

# THE INFLUENCE OF OCCUPATIONAL SAFETY AND MOTIVATION ON WORK PRODUCTIVITY MEDIATED BY EDUCATION AND TRAINING IN A PRIVATE PHARMACEUTICAL COMPANY, JAKARTA

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## Abstract

Work productivity is crucial for achieving organizational goals. Using education and training as mediating variables, this study investigates how occupational safety and work motivation influence the work productivity of employees at PT X in Jakarta. A quantitative approach was used in conjunction with a survey. After asking PT X employees to complete the survey, the Partial Least Squares–Structural Equation Modeling (PLS-SEM) method was used to analyze the data. The results showed that work motivation had a positive and significant effect on education and training, as well as work productivity. Conversely, occupational safety did not affect work productivity or education and training. Furthermore, training and education were shown to be unable to control the relationship between occupational safety and work motivation on work productivity. Compared with perceptions of occupational safety and existing education and training programs, these findings indicate that motivation has a greater influence on increasing work productivity at PT X. Therefore, the company should evaluate its education and training programs and strengthen strategies to improve work motivation to meet operational needs and improve work productivity.

**Keywords :** *Occupational Safety, Work Motivation, Education and Training, Work Productivity, PLS-SEM*

## 1. Background

In today's industrial era, companies must maintain strong competitiveness due to increasingly fierce global competition. The Indonesian pharmaceutical industry is one of the fastest-growing industries, with a large market value and continued growth. Data from the Ministry of Health shows that the number of pharmaceutical industries, raw material industries, and medical device manufacturers continues to grow, reflecting the high potential and market opportunities in this sector. This situation demands effective management and good governance to be able to compete and capitalize on existing market opportunities. Human resources (HR) are crucial to an organization's success amidst competition. Company performance is significantly influenced by employee productivity, as productivity reflects the ability of an individual or group to produce output that meets both quality and quantity requirements. High productivity supports the achievement of company goals, while low productivity can hinder business competition. One of the pharmaceutical companies that is trying to increase employee work productivity is PT X. However, this company still faces work productivity problems, which is indicated by the realization of drug production that fails to achieve the set targets during a certain production period. This condition indicates that there is a need for additional research on the components that affect the work productivity of the company's employees .

**Table 1.** Work Productivity Data of PT. X Jakarta's Production Results for the Period January - May 2024

Month	Drug Production		Vaccine Production	
	Target	Realization	Target	Realization
January	11,000	10,650	5,000	4,500
February	11,000	10,320	5,000	4,460
March	11,000	11,270	5,000	4,930
April	11,000	10,880	5,000	5,270
May	11,000	9,960	5,000	5,045

Source: Data from PT. X Jakarta

Based on PT X's production data, drug and vaccine production during the January–May 2024 period fluctuated, with most production falling short of its target. Drug production only reached its target in March, while vaccine production only reached its target in April and May. This indicates that employee productivity is still suboptimal, as production output has not met the company's targets. Employees who achieve their goals and meet deadlines are considered productive. Work motivation is one component suspected of influencing work productivity (Hastaria et al., 2021; Hairo & Martono, 2019; Johari & Jha, 2020; Masriah, 2020). Work motivation is a drive within a person that influences their behavior and performance to achieve certain goals (Yenni, 2019). In the context of PT X, employee work motivation is a crucial factor in supporting the achievement of production targets. The company measures employee motivation levels through several key performance indicators (KPIs), such as attendance rates and punctuality in completing tasks.

**Table 2.** KPI Data for PT. X Jakarta Employees for the Period January - May 2024

Month	Average Attendance (%)	Timeliness of Task Completion (%)
January	92%	84%
February	90%	82%
March	95%	88%
April	93%	86%
May	89%	80%

Source: Data from PT. X Jakarta

Based on the data in Table 2, it can be seen that when attendance and punctuality in task completion are higher, drug and vaccine production tends to approach or even reach targets. Conversely, when these motivation indicators decline, production also falls short of targets. These findings indicate that employee motivation is a critical factor in achieving company productivity. In addition to work motivation, occupational safety is also a component that can influence employee productivity. Occupational safety means a workplace that is safe and protected from potential accidents that could endanger employee health and safety. How employees perceive the possibility of such accidents can influence how they think and behave in their workplace. Previous research has

shown that workplace accidents and perceptions of occupational safety can influence employee motivation and productivity (Suryaputra et al., 2023; Masrofah & Michael, 2020; Umama & Nurfitriya, 2019). Therefore, safe and healthy working conditions can increase employee job satisfaction, motivation, and productivity. On the other hand, cases of work accidents are still found at PT X, so this condition needs to be a concern for the company in an effort to improve work safety and employee productivity.

