



The Relationship Between Psychosocial Factors and Employee Productivity in Pesticide Company

Dysa Fitri Permatasari¹, Hanifa Maher Denny², Yuliani Setyaningsih³

¹Master Student at the Health Promotion Study Program, Diponegoro University,
Semarang, Central Java, Indonesia
Email: dysafitrip@gmail.com

²Departement of Occupational Health and Safety, Diponegoro University,
Semarang, Central Java, Indonesia
Email: hanifadenny@live.undip.ac.id

³Departement of Occupational Health and Safety, Diponegoro University,
Semarang, Central Java, Indonesia
Email: joeliani_kesja_undip@yahoo.com

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Abstract

Work experience, stress, and satisfaction are important psychosocial factors that affect employee productivity. This study analyzes the relationship between work experience, work stress, job satisfaction, and employee productivity in a pesticide company. It involved 357 employees, who were

randomly selected as a sample of 80 employees. The researcher utilized questionnaires on demographics, Osipow, Job Descriptive Index, Hersey, and Goldsmith. The multiple regression analysis results show that employee productivity is related to role insufficiency and role ambiguity. In addition, productivity is significantly related to supervisory co-workers. Overall, supervision and coworkers explain 56% of the level of employee productivity ($R^2 = 0.56$). This study highlighted the need for improved work systems in terms of management. Supervisor and coworker support should be improved to reduce job stress and increase job satisfaction to achieve higher employee productivity.

Keywords: *Work experience, Work stress, Job satisfaction, Employee productivity, Pesticide companies*

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Introduction

Human resources are an important element in a company that must be managed well to balance employee needs and organizational goals (Gunawan & Verianto, 2014). Effective human resource management is the key to a company's productive development. Companies need to optimize the use of human resources so that employees have high productivity and company targets are achieved (Hoboubi et al., 2017). Work productivity is influenced by various factors, including psychosocial ones. Psychosocial factors in the workplace such as stress and job satisfaction are important concerns (Hoboubi et al., 2017). Work stress can cause mental, emotional, and physical disorders as well as increase the number of work-related diseases is related to productivity, engagement, and the likelihood of employees staying with the company (Hoboubi et al., 2017). Job stress can negatively impact employees' mental and physical health and increase their risk of occupational diseases. Job stress is a global problem that affects employees' performance. Work stress is considered common and associated with high absenteeism (Wibowo & Tholok, 2019; Vadivu, 2017).

Surveys in the United States also show that work stress is experienced by most workers and is a major source of stress. Work stress can cause significant economic loss (Vadivu, 2017; Brondolo et al., 2017). Job satisfaction is the condition in which employees feel satisfied with their work. Employees with high job satisfaction tend to be more productive, engaged, and less likely to resign. Job satisfaction is influenced by social support from the family, coworkers, and superiors (Wibowo & Tholok, 2019; Vadivu, 2017).

Data from the Labor Force Survey (LFS) showed increased cases of work-related stress, depression, and anxiety (Health and Safety Executive, 2022). In 2021/2022, there were 914,000 cases of work-related stress, depression, and anxiety. This figure is an increase compared with the previous period, with workload and lack of support being the main causes. The COVID-19 pandemic has contributed to an increase in mental health problems among workers (Riskesdas, 2018). Basic Health Research (Riskesdas) 2018 data showed an increase in the prevalence of



emotional mental disorders in Indonesia. Nationally, more than 19 million people aged over 15 years with experience emotional mental disorders and more than 12 million experience anxiety (Riskesdas Jawa Tengah, 2019).

Factors such as job design, interpersonal relationships, leadership style, career development, job roles, and work environment can cause job stress. Individual factors such as age, sex, marital status, and length of service can also affect the level of job stress. Unmanaged job stress can lead to job dissatisfaction, turnover, and loss of labor. The length of service also plays a role in employee satisfaction and job engagement. Length of service can increase employee engagement, productivity, and performance, because it is an employee's work experience (Vadivu, 2017).

The manufacturing industry in Indonesia plays an important role in economic growth. Increasing market demand in the manufacturing industry can increase workload and trigger employee stress. This study was conducted at the PT. X Chemical Manufacturing Company. The company implemented a five-day work system. The potential for work stress exists because of varying workloads. The company has an OHS programme to monitor employees' mental health. Employee welfare is considered through various facilities and programmes. A high workload, especially when consumer demand increases, can trigger work stress in a company. This study aims to analyze the relationship between experience, stress, and job satisfaction with employee productivity in a pesticide company in the Semarang Regency.

