

Analysis of Work Motivation, Work Environment, and Occupational Health on Employee Work Productivity at PT Belawan New Container Terminal

Ari Kelana Wijaya, Daud Arifin, Husni Muharram Ritonga

Abstract

This study aimed to analyze the effect of work motivation, work environment, and occupational health on employee work productivity at PT Belawan New Container Terminal. The research problem was based on the decline in work productivity during 2021 to 2024 and preliminary survey findings indicating that the achievement of work quality, work quantity, timeliness, work enthusiasm, and employee discipline had not been optimal. This study used a quantitative approach with an associative research design. The population consisted of 210 permanent employees, while the sample comprised 68 respondents selected using the Slovin formula with a purposive sampling technique. Primary data were collected through a closed ended Likert scale questionnaire and analyzed using multiple linear regression with the assistance of SPSS version 24. The results showed that work motivation had a positive and significant effect on work productivity, with a coefficient of 0.384, a calculated t value of 3.402, and a significance value of 0.001. The work environment had a positive and significant effect, with a coefficient of 0.322, a calculated t value of 2.169, and a significance value of 0.034. Occupational health also had a positive and significant effect, with a coefficient of 0.297, a calculated t value of 3.324, and a significance value of 0.001. Simultaneously, the three variables had a significant effect, with a calculated F value of 85.736 and a significance value of 0.000. The Adjusted R Square value of 0.791 indicated that the model explained 79.1 percent of the variation in work productivity. Work motivation was the most dominant variable in improving employee work productivity.

Keywords: Work Motivation, Work Environment, Occupational Health, Work Productivity, Multiple Linear Regression..

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Introduction

Work productivity is one of the main indicators in assessing the success of human resource management, particularly in companies engaged in operational services that require timeliness, accuracy, and high coordination [1]. Productivity is not only understood as the amount of output that employees are able to produce, but also reflects the quality of work results, efficiency in the use of resources, timeliness in completing tasks, work enthusiasm, and discipline in following procedures [2].

Anoraga explained that work productivity is related to the ratio between output and input, so productivity improvement must be viewed from the organization's ability to produce better output with the available resources [3]. In a container terminal company, employee productivity has strategic importance because it is directly related to the smoothness of loading and unloading activities, container data accuracy, service speed, and port service user satisfaction.

PT Belawan New Container Terminal is a container terminal management company located at Belawan Port, North Sumatra [4]. The company's activities include vessel services, container handling, container yard management, and coordination with various port stakeholders [5]. These work characteristics require employees to work quickly, accurately, and consistently according to operational standards [6].

Previous studies on PT Belawan New Container Terminal have highlighted operational aspects, including the implementation of TOS upgrade and VMT on operational performance, the risk of work fatigue among Internal Transfer Vehicle operators, and the achievement of box ship hours performance standards in loading and unloading productivity [4][5][6]. However, studies that specifically examine human resource factors in the form of work motivation, work environment, and occupational health on employee work productivity still need to be strengthened so that managerial decision making does not rely only on technology and work systems, but also on employee behavior and working conditions.

Initial phenomena in the research object indicate a decline in employee work productivity. Company data show that output per employee decreased from 31.0 units in 2021 to 24.6 units in 2024. The productivity percentage also decreased from 25.8 percent in 2021 to 20.5 percent in 2024. This decline occurred even though the number of employees did not decrease sharply, indicating problems in work efficiency and effectiveness.

The results of a preliminary survey of 20 employees also reinforced this problem. A total of 70 percent of respondents stated that they had not been able to achieve work quantity targets, 65 percent stated that work quality had not met the standards, 65 percent had not been able to complete tasks within the specified time, 60 percent had not shown high enthusiasm and responsibility, and 55 percent had not optimally complied with work rules and schedules. These data indicate that employee work productivity is not fully stable and requires empirical explanation from the factors that influence it.

Work motivation is suspected to be one of the factors that affects work productivity [7]. Hasibuan stated that motivation is a driving force that can foster work enthusiasm and direct employees to work effectively in order to achieve organizational goals [8]. Employees with high motivation tend to be encouraged to achieve targets, take initiative in solving problems, develop ideas, and become more responsible for work results [9].

