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The Mediating Role of Stress Between Workload, Work Environment, and Performance of Factory Workers

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Keywords : employee productivity; employee well-being; human capital; manufacturing company; operational management

Abstract

Research Aim: *This study investigates the influence of workload and work environment on employee performance, with work stress serving as the mediator*
Approach: *The study employed a quantitative approach using SEM-PLS analysis. The sample included 75 factory workers selected through census sampling conducted from February to June 2023 at PT PSB, a manufacturing firm in Medan, North Sumatra*
Findings*: Findings reveal that workload and work environment positively impact employee performance, mediated by work stress*
Theoretical Contribution/Originality: *This research contributes to the literature by exploring work stress as a mediator in enhancing the understanding of employee performance within the manufacturing sector*
Policy Implication: *Recommendations include PT PSB and similar companies prioritizing plant workers' stress levels, monitoring workload, and fostering a healthy workplace environment*
Research Limitation: *The scope of the study was limited by the number of respondents and the factors considered in assessing employee productivity*

Abstrak

Tujuan Penelitian: Penelitian ini menyelidiki pengaruh beban kerja dan lingkungan kerja terhadap kinerja karyawan, dengan stres kerja sebagai mediatornya
Pendekatan: Penelitian ini menggunakan pendekatan kuantitatif dengan menggunakan analisis SEM-PLS. Sampelnya adalah 75 orang pekerja pabrik yang dipilih melalui sensus sampling yang dilakukan pada bulan Februari hingga Juni 2023 di PT PSB, sebuah perusahaan manufaktur di Medan, Sumatera Utara
Temuan: Temuan mengungkapkan bahwa beban kerja dan lingkungan kerja berdampak positif terhadap kinerja karyawan yang dimediasi oleh stres kerja
Kontribusi Teoritis/Originalitas: Penelitian ini berkontribusi pada literatur dengan mengeksplorasi stres kerja sebagai mediator dalam meningkatkan pemahaman kinerja karyawan di sektor manufaktur
Implikasi Kebijakan: Rekomendasi yang diberikan antara lain PT PSB dan perusahaan serupa yang memprioritaskan tingkat stres pekerja pabrik, memantau beban kerja, dan membina lingkungan kerja yang sehat
Batasan Penelitian: Ruang lingkup penelitian terbatas oleh jumlah responden dan faktor-faktor yang dipertimbangkan dalam menilai produktivitas karyawan

Pendahuluan

In today's fast-paced and challenging industrial landscape, companies strive to optimize their workforce's performance to achieve operational efficiency and maintain a competitive edge [1]. The performance of plant workers plays a crucial role in ensuring smooth operations, productivity, and overall organizational success. However, various factors, including workload [2] and job environment [3], can influence their performance. One significant factor that often arises in this context is stress [4]. Although many studies have investigated workload and work environment to influence the productivity of workers, limited research has been found that

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includes stress as the mediator, especially in manufacturing. It is crucial to understand that a factory is a challenging workplace and it is important for managers to pay attention to this issue.

Two critical sources that are useful in understanding how stress is produced have been taken into consideration in studies on occupational stress. The traditional work-related stress is highlighted in the first category. It looks at how demanding psychological elements of the workplace, namely increased workloads, role conflict, a lack of autonomy, and a lack of social support, can cause stress at work and hinder performance [5;7]. The second stream focuses on environmental factors, investigating how the work physical environment affects performance. As a result, certain aspects of the physical environment restrict employees' ability to perform by elevating stress levels [2,4,8]. Thus, this study aims to investigate the factors influencing employee performance using workload and work environment as independent variables and work stress as a mediating variable. It is strongly believed that occupational stress caused by workload and working conditions affects factory workers' productivity [6,9].

PT PSB is a manufacturing company located in Medan, North Sumatra, that produces products made of rubber. Its plant workers are exposed to demanding workloads and challenging job conditions, which lead to increased stress levels. It is shown by the increasing absence and tardiness among employees as seen in Table 1 below. Also, employees frequently completed their assigned tasks behind projected schedules. Thus, both workload and the company's work environment can significantly impact the performance of workers [2,10].