**Table 3.** Data on the Number of Workplace Accidents at PT. X

Year	Number of employees	Accident Rate			Percentage
		Light	Currently	Heavy	
2020	86	4	3	1	9.30%
2021	89	5	2	2	10.11%
2022	90	4	2	-	6.67%
2023	90	5	1	2	8.89%

Source: Data from PT. X Jakarta

Workplace accident data at PT X shows that the number of workplace accidents, both minor and serious, fluctuates and tends to increase over time. This indicates that occupational safety remains a critical concern, as it can impact employee working conditions and potentially impact performance and productivity. In addition to occupational safety, education and training are also factors that can influence employee motivation and productivity (Mohammed & Gana, 2022; Mualuko et al., 2023; Ozkeser, 2019; Rosada & Ubaidillah, 2022). Training and education serve to improve employees' knowledge, skills, and perspectives, which are necessary for more efficient work performance. Through targeted training programs, employees are expected to improve their abilities and performance to help achieve organizational goals. PT X regularly holds employee training programs covering both technical and non-technical aspects, such as occupational safety training, production efficiency, and managerial skills development. To see the progress of these programs, data on the number of employee training sessions over the past few years is presented in the following table.

**Table 4.** Employee Education and Training Program Data at PT. X (2020-2023)

Year	Number of Employees Who Attended Training	Types of Technical Training	Types of Non-Technical Training	Average Training Evaluation Score*
2020	51	3	3	7.8
2021	56	4	3	8.1
2022	60	4	3	8.4
2023	63	6	4	8.6

\*Training evaluation scores are measured on a scale of 1–10 based on employee assessments.

Source: Data from PT. X Jakarta

The table above shows that the number of workers participating in training programs increases every year, along with an increase in the average training evaluation score.

## 2. Literature Review

### *Work Productivity*

According to Seldarmayanti (2017:341), production is generally defined as a comparison between the results that can be achieved with the total power or production factors used, or the number of goods or services that can be produced by a person or group, individual, or employee within a specified time period. According to Narpati et al. (2021), work productivity is the ratio of output compared to the ratio of physical input. Work production is defined as the ability of a worker to produce products or complete work tasks in a way that allows them to achieve certain goals (Pancari et al., 2021). Work production, according to Andriyany (2021), is the mental attitude of employees that reflects their ability to perform tasks and produce results using the resources used.

*Work motivation*

The desire to remain still is motivation. Although there is an opinion that motivation must come from external sources, the fact is now becoming clearer that there are different forces that drive each person (Wibowo, 2016:322). Influencing employees to change their motivation to meet organizational needs is important for us in the workplace. Motivation, according to Hasibuan (2018:92), is a psychological process described by the relationship between attitudes, needs, perceptions, and decisions that occur in an individual. The conditions or forces that drive workers to achieve the goals of the company's organization are known as motivation. If an employee has a positive mental perspective and is positive about their work conditions, they will be more motivated to do their best in their work. However, according to Robbins (2016:166), motivation is defined as the desire to exert a lot of effort for organizational goals, which is conditioned by the ability to meet individual needs.

*education and training*

According to Sutrisno (2020:62), education is an activity aimed at improving theoretical mastery and decision-making skills in addressing issues related to achieving specific goals. Meanwhile, according to As'ad in Sutrisno (2020:66), training is a planned effort undertaken to achieve mastery of job-relevant skills, knowledge, and attitudes.