Please try to answer at least two questions:

(1) Why you believe that your research question is such an important to answer?

This research question is essential because employee productivity is a critical determinant of a company's performance, especially in manufacturing industries such as pesticide production. The study explores how work experience, stress, and job satisfaction influence productivity. Three core variables that are highly relevant in today's demanding industrial environment. In the case of a pesticide company, workloads can fluctuate significantly



depending on customer demand and deadlines. If psychological factors like stress and satisfaction are not properly managed, they can lead to reduced performance, errors, and even employee turnover. In fact, preliminary findings from the company show that 0.5% of employees experienced mental disturbances that impacted work rotation. Therefore, identifying these relationships helps businesses develop better strategies to maintain workforce performance and mental well-being.

- (2) How other scholars have or have not answered, or how you think your answer will give a contribution to the existing scholarship on the subject.

While previous researchers have examined the impact of job stress and satisfaction on productivity, most studies have focused on general sectors like education, healthcare, or administrative work. Moreover, research involving industrial workers, particularly in the pesticide or chemical manufacturing sector, remains limited. This study contributes uniquely by including work experience as an additional variable and analyzing it in the specific context of a pesticide company in Semarang Regency. The findings reveal that job satisfaction has a significant positive effect on productivity ($p = 0.000$), while experience and stress do not show statistically significant effects. This provides fresh insight into how emotional and organizational factors function in a high-risk work environment. The study also adds value by connecting elements such as role ambiguity, role insufficiency, supervisor support, and coworker relations to productivity outcomes, offering practical implications for human resource policies in similar industrial settings.

Methods

Provide sufficient details to explain the research process which includes the type of research, method or approach, data collection technique, informant / respondent, data validity test and data analysis used.



This study used a quantitative approach and a cross-sectional survey design. Random sampling involved 80 employees from a total population of 357 employees at the Semarang Regency Pesticide Company, where pesticides are produced as the final products of fertilizers in both powder and liquid forms. Data were collected through an offline survey in October 2024 using the Osipow, Job Descriptive Index, and Hersey Goldsmith, which have been validated and analyzed using logistic regression to examine the relationship between psychosocial factors and employee productivity. Measurement using the questionnaire, as follows:

- 1) Demographic questionnaires were used to collect detailed personal information, including age, BMI, length of service, hours worked per day, gender, marital status, educational status, and work schedule.
- 2) The Persian version of the Osipow Job Stress Questionnaire was used to investigate the level of job stress among study participants. Job stress was measured using six subscales: role overload, role insufficiency, role ambiguity, role constraints, responsibilities, and the physical environment. Each subscale contained 10 items, with a total of 60 items. Each item is scored on a 5-point Likert scale. Subscale scores were high, indicating a greater level of role stressors. The scores obtained were categorized as low (10-19), low medium (20-29), medium-high (30-39), and high (40-50). The total score of the work stress questionnaire was also divided into four levels: low (60-119), low-medium (120–179), medium-high (180-239), and high (240-300). The validity of the overall questionnaire had a value of > 0.2816 ($r \text{ count} > r \text{ table}$), and the Cronbach's alpha coefficient was calculated to be $0.985 > 0.6$.
- 3) The Persian version of the Job Descriptive Index (JDI) was used to investigate job satisfaction. The JDI consists of 39 items on five subscales: work (10 items), salary (6 items), promotion (5 items), supervision (8 items), and coworkers (10 items). Each section measured one specific area of job satisfaction. Responses were collected for each item on a 5-point Likert scale, and each subscale was summed for each respondent to obtain a total JDI score that reflects overall job satisfaction. No cutoff point has been reported in the scientific literature to determine the upper and lower limits of the job satisfaction index; therefore, we used the minimum and



maximum achievable JDI scores (39-195) to assess the level of job satisfaction in the study population. In this case, if the average JDI score is close to the lower limit score (39), midpoint (117), and upper limit score (195), then job satisfaction is considered low, medium, and high, respectively. The validity of the entire questionnaire item had a value of > 0.2816 ($r \text{ count} > r \text{ table}$), and the Cronbach's alpha coefficient was calculated to be $0.986 > 0.6$.