Table 1. Number of Employees' Absence and Tardiness Year 2022

No.	Month	Absence	Tardiness
1.	January	17	34
2.	February	19	39
3.	March	21	42
4.	April	18	48
5.	May	16	49
6.	June	22	42
7.	July	26	56
8.	August	19	64
9.	September	28	62
10.	October	35	71
11.	November	24	65
12.	December	39	64

Source: PT PSB (2023)

The contemporary industrial landscape introduces numerous challenges that adversely affect the performance of plant workers. Firstly, the escalation of global competition and

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market demands frequently leads to an increase in employee workload[7,9]s. This uptick can precipitate emotional strain, diminished control over one's job, and heightened job demands, collectively fostering stress[11]. Secondly, the manufacturing job environment, characterized by noise, temperature fluctuations, safety hazards, and prolonged working hours, further aggravates stress levels[7,12]. Such challenges can detrimentally affect plant workers' performance, manifesting in reduced productivity, an escalation in errors, and heightened safety risks[13].

Understanding the pivotal role of work stress as a mediator between workload, job environment, and the performance of plant workers is vital for manufacturers aiming to boost their workforce's productivity and well-being. By acknowledging the effects of stress, companies can devise and implement targeted measures and strategies to alleviate stressors and cultivate a healthier working ambiance[6].

Despite numerous studies exploring the impact of workload and work environment on worker performance, research elucidating the mediating role of work stress, particularly within the manufacturing sector, remains scarce. Addressing stress-related issues is essential for enhancing performance[14], reducing employee turnover[2], improving job satisfaction[15], and ultimately achieving greater organizational success in today's industrial milieu[8]. Therefore, this research aims to offer valuable insights into the factors influencing plant workers' performance and guide the development of effective stress management programs, job redesign initiatives, and organizational policies.

A theoretical framework is essential for this study, which seeks to investigate the mediating role of stress between workload, work environment, and the performance of plant workers. The framework serves as a conceptual basis to comprehend the dynamics among these variables and their mutual influences.

Workload is defined as the amount and complexity of tasks assigned to an individual within a specified timeframe[16]. It encompasses both quantitative aspects, such as the number of targets, types of tasks, and pace of work[17]; and qualitative aspects, including task complexity, job standards, and interpersonal relationships. In this research, workload is measured using eight indicators, divided into five quantitative and three qualitative items. A cross-sectional survey by Kokoroko & Sanda (2019) involving employees in Ghana highlighted a significant positive correlation between workload and job stress[18], with an increase in workload corresponding to an increase in job stress. The study of workload and its influence on employee performance is an evolving field, gaining momentum over the past decade. As the dynamics of the modern workplace change, understanding the relationship between workload and employee performance has become increasingly crucial for

organizations striving for heightened productivity and efficiency[19]. Recent empirical evidence suggests a direct impact of workload on employee performance[5], with a moderate level of workload potentially stimulating employees, enhancing their motivation, and driving optimal performance. This beneficial stress, often termed 'eustress,' enables employees to feel accomplished and grow personally, leading to improved performance.

H1: Workload will have a positive direct effect on Work Stress at PT PSB.

H2: Workload will have a positive direct effect on Employee Performance at PT PSB.

The work environment pertains to the conditions and circumstances under which work is performed, encompassing workplace structure, job responsibilities, managerial support, team coordination, and effective communication[8,20]. This study measures the work environment using eight items[13]. Research by Bogdanova et al. (2008), utilizing semi-structured interviews, established a connection between the work environment and stress experience, which, in turn, affects performance. Understanding environmental conditions enables managers to enhance employee productivity and well-being. Rachman (2021) emphasized the significance of the work environment in boosting organizational productivity, advocating for managerial support to ensure employee enjoyment and comfort through fully supportive facilities.

H3: Work Environment will have a positive direct effect on Work Stress at PT PSB.

H4: Work Environment will have a positive direct effect on Employee Performance at PT PSB.

Work stress is described as the psychological and physiological response to perceived demands or pressures, stemming from workload, job conditions, and personal factors. Additionally, role conflict, ambiguity in work, responsibility towards others, and career development are crucial factors leading to work stress. In this research, work stress is assessed through six items. A study by Rachman (2021) using an explanatory method revealed that stress influences individuals based on the level and duration of exposure, affecting employee performance. Employee performance is the extent to which an individual achieves their goals and fulfills the expectations of their role. This study employs six items to gauge employee performance, including aspects of work quality, quantity, timeliness, and effectiveness[23;24]. Performance is influenced by various factors, including workload, work environment, and work stress. According to Purwanti et al. (2022), workload impacts employee performance through work stress. Additionally, Rachman (2021) highlighted that stress could mediate the influence of the work environment on employee performance. Recognizing the interplay between employee well-being and performance, organizations are increasingly adopting strategies to promote mental health and work-life balance[26].

