Analysis of The Effect of Workload on Work Stress Level in Indonesia Manufacturing Industry

Timotius Candra Kusuma
Department of Industrial Engineering,
Universitas Indonesia,
Depok 16424, Indonesia
Timotius.candra@ui.ac.id

Rahmat Nurcahyo
Professor in Industrial Engineering
Department of Industrial Engineering,
Universitas Indonesia,
Depok 16424, Indonesia
rahmat@eng.ui.ac.id

M Dachyar
Professor in Industrial Engineering
Department of Industrial Engineering,
Universitas Indonesia,
Depok 16424, Indonesia
mdachyar@eng.ui.ac.id

Abstract
Indonesia's manufacturing industry is the backbone of national economic growth. The requirement of production targets to maintain customer satisfaction leads to a higher workload at any given time. In the manufacturing industry, organisations have divisions according to their business functions, namely core and non-core. Each division has its workload and function. The workload determines the work stress risk level. So the researchers will do survey research on the influence of sources of stress on the level of work stress risk in each division with a study case of a manufacturing industry employee. The causes of stress based on Indonesia Minister of Manpower Regulation No. 5 of 2018 are role clarity, role conflict, quantitative workload, qualitative workload, career development, and responsibility to others. Then researcher examined using Analysis of Variance (ANOVA), it was found that there was no difference between core and non-core functions in work stress risk level.

Keywords
Manufacturing Industry, Stress Diagnostic Survey, and ANOVA

1. Introduction
Operations strategy is a vision of the operating function that provides overall direction or impetus for decision-making to align with company goals (Baumgartner, 2014). The manufacturing industry can assist the way to achieve and implement an operational strategy in a company by applying the performance criteria of a management system, such as ISO 9001 (Alfredo and Nurcahyo, 2018). The output of the application of the performance criteria of a management system is expected to improve the company's operations and the business performance of manufacturing companies (Nurcahyo and Habiburrahman, 2021). The manufacturing industry must meet some clauses in implementing ISO 9001 in a company, including clause 7.1.4. Environment for Process Operation (Myhrberg, 2016). The organisation shall determine, provide and maintain the environment necessary for operating processes and achieving conformity to products and services. The appropriate environment can be a combination of human and physical factors, such as: social (e.g., non-discriminatory, calm, non-confrontational); psychological, for example: reducing stress, preventing fatigue, preventing emotions, mental health); physical (e.g., temperature, heat, humidity, light, airflow, cleanliness,

sound). The psychological factor may affect the lives of workers. This health contributes to lowering company performance and high staff turnover, as well as absenteeism due to mental health problems such as anxiety, depression, and other emotional disorders, as well as minor physical illnesses such as headaches, heart disease, stomach problems, and obesity (Rasheed et al., 2021). Based on previous theories, job stress can negatively affect employee performance in various work areas. In the industry, the work pressure of superiors generates frustrations among employees, which produces a significant fluctuation in the company. In the banking sector, stress causes employee performance to deteriorate and affects rewards (Khalid, 2020). Today, Indonesia's manufacturing industry is the backbone of national economic growth (Bappenas, 2019).

According to data published in the 2018 Global Manufacturing Scorecard, Indonesia ranks 4th out of 16 countries, with manufacturing accounting for more than 10% of the country's output. Indonesia has become the most significant manufacturing industrial base in ASEAN with a contribution of 20.27% in the national scale economy (Bappenas, 2019). The rapid development of the industry is driving the market demand, which opens up new opportunities for players in the manufacturing industry. The success rate of industrial action is determined by the quality of its labour productivity, particularly those working in the field (Lukita and Dachyar, 2015). The requirement of production targets to maintain customer satisfaction leads to a higher workload at any given time, resulting in a workload for employees to meet the quality and quantity of production (Dachyar and Yadrifil, 2014). Low productivity means that production targets are not being met (Aji, 2020).

