Between Occupational Stress and Job Performance

The working environment refers to the physical and psychological conditions surrounding employees as they perform their job tasks. It includes workplace facilities, equipment, and other environmental factors that support employees in fulfilling their responsibilities effectively (Sedarmayanti, 2018). According to Nitisemito (1982), the working environment comprises workplace characteristics that influence employees' attitudes, behaviour, and productivity. Research indicates that occupational stress is significantly related to employee performance. Deseria and Lestari (2024) identified that stress can enhance performance when workloads match employees' capabilities, as manageable challenges increase motivation, focus, and task completion. Similarly, Ekhsan and Septian (2021) reported that demanding yet achievable tasks improve employees' responsibility and commitment.

This relationship is explained by the concept of positive stress, which holds that moderate pressure stimulates discipline, focus, and productivity (Chan et al., 2021). However, when stress exceeds coping capacity, it negatively affects performance, causing fatigue, reduced concentration, and increased errors (Hartono & Prasetyo, 2023). Herdiana and Sary (2023) and Alpriani et al. (2025) further highlighted that excessive workload and stress reduce

performance, whereas moderate levels can enhance it. Pertiwi et al. (2025) emphasized that job performance is influenced simultaneously by workload, occupational stress, and the working environment. In labour-intensive sectors such as palm oil plantations, occupational stress is often exacerbated by physical demands, repetitive tasks, extreme weather, and safety risks. Abdullah et al. (2023) reported that excessive stress among plantation workers contributes to fatigue and lower productivity. Overall, the literature suggests that occupational stress has a dual effect on performance: moderate stress can enhance focus and efficiency, while excessive stress reduces performance and well-being.

Relationship Between Working Environment and Job Performance

Workload refers to the physical and mental effort required of employees to perform job-related tasks within a given period. According to Irzal (2016), workload refers to the total effort required of workers to meet job requirements. Despite this, individuals differ in their ability to manage workload due to variations in physical capacity, skills, and experience.

The working environment significantly influences employee performance. Deseria and Lestari (2024) reported that a supportive environment improves performance, while poor conditions, such as auditory and visual distractions, reduce focus and productivity. This pattern aligns with Ardhianti and Susanty (2020), who identified that noise and interruptions lower work efficiency. Physical factors, such as lighting, workspace arrangement, and noise levels, also affect comfort and concentration (Smith et al., 2023; Johnson & Lee, 2021), with disruptive environments increasing stress and reducing productivity. In Malaysian plantations, the working environment is particularly challenging due to the physically demanding nature of the work. Nawi et al. (2016) highlighted that exposure to heat, unsafe equipment, long hours, and poor ergonomics negatively impacts health and efficiency. Rahim et al. (2023) noted that uneven terrain, inadequate shelter, heavy manual handling, and prolonged exposure to sunlight contribute to fatigue, reduced concentration, and declining performance.

Social and organizational aspects are equally essential. Positive relationships with supervisors and coworkers, effective communication, and organizational support enhance motivation, collaboration, and well-being (Aminuddin, 2022). Conversely, poor supervision, conflicts, and weak teamwork can reduce focus and work effectiveness. Overall, both physical and psychosocial aspects of the working environment play a critical role in job performance. Improving workplace safety, ergonomics, supervision, and social support is essential to sustain productivity and employee well-being.

Relationship Between Workload and Job Performance

Job performance refers to the extent to which employees successfully perform their assigned duties and responsibilities within an organization. It is commonly evaluated based on the quantity and quality of work produced by employees (Dharmanegara et al., 2016; Jalagat, 2017). Workload is a crucial factor influencing employee performance. Excessive workload can lead to physical fatigue, reduced attention, and lower efficiency (Wisudawati & Pratama, 2021). This is especially true in harvesting operations that require precision and timing. Increased workload also raises stress levels, indirectly reducing job performance (Yuli et al., 2023), a common issue in under-resourced plantation settings. Studies consistently demonstrate that high workload negatively impacts employee satisfaction, productivity, and performance in plantation industries (Zamri et al., 2021; Manalu et al., 2022; Ghazali et al., 2023; Hasanah et

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al., 2024). Excessive demands may force workers to prioritize speed over accuracy, increasing errors and workplace accidents and reducing harvesting quality, ultimately affecting overall plantation efficiency (Ghazali et al., 2023; Hasanah et al., 2024). Prolonged exposure also contributes to chronic fatigue and higher absenteeism (Nawi et al., 2016; Manalu et al., 2022). Although workload measurement methods vary across studies, in palm oil plantations, it is influenced by task volume, physical strain, environmental conditions, and work schedules (Rahim et al., 2023). Essentially, the literature indicates that excessive workload negatively affects employee performance, highlighting the need for effective workload management to maintain productivity, safety, and worker well-being.