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H5: Work Stress will have a positive direct effect on Employee Performance at PT PSB.

The research model is illustrated in Figure 1 below.

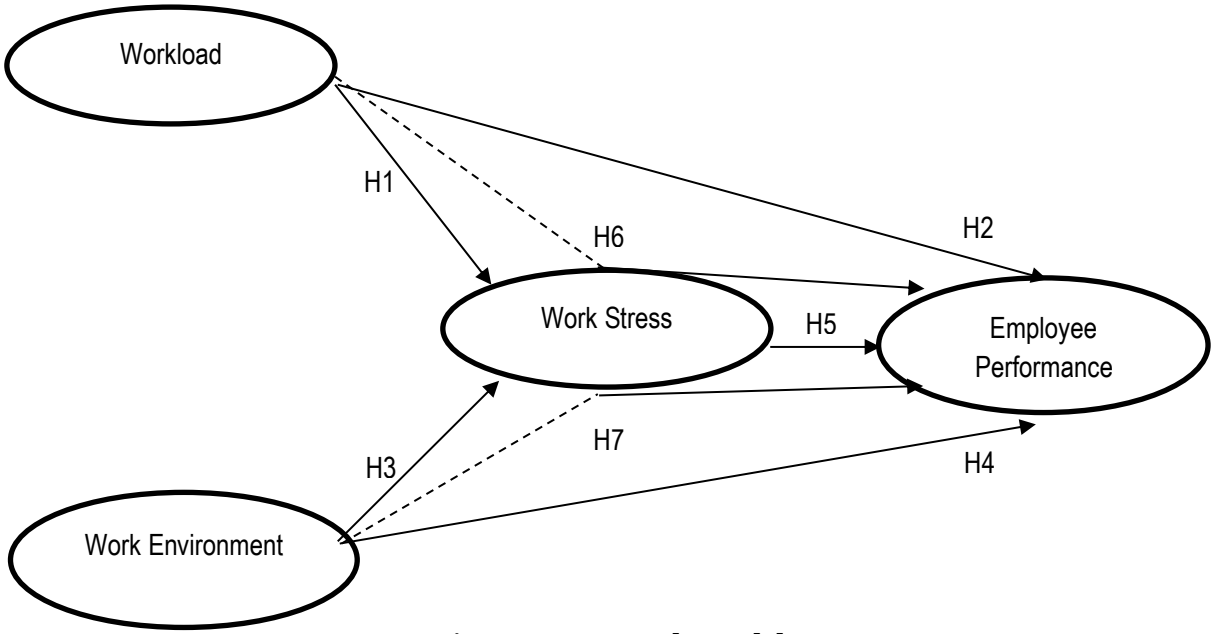

Figure 1. Research Model

Method

Data collection

It is important to utilize all the employees who work in the production area of this company; thus, census sampling is used to obtain data. The next step is to present an online survey that explains each item of the conceptual model's construct. The questionnaire was administered via Google Forms and distributed by the human resource manager of PT PSB to 75 respondents over two weeks in March 2023. Based on gender, there are 69% of employees are male and the remaining are female, which is very common in manufacturing companies. In terms of age, 40% of employees are 21 to 30 years old, 31% of employees are below 21 years old, and 29% of employees are above 30 years old.

Research instrument

The questionnaire in this study uses a five-point Likert scale (1 = strongly disagree; 5 = strongly agree) and is designed to measure the variables used. Instruments from several previous studies are adopted to compose the questionnaire. 30 respondents took part in a pre-test before the survey was started, which were employees from other similar company, to ensure that no major change was needed and the questionnaire was ready to use.

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Data analysis

As a thorough multivariate statistical analysis method capable of concurrently examining each relationship between constructs in the conceptual framework, involving measurements and structural elements, this current research used the PLS-SEM analytic technique. A two-step process, which consisted of assessing the measurement and structural model, was carried out following the PLS-SEM analytic literature. The structure model was evaluated using R2, f2, Q2, and path coefficients, whilst the measurement model was evaluated by measuring the validity and reliability of reflective constructs (27).

Results and Discussion

Measurement Model

The reliability of the measurement scale for each construct was initially tested to assess the measurement model. The loadings of the indicators, with their corresponding constructs, were then tested, to determine the reliability. According to Hair et al. (2022), the outer loadings must be more than 0.708 (27). All loadings in this research were discovered to be higher than 0.708. After evaluating reliability, the average variance extracted (AVE), which must be more than 0.5 (28), was used to examine the convergent validity. Based on the results, all AVEs for each construct have a value between 0.637–0.751. Table 2 below shows each construct has a high level of internal consistency.