To achieve company goals, the management of each company divides personnel into a division that has specific functions. Divisions within the company are generally divided into two parts; Core and Support/non-core (Fischer et al., 2020). The core is the party that generates value directly for customers (Kerpedzihev et al., 2021). The Production Division is the maker of products to sell (Core). For this purpose, several supporters were established, including Laboratory, Safety, Health, Environment and Technical, Engineering & Construction Division. As a supporter, Support's role is to assist operations in producing products to create profits. Each division has its workload and function (Wahidi et al., 2021). At the same time, the workload determines the work risk level (Schwartz et al., 2020). Based on the background described above, researchers are interested in conducting survey research on the influence of sources of stress on the level of work stress risk in each division of manufacturing industry employees.

1.1 Objectives

Based on the formulation of the problem, the objectives to be achieved in this study are analysing the relationship of the influence of sources of stress on the level of work stress risk, knowing the sources of stress that are felt mainly by manufacturing industry workers, knowing whether there is a difference in the stress level received by manufacturing and non-manufacturing due to different workload.

2. Literature Review

Stress is a condition that makes a person feel uncomfortable because he sees a mismatch between the physical or psychological demands of the situation and the resources of the biological, psychological, and social systems (Johnson et al., 2020). Stress does not just arise, but the causes of lead stress are generally followed by event factors that affect a person's psyche. The event occurs beyond his ability, so the condition has suppressed his soul. The International Labor Organization defines work stress as physical and emotional responses that arise when job needs do not match the workers' capabilities, power, and conditions (ILO, 2016). A more straightforward definition of job stress is a reaction to excessive pressure occurring at work, both physical and psychological reactions.

Stress that comes from the individual level, stress related to the role played, and the tasks that must be completed in connection with a person's position in the work environment and included in the sources of this work stress are role conflict, ambiguous/unclear roles, excessive workload, responsibility to others an opportunity to develop a career. Role conflict is the combination of expectations and demands placed on employees or other organisation members that create role pressure (Nikmah et al., 2020). Ambiguous/unclear roles due to a person's lack of clarity regarding the role he must carry out relate to the tasks he must perform and the responsibilities related to his position (Lal et al., 2020). The excessive workload can be quantitative or qualitative (Omar et al., 2020).

Core Business is a core area where a company develops or conducts its core business. The main activity is the generate a product/service that can be converted into money. Looking at the definition above, we can see that companies in the same industry are doing the same core business. For example, a company manufacturing its core business is to produce

products**.** The delivery service company's core business is the delivery of goods**.** Banking companies core business is taking and storing money by customers (Ayantoyinbo et al., 2018). For the petrochemical industry, you can find the production flow in Figure 1 and the division of core and non-core in Figure 2.

Petrochemicals are inferred from different chemical compounds, basically from hydrocarbons. These hydrocarbons are determined from unrefined oil and common gas. Among the multiple fractions produced by distillation of crude oil, petroleum gases, naphtha, kerosene and gas oil are the primary feedstocks for the petrochemical industry. Ethane, propane, and common gas fluids gotten from common gas are the other critical feedstock utilized within the Petrochemicals industry. The petrochemical industry is critical to the manufacturing industry's financial development and success. The petrochemicals business adds more value to the economy than most other industries. The production division is responsible for converting raw materials and other inputs into finished goods or services in the core industrial process. In a broader sense, a maintenance division's responsibilities include preventing unexpected machine breakdowns, maximizing the availability and reliability of all operating systems, maintaining equipment and operating systems in good working order to avoid potential safety issues, and ensuring high operational standards. In the supporting industrial process, a Laboratory division is needed to find out that the resulting product has passed the QA and QC. The petrochemical laboratory is responsible for periodically analysing monomer and polymer product samples to ensure a consistent level of quality. Safety, health and environment division ensures that environmental, health and safety training is delivered, ensuring EHS regulatory compliance, performing worksite walkthroughs and safety observations and implementing controls for identified hazards, often by using the hierarchy of controls in the petrochemical industry. Technical, Engineering & Construction division are in charge of developing innovative devices to bring out advanced materials into the world and designing, introducing, preserving and improving plants for stable and efficient production. Using elemental technologies such as machinery, electricity, measurement, control, etc., in cooperation with technology/production divisions and officials outside the company, they promote the creation and maintenance of equipment with the world's best competitiveness.