*Work safety*

Occupational safety is a safe working environment free from the risk of accidents that could harm employee health and safety. Occupational safety in this study was measured based on employee perceptions of the risk of occupational accidents encountered in daily work activities. According to Primartuti (2016), occupational accident risk is a hazard faced by employees in their workplace that has the potential to cause an accident. This risk is a calculation of the likelihood of an incident occurring and its consequences (Campbell, 2016). Two main components, namely environmental factors and human factors, influence occupational safety.

Based on the background and theoretical review, the conceptual framework in this research can be described as follows.

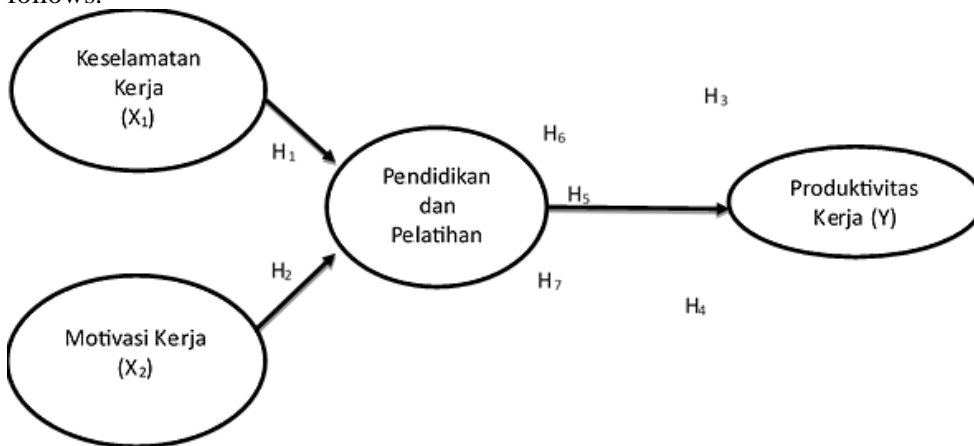


Figure 1. Conceptual Framework

**3. Methodology**

This study involved employees of PT X, and the subjects were occupational safety, education and training, work motivation, and work productivity. This study used a quantitative approach with a survey method, and was classified as *explanatory research*, namely research that explains the causal relationship between occupational safety and work motivation on work productivity mediated by education and training. All employees of PT. X in the factory section were eligible for this study. However, the total sampling method uses the entire population as a sample. There are three types of variables used in this study: dependent variables, independent variables, and intervening variables. The research data is divided into two types. Primary data comes from direct collection, such as through questionnaires. Secondary data comes from various sources, such as books, reports, journals, and employee data. In this study, a five-point Likert scale was used. This study uses a structural equation modeling (SEM) method based on partial least squares (PLS), processed using the latest SmartPLS program.

**4. Results and Discussion**

PLS-SEM analysis consists of two main stages: the outer model (measurement model) and the inner model (structural model). The first stage is the PLS-SEM analysis stage.

*Measurement Model Testing (Outer Model)*

The first test is convergent validity, which aims to ensure that each indicator has the ability to show the construct that has been measured.

Table 1. Outer Loading Values

Variables	Indicator	Loading Factor	Information
Occupational Safety (X1)	KK1	0.795	Valid
	KK2	0.852	
	KK3	0.649	
	KK4	0.836	
	KK5	0.790	
	KK6	0.739	
	KK7	0.654	
Work motivation (X2)	MK1	0.943	
	MK2	0.957	
	MK3	0.909	
	MK4	0.777	
	MK5	0.947	
	MK6	0.933	
	MK7	0.887	
	MK8	0.954	
education and training (Z)	PP1	0.888	
	PP2	0.915	
	PP3	0.861	
	PP4	0.929	
	PP5	0.966	
	PP6	0.937	
Work Productivity (Y)	PK1	0.877	
	PK2	0.924	
	PK3	0.878	
	PK4	0.944	
	PK5	0.923	
	PK6	0.939	
	PK7	0.917	

Source: Data Processing Results with SmartPLS version 3.2.9 (2026)

All indicators for the variables Occupational Safety, Work Motivation, Education and Training, and Work Productivity have external loading values above 0.70, according to SmartPLS data processing results. This indicates that all metrics can be communicated convergently. In the research model, two indicators with external loading values below 0.70 were retained. This indicates that PLS-SEM analysis guidelines state that loading values between 0.60 and 0.70 are still acceptable during the model development stage (Hair et al., 2019).