Table 2. Loading, Composite Reliability (CR), Average Variance Extracted (AVE)

Construct / Item	Loading	CR	AVE
Workload		0.933	0.637
WL_1	0.804		
WL_2	0.842		
WL_3	0.800		
WL_4	0.804		
WL_5	0.713		
WL_6	0.763		
WL_7	0.810		
WL_8	0.840		
Work Environment		0.957	0.736
WE_1	0.842		
WE_2	0.893		
WE_3	0.865		
WE_4	0.913		
WE_5	0.834		
WE_6	0.825		
WE_7	0.840		
WE_8	0.850		
Work Stress		0.934	0.702
WS_1	0.795		
WS_2	0.800		
WS_3	0.883		
WS_4	0.842		

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WS_5	0.828		
WS_6	0.874		
Employee Performance		0.948	0.751
EP_1	0.823		
EP_2	0.909		
EP_3	0.914		
EP_4	0.907		
EP_5	0.863		
EP_6	0.777		

Source: Data Processed (2023)

The assessment of discriminant validity utilizing the heterotrait-monotrait (HTMT) evaluation was conducted. When the value is less than 0.85, there is discriminant validity (27). This measurement determines the ratio between the heterotrait and monotrait correlation. The value achieved stays below the threshold value, which demonstrates proof of acceptable reliability and validity, as shown in Table 3 below.

Table 3. Heterotrait-Monotrait Ratio (HTMT)

Construct	1	2	3	4
1. Workload				
2. Work Environment	0.302			
3. Work Stress	0.428	0.469		
4. Employee Performance	0.425	0.632	0.576	

Source: Data Processed (2023)

To make sure that there is no bias in the regression results, collinearity should be examined before examining structural correlations. Hair et al. (2022) recommend that the variance inflation factor (VIF) should be less than 3 (27). Considering that the Inner VIF (reflection indicator) value was below the predetermined limit, this analysis identified no collinearity issues.

Structural Model

The structural model was evaluated in the following testing stage. The significance of indicators and path coefficients was assessed using a bootstrap approach with 5,000 iterations (29). To examine the predictive relevance of the model, Stone–Geisser's Q^2 was used (27). All Q^2 values are above zero in the outcome, demonstrating that the model has adequate prediction power. The coefficient of determination (R^2) shows that work stress is influenced by workload and work environment by as much as 27.7%, whereas employee performance is influenced by work stress by as much as 28.8% as seen in Table 4 below. Thus, there are many other factors

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affecting both stress and the performance of the employees outside the variables used in this research.

Table 4. Results of Q^2, R^2, R^2 Adjusted

Construct	Q^2	R^2	R^2 Adjusted
Work Stress	0.193	0.296	0.277
Employee Performance	0.218	0.298	0.288

The calculation of f^2 yields the effect size for each path model with 0.02, 0.15, and 0.35 used as the standards for small, medium, and large effects (27). Both workload and work environment have medium effect sizes on work stress, however, work stress has a large effect size on employee performance as seen in Table 5 below.

Table 5. Results of f^2

Relationship	f^2
Workload -> Work Stress	0.125
Work Environment -> Work Stress	0.178
Work Stress -> Employee Performance	0.424

Table 6 below lists the outcomes of the one-tailed test used to evaluate the hypotheses. When the coefficient is thought to have a positive or negative sign, one-tailed testing should be performed. At PT PSB, the workload has a positive direct effect on work stress ($\beta = 0.309$, $t = 3.428$) and employee performance ($\beta = 0.169$, $t = 3.156$); therefore, H1 and H2 are accepted. The work environment has a positive direct effect on work stress ($\beta = 0.369$, $t = 3.026$) and employee performance ($\beta = 0.202$, $t = 2.178$), supporting H3 and H4. Also, work stress has a positive direct effect on employee performance ($\beta = 0.546$, $t = 5.666$), which means H5 is accepted. Lastly, work stress mediates the relationship between workload and employee performance at PT PSB ($\beta = 0.169$, $t = 3.156$), as well as mediates the relationship between work environment and employee performance at PT PSB ($\beta = 0.202$, $t = 2.178$); thus, H6 and H7 are accepted. A visual representation of the results is given in Figure 2.