At PT Belawan New Container Terminal, low motivation is reflected in the preliminary survey results, which showed that 70 percent of respondents did not yet have a strong desire to achieve work targets and 65 percent had not carried out their duties with enthusiasm and a positive attitude every day. In container terminal work that is under time pressure, internal

drive is important because employees are not only required to follow procedures, but also need readiness to respond quickly to changing operational situations.

The work environment also plays an important role in shaping productivity [10]. Soetjipto explained that the work environment includes elements that can influence employee performance and job satisfaction, both directly and indirectly [11]. A clean, neat, bright work environment with adequate air circulation and harmonious working relationships can improve concentration and work comfort. Conversely, an uncomfortable work condition can reduce focus, slow coordination, and increase the potential for operational errors [12].

The preliminary survey showed that 60 percent of employees considered workplace cleanliness and neatness inadequate, 55 percent considered lighting and air circulation not optimal, 60 percent had not experienced good working relationships, and 65 percent had not received adequate support and direction from supervisors. This indicates that the physical and social work environment remains a relevant issue to be analyzed.

Occupational health is another variable suspected to influence productivity [13]. Suma'mur explained that occupational health aims to protect workers from the adverse effects of work on health while ensuring that employees are able to carry out their duties safely and sustainably [14]. In a container terminal, operational work is often associated with physical workload, shift work patterns, weather exposure, noise, and target pressure.

The preliminary survey showed that 65 percent of employees still experienced excessive fatigue, 55 percent had difficulty managing stress and maintaining focus, 55 percent were relatively often absent due to health problems, 60 percent considered cleanliness, ventilation, and lighting not fully adequate, and 60 percent assessed routine health checks and safety training as not optimal. These conditions show that employees' physical and psychological health can determine the stability of work output.

Previous studies have shown that work motivation and work environment generally have a positive effect on work productivity [15][16]. Birowo and Ahsani found that work motivation, work environment, and work discipline had a positive and significant effect on employee productivity [7]. On the other hand, Nopitasari et al. showed that work environment and motivation had a significant effect, while workload had no significant effect [17]. Fajar found that health insurance did not have a significant effect, although work environment, incentives, and motivation had a significant effect on productivity [10]. Differences in variables, objects, sectors, and some research results indicate a relevant research gap to be retested in a container terminal company, which has different operational characteristics from factories, public institutions, and other service companies.

Based on the phenomenon of declining productivity, preliminary survey results, and differences in the focus of previous studies, this research is important to obtain empirical evidence regarding the effect of work motivation, work environment, and occupational health on employee work productivity at PT Belawan New Container Terminal. The purpose of this study is to analyze the partial and simultaneous effects of work motivation, work environment, and occupational health on employee work productivity at PT Belawan New Container Terminal.

Literature Review

2.2. Work Productivity

Anoraga explained that work productivity is a measure or index figure that reflects the ratio between output and input [3]. Work productivity is measured using several indicators, including the achievement of work quality targets, the achievement of work quantity targets, the achievement of task completion time, high work enthusiasm, and high work discipline

[3]. Anoraga explained that employee work productivity is influenced by various factors, including employee work motivation, education, work discipline, skills, work ethics, cooperation ability, nutrition and health, income level, work environment, work climate, technological sophistication, adequate production factors, social security, leadership management, and opportunities for achievement [3].

2.2. Work Motivation

Hasibuan explained that work motivation is the process of providing encouragement that creates work enthusiasm, so that individuals are driven to cooperate effectively and in an integrated manner to achieve job satisfaction [8]. Several indicators used to measure employee work motivation include the drive to achieve goals, enthusiasm at work, ability to take initiative, creativity, and sense of responsibility [8].

2.3. Work Environment

Soetjipto explained that the work environment is all elements or factors that can influence an organization or company, either directly or indirectly, and affect employee performance and job satisfaction, either positively or negatively [11]. The employee work environment can be measured through several main indicators, including workplace cleanliness and neatness, lighting and air circulation, relationships among employees, and support from supervisors [11].