Next, the second reflective outer model analysis, namely the measurement of *discriminant validity*, is measured based on the Average Variance Extracted (AVE) value for each structure.

Average Variance Extracted (AVE) Value	
Variables	AVE
Work safety	0.582
Work motivation	0.838
education and training	0.841
Work Productivity	0.837

Source: Data Processing Results with SmartPLS version 3.2.9 (2026)

All research constructs have met the convergent validity criteria, according to the results of convergent validity testing using Average Variance Extracted (AVE), which shows that each construct is able to explain more than half of the variance of the indicators that form it. Next, a reliability test was conducted using the combined reliability and Cronbach's alpha values for each indicator block used to measure the construct. As a result of data processing with SmartPLS version 3.2.9, the following results were obtained.

*Composite Reliability and Cronbach's Alpha Values*

Variables	<i>Composite Reliability</i>	<i>Cronbach's Alpha</i>	Condition	Information
Work safety	0.906	0.881	> 0.7	Reliable
Work motivation	0.976	0.972		
education and training	0.969	0.962		
Work Productivity	0.973	0.967		

Source: Data Processing Results with SmartPLS version 3.2.9 (2026)

The analysis results indicate that all variables in this study are considered reliable and worthy of further evaluation. All constructs have combined reliability and Cronbach's alpha values above 0.70 . In addition, a discriminant validity test was conducted to ensure that each structure was clearly distinct from the others. The Heterotrait-Monotrait Ratio (HTMT) was used to conduct the test.

*Table 4. Results of the Discriminant Validity Test (HTMT)*

Variable Pairs	HTMT Value
Work Safety – Work Motivation	0.811
Occupational Safety – Education & Training	0.760
Occupational Safety – Work Productivity	0.687
Work Motivation – Education & Training	0.865
Work Motivation – Work Productivity	0.865
Education & Training – Work Productivity	0.713

Source: Data Processing Results with SmartPLS version 3.2.9 (2026)

The results of the analysis show that all constructs in this study meet the discriminant validity criteria, because all HTMT values are below the maximum limit of 0.90. Then the next test is the multicollinearity test, which aims to ensure that there is no high correlation between indicators or between constructs.

*Table 5. Multicollinearity Test Results (VIF)*

Relationship between variables	VIF	Information
X1 → Z	2,463	There is no multicollinearity
X2 → Z	2,463	There is no multicollinearity
X1 → Y	2,627	There is no multicollinearity
X2 → Y	4,094	There is no multicollinearity
Z → Y	3,590	There is no multicollinearity

Source: Data Processing Results with SmartPLS version 3.2.9 (2026)

The analysis results showed no signs of multicollinearity between constructs; the VIF values for the structural model (inner model) ranged from 2.463 to 4.094. Therefore, the structural model is considered to be free from multicollinearity.

*Structural Model Testing (Inner Model)*

The determination coefficient (R<sup>2</sup>) is used to determine the magnitude of the endogenous variable that can be explained by the exogenous variable .

Table 6. R Square (R2) Value

Matrix	R Square
Occupational Safety and Work Motivation towards Education and Training	0.721
Occupational Safety, Work Motivation, and Education and Training on Work Productivity	0.713

Source: Data Processing Results with SmartPLS version 3.2.9 (2026)

The Work Productivity variable (Y) has an R-square value of 0.713, indicating that 71.3% of its variation can be explained by Work Safety and Work Motivation, as well as education and training, and the remaining 27.9% is influenced by other factors outside the model. The R-square value of the Education and Training variable (Z) of 0.721 indicates that 72.1% of its variation can be explained by Work Safety and Work Motivation. Both values are included in the strong category according to the R-square assessment criteria.

Next, hypothesis testing between constructs was conducted using the *bootstrap resampling method*. The results of the structural model testing (T-Values) can be seen in Table 7 below.