Table 6. Direct Effects and Indirect Effects

Path	β	t-value

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Direct Effect	H1: Workload -> Work Stress	0.309	3.428**
	H2: Workload -> Employee Performance	0.169	3.156**
	H3: Work Environment -> Work Stress	0.369	3.026**
	H4: Work Environment -> Employee Performance	0.202	2.178*
	H5: Work Stress -> Employee Performance	0.546	5.666**
Indirect Effect	H6: Workload -> Work Stress -> Employee Performance	0.169	3.156**
	H7: Work Environment -> Work Stress -> Employee Performance	0.202	2.178*

**significant at p < 0.05, **significant at p < 0.01*

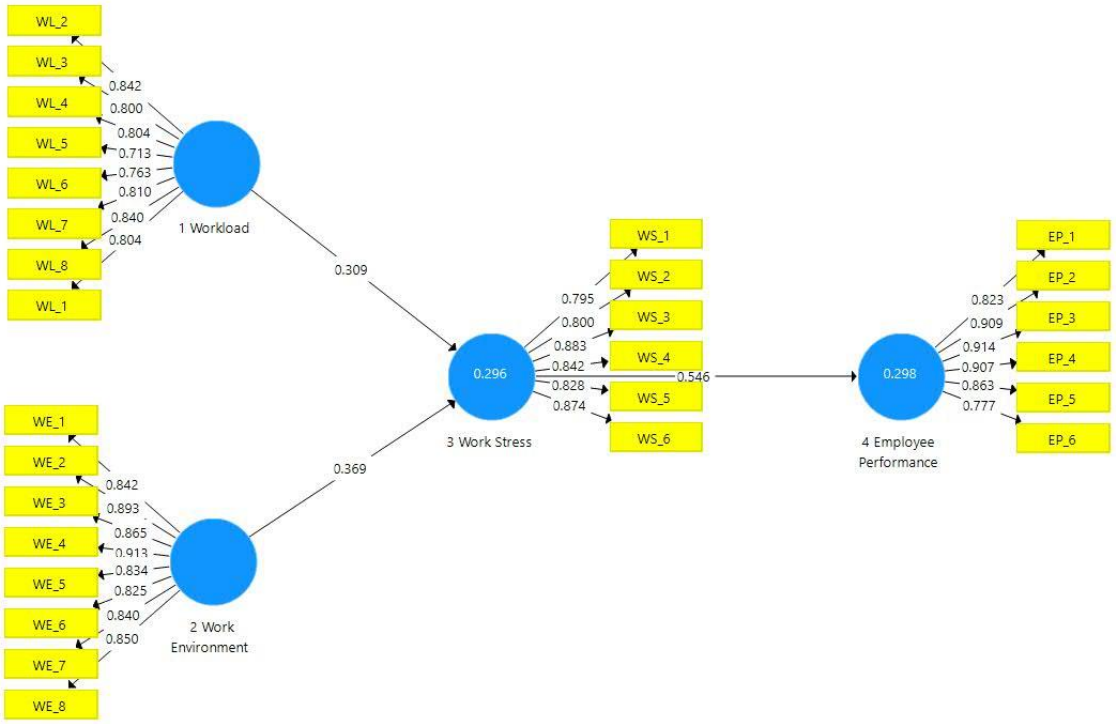

Figure 2. Relationships between Variables

This study proposes a research model where work stress is utilized to show how workload and work environment influence employee performance in the manufacturing company at PT PSB. Thus, the results prove several assumptions, as strengthened by previous studies. First, workload has a positive and significant effect on work stress, supported by a previous study by Kokoroko and Sanda in 2019 (18). This means that workload is an important factor that contributes to occupational stress among factory workers. Long working hours,

additional amounts of production, and time pressure are responsible for increasing stress. However, it is also important to note that workload can also perceived as a challenge stressor that is positively associated with job performance (30). Therefore, managers must recognize the right level of work-related stress to encourage productivity to the maximum.

Second, workload has a positive and significant effect on employee performance as supported by a previous study by Purwanti et al. in 2022 (5). Although heavy workloads can lead to decreased productivity among workers, the right amount of workload can challenge employees to perform at their best (23). It is important to note that the relationship between workload and employee performance can be mediated by other factors.

Third, it is proved that the work environment has a positive and significant effect on stress among factory workers. This result is in line with the previous study by Bogdanova et al. in 2008 (21). Poor work organization, job insecurity, conflict with colleagues, and lack of job development can lead to occupational stress. Providing a healthy work environment, both physical and physiological is necessary to sustain employees in the long term (8).