2.4. Occupational Health

Suma'mur explained that occupational health is a condition intended to protect workers from the adverse effects of work on health and vice versa [14]. Occupational health can be measured through several indicators, namely employee physical condition, mental and psychological health, absenteeism due to illness, workplace environmental conditions, and implementation of occupational health programs [14].

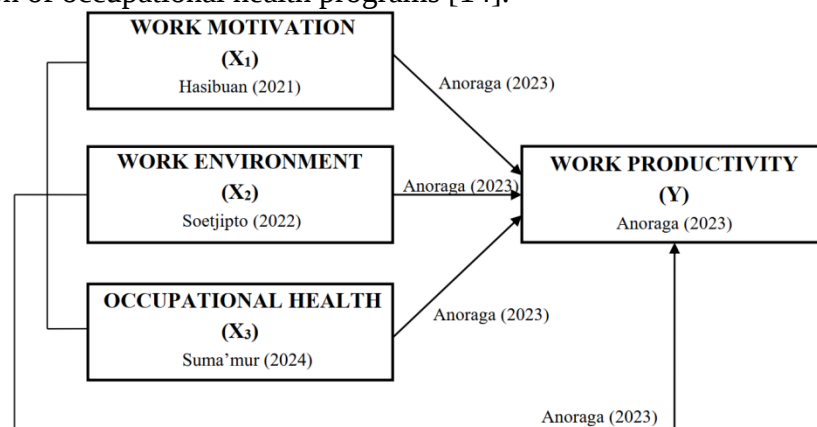


Figure 1. Research Conceptual Framework

The hypotheses H1, H2, H3, and H4 proposed in this study state that work motivation, work environment, and occupational health, both partially and simultaneously, are suspected to have a positive and significant effect on employee work productivity at PT Belawan New Container Terminal.

Research Methodology

This study used a quantitative approach with an associative research design. The quantitative approach was used because the research data were processed in numerical form and analyzed statistically [18]. The associative research design was selected because this study aimed to examine the effect of work motivation, work environment, and occupational health as independent variables on work productivity as the dependent variable [19]. The research location was PT Belawan New Container Terminal, Jalan Raya Pelabuhan Gabion,

Medan City, North Sumatra. This study used cross sectional data, meaning that data were collected within one observation period through questionnaire distribution to respondents.

The research population consisted of all permanent employees of PT Belawan New Container Terminal, totaling 210 people. The research sample consisted of 68 respondents, determined using the Slovin formula at a 10 percent error rate [20]. The sampling technique used was purposive sampling, with respondent criteria consisting of permanent employees, employees who had worked for at least one year, and employees who did not hold managerial positions. These criteria were used so that respondents' answers reflected adequate work experience in understanding the company's operational activities and work conditions [21].

The types of data used were primary data and secondary data. Primary data were obtained through closed ended questionnaires distributed to respondents, while secondary data were obtained from company documents, research proposals, and relevant scientific references. The research instrument used a five point Likert scale, consisting of Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree.

This study used three independent variables, namely Work Motivation (X1), Work Environment (X2), and Occupational Health (X3), and one dependent variable, namely Work Productivity (Y).

The data analysis technique used was multiple linear regression with the assistance of SPSS version 24. The analysis stages began with data quality testing through validity and reliability tests. The validity test was conducted by examining the Corrected Item Total Correlation value greater than 0.3, while the reliability test was conducted by examining the Cronbach's Alpha value greater than 0.7 [22].

The classical assumption tests included the Kolmogorov Smirnov normality test, histogram and Normal P P Plot graphical analysis, multicollinearity testing through Tolerance and Variance Inflation Factor values, and heteroscedasticity testing using the Glejser method [23]. Hypothesis testing was conducted using the t test to determine partial effects, the F test to determine simultaneous effects, and the coefficient of determination to examine the model's ability to explain variations in work productivity [24].