Table 7. Path Coefficient Test Results

No	Relationship between variables	Path Coefficient ( $\beta$ )	T-Statistics	P-Value	Decision
H1	Occupational Safety $\rightarrow$ Education and Training	0.214	1,118	0.263	Rejected
H2	Occupational Safety $\rightarrow$ Work Productivity	0.052	0.352	0.725	Rejected
H3	Work Motivation $\rightarrow$ Education and Training	0.674	3,782	0.000	Accepted
H4	Work Motivation $\rightarrow$ Work Productivity	0.867	5,847	0.000	Accepted
H5	Education and Training $\rightarrow$ Work Productivity	-0.077	0.503	0.615	Rejected

Source: Data Processing Results with SmartPLS version 3.2.9 (2026)

The results of hypothesis testing using SmartPLS 3.2.9 can be seen as follows:

1. First Hypothesis (H1)

It is known that the direct influence of Occupational Safety on Education and Training ( $X1 \rightarrow Z$ ) has a *t-statistic value* of 1.118 ( $< 1.96$ ) and a *p-value* of 0.263 ( $> 0.05$ ), with a path coefficient of 0.214. Thus, it can be concluded that the H1 hypothesis is rejected.

2. Second Hypothesis (H2)

It is known that the direct influence of Work Motivation on Education and Training ( $X2 \rightarrow Z$ ) has a *t-statistic value* of 3.782 ( $> 1.96$ ) and a *p-value* of 0.000 ( $< 0.05$ ), with a path coefficient of 0.674. Thus, it can be concluded that the H2 hypothesis is accepted.

3. Third Hypothesis (H3)

It is known that the direct influence of Occupational Safety on Work Productivity ( $X1 \rightarrow Y$ ) has a *t-statistic value* of 0.352 ( $< 1.96$ ) and a *p-value* of 0.725 ( $> 0.05$ ), with a path coefficient of 0.052. Thus, it can be concluded that the H3 hypothesis is rejected.

4. Fourth Hypothesis (H4)

The direct effect of Work Motivation on Work Productivity ( $X2 \rightarrow Y$ ) was found with a path coefficient of 0.867 and a *t-statistic value* of 5.847 ( $> 1.96$ ) and a *p-value* of 0.000 ( $< 0.05$ ). Therefore, hypothesis H4 is accepted.

5. Fifth Hypothesis (H5)

The direct effect of education and training on work productivity ( $Z \rightarrow Y$ ) was found with a *t-statistic value* of 0.503 ( $< 1.96$ ) and a *p-value* of 0.615 ( $> 0.05$ ), with a path coefficient of -0.077. Thus, it can be concluded that Hypothesis H5 is rejected, which means that training and education do not significantly affect the work productivity of PT. X employees.

Then the indirect influence test was carried out to determine the role of Education and Training as a mediating variable.

Table 8. Results of the Indirect Effect Test

No	Mediation Path	Indirect Coefficient ( $\beta$ )	T-Statistics	P-Value	Decision
H6	Occupational Safety (X1) → Education and Training (Z) → Work Productivity (Y)	-0.016	0.251	0.802	Not significant
H7	Work Motivation (X2) → Education and Training (Z) → Work Productivity (Y)	-0.052	0.597	0.550	Not significant

Source: SmartPLS data processing version 3.2.9 (2026)

According to table 4.8, the mediation hypothesis testing can be explained as follows:

6. Sixth Hypothesis (H6)

Occupational Safety (X1) on Work Productivity (Y) through Education and Training (Z) has a p-value of 0.802 (> 0.05) and a t-statistic of 0.251 (< 1.96). The results indicate that hypothesis H6 is invalid.

7. Seventh Hypothesis (H7 )

It is known that the indirect effect of Work Motivation (X2) on Work Productivity (Y) through Education and Training (Z) has a p-value of 0.550 (> 0.05) and a t-statistic value of 0.597 (< 1.96). Therefore, the hypothesis H7 is rejected.