Fourth, it is proved that the work environment has a positive and significant effect on performance among factory workers. This result is in line with the previous study by Rachman in 2021 (15). Positive work culture and teamwork, including temperature, lighting, and noise in a factory environment can lead to improved productivity (2). Therefore, employers are to create a supportive working environment that promotes creativity and innovation.

Fifth, work stress has a positive and significant effect on employee performance, supported by the previous study by Mahmood et al. in 2010 (22). Short-term and healthy amounts of stress can help build resilience and increase alertness during working hours. However, higher stress levels are also associated with lower work productivity (17). Stress can lead to fatigue, personality changes, withdrawal from others, and a decrease in enthusiasm, all of which affect the quality of work. Therefore, employers need to recognize the impact of work stress on employee productivity and take steps to ensure that employees are not subjected to unnecessary stress. Employers can provide resources such as employee assistance programs, flexible work arrangements, and stress management training to help employees manage stress and improve productivity.

Lastly, based on the result of the indirect effect, work stress mediates the relationship between workload and employee performance, as well as the relationship between work environment and employee performance. These results are in line with previous studies by Purwanti et al. in 2022 and Rachman in 2021 (5,15). Work stress as the mediator is important in this research as it explains the process of how workload and work environment influence the performance of workers in the factory.

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Conclusion

This study examines the intervening role of stress in the relationship between workload, work environment, and employee performance. It is designed to advance knowledge and understanding in managing factors influencing the productivity of employees working in more challenging workplaces such as manufacturing. Based on the statistical tests conducted, work stress is influenced by workload and work environment as strengthened by previous research (18,21). Also, it is proven that employee performance is influenced by work stress as supported by previous research (15).

The effect size for each path model shows that employee performance is largely influenced by work stress. This finding suggests that maintaining the right level of stress among workers is important for managers, especially in a more challenging workplace such as a manufacturer or assembly line. Thus, for the managerial implications, it is recommended that the operational manager implements a job rotation schedule (31), improves the current production line (30), and removes any obstacles and wastes found in the working area (9).

The results of the indirect effect show that employee performance is significantly influenced by workload with work stress playing as a mediating factor. This finding suggests that in manufacturing, the productivity of workers is highly determined by how much workload is given together with the amount of stress experienced by the workers. Therefore, the manager should pay attention to the physical and mental health of the workers (32). Providing employee training and development programs has also been crucial in enhancing company productivity, especially by integrating learning activities with technology (33,34).

Recognizing the positive direct effect of workload on employee performance has significant implications for organizations. By managing workload effectively, organizations can harness employees' potential and improve overall productivity and competitiveness. However, organizations must strike a balance between workload and employee well-being to avoid negative consequences, such as burnout (5).

As for the theoretical implications, this study enriches the theories on occupational stress found among factory workers. Furthermore, it provides a better understanding of how workload and work environment affect employee performance through the role of work stress. Including work stress as the mediator helps to study beyond a simple relationship between variables for a fuller picture of real industry (2).

Through this study, we now have a greater knowledge on the effects of workload and work environment using work stress as a mediator to influence employee performance. Nevertheless, some limitations must be addressed. First of all, the R^2 value for work stress and employee performance is still not satisfactory. It means that there are many other factors

affecting both stress and the performance of the employees outside the variables used in this research, for example, effort-reward balance (35). Other antecedents in describing the productivity of employees in a factory may be utilized in future studies. Second, the characteristics of the respondents have not been extensively scrutinized in this research. Somehow, it can help in explaining the competency of the workers in fulfilling their expected tasks (36). Further investigation is anticipated to distinguish the employees' characteristics in analyzing their influences on the tolerance of work stress. Third, this study only includes plant workers at PT PSB located in Medan, Indonesia. The outcomes may vary in other manufacturing firms with less or more workloads, different work environments, and levels of stress (37).