3.1. Respondent Characteristics and Analysis of Respondent Answer Distribution

Table 1. Respondent Characteristics

Characteristic	Category	Frequency	Percentage (%)	Description
Gender	Male	42	61.8	Dominant
Gender	Female	26	38.2	
Age	Below 26 Years	5	7.4	Dominant
Age	26 to 30 Years	6	8.8	
Age	31 to 35 Years	11	16.2	
Age	36 to 40 Years	10	14.7	
Age	41 to 45 Years	17	25.0	
Age	46 to 50 Years	11	16.2	
Age	51 to 55 Years	6	8.8	
Age	Above 55 Years	2	2.9	
Last Education	Senior High School or Vocational School	9	13.2	Dominant
Last Education	Diploma 3	3	4.4	
Last Education	Bachelor Degree	36	52.9	
Last Education	Master Degree	18	26.5	
Last Education	Doctoral Degree	2	2.9	Dominant
Years of Service	Less than 6 Years	10	14.7	
Years of Service	6 to 10 Years	15	22.1	
Years of Service	11 to 15 Years	12	17.6	
Years of Service	16 to 20 Years	13	19.1	

Characteristic	Category	Frequency	Percentage (%)	Description
Years of Service	21 to 25 Years	12	17.6	
Years of Service	More than 25 Years	6	8.8	
Marital Status	Unmarried	11	16.2	
Marital Status	Married	57	83.8	Dominant

Respondent characteristics show that the majority of respondents were male, totaling 42 people or 61.8 percent, while female respondents totaled 26 people or 38.2 percent. The largest age group was 41 to 45 years, totaling 17 people or 25.0 percent, indicating that respondents were dominated by employees with relatively mature working age. The highest education level was Bachelor Degree, totaling 36 people or 52.9 percent. The most dominant years of service category was 6 to 10 years, totaling 15 people or 22.1 percent, while married respondents reached 57 people or 83.8 percent. This composition indicates that respondents had sufficient experience and work responsibility to assess the company's productivity conditions.

Table 2. Summary of Respondent Answer Distribution per Indicator

Variable	Indicator	Item	Indicator Mean	Agree and Strongly Agree (%)
Work Motivation (X1)	Drive to Achieve Goals	X1.1 to X1.2	4.0441	79.4
Work Motivation (X1)	Enthusiasm at Work	X1.3 to X1.4	3.9191	76.4
Work Motivation (X1)	Ability to Take Initiative	X1.5 to X1.6	4.1471	83.1
Work Motivation (X1)	Creativity	X1.7 to X1.8	4.0368	80.1
Work Motivation (X1)	Sense of Responsibility	X1.9 to X1.10	3.9412	75.8
Work Environment (X2)	Workplace Cleanliness and Neatness	X2.1 to X2.2	3.9265	75.7
Work Environment (X2)	Lighting and Air Circulation	X2.3 to X2.4	4.0368	81.7
Work Environment (X2)	Relationships among Employees	X2.5 to X2.6	4.1103	83.1
Work Environment (X2)	Support from Supervisors	X2.7 to X2.8	4.0441	80.2
Occupational Health (X3)	Employee Physical Condition	X3.1 to X3.2	3.9780	75.7
Occupational Health (X3)	Mental and Psychological Health	X3.3 to X3.4	4.1692	80.9
Occupational Health (X3)	Absenteeism Due to Illness	X3.5 to X3.6	4.1912	83.1
Occupational Health (X3)	Workplace Environmental Conditions	X3.7 to X3.8	4.1250	83.9
Occupational Health (X3)	Implementation of Occupational Health Programs	X3.9 to X3.10	4.0662	83.1
Work Productivity (Y)	Achievement of Work Quality Targets	Y.1 to Y.2	4.0442	80.2
Work Productivity (Y)	Achievement of Work Quantity Targets	Y.3 to Y.4	4.1324	81.7
Work Productivity (Y)	Achievement of Task Completion Time	Y.5 to Y.6	4.1912	83.1
Work Productivity (Y)	High Work Enthusiasm	Y.7 to Y.8	4.1324	80.2
Work Productivity (Y)	High Work Discipline	Y.9 to Y.10	3.9191	75.8