- 4) The Persian version of the Hersey and Goldsmith Questionnaire was used to investigate worker productivity. This questionnaire consists of 26 items in seven subscales: ability (three items), job identification (four items), organizational support (four items), motivation (four items), performance feedback (four items), credit (four items), and environmental suitability (three items). Each item is scored on a 5-point Likert scale. Similar to the JDI, there is no indicated cut-off point to determine the upper and lower limits of the productivity index in the scientific literature. Therefore, the minimum and maximum achievable scores of this index (29-130) were used to assess the productivity levels of the study population. Based on this, if the average productivity score is close to the lower limit score (29), close to the midpoint (79.5), and close to the upper limit score (130), then the productivity is considered low, medium, and high, respectively. The validity of the overall questionnaire items has a value of > 0.2816 ($r \text{ count} > r \text{ table}$), and Cronbach's alpha coefficient was calculated as $0.981 > 0.6$.

This study was collected through an offline questionnaire survey in October 2024. The researcher provided a consent form and instructions for completing the questionnaire so that respondents could complete it completely when it was collected. After the field survey and data collection, the data were transferred to a computer for statistical analysis. Statistical analyses were performed using SPSS software. Pearson's correlation analysis was used to test the relationship between quantitative variables, such as job stress, job satisfaction, and productivity scores. Linear regression analysis was used to assess factors affecting productivity. For all tests, the significance level was set at $p < 0.05$.



This study was approved by the Health Research Ethics Committee of Diponegoro University (Approval Number: 336/EA/KEPK-FKM/2024). All samples were taken through random techniques from the total respondents, including employees of pesticide companies, and their consent was obtained before participating in this study. The confidentiality of all participants was strictly maintained throughout the research process

Results (or Results and Discussion)

The demographic characteristics of the study participants are summarized in Table 1. The sample consisted of 80 individuals from diverse backgrounds. This section contains the data (in its simplest form), assumption test results, and a hypothetical test presented sequentially or integrated and critically analyzed. If there is a table/chart/picture, it must contain exposure to the analysis results that have been meaningful and easy to understand its meaning quickly.

Tabel 1 Demographic characteristics of the employees (N=80)

Variable	Category	Amount (n)	Frequency (%)	Min-Max	Mean ± SD
Age	Young (<32 th)	48	60	22 - 48	31,32 ± 5,7
	Old (≥32 th)	32	40		
	Total	80	100		
BMI (Body Mass Index)	Skinny (0-18,4) kg/m ²	0	0	20,7 - 28,3	23,80 ± 1,66
	Normal (18,5-25,0) kg/m ²	70	87,5		
	Fat (>25,1) kg/m ²	10	12,5		
	Total	80	100		
Tenure	< 6 years	45	56,3	1 - 19	6,61 ± 3,41
	≥ 6 years	35	43,8		
	Total	80	100		
Working hours/day	8 hours	78	97,5	8 - 9	8,02 ± 0,157
	> 8 hours	2	2,5		
	Total	80	100		
Gender	Male	51	63,8	1 - 2	1,36 ± 0,48
	Female	29	36,3		
	Total	80	100		
Marital status	Single	31	38,8	1 - 2	1,61 ± 0,49
	Married	49	61,3		
	Total	80	100		
Education status	Low (Under JHS)	0	0	2 - 3	2,55 ± 0,5
	Medium (Under Diploma)	36	45		



Variable	Category	Amount (n)	Frequency (%)	Min-Max	Mean ± SD
Working schedule	High (Diploma, B.Sc, M.Sc)	44	55	2	2 ± 0,00
	Total	80	100		
	Shift work	0	0		
	Day work	80	100		
	Total	80	100		

Table 1 shows the characteristics of the employees who participated in the study. As shown in Table 1, 48 employees (60%) were aged < 32 years. Seventy employees had a normal BMI (18.5-25.0) kg/m² (87.5%). Approximately 56.3% of the employees had a tenure of <6 years, and 97.5% worked for 8 hours/day. The majority were male, with 51 employees (63.8%), and 49 employees with a single status (61.3%). On average, 44 employees (55%) had a higher education (Diploma, B.Sc, and M.Sc), and all employees had a work schedule according to hours.