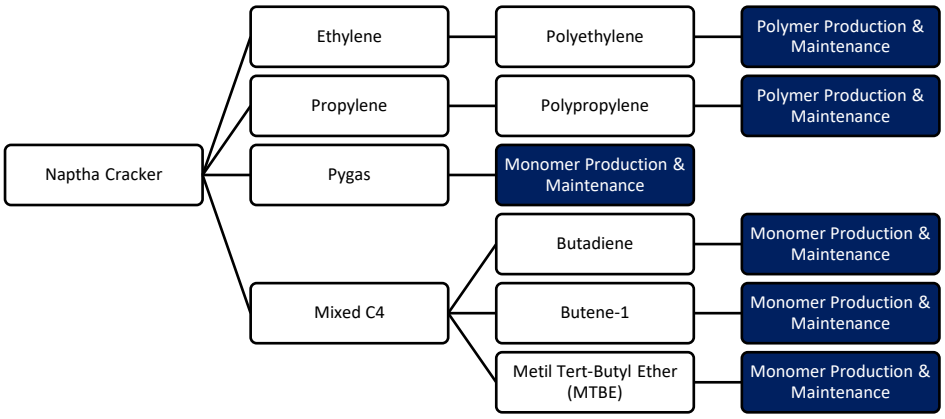

Figure 1. Production Flow

ANOVA is a statistical analysis that examines differences in mean values between groups. If the calculated f value is more than the f table, The researcher can conclude that accepting H1 and rejecting H0 means a significant difference in the mean of all groups (Montgomery, 2009). Some assumptions must be met to perform the ANOVA test: Random sampling: the samples are independent and free, meaning that individual pieces are taken randomly from each population or data group. Multivariate normality: the distribution of symptoms for each population or data group is normal. Homogeneity of variance: every population has the same variance if the difference should not be too significant.

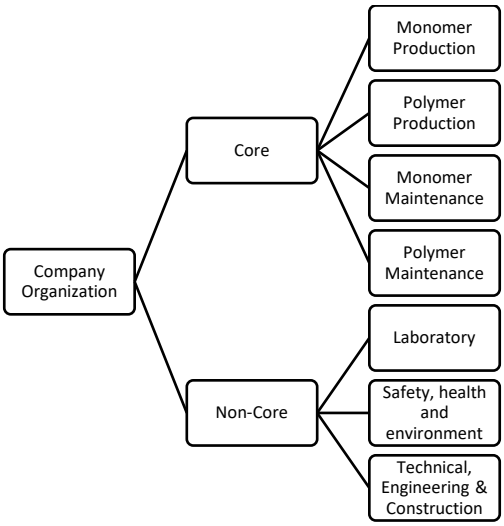

Figure 2. Company Organization Divisions based on Core and Non-Core.

3. Methods

The work psychology assessment method refers to the Minister of Manpower Regulation No. 5 of 2018, using the SDS Questionnaire (Stress Diagnosis Survey), designed to assess Work Stress Risk Level due to stressor factors that can be seen in table 1.

Table 1. List Stressor and Each Question

No.	Stressor	Question Item
1.	Role Clarity Factor	1 The purpose of employee assignments and work is not clear. 2 The employee is not clear to whom or to whom to report. 3 The employee is not authorised to perform their professional duties. 4 The employee does not quite understand what is expected. 5 The employee does not understand the work's role in achieving the organisational goals.
2.	Role Conflict Factor	1 The employee always works on unnecessary tasks or projects. 2 The employee being caught in the middle between superiors and subordinates 3 Formal lines of command are not obeyed 4 The employee does work accepted by one person but not accepted by another. 5 The employee receives conflicting requests from one or more people.
3.	Excessive Quantitative Load Factor	1 The employee has to bring work home every afternoon or weekend to catch up on time. 2 The employee spends too much time on unnecessary meetings that take uptime 3 The employee is in charge of all work projects at the same time, which is almost uncontrollable 4 The employee usually does much more work than the employee can do in a day. 5 The employee feels that the employee does not have time for periodic breaks.