References

[1] Vania P, Kaban LM. Analysis of Online Purchase Intention using Scarcity and Liking as the Persuasion Marketing Strategies. In: The Opportunity of Digital and Technology Disruption [Internet]. 2022 [cited 2023 Sep 22]. Available from: https://ojs.uph.edu/index.php/NCBMA/article/view/5825
[2] Nanda A, Soelton M, Luiza S, Saratian ETP. The Effect of Psychological Work Environment and Work Loads on Turnover Interest, Work Stress as an Intervening Variable. In: Proceedings of the 4th International Conference on Management, Economics and Business (ICMEB 2019) [Internet]. Atlantis Press; 2020. p. 225–31. Available from: https://doi.org/10.2991/aebmr.k.200205.040
[3] Haryati E, Suharyanto A, Hasmayni B, Siregar FH. The Effect of Work Environment and Work Stress on Employee Performance at PT Aneka Gas Industri Tbk. Proceedings of the Proceedings of the 2nd International Conference on Social Sciences and Interdisciplinary Studies (formerly ICCSSIS), ICCSIS 2019, 24-25 October 2019, Medan, North Sumatera, Indonesia [Internet]. 2019; Available from: https://api.semanticscholar.org/CorpusID:213540071
[4] Ratnawat RG, Jha P. Impact of Job Related Stress on Employee Performance: A Review and Research Agenda. IOSR Journal of Business and Management [Internet]. 2014;16:1–6. Available from: https://api.semanticscholar.org/CorpusID:15101018
[5] Purwanti I, Suyanto UY, Dzikri Abadi M, Darianto D, Liliana D. The Role of Burnout between Workload, Work Stress, and Employee Performance: Mediation Model. KnE Social Sciences. 2022 Jun 20;70–85.
[6] Wang Z, Liu H, Yu H, Wu Y, Chang S, Wang L. Associations between occupational stress, burnout and well-being among manufacturing workers: mediating roles of psychological capital and self-esteem. BMC Psychiatry. 2017 Dec 15;17(1):364.
[7] Soelton M, Hardianti D, Kuncoro S, Jumadi J. Factors Affecting Burnout in Manufacturing Industries. In: Proceedings of the 4th International Conference on Management, Economics and Business (ICMEB 2019) [Internet]. Atlantis Press; 2020. p. 46–52. Available from: https://doi.org/10.2991/aebmr.k.200205.010
[8] Amin M Al, Chakraborty A. Impact of Physical Factors of Workplace Environment on Workers Performance in Industry. Journal of Engineering Science. 2022 Jan 10;12(3):57–66.

[9] Brown K, Mitchell T. Performance obstacles for direct and indirect labour in high technology manufacturing. Int J Prod Res [Internet]. 1988;26(11):1819–32. Available from: https://doi.org/10.1080/00207548808947994
[10] Birhanu M, Gebrekidan B, Tesefa G, Tareke M. Workload Determines Workplace Stress among Health Professionals Working in Felege-Hiwot Referral Hospital, Bahir Dar, Northwest Ethiopia. J Environ Public Health. 2018;2018.
[11] Akdeniz Ş, Çoban M, Koç O, Pekesen M, Korkmaz Yaylagul N, Sönmez S, et al. Determination of Workload, Work Stress and Related Factors in Nursing Home Workers during the COVID-19 Pandemic in Turkey. Int J Environ Res Public Health. 2023 Jan 1;20(1).
[12] Golmohammadi R, Darvishi E. The combined effects of occupational exposure to noise and other risk factors-a systematic review. Noise Health. 2020 Jul 1;21(101):125–41.
[13] Zhenjing G, Chupradit S, Ku KY, Nassani AA, Haffar M. Impact of Employees' Workplace Environment on Employees' Performance: A Multi-Mediation Model. Front Public Health. 2022 May 13;10.
[14] Imtiaz S, Ahmad S. Impact Of Stress On Employee Productivity, Performance And Turnover; An Important Managerial Issue. International Review of Business Research Papers [Internet]. 2009; Available from: https://api.semanticscholar.org/CorpusID:13159101
[15] Rachman MM. The Impact of Work Stress and the Work Environment in the Organization: How Job Satisfaction Affects Employee Performance? Journal of Human Resource and Sustainability Studies. 2021;09(02):339–54.
[16] Schiff M, Leip L. The Impact of Job Expectations, Workload, and Autonomy on Work-Related Stress Among Prison Wardens in the United States. Crim Justice Behav. 2019 Jan 1;46(1):136–53.
[17] Veldhoven M Van. Quantitative job demands. In: An Introduction to Contemporary Work Psychology. 2014.
[18] Kokoroko E, Sanda MA. Effect of Workload on Job Stress of Ghanaian OPD Nurses: The Role of Coworker Support. Saf Health Work. 2019 Sep 1;10(3):341–6.
[19] Bommer SC, Fendley M. A theoretical framework for evaluating mental workload resources in human systems design for manufacturing operations. Int J Ind Ergon [Internet]. 2018;63:7–17. Available from: https://www.sciencedirect.com/science/article/pii/S0169814116302141
[20] Zafar M, Karim E, Abbas O. Factors of Workplace Environment that Affects Employee Performance in an Organization: A study on Greenwich University of Karachi. Greenwich University [Internet]. 2017; Available from: https://mpra.ub.uni-muenchen.de/78822/
[21] Bogdanova A, Enfors H, Naumovska S, Boers B. Work Environmental Stressors-The link between employees' well-being and performance. Jönköping University; 2008.
[22] Mahmood B, Hussain SD, Dept. P, Muhammad N. The relationship between stress and work performance in an industrial environment of Faisalabad district. Pak J Life Soc Sci [Internet]. 2010; Available from: https://api.semanticscholar.org/CorpusID:110543145
[23] Raaymakers WHM, Bertrand JWM, Fransoo JC. The performance of workload rules for order acceptance in batch chemical manufacturing. J Intell Manuf [Internet]. 2000;11(2):217–28. Available from: https://doi.org/10.1023/A:1008999002145