Tabel 2 Frequency distribution of work experience

Variable	Category	Amount (n)	Frequency (%)	Min-Max	Mean ± SD
Work experience	< 6 years	45	56,3	1 - 19	6,6 ± 3,41
	≥ 6 years	35	43,8		
	Total	80	100		

Based on Table 2, the average work experience score was calculated as 6.6 – 3.41 with a min-max value of 1-19, indicating a work experience level of <6 years.

Tabel 3 Frequency distribution of job stress

Variable	Category	Amount (n)	Frequency (%)	Min-Max	Mean ± SD
Job stres	Low	43	53,7	65 - 188	115,5 ± 28,8
	Low-moderate	36	45,0		
	Moderate-High	1	1,3		
	High	0	0		
	Total	80	100		

Based on Table 3, the average work stress score was calculated as 115.5 – 28.8 with a min-max value of 65-188 which indicates a “low” stress level.



Tabel 4 Frequency distribution of job satisfaction

Variable	Category	Amount (n)	Frequency (%)	Min-Max	Mean ± SD
Job satisfaction	Low	27	33,7	72 - 191	134,2 ± 30,2
	Moderate	53	66,3		
	High	0	0		
	Total	80	100		

Based on Table 4, the average job satisfaction score is calculated as 134.2 – 30.2 with a minimum value of 72-191 which indicates a “moderate” level of satisfaction.

Tabel 5 Frequency distribution of employee productivity

Variable	Category	Amount (n)	Frequency (%)	Min-Max	Mean ± SD
Employee productivity	Low	0	0	48 - 122	98,67 ± 19,5
	Moderate	69	86,3		
	High	11	13,7		
	Total	80	100		

Based on Table 5, the average work productivity score is calculated as 98.67 – 19.5 with a minimum maximum value of 48-122 which indicates a “moderate” level of productivity.

Tabel 6 Frequency Distribution of level psychosocial

Variable	Category	Amount (n)	Frequency (%)	Min-Max	Mean ± SD
Level psychosocial	Low	14	0	149 - 353	251,35 ± 51,5
	Moderate	46	86,3		
	High	20	13,7		
	Total	80	100		

Based on Table 6, employees’ psychosocial level is the result of the sum of experience, stress, and job satisfaction factors. The level was determined based on the minimum and maximum values of the sum score of each respondent. The higher the score on the item, the better the employees’ psychosocial condition. The lower the score on the item, the worse the employees’ psychosocial



condition. It can be concluded that the results show that the psychosocial level is in the “moderate” category.

Tabel 7 Statistical analysis for assessment indices (N=80)

Variable	Category	Job stress		Job satisfaction		Productivity	
		115,5 ± 28,8		134,2 ± 30,2		98,67 ± 19,5	
		(Mean ± SD)	p	(Mean ± SD)	p	(Mean ± SD)	p
Age groups**	<32 years	117,37 ± 27,32	0,204	131,56 ± 30,64	0,630	97,87 ± 21,62	0,023
	≥32 years	112,75 ± 31,14		138,21 ± 29,59		99,87 ± 16,11	
Marital status*	Single	102,32 ± 29,56	0,239	126,29 ± 34,16	0,057	91,38 ± 21,98	0,014
	Married	123,87 ± 25,22		139,24 ± 26,59		103,28 ± 16,4	
Educational level**	Under Diploma	106,55 ± 26,39	0,374	128,0 ± 29,98	0,941	97,41 ± 18,58	0,518
	D3, S1, S2	122,86 ± 28,9		139,29 ± 29,79		99,7 ± 20,4	
Working schedule*	Day working	115,52 ± 28,81	-	134,22 ± 30,22	-	98,67 ± 19,51	-
	Shift working	-		-		-	
Daily working time (h)*	8 hours	115,59 ± 28,78	0,970	134,91 ± 30,25	0,149	99,02 ± 19,51	0,800
	>8 hours	98,0 ± 33,94		107,5 ± 13,43		85,0 ± 19,79	
Work experience**	<6 years	115,62 ± 28,69	0,817	135,95 ± 30,93	0,971	99,53 ± 19,39	0,789
	≥6 years	115,40 ± 29,37		132,0 ± 29,57		97,57 ± 19,9	
Stress dimensions	Role overload**	Low				91,0 ± 27,78	0,621
		Low-moderate				98,72 ± 19,51	
		Moderate-high				108,5 ± 3,53	
		High				-	
	Role insufficiency**	Low				91,35 ± 20,8	0,007
		Low-moderate				98,4 ± 19,15	
		Moderate-high				114,7 ± 5,22	
		High				-	