The distribution of responses for the work motivation variable shows a generally positive pattern, with an overall mean of 4.0177. The strongest indicator was the ability to take initiative, with a mean of 4.1471 and an agree and strongly agree percentage of 83.1 percent. The highest item was X1.1 with a mean of 4.2794, while the lowest item was X1.3 with a mean of 3.7647. This shows that employees' drive to achieve targets and initiative were good, although daily enthusiasm still needs to be strengthened. Based on these results, it can be concluded that employee work motivation is good, but consistency in work enthusiasm still needs improvement.

The distribution of responses for the work environment variable shows an overall mean of 4.0294. The strongest indicator was relationships among employees, with a mean of 4.1103 and an agree and strongly agree percentage of 83.1 percent. The highest item was

X2.6 with a mean of 4.1765, while the lowest item was X2.1 with a mean of 3.8824. This finding indicates that social relationships among employees were relatively good, but workplace cleanliness and neatness still need to be maintained more consistently. Based on these results, it can be concluded that the work environment was assessed as good, especially in terms of working relationships, but the physical aspects of the workplace still require attention.

The distribution of responses for the occupational health variable shows an overall mean of 4.1059. The strongest indicator was absenteeism due to illness, with a mean of 4.1912, followed by mental and psychological health with a mean of 4.1692. The highest item was X3.5 with a mean of 4.2206, while the lowest item was X3.2 with a mean of 3.8088. This means that respondents assessed efforts to maintain health and work attendance as relatively good, but physical endurance against fatigue remains a weak point. Based on these results, it can be concluded that employee occupational health is good, but the control of physical fatigue still needs to be improved.

The distribution of responses for the work productivity variable shows an overall mean of 4.0838. The strongest indicator was the achievement of task completion time, with a mean of 4.1912 and an agree and strongly agree percentage of 83.1 percent. The highest item was Y.6 with a mean of 4.2353, while the lowest item was Y.9 with a mean of 3.8676. This shows that time management was assessed as good, but punctual attendance and compliance with schedules still need to be strengthened. Based on these results, it can be concluded that employee work productivity is good, especially in task completion timeliness, but discipline still needs improvement.

Data Quality Test: Validity and Reliability

Table 3. Validity and Reliability Test Results

Variable	Number of Items	Corrected Item Total Correlation Range	Validity Criterion	Cronbach's Alpha	Decision
Work Motivation (X1)	10	0.333 to 0.823	> 0.30	0.885	Valid and reliable
Work Environment (X2)	8	0.372 to 0.694	> 0.30	0.834	Valid and reliable
Occupational Health (X3)	10	0.449 to 0.914	> 0.30	0.944	Valid and reliable
Work Productivity (Y)	10	0.434 to 0.779	> 0.30	0.884	Valid and reliable

The data quality test results show that all research items had Corrected Item Total Correlation values above 0.30. The validity ranges were 0.333 to 0.823 for work motivation, 0.372 to 0.694 for work environment, 0.449 to 0.914 for occupational health, and 0.434 to 0.779 for work productivity. All Cronbach's Alpha values were also above 0.70, namely 0.885, 0.834, 0.944, and 0.884. Thus, all instruments were declared valid and reliable for use in the next analysis [22].

4.1. Classical Assumption Tests: Normality, Multicollinearity, and Heteroscedasticity

Table 4. Kolmogorov Smirnov Normality Test

Parameter	Value
N	68
Mean residual	0.0000000
Std. Deviation	3.01722150
Test Statistic	0.094

Asymp. Sig. (2-tailed)

0.200

The Kolmogorov Smirnov test results show a Test Statistic value of 0.094 and an Asymp. Sig. (2-tailed) value of 0.200. Since the significance value is greater than 0.05, the regression residuals are declared normally distributed [25].