4.	Excessive Qualitative Load Factor	1	The demands regarding the quality of work against The employee are outrageous.
		2	The tasks assigned to The employee are sometimes too complicated and too complex.
		3	The task is getting more complicated day by day.
		4	The organisation expects the employee to exceed skills and abilities.
		5	The employee is poorly trained and inexperienced in carrying out duties adequately.
5.	Career Development Factor	1	The employee did not have adequate opportunities to advance in this organisation.
		2	If the employee wants to get promoted, they have to find another work unit.
		3	The employee is harming the employee's career advancement by staying with this organisation.
		4	The employee has few opportunities to develop and learn new knowledge and skills.
		5	The employee feels stuck in their career.
6.	Responsibility to Others Factor	1	The employee is responsible for the development of other employees
		2	The employee responsible for guiding or helping subordinates solve their problems
		3	The employee acts or makes decisions that affect the safety and well-being of others
		4	The employee responsibilities in this organisation are more about people than things.
		5	The employee is in charge of other people's future (career).

Respondents filled out the Questionnaire in numbers 1-7. Score 1 if the conditions described never cause stress. Score 2 if the conditions described very rarely cause stress. Score 3 if the conditions described rarely cause stress. Score 4 if the conditions described sometimes cause stress. Score 5 if the conditions described often cause stress. Score 6 if the conditions described very often cause stress. Score 7 if the conditions told always cause stress

This Questionnaire is not intended to score personal stress levels but instead describes and summarize overall stress levels in a company, division, or other group determined at the time of scoring. The determination of the number of respondents follows the following rules. If score < = 9, then low work risk level. If score 10-24, then medium work risk level. If score > 24, then high work risk level. The implementation of filling out the Questionnaire is carried out online starting on January 28, 2021, until February 11, 2021, at an Indonesian manufacturing company with the products produced in the upstream petrochemical sector. The below mentioned figure 3 shows the overview of Conceptual Design.

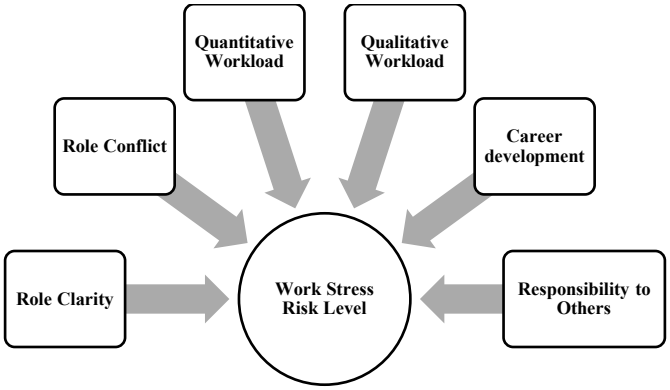

Figure 3. Conceptual Design refers to the Indonesia Minister of Manpower Regulation No. 5 of 2018

4. Data Collection

4.1. Characteristics of respondents

Characteristics of respondents can increase workers' stress levels due to habits or behavior based on their factors. However, in this study, the respondents' characteristic data did not consider its effect on work stress levels, only to describe the characteristics of respondents who participated in filling out the Stress Diagnostic Survey (SDS) Questionnaire.