**Discussion**

The test results show that occupational safety does not have a significant impact on employee training and education at PT. X. This finding indicates that although the company has implemented an occupational safety policy, this condition has not directly encouraged increased participation or intensity of training received by employees. This result is inconsistent with research by Siregar & Kurniawan (2021) and Rahmawati (2022) which stated that increasing risks in the workplace can encourage companies to strengthen OHS training programs. This difference in findings is likely due to the characteristics of the training program at PT. X which is still routine, general, and scheduled, and has not been explicitly adjusted to the level of risk or safety perceptions felt by employees in the field. The test results indicate that occupational safety does not significantly influence the work productivity of PT. X employees. This finding differs from the research results of Suryaputra et al. (2023) and Masrofah & Michael (2020) which stated that risk perception as well as the frequency and severity of work accidents influence productivity. This difference in results is likely due to the relatively stable condition of occupational safety standards at PT. X, so that variations in safety perceptions among employees are not large enough to affect productivity levels. Practically, this finding indicates that work productivity is more influenced by daily work factors such as operational work systems, work targets, and motivation.

The analysis results show that work motivation has a positive and significant effect on the education and training of PT. X employees. This finding is in line with research by Ozkeser (2019) and Mulyani (2020) which states that people who are highly motivated to work tend to be more active in seeking and utilizing opportunities for development . According to the respondent's answer patterns, employees who are highly motivated to work tend to respond positively to training offers and actively participate in training programs. Therefore, work motivation plays a major role in encouraging employees to improve their abilities in the workplace. The results of the study indicate that the work motivation of PT X employees has a positive and significant impact on their productivity . This finding is in line with research by Johari & Jha (2020) and Imas Masriah (2020) which emphasized the important role of motivation in driving operational performance and achieving work output. The results show that motivation functions as a primary driver that directly influences employee work behavior, including in managing time, completing tasks, and achieving work targets consistently. The test results indicate that education and training do not significantly impact employee work productivity at PT. X. This finding differs from previous studies (Mulyani, 2020; Mohammed & Gana, 2022; Mualuko et al., 2023) which reported a positive effect of education and training on increased productivity. This condition indicates that the effectiveness of training at PT. X has not been fully optimal in translating into increased work output, which is likely due to the limited relevance and quality of the training materials.

The results of the mediation test indicate that education and training do not mediate the relationship between occupational safety and employee work productivity at PT. X. This finding indicates that, although occupational safety has been well implemented, current training does not function as a means to link safety perceptions with increased work productivity. This finding contradicts several previous studies that found that increasing safety training improves safety perceptions and increases work productivity. The results of the mediation test indicate that PT. X employees' work motivation does not mediate the influence of education and training on their work productivity. This conclusion suggests that employees with high work motivation tend to increase their productivity directly without needing to use education and training as intermediary factors.

## 5. Conclusion

The research findings indicate that neither work productivity nor education and training are significantly influenced by occupational safety. On the other hand, it has been shown that work productivity and education and training positively and significantly influence employee motivation. Furthermore, this study shows that work motivation is the main factor that directly influences employee work productivity at PT. X; education and training also cannot reduce the influence of work safety and work motivation on work productivity. Based on these findings, further research is recommended to increase the number of respondents and involve other businesses or industry sectors to increase the generalizability of the results. Future research could also examine other factors such as job satisfaction, company culture, and leadership that may impact productivity. To provide a more comprehensive picture of the variables influencing workforce productivity, additional research could include a wider range of data collection techniques, such as observation or interviews.