Variable	Category	Job stress		Job satisfaction		Productivity	
		115,5 ± 28,8		134,2 ± 30,2		98,67 ± 19,5	
		(Mean ± SD)	p	(Mean ± SD)	p	(Mean ± SD)	p
	Role ambiguity**	Low				93,26 ± 18,79	0,006
		Low-moderate				96,64 ± 20,56	
		Moderate-high				112,66 ± 9,29	
		High				-	
	Role boundary**	Low				91,14 ± 19,65	0,066
		Low-moderate				99,24 ± 19,41	
		Moderate-high				116,25 ± 3,86	
		High				-	
	Responsibility**	Low				89,5 ± 22,02	0,025
		Low-moderate				97,46 ± 19,42	
		Moderate-high				110,07 ± 13,12	
		High				-	
	Physical environment**	Low				98,2 ± 17,04	0,066
		Low-moderate				95,67 ± 20,09	
		Moderate-high				108,29 ± 16,66	
		High				-	
Satisfaction dimensions	Work***						0,012
	Payment***						0,027
	Promotion***						0,006
	Supervision***						0,018
	Coworkers***						0,000

Notes:

* Independent-sample t-test.

** One-way ANOVA test.

*** Pearson correlation coefficient.

Based on the statistical test above, the results did not show a significant relationship between the average stress score, job satisfaction, and employee characteristics. The average productivity score was related to age ($p = 0.023$) and marital status ($p = 0.014$). The one-way ANOVA test showed a significant relationship between the average productivity score and the second dimension (role



insufficiency) ($p = 0.007$), third dimension (role ambiguity) ($p = 0.006$), and fifth dimension (responsibility) (0.025). In the satisfaction indicator variables, it is known that work ($p = 0.012$), salary ($p = 0.027$), promotion ($p = 0.006$), supervision ($p = 0.018$), and coworkers ($p\text{-value}0.000$), thus indicating a significant direct relationship with employee productivity. This indicated that higher job satisfaction index scores were associated with higher productivity.

To investigate the correlation between psychosocial factors (work experience, work stress, and job satisfaction) and the productivity index of respondents using the Pearson correlation coefficient. The results of the analysis show that although the correlation between work experience, work stress, and employee productivity is not statistically significant ($p\text{-value} > 0.05$), the correlation between the job satisfaction index and the productivity index is statistically significant ($p\text{-value} 0.000$). The relationship between satisfaction and productivity is positive (regression coefficient = 0.549), which indicates a weak correlation between both variables. This means that, with an increase in the average job satisfaction score, the average productivity score will increase.

Multiple linear regression analysis was used to determine the factors influencing the productivity index. Based on the results of the one-way ANOVA and univariate analyses, it was found that age; marital status; the second, third, and fifth dimensions of the job stress index (role insufficiency, role ambiguity, and responsibility); and the first, second, third, fourth, and fifth dimensions of the job satisfaction index (work itself, salary, promotion, supervision, and coworkers) were eligible for inclusion in the linear regression model ($\text{sig} < 0.25$). The results of the regression modeling showed that the supervision and coworkers variables remained in the model. According to the coefficient of determination (R^2), 56% of the changes related to the productivity index can be explained by related variables, while the rest are influenced by variables outside this study.

Discussion

Respondent Characteristics

The age group had a p value of 0.204 , indicating that age did not affect work stress. A p -value of 0.630 indicated that age did not affect job satisfaction. Meanwhile, it is known that the age group



has a p-value of 0.023, indicating that age affects employee productivity (Zuhroh et al., 2019). The results of this study are different from those conducted by Zuhroh, where the results showed that the largest group of respondents was aged 25-40 years with 165 people (84.2%) classified as productive age. Based on research conducted by Jamaludin on PT workers. Galva Kami Industri, with a significance of $0.036 < 0.050$, indicates a significant relationship between age and worker productivity (Jamaludin et al., 2024). Employees' marital status has a p-value of 0.239, indicating that marital status does not affect work stress. A p-value of 0.057 indicated that marital status did not affect job satisfaction. A p-value of 0.014 indicated that marital status affected employee productivity. This is because married employees have greater responsibilities towards their families, so they are motivated to work harder. Marital status can affect productivity and income, with different values depending on gender (Akbariandhini & Prakoso, 2020). This is different from the research conducted by Hazmi, who stated that marital status does not directly affect productivity but creates differences in motivation, which can increase work productivity gradually (Hazmi et al., 2022).