Table 2. Characteristics of respondents

No.	Characteristics Item	Result
1.	Characteristics of Respondents by Gender	Man : 734 respondents (89%) Woman : 89 respondents (11%)
2.	Characteristics of Respondents Based on Age	Age 17 – 30 : 299 respondents (36%) Age 31 – 45 : 276 respondents (34%) Age > 45 : 248 respondents (30%)
3.	Characteristics of Respondents Based on Marital Status	Not married yet : 206 respondents (25%) Married : 617 respondents (75%)
4.	Characteristics of Respondents Based on Working Period	Years of service 0-10 Year: 367 respondents (45%) Years of service 11-20 Year: 169 respondents (21%) Years of service 21-35 Year: 287 respondents (34%)
5.	Characteristics of Respondents Based on Placement and Work Position	Operator : 314 respondents (38%) Staff : 232 respondents (28%) Supervisor : 185 respondents (23%) Manager : 92 respondents (11%)

5. Results and Discussion

5.1 Results

From the stress diagnostic survey (SDS) questionnaire from the respondents in table 2, the researcher got the results of stress based on each division and its function (non-core and core). In the non-core function, there is the central laboratory division, safety, health & environment division, and technical, engineering & construction division. As for the core functions, there are the polymer maintenance division, monomer maintenance division, monomer production division, and polymer production division.

Table 3. Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Role Clarity	Based on Mean	1.237	6	816	0.285
	Based on Median	1.154	6	816	0.329
	Based on Median and with adjusted df	1.154	6	812.124	0.329
	Based on trimmed mean	1.254	6	816	0.276
Role Conflict	Based on Mean	0.825	6	816	0.551
	Based on Median	0.764	6	816	0.599
	Based on Median and with adjusted df	0.764	6	811.182	0.599
	Based on trimmed mean	0.823	6	816	0.552
Quantitative Workload	Based on Mean	0.740	6	816	0.618
	Based on Median	0.655	6	816	0.686

	Based on Median and with adjusted df	0.655	6	812.386	0.686
	Based on trimmed mean	0.725	6	816	0.629
Qualitative Workload	Based on Mean	0.808	6	816	0.564
	Based on Median	0.695	6	816	0.654
	Based on Median and with adjusted df	0.695	6	811.461	0.654
	Based on trimmed mean	0.819	6	816	0.555
Career Development	Based on Mean	0.540	6	816	0.778
	Based on Median	0.459	6	816	0.839
	Based on Median and with adjusted df	0.459	6	806.235	0.839
	Based on trimmed mean	0.540	6	816	0.778
Responsibility to Others	Based on Mean	0.904	6	816	0.492
	Based on Median	0.909	6	816	0.488
	Based on Median and with adjusted df	0.909	6	810.091	0.488
	Based on trimmed mean	0.897	6	816	0.496

If the p-value is greater than 0.05, the assumption of homogeneity of variance has been fulfilled, and a one-way ANOVA can be performed. If the p-value is less than 0.05, the researchers have broken the homogeneity of variance assumption and will conduct the study using a non-parametric Kruskal-Wallis test. Because the p-value is greater than 0.05, Table 3 reveals that the data is homogenous.

Table 4. One-Sample Kolmogorov-Smirnov Test

N		823
Normal Parameters[a,b]	Mean	0.0000000
	Std. Deviation	1.82239419
Most Extreme Differences	Absolute	0.212
	Positive	0.212
	Negative	-0.098
Test Statistic		0.212

As a rule of thumb, the researcher rejects the null hypothesis if $p < 0.05$. So if $p < 0.05$, the researcher don't believe that our variable follows a normal distribution in our population. In table 4, it shows that the data is normal because the value > 0.05

Table 5. Analysis of Variance (ANOVA) Stress Diagnostic Survey Result

		Sum of Squares	df	Mean Square	F	Sig.
Role Clarity	Between Groups	33.794	6	5.632	0.596	0.733
	Within Groups	7706.079	816	9.444		
	Total	7739.874	822			
Role Conflict	Between Groups	74.168	6	12.361	1.184	0.313
	Within Groups	8518.734	816	10.440		
	Total	8592.902	822			
Quantitative Workload	Between Groups	49.046	6	8.174	0.846	0.535
	Within Groups	7885.967	816	9.664		
	Total	7935.013	822			
Qualitative Workload	Between Groups	35.617	6	5.936	0.549	0.771
	Within Groups	8823.432	816	10.813		