Materials And Methods

This study was conducted among palm oil plantation workers employed under the FELDA in Kota Tinggi, Johor. The plantation sector involves labour-intensive tasks such as harvesting, pruning, fertilizing, and transporting palm fruit. These tasks require significant physical effort and prolonged exposure to outdoor environmental conditions, making this sector an appropriate setting for examining factors influencing workers' job performance.

A cross-sectional quantitative research design was employed, with primary data collected using a structured questionnaire distributed to the workers. Respondents evaluated each statement using a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). This scale allows respondents to express their level of agreement and provides measurable data suitable for statistical analysis. The total population of workers in the selected plantation area was approximately 160 and based on the Krejcie and Morgan (1970) sample size determination table, a minimum of 113 respondents was required. Respondents were selected using a simple random sampling technique to ensure that every worker had an equal chance of participating in the study.

The questionnaire was adapted from previous research and consisted of five sections. Section A collected demographic information, including gender, age, marital status, ethnicity, education level, work experience, and income. Meanwhile, Sections B, C, and D measured the independent variables, which are occupational stress, working environment, and workload. Moreover, Section E measured the dependent variable, which is job performance. A pilot test was conducted to ensure reliability, and Cronbach's alpha coefficients greater than 0.70 confirmed that all variables met the required threshold.

Descriptive statistics summarized respondents' demographic characteristics and assessed the level of each variable. Pearson correlation analysis examined the relationships among occupational stress, working environment, workload, and job performance, while multiple linear regression analysis identified the most influential factor affecting job performance. The details of the questionnaire, including sections, variables, the total number of questions, and sources, are summarized in Table 1.

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Table 1: Description of the Questionnaire

Section	Variables	Total Question	Source
A	Demographic	7	(Munisamy, 2013; Abegaz et al., 2025)
B	Occupational stress	10	(Munisamy, 2013)
C	Working environment	10	(Munisamy, 2013)
D	Workload	10	(Munisamy, 2013)
E	Job performance	6	(Sari, 2015)

Results and Discussions

Demographic Profile of the Respondents

Table 2 presents the demographic profile of the respondents. All respondents were male (100%, N = 113), reflecting the physically demanding nature of plantation fieldwork. The majority of respondents were aged 25-34 years (37.2%), followed by 18-24 years (27.4%) and 35-44 years (21.2%). This indicates that most respondents belong to the young-to-middle-aged working population. In terms of marital status, 60.2% were single, 30.1% married, and 9.7% divorced. Malay respondents formed the largest ethnic group (73.5%), followed by Chinese (15.9%) and Indian (10.6%).

Regarding education level, most respondents had secondary-level qualifications: SPM (23.0%), STPM (20.4%), and PMR (17.7%). Smaller proportions had no formal education (15.9%) or primary education (14.2%), while a few possessed a diploma (7.1%) or bachelor's degree (1.8%). Most respondents had relatively short to moderate work experience, with 6 months to 1 year (26.5%) being the largest group, followed by 3-5 years (25.7%) and 1-3 years (22.1%). In terms of income, the majority earned between RM441 and RM750 (23.9%), followed by RM1501-RM2000 (22.1%) and RM751-RM1500 (20.4%), indicating that most respondents fall within the low to middle-income category.

Table 2: Respondents' Demographic Profile

Characteristic	Frequency	Percentage (%)
Gender		
Male	113	100.0
Age		
18 years - 24 years	31	27.4
25 years - 34 years	42	37.2
35 years - 44 years	24	21.2
45 years - 54 years	13	11.5
55 years and above	3	2.7
Total	113	100.0
Marital Status		
Single	68	60.2