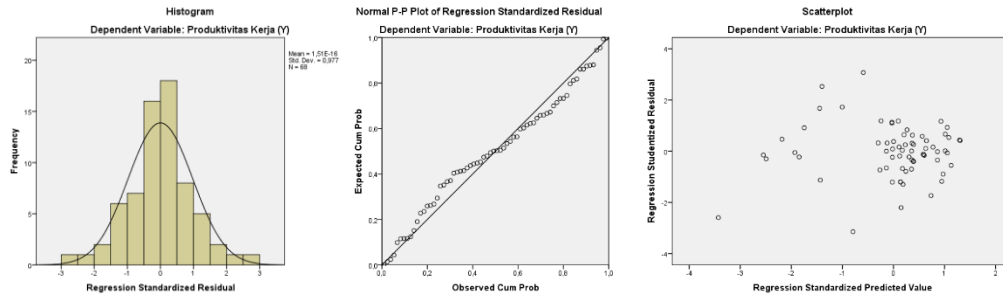


Figure 2. Histogram, P P Plot, and Scatterplot Graphs

The histogram graph shows that the standardized residuals formed a pattern resembling a normal curve, with data distribution concentrated around the value 0. The mean value of 1.51E 16 was close to zero, and the standard deviation of 0.977 was close to one. This means that the model residuals tended to be normally distributed and did not show extreme deviations [26].

The Normal P P Plot shows that the residual points generally followed the diagonal line, although there were slight deviations in the middle section. This pattern is still acceptable because the points did not move extremely far from the diagonal line. Thus, the regression residuals can be declared to meet the normality assumption [27].

The scatterplot graph shows that the residual points spread randomly above and below zero without forming a particular pattern, such as waves or funnels. Although there were several points located rather far from the others, the overall pattern remained random. This means that the model did not indicate heteroscedasticity symptoms [28].

Table 5. Glejser Heteroscedasticity Test

Variable	B	t	Sig.	Decision
Work Motivation (X1)	0.050	0.667	0.507	No heteroscedasticity
Work Environment (X2)	0.002	0.024	0.981	No heteroscedasticity
Occupational Health (X3)	0.034	0.565	0.574	No heteroscedasticity

The Glejser test results show that all significance values of the independent variables were greater than 0.05, namely 0.507 for work motivation, 0.981 for work environment, and 0.574 for occupational health. This means that there was no heteroscedasticity [21].

Table 6. Multiple Linear Regression Analysis and t Test

Variable	B	Std. Error	Beta	Calculated t	t table	Sig.	Decision
Constant	2.839	2.538		1.119		0.267	
Work Motivation (X1)	0.384	0.113	0.383	3.402	1.998	0.001	H1 accepted
Work Environment (X2)	0.322	0.148	0.233	2.169	1.998	0.034	H2 accepted
Occupational Health (X3)	0.297	0.089	0.340	3.324	1.998	0.001	H3 accepted

Based on the regression results, the equation obtained is $Y = 2.839 + 0.384X_1 + 0.322X_2 + 0.297X_3$. The work motivation coefficient of 0.384, which is positive, indicates that every increase in work motivation will increase work productivity by 0.384 units, assuming other

variables remain constant. The coefficients for work environment, 0.322, and occupational health, 0.297, are also positive.

Thus, all independent variables have a positive direction of influence on employee work productivity [29]. Work motivation is the most influential variable, with the largest coefficient (B) and beta values of 0.384 and 0.383 [22].

The t table value was calculated at a significance level of 0.05 with degrees of freedom n minus k minus 1 = 68 minus 3 minus 1 = 64, resulting in a t table value of 1.998 [20].

The t test results show that work motivation had a calculated t value of $3.402 > 1.998$ and a significance value of $0.001 < 0.05$, so H1 was accepted [16]. The work environment had a calculated t value of $2.169 > 1.998$ and a significance value of $0.034 < 0.05$, so H2 was accepted [30]. Occupational health had a calculated t value of $3.324 > 1.998$ and a significance value of $0.001 < 0.05$, so H3 was accepted [31].

This means that work motivation, work environment, and occupational health each partially have a positive and significant effect on work productivity [32].