## REFERENCES

- Andriyany, D. (2021). Pengaruh Keselamatan dan Kesehatan Kerja Terhadap Produktivitas Karyawan. *Jurnal Manajemen dan Bisnis*, 5(2), 123–134.
- As'ad, M. (2020). *Psikologi industri dan organisasi*. Yogyakarta: Liberty.
- Campbell, J. P. (2016). Modeling the performance prediction problem in industrial and organizational psychology. In *Handbook of Industrial and Organizational Psychology*.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis* (8th ed.). Cengage Learning.
- Hairo, A. M., & Martono, S. (2019). The Effect of Environment, Training, Motivation, and Satisfaction on Work Productivity. *Management Analysis Journal*, 8(1), 50-57.
- Hasibuan, M. S. P. (2018). *Manajemen sumber daya manusia* (Edisi revisi). Jakarta: Bumi Aksara.
- Hastari, S., Mufidah, E., Wahyudi, P., & Laksmita, D. (2021). Contribution of work ability and work motivation with performance and its impact on work productivity. *Management science letters*, 11(2), 425-434.
- Johari, S., & Jha, K. N. (2020). Impact of work motivation on construction labor productivity. *Journal of management in engineering*, 36(5), 04020052.
- Masriah, I. (2020). Pengaruh pelatihan dan motivasi terhadap produktivitas kerja karyawan. *Jurnal Ekonomi dan Manajemen*, 8(1), 45–56.
- Masriah, I. (2021). The Influence of Motivation and Work Experience on Employee Productivity. *PINISI Discretion Review*, 1(1), 331. <https://doi.org/10.26858/pdr.v1i1.20538>
- Masrofah, I., & Michael, M. (2020). Analisis Pengaruh Kecelakaan Kerja terhadap Produktivitas Kerja di CV. Karya Nugraha. *Jurnal Media Teknik dan Sistem Industri*, 4(2), 85. <https://doi.org/10.35194/jmts.v4i2.1073>
- Mohammed, A., & Gana, U. (2022). Work motivation and employee productivity: A mediating role of training. *International Journal of Business and Management*, 10(3), 77–89.
- Mualuko, N. J., et al. (2023). Occupational safety practices and employee productivity in manufacturing firms. *Journal of Workplace Safety*, 12(1), 15–27.
- Mulyani, S. (2020). *Influence of Education and Training on Motivation and Productivity of Civil Servant Lecturers*. 443(Iselt 2019), 461–465. <https://doi.org/10.2991/asselhr.k.200620.090>
- Narpati, B., et al. (2021). Pengaruh keselamatan kerja terhadap produktivitas karyawan dengan pelatihan sebagai variabel intervening. *Jurnal Manajemen SDM*, 9(2), 101–112.

- Ozkelseir, B. (2019). Impact of Training on Employee Motivation in Human Resources Management. *Procedia Computer Science*, 158, 802–810. <https://doi.org/10.1016/j.procs.2019.09.117>
- Pancari, A., et al. (2021). Pengaruh motivasi kerja terhadap produktivitas melalui pelatihan karyawan. *Jurnal Ilmu Manajemen*, 7(3), 210–221.
- Primartuti, E. (2016). Pengaruh pendidikan dan pelatihan terhadap produktivitas kerja pegawai. *Jurnal Administrasi Bisnis*, 4(2), 89–98.
- Rahmawati, N. (2022). Pengaruh Kecelakaan Kerja terhadap Efektivitas Pendidikan Keselamatan Kerja di Sektor Manufaktur. *Jurnal Keselamatan dan Kesehatan Kerja*, 15(2), 120–135.
- Robbins, S. P., & Judge, T. A. (2016). *Organizational behavior* (16th ed.). Pearson Education.
- Rosada, M., & Ubaidillah, U. (2022). Peran pelatihan dalam meningkatkan produktivitas kerja karyawan. *Jurnal Ekonomi Modern*, 11(2), 134–145.
- Sedarmayanti. (2017). *Manajemen sumber daya manusia: Reformasi birokrasi dan manajemen pegawai negeri sipil*. Bandung: Refika Aditama.
- Siregar, R., & Kurniawan, A. (2021). Analisis Hubungan Kecelakaan Kerja dengan Implementasi Pelatihan Keselamatan dan Kesehatan Kerja (K3) di Industri Konstruksi. *Jurnal Teknik Industri*, 10(1), 45–60.
- Suryaputra, I. G. N., et al. (2023). The effect of occupational safety and training on employee productivity. *International Journal of Management Studies*, 15(1), 55–66.
- Sutrisno, E. (2020). *Manajemen sumber daya manusia*. Jakarta: Kencana.
- Umama & Siti. (2018). Pengaruh Persepsi Risiko Kecelakaan Kerja terhadap Motivasi Kerja Pekerja Bagian Pengelasan pada Industri Daur Ulang Kapal di Desa Tanjung Jati Kamal Madura. *Jurnal Personifikasi*, 9(2), 70–132.
- Wibowo. (2016). *Manajemen kinerja* (Edisi kelima). Jakarta: Rajawali Pers.
- Yenni, Y. (2019). Pengaruh motivasi dan pelatihan terhadap produktivitas kerja karyawan. *Jurnal Manajemen Indonesia*, 6(1), 66–75.