[24] Land MJ, Gaalman GJC. The performance of workload control concepts in job shops: Improving the release method. Int J Prod Econ [Internet]. 1998;56–57:347–64. Available from: https://www.sciencedirect.com/science/article/pii/S0925527398000528
[25] Rachman MM. The Impact of Work Stress and the Work Environment in the Organization: How Job Satisfaction Affects Employee Performance? Journal of Human Resource and Sustainability Studies. 2021;09(02):339–54.
[26] Sherehiy B, Karwowski W. The relationship between work organization and workforce agility in small manufacturing enterprises. Int J Ind Ergon [Internet]. 2014;44(3):466–73. Available from: https://www.sciencedirect.com/science/article/pii/S0169814114000031
[27] Hair J, Hult GT, Ringle C, Sarstedt M. A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) Third Edition. SAGE; 2022.
[28] Fornell C, Larcker DF. Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. Journal of Marketing Research. 1981 Feb;18(1):39.
[29] Chin WW, Peterson RA, Brown SP. Structural Equation Modeling in Marketing: Some Practical Reminders. Journal of Marketing Theory and Practice [Internet]. 2008;16:287–98. Available from: https://api.semanticscholar.org/CorpusID:168091459
[30] Biondi FN, Cacanindin A, Douglas C, Cort J. Overloaded and at Work: Investigating the Effect of Cognitive Workload on Assembly Task Performance. Hum Factors [Internet]. 2021;63(5):813–20. Available from: https://doi.org/10.1177/0018720820929928
[31] Yoon SY, Ko J, Jung MC. A model for developing job rotation schedules that eliminate sequential high workloads and minimize between-worker variability in cumulative daily workloads: Application to automotive assembly lines. Appl Ergon [Internet]. 2016;55:8–15. Available from: https://www.sciencedirect.com/science/article/pii/S0003687016300114
[32] Nordlöf H, Wiitavaara B, Högberg H, Westerling R. A cross-sectional study of factors influencing occupational health and safety management practices in companies. Saf Sci [Internet]. 2017;95:92–103. Available from: https://www.sciencedirect.com/science/article/pii/S0925753517302989
[33] Coetzer A. Employee learning in New Zealand small manufacturing firms. Employee Relations [Internet]. 2006 Jan 1;28(4):311–25. Available from: https://doi.org/10.1108/01425450610673385
[34] Kitagawa Ritsu AND Kuroda SANDOHANDOH. Working from home and productivity under the COVID-19 pandemic: Using survey data of four manufacturing firms. PLoS One [Internet]. 2021 Sep;16(12):1–24. Available from: https://doi.org/10.1371/journal.pone.0261761
[35] Feuerhahn N, Kühnel J, Kudielka BM. Interaction effects of effort–reward imbalance and overcommitment on emotional exhaustion and job performance. Int J Stress Manag. 2012 May;19(2):105–31.
[36] Haskose A, Kingsman BG, Worthington D. Performance analysis of make-to-order manufacturing systems under different workload control regimes. Int J Prod Econ [Internet]. 2004;90(2):169–86. Available from: https://www.sciencedirect.com/science/article/pii/S0925527303000525
[37] Pradhan RK, Jena LK. Employee Performance at Workplace: Conceptual Model and Empirical Validation. Business Perspectives and Research [Internet]. 2017;5(1):69–85. Available from: https://doi.org/10.1177/2278533716671630