Educational status had a p-value of 0.374, indicating that educational status does not affect work stress. A p-value of 0.941 indicated that educational status did not affect job satisfaction. Educational status has a p-value of 0.518, indicating that it does not affect employee productivity. This study is in line with that of Andari and Aswitari, who explained that educational status does not affect worker productivity. From the results of the t-test, the t-count value was obtained as 0.193 and the t-table at the real level was 1,987 (Andari & Aswitari, 2020). This is different from what Akbariandhini did, who stated that educational status influences work productivity so that it can increase income. Education has a significant positive impact on the length of time a person spends looking for work (Aji et al., 2023).

Employee working hours had a p-value of 0.970, indicating that working hours do not affect work stress. A p-value of 0.149 indicated that working hours did not affect job satisfaction. Meanwhile, the working hours variable has a p-value of 0.800, indicating that working hours per day did not affect employee productivity. This study is in line with previous research. Conducted by Alifia,



who explains that working hours have a negative effect on employee productivity (Afilia, 2023). This is different from the study conducted by Pramono and Mursal, who stated that working hours had a positive influence on employee work productivity (Pramono, 2020; Mursal, 2015). Good time management will produce high-quality work results. Quality in question is employee productivity in the form of products or services that meet quality standards and customer expectations (Kurnianingsih et al., 2024).

Relationship between Work Experience and Employee Productivity

Work experience, with a p-value of 0.253, indicates no relationship between work experience and employee productivity. Work experience is an important factor in mastering skills and solving problems in a company, and can ultimately improve the quality of human resources and increase employee productivity. Longer work experience can increase the likelihood of employee productivity. This is because the work is monotonous, and every day for years receives the same workload and responsibilities to meet company targets. Technological advances in manufacturing reduce dependence on individual expertise, and employees can adapt quickly through training programs. Employees who have worked for a long time may stagnate or decline over time. Employees with more years of service will have a variety of work experiences in solving various problems within the company (Ilham, 2022). Employee productivity is closely related to work experience. The more employees have good work experience, the higher the productivity will increase. Work experience is a reflection of employees' ability to work in their previous place and can also describe how long the employee has worked. The more work experience is obtained, the higher is the productivity of the work produced (Hidaya et al., 2020).

The results of this study are in line with research conducted by Joshua, which states that there is no relationship between work experience and employee productivity (Pangaribuan, 2022). A study conducted by Dhinta et al. also stated that work experience has a negative and insignificant effect on employee productivity. This has no effect because the work experience of health workers at RSI Surabaya has not been able to fully increase the productivity of health workers (Dhinta



Feritsya Chita et al., 2022). A study by Wardani et al., stated that work experience influences employee work productivity. This is because of high knowledge and skills, and the higher the work experience, the higher the employee productivity (Wardani et al., 2023). This study is not in line with what Putri did and stated that work experience has an effect and is significant for employee productivity. This is because employees have good work experience and can do so based on the needs of the workplace, and employee productivity will increase (Annisa, 2022).

Relationship between Work Stress and Employee Productivity

The output of the six stress indicators shows that only three indicators (second, third, and fifth) affect the productivity of company employees: role insufficiency, role ambiguity, and responsibility. Work stress had a p-value of 0.159, so it was concluded that it had no relationship with employee productivity. The company has a structured workflow and standard operating procedures to ensure consistent productivity. Even though their work is repetitive and has low stress, employees can still perform their tasks efficiently because their work relies more on mechanical efficiency than cognitive engagement. Role insufficiency can also trigger stress owing to uncertainty in work expectations, which has an impact on the performance and quality of work results. If left unchecked, this can lead to decreased job satisfaction, low loyalty, and reduced employee innovation and creativity. Role ambiguity affects the productivity of some company employees because of the lack of clarity in tasks and responsibilities, causing confusion, stress, and decreased work effectiveness. In the long term, this can lead to low levels of job satisfaction, increased stress, and an increased risk of employee turnover. Role responsibilities have an impact on employee productivity because they are directly related to workload, expectations, and pressure to carry out tasks. However, if these responsibilities are too heavy or not balanced with adequate support, employees can experience physical and mental fatigue, which ultimately reduces productivity, and vice versa.