	Total	8859.050	822			
Career Development	Between Groups	41.437	6	6.906	0.705	0.646
	Within Groups	7995.424	816	9.798		
	Total	8036.860	822			
Responsibility to Others	Between Groups	48.343	6	8.057	0.850	0.532
	Within Groups	7736.563	816	9.481		
	Total	7784.906	822			

Once the researcher knows that our data is homogeneous and normal, then the researcher can fulfil the assumptions required in the ANOVA. So that the researcher can continue in table 5 to interpret the average difference of a group. In most cases, the significance threshold is chosen at 0.05 or 5%. This suggests that if the null hypothesis is true, your results have a 5% chance of happening, or less. In table 5, it can be concluded that there is no significant difference for each division (workload effect) to the level of stress in terms of several stressors.

5.2 Discussion

This study found that the level of role clarity stressor in each division was at the medium level. The medium risk level on the role clarity factor describes the condition of workers who do not understand their functions and roles in carrying out their general duties, authorities, and responsibilities. As a suggestion for control measures, communication or counselling is needed to workers regarding their duties, rules, and responsibilities. If required, a training program is held to improve workers' skills in carrying out their duties.

This study found that each division's level of role conflict stressor was at the medium level. The medium risk level on the role conflict factor describes the condition of workers who do not understand the formal lines (line of command and line of coordination) in their work and lack respect for coworkers' roles. As a suggestion for control measures, communication or counselling can be carried out to workers to better understand the limits of authority and re-explain the formal lines (orders and coordination) and procedures related to their duties.

This study found that the quantitative workload level stressor in each division was at the medium level. The medium risk level on the quantitative workload factor describes the condition of workers who experience overload or lack of time to complete their work. As a suggestion for control measures, it is necessary to review work procedures to make them more effective and efficient, and if necessary, a technical training program is held so that workers are more effective and efficient in completing their tasks.

This study found that the level of qualitative workload stressor in each division was at the medium level. The medium risk level on the qualitative workload factor describes the condition of workers who do not understand the quality of the expected work results and how to report work results to superiors and company management. As a suggestion for control measures, it is necessary to conduct communication and counselling to workers to understand better the expected final results of each task that is their authority and responsibility. It is also required to review the procedures related to reporting work results to superiors and company management.

This study found that each division's career development level stressor was medium. The medium risk level on the career development factor illustrates that workers do not understand the direction of their career development in the future. As a suggestion for control measures, it is necessary to provide counselling to workers regarding the direction of their career development and the targets for meeting qualifications and achieving KPI (key performance indicators) that must be met to continue on the expected career development path.

This study found that responsibility to others stressor in each division was at the medium level. The medium risk level on the responsibility to others illustrates the lack of balance in working conditions and understanding of goals and objectives within a division, thus burdening other workers. As a means of control, the employee can negotiate with their employer about the division's goals and objectives and the areas of responsibility that play a role in achieving its goals and objectives.

Most respondents experienced stress with a medium level sourced from the qualitative workload stressor. In addition to the qualitative workload, there are the most experienced role conflicts between the SHE and the Technical, Engineering & Construction divisions. Role clarity as a source of stress is also experienced by the Technical,

Engineering & Construction Division. After going through the ANOVA test as mentioned in Table 5, the researchers found that core and non-core division functions experienced the same work stress value because of significance level > 0.05. So the researchers can conclude that the Indonesian manufacturing industry's non-core and core divisions experience the same stress level, namely medium.