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Married	34	30.1
Divorced	11	9.7
Total	113	100.0
Ethnicity		
Malay	83	73.5
Chinese	18	15.9
Indian	12	10.6
Total	113	100.0
Highest Level of Education		
No Formal Education	18	15.9
Primary Education	16	14.2
PMR	20	17.7
SPM	26	23.0
STPM	23	20.4
Diploma	8	7.1
Bachelor's Degree	2	1.8
Total	113	100.0
Working Experience at Current Job		
Less than 6 months	12	10.6
6 months - 1 year	30	26.5
1 - 3 years	25	22.1
3 - 5 years	29	25.7
More than 5 years	17	15.0
Total	113	100.0
Income		
RM0 - RM440	21	18.6
RM441 - RM750	27	23.9
RM751 - RM1500	23	20.4
RM1501 - RM2000	25	22.1
RM2001 - RM3000	17	15.0
Total	113	100.0

Relationship Between Occupational Stress, Working Environment, Workload, and Job Performance

Table 3 presents the results of the Pearson correlation analysis examining the relationships among occupational stress, working environment, workload, and job performance among palm oil workers in Johor.

The strongest linear relationship was revealed between working environment and job performance ($r = 0.778$, $p = 0.001$). The correlation coefficient indicates a strong positive relationship between working environment (X2) and job performance (Y). This finding suggests that improvements in the working environment may lead to higher employee

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performance. Therefore, the research hypothesis proposing a positive relationship between working environment and job performance is supported.

The second strongest linear relationship was identified between occupational stress and job performance (r = 0.764, p = 0.001). The correlation coefficient indicates a strong positive relationship between occupational stress (X1) and job performance (Y). This finding implies that an appropriate level of occupational stress may influence workers' motivation and productivity. Thus, the research hypothesis that occupational stress is significantly related to job performance is supported.

The weakest linear relationship was observed between workload and job performance (r = 0.752, p = 0.000). The correlation coefficient indicates a strong positive relationship between workload (X3) and job performance (Y). Nevertheless, the result still supports the research hypothesis that workload is significantly related to employee performance.

Generally, the findings demonstrate that occupational stress, working environment, and workload are positively related to job performance, although the strength of the relationships varies across the variables.

Table 3: Findings on the Relationship between Occupational Stress, Working Environment, Workload, and Job Performance.

	Job Performance		
	Magnitude of the relationship	**Coefficient (r)**	**P-value**
Occupational Stress	Strong positive	0.764	0.000
Working Environment	Strong positive	0.778	0.000
Workload	Strong positive	0.752	0.000

The Most Contributing Factors Between Occupational Stress, Working Environment, Workload, and Job Performance

Table 4 presents the coefficient estimates from the multiple linear regression model examining the effects of occupational stress, working environment, and workload on job performance among palm oil workers in Kota Tinggi, Johor. The results from the regression coefficients indicate that all three independent variables, occupational stress, working environment, and workload, significantly influenced job performance, as their significance values ($p < 0.05$) fall below the threshold. The positive unstandardized coefficients suggest that increases in occupational stress, improvements in the working environment, and higher workload levels are associated with higher job performance.

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Among the three predictors, working environment was the strongest factor influencing job performance, as indicated by the highest standardized Beta (β = 0.365, p = 0.001). This finding implies that enhancing the quality of the working environment is likely to have the greatest impact on improving job performance. Occupational stress was the second strongest contributor (β = 0.267, p = 0.021), followed by workload (β = 0.233, p = 0.034). Overall, these findings support hypotheses H1, H2, and H3, confirming that occupational stress, working environment, and workload each play a significant role in determining job performance among palm oil workers. Improving the working environment should therefore be prioritized, as it has the greatest effect, while occupational stress and workload also contribute positively to employee performance.

Table 4: Estimates of Coefficients of the Three Factor Multiple Linear Regression Model on Job Performance

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.364	.225		1.619	.108
	Occupational Stress	.289	.123	.267	2.351	.021
	Working Environment	.353	.107	.365	3.301	.001
	Workload	.256	.120	.233	2.143	.034

Conclusion

A strategic approach to managing job demands and resources can enhance worker well-being and overall job performance. This study demonstrates that occupational stress, working environment, and workload significantly influence job performance among palm oil workers in Kota Tinggi, Johor. Among these, the working environment is the most crucial factor. Therefore, managers should focus on improving workplace conditions, monitoring stress levels, and managing workload to optimize employee performance and productivity.

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Ethics Statement: This study was conducted in accordance with ethical research standards. Participation in the survey was voluntary, and informed consent was obtained from all respondents prior to data collection. The confidentiality and anonymity of participants were strictly maintained.

Author Contribution Statement: Nur Shazwani Samsudin was responsible for conceptualization, data collection, data analysis and manuscript preparation. The supervisor contributed to research supervision, methodological guidance and critical review of the manuscript.

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