This is in line with Herminingsih's findings, which stated that work stress does not have a significant influence on employee productivity, with a p-value of 0.538 (Herminingsih, 2025).



Work stress had a partially negative and significant effect on employee performance (Lasminingrat, 2021). Another study stated that work stress does not affect productivity because each employee reacts differently in dealing with stress. Work stress can increase or decrease employee productivity, depending on the level of stress of the employee. If employees do not experience stress, they do not face any challenges in their work (Larasati & Prajogo, 2022). The results of this study are not in line with those of Hanung, who stated that work stress influences employee work productivity (Atmaja, 2023). Fatimatuz et al. also stated that work stress has a significant relationship with factory employee productivity (p-value 0.000). In his research, it was stated that employees experience stress in their jobs. The most prominent symptoms of work stress and productivity are behavioral symptoms (Zuhroh et al., 2019). The lower the level of work stress, the higher the employee's work productivity (Putri et al., 2024).

Relationship between Job Satisfaction and Employee Productivity

The outputs of the five satisfaction indicators show that all indicators have an effect on employee productivity in PT. X, including work, salary, promotion, supervision, and co-workers because the p-value was <0.05 . The company has ensured job satisfaction through appropriate HR strategies, such as fair wages, regular training programs, clear career development, and employee health initiatives, so that it can significantly increase productivity. Happy employees tend to work more efficiently, collaborate better with co-workers, and contribute to innovation in the production process. Therefore, investing in employee satisfaction is not only a matter of improving morale in the workplace but also a strategic decision to improve efficiency, product quality, and company profitability. Job satisfaction includes feelings and behaviors towards one's job through the assessment of one's job as a sense of appreciation in achieving one of the important values of the job (Nitisemito, 2021). A high workload causes stress and fatigue, thus reducing employee effectiveness in completing tasks and vice versa. Salary, which is in accordance with employee responsibilities and contributions, is a major motivating factor in increasing productivity because employees who feel financially appreciated tend to work harder and be loyal to the company.



Employee opportunities to develop and move up through promotions can increase employee morale and dedication to achieving company targets. In addition, good supervision from superiors can provide clear direction, reduce work errors, and create a conducive work environment. Harmonious relationships with coworkers improve teamwork, speed up task completion, and create a comfortable work atmosphere.

The results of this study are in line with those of Sururin et al., who found that job satisfaction has a significant effect on employee productivity. These results indicate that employees feel dissatisfied because they do not pay sufficient attention to employees (Sururin et al., 2020). Other studies have explained that job satisfaction has a significant effect on employee productivity (Saragih et al., 2024). Next studies have also shown a positive relationship between job satisfaction and employee productivity in PT. Doosan Jaya Sukabumi (Lidwina et al., 2024). Based on the research results of Santi et al. using the t-test, it shows that there is a significant influence of job satisfaction on employee productivity (Puspita et al., 2023).

The Relationship between Experience Factors, Stress, and Job Satisfaction with Employee Productivity

The results of the multivariate analysis in this study showed a significant negative relationship between role inadequacy and productivity; thus, when role insufficiency increased, productivity decreased. Role inadequacy is any problem in identifying roles, playing roles, or goals related to roles that are understood by individuals or others (Rachman, 2021). This finding is in line with the research by Wu et al., which states that role insufficiency has a significant impact on the symptoms of depression (Wu et al., 2011). One study found that increased job stress was associated with increased role insufficiency (Hoboubi et al., 2017). Increasing role ambiguity leads to decreased productivity. Role ambiguity is defined as a lack of clarity in understanding actions to be achieve individual goals. This occurs when employees do not clearly understand the responsibilities or expectations of their roles within the organization, which can lead to confusion and dissatisfaction, hinder productivity, and ultimately reduce employee performance (Mañas et al., 2018).