6. Conclusion

Analysis related to the influence of sources of stress on the level of work stress risk found that all divisions in a manufacturing industry experienced medium work stress risk. Stress causes include role clarity, role conflict, quantitative workload, qualitative workload, career development, and responsibility to others. Furthermore, the most source of stress is qualitative workload. The researcher also found no relationship between work stress risk level and core and non-core division functions in the manufacturing industry in Indonesia. Further research needs to reduce stress on employees in the manufacturing industry and make productivity improvements in the company. So that if the labor can minimize the source of stress, then The least stress labor can achieve the company's productivity because employee performance is not disturbed due to stress.

References

Aji, M. P. (2020). Improving Indonesia's Human Resources Quality to Support National Defense: Lesson Learned from South Korea. *Jurnal Pertahanan & Bela Negara*, vol. 10, no. 1, pp. 19-46.

Alfredo, E. I., & Nurcahyo, R. (2018). The impact of ISO 9001, ISO 14001, and OHSAS 18001 certification on manufacturing industry operational performance. *In Proceedings of the International Conference on Industrial Engineering and Operations Management Bandung*, pp. 6-8.

Ayantoyinbo, B. B., MCILT, C., & Odepidan, O. M. (2018). Effect of Outsourcing of Non-Core Services on Organization Performance: A Case Study of Seven-up Bottling Company. *British Journal of Humanities and Social Sciences*, vol. 20, no. 1.

Bappenas. (2019). Policies to support the development of Indonesia's manufacturing sector during 2020–2024. https://www.bappenas.go.id/files/6215/4994/1543/policies-manufacturing-sector-indonesia-2020-2014.pdf

Baumgartner, R. J. (2014). Managing corporate sustainability and CSR: A conceptual framework combining values, strategies, and instruments contributing to sustainable development. *Corporate Social Responsibility and Environmental Management*, vol. 21, no. 5, pp. 258-271.

Dachyar, M., & Yadrifil, L. Y. (2014). Interpretive structural model of institutional design for increased domestic component of upstream oil and gas industry in Indonesia. *International Journal Science Index*, vol. 8, pp. 776-780.

Fischer, M., Imgrund, F., Janiesch, C., & Winkelmann, A. (2020). Strategy archetypes for digital transformation: Defining meta objectives using business process management. *Information & Management*, vol. 57, no. 5, pp. 103262.

Indonesia Minister of Manpower Regulation No. 5 of 2018. Keselamatan Dan Kesehatan Kerja Lingkungan Kerja.

International Labor Organization (ILO). 2016. Workplace stress: a collective challenge.

Johnson, J. V., Gardell, B., & Johannson, G. (2020). The psychosocial work environment: work organisation, democratisation, and health: essays in memory of Bertil Gardell. *Routledge*.

Kemenperin. 2019. Kontribusi Manufaktur Nasional Capai 20 Persen, RI Duduki Posisi Ke-5 Dunia. https://kemenperin.go.id/artikel/20579/Kontribusi-Manufaktur-Nasional-Capai-20-Persen,-RI-Duduki-Posisi-Ke-5-Dunia

Kerpedzihev, G. D., König, U. M., Roglinger, M., & Rosemann, M. (2021). An exploration into future business process management capabilities given digitalisation.

Khalid, A., Pan, F., Li, P., Wang, W., & Ghaffari, A. S. (2020). The impact of occupational stress on job burnout among bank employees in Pakistan, with psychological capital as a mediator. *Frontiers in public health*, vol. 7, pp. 410.

Lal, A., Tharyan, A., & Tharyan, P. (2020). The prevalence, determinants and the role of empathy and religious or spiritual beliefs on job stress, job satisfaction, coping, burnout, and mental health in medical and surgical faculty of a teaching hospital: A cross-sectional survey. *La Revue de medecine interne*, vol. 41, no. 4, pp. 232-240.

Lukitaputri, A. A., & Dachyar, M. (2015). Designing jewellery manufacturing industry productivity improvement using DMAIC method. *International Journal of Applied Engineering Research*, 10(13), 33836-33841.