This study is in line with the finding that role ambiguity has a positive and significant influence on employee productivity. Experiencing role ambiguity can affect emotions and thought processes, thus inhibiting performance (Saputra et al., 2021). Role ambiguity can lead to increased absenteeism, work delays, increased employee turnover and decreased workforce productivity (Alblihed & Alzghaibi, 2022). Stressful conditions create low levels of well-being that are closely related to productivity. Increased work stress is accompanied by decreased performance and job satisfaction, leading to decreased individual productivity (Unguren & Arslan, 2021).

Supervision also plays an important role in increasing productivity. Supervision plays a key role in shaping employee performance. Effective leadership, clear communication, and fair treatment by superiors have a positive impact on employee engagement and commitment to their tasks. Employees who feel appreciated and supported by their superiors tend to show higher productivity, lower absenteeism, and better work quality and vice versa. Supervision is an evaluation process that measures the suitability and smoothness of the implementation of activities to achieve company goals (Tarsisia & Suryalena, 2024). Work supervision is carried out so that employees continue to work in accordance with established regulations and prevent them from neglecting their duties so that they can work efficiently and effectively. This aims to identify errors in the implementation of work that have been determined by the company (Qodariah & Anwar, 2024). This study is in line with the previous research conducted by Robi et al. in Palembang, which showed a p-value of 0.000. This means that work supervision has an influence on and is significant for employee work productivity (Harini & Setiawan, 2024). Another study proved that work supervision has an influence on and is related to employee productivity ($p = 0.000$) (Tarsisia & Suryalena, 2024; Mwasawa & Wainaina, 2021). Good supervision can increase employees' motivation and job satisfaction. When supervisors provide clear directions and necessary support, employees feel more confident and motivated to work harder (Yusiana et al., 2024).

Coworker relationships between employees in a company significantly contribute to productivity in the workplace. In a manufacturing environment, where tasks are often interdependent, mutual trust and cooperation among coworkers ensure a smoother workflow and reduce errors. Employees



who feel a sense of belonging to their team tend to be more engaged, innovative, and willing to move forward. This study is in line with Wibowo and Tholok's research in Yogyakarta, showing that coworkers have a partially significant effect on employee productivity, with a p-value of 0.000 (Wibowo & Tholok, 2019). Through good teamwork, coworkers can improve their productivity and work quality (Ristami et al., 2022). Effective communication, mutual respect, teamwork, and supportive culture all contribute to overall performance. This can increase employee motivation, engagement, and commitment, resulting in increased productivity (Rajesh & Pandya, 2024). The results of the multivariate analysis showed that employee productivity was significantly related to role insufficiency and ambiguity (negative relationship), as well as supervision and coworkers (positive relationship). Meanwhile, role inadequacy and ambiguity can decrease productivity, while supervision and coworker support can increase employee productivity.

Limitations and Cautions

This study used a random sampling technique for data collection, thus affecting the generalization of the relationship between psychosocial factors and employee productivity. This study used a cross-sectional design that captures data only at one point in time. Therefore, it cannot be concluded that there is a longitudinal causal relationship between variables. Data were collected through questionnaires, and recapitulation of company data was based on employees who had been selected as respondents. Therefore, there may be a potential bias in the analysis of the variables (social desirability bias). Likewise, data on psychological conditions were also based on the data held by the company.

Conclusion and Recommendation

Employee productivity at the Pesticide Company in Semarang Regency is mostly in the moderate category, with a dominance of employees who have sufficient work experience and are at low to moderate levels of work stress. Work experience does not have a statistically significant relationship to employee productivity (p value = 0.359), as well as work stress which also does not



show a significant relationship (p value = 0.159). Job satisfaction has a significant and positive relationship with employee productivity, with a p -value of 0.000, which means that the higher the level of job satisfaction, the higher the employee productivity.

The dimensions of job stress, such as role inadequacy, had a regression coefficient of -0.164 (p = 0.807) and role ambiguity -0.520 (p = 0.930). The statistical results show that these values tend to decrease productivity, although the relationship is not statistically significant. Job satisfaction has a significant and positive relationship with employee work productivity, especially in the supervision aspect, with a regression coefficient of 0.684 (p = 0.050), and coworkers with a regression coefficient of 1.011 (p = 0.000), which are proven to be able to increase productivity. This finding confirms that, in the context of a pesticide company, social factors such as good supervision from company management and harmonious relationships between coworkers have a greater influence on employee productivity than experience factors or work stress.





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