Montgomery, D. C., Runger, G. C., & Hubele, N. F. (2009). Engineering statistics. John Wiley & Sons.

Myhrberg, E. V. (2016). A Practical Field Guide for ISO 9001: 2015. *Quality Press*.

Nikmah, F., Indrianti, T., & Pribadi, J. D. (2020). The Effect of Work Demand, Role Conflict, and Role Ambiguity on Work-Family Conflict (Impact of Work From Home due to The Covid-19 Pandemic). *Journal of Family Sciences*, vol. 5, no. 2, pp. 92-102.

Nurcahyo, R., & Habiburrahman, M. (2021). Relationship between ISO 9001: 2015 and operational and business performance of manufacturing industries in a developing country (Indonesia). *Heliyon*, vol. 7, no. 1.

Omar, M. K., Aluwi, A. H., Fauzi, M. W. M., & Hairpuddin, N. F. (2020). Work stress, workload, work-life balance, and intention to leave among employees of an insurance company in Malaysia. *International Journal of Business, Economics, and Law*, vol. 21, no. 2, pp. 70-78.

Padilla, K. E. (2020). Sources and severity of stress in a Southwestern police division. *Occupational Medicine*, vol. 70, no. 2, pp. 131-134.

Pavithra, A. C., & Sivakumar, V. J. (2020). Impact of Eustress on Work-life Balance: An Analysis on Public Sector Bank Employees in South India. *Asia-Pacific Journal of Management Research and Innovation*, vol. 16, no. 3, pp. 196-209.

Rasheed, E. O., Khoshbakht, M., & Baird, G. (2021). Time spent in the office and workers' productivity, comfort and health: A perception study. *Building and Environment*, vol. 195, pp. 107747.

Schwartz, A., Gerberich, S. G., Albin, T., Kim, H., Ryan, A. D., Church, T. R., Green DR, McGovern PM, Erdman AG & Arauz, R. F. (2020). The SWEEP study is the association between Janitor physical workload, mental workload, and stress. *Work*, vol. 65, no. 4, pp. 837-846.

Wahidi, S. I., Pribadi, S. R. W., Pribadi, T. W., Wardhana, N. L. A., & Arif, M. S. (2021). Fixed Manpower Reduction Analysis to Reduce Indirect Cost of Ship Production. *In IOP Conference Series: Materials Science and Engineering,* vol. 1052, no. 1, pp. 012048. IOP Publishing.

Zhang, M., Zhang, P., Liu, Y., Wang, H., Hu, K., & Du, M. (2021). Influence of perceived stress and workload on work engagement in front-line nurses during COVID-19 pandemic. *Journal of clinical nursing*, vol. 30, no. 11-12, pp. 1584-1595.

Biographies

Timotius Candra Kusuma is a Master's Degree student in the Industrial Engineering Department, Faculty of Engineering Universitas Indonesia. He holds a Bachelor of Engineering in Chemical Engineering from Institut Teknologi Sepuluh Nopember Surabaya. Mr Timotius Candra currently works in Chandra Asri Petrochemical as Risk Management Officer. He has published conference papers. His research and job area are strategy management, project management, and vendor evaluation. He is an ambitious person who has a strong desire to upgrade his skills in engineering fields and how to manage complex projects such as Butene-1 and MTBE Project Development.

Rahmat Nurcahyo is a Professor in Management System, Industrial Engineering Department, Universitas Indonesia. He earned Bachelor in Universitas Indonesia and a Masters's in the University of New South Wales, Australia, then a Doctoral degree in Universitas Indonesia. He has published journals and conference papers. His research interests include management systems, strategic management, maintenance management, and business management.

M. Dachyar is a Professor in Management System in the Industrial Engineering Department, Faculty of Engineering Universitas Indonesia. He earned a Bachelor of Engineering degree from Universitas Indonesia, Master degree from Vrije Universiteit Brussel. His research interest in operations management, project management, enterprise information systems, and business process management.