Table 7. F Test Results and Coefficient of Determination

Model	df	Calculated F	F table	Sig.	Decision	R	R Square	Adjusted R Square
Regression	3	85.736	2.748	0.000	H4 accepted	0.895a	0.801	0.791
Residual	64							
Total	67							

The F table value was calculated at a significance level of 0.05 with $df_1 = 3$ and $df_2 = 64$, resulting in an F table value of 2.748 [23].

The F test results show a calculated F value of 85.736, which is greater than the F table value of 2.748, with a significance value of $0.000 < 0.05$, so H4 was accepted [1]. Thus, work motivation, work environment, and occupational health simultaneously had a positive and significant effect on employee work productivity at PT Belawan New Container Terminal.

The R value of 0.895 indicates a very strong relationship among work motivation, work environment, occupational health, and work productivity [2]. The R Square value of 0.801 means that 80.1 percent of the variation in work productivity can be explained by the three independent variables in the model. The Adjusted R Square value of 0.791 shows that, after adjustment for the number of variables and samples, the model was still able to explain 79.1 percent of the variation in work productivity, while the remaining 20.9 percent was influenced by other variables outside this study [2].

Discussion

5.1. The Effect of Work Motivation (X1) on Work Productivity (Y)

Work motivation had a positive and significant effect on work productivity, with a regression coefficient of 0.384, a beta value of 0.383, a calculated t value of 3.402, and a significance value of 0.001. This finding shows that the higher the employees' drive to achieve targets, the greater their ability to produce work that is high in quality, timely, and in accordance with company standards [15]. Motivation became the dominant variable because employees who have enthusiasm, initiative, creativity, and responsibility tend to work more actively and do not merely wait for instructions from supervisors [9].

This influence occurs because container terminal activities require fast responses, accuracy, and readiness to face operational pressure. The company has attempted to improve productivity through work target setting, clear task distribution, implementation of operational standards, and encouragement for employees to be more independent in solving work related problems.

The distribution of responses also supports this finding because the ability to take initiative indicator obtained the highest mean of 4.1471. In container terminal operations, motivation encourages employees to work more responsively, take quick action when obstacles arise, and maintain service quality.

This finding is consistent with Anoraga's view that employee work productivity is influenced by various factors, one of which is employee work motivation [3]. This finding is also in line with studies conducted by Birowo and Ahsani [7], Ipijei and Tawenem [9], Nurhayanti et al. [15], and Nugraha et al. [16], which proved that work motivation partially has a positive and significant effect on work productivity.

5.2. The Effect of Work Environment (X2) on Work Productivity (Y)

The work environment had a positive and significant effect on work productivity, with a regression coefficient of 0.322, a beta value of 0.233, a calculated t value of 2.169, and a significance value of 0.034. This result shows that physical comfort and social relationships in the workplace can help employees work with greater focus, order, and productivity [12].

This influence can occur because container terminal work depends heavily on interunit coordination, work communication, and safe and comfortable work areas. The company has supported productivity through the provision of operational facilities, workplace arrangement, standardized work systems, and coordination among divisions to maintain the smoothness of loading and unloading processes.

The distribution of responses shows that relationships among employees became the strongest aspect, with a mean of 4.1103, while workplace cleanliness and neatness became the lowest indicator, with a mean of 3.9265. This means that the company has relatively good working relationships, but the strengthening of cleanliness, neatness, lighting, and air circulation remains necessary.

This finding is consistent with Anoraga's view that employee work productivity is influenced by various factors, one of which is the employee work environment [3]. This finding is also in line with studies conducted by Fajar [10], Heldianto et al. [12], Nopitasari et al. [17], and Mursalin et al. [30], which proved that the work environment partially has a positive and significant effect on work productivity.

5.3. The Effect of Occupational Health (X3) on Work Productivity (Y)

Occupational health had a positive and significant effect on work productivity, with a regression coefficient of 0.297, a beta value of 0.340, a calculated t value of 3.324, and a significance value of 0.001. The beta value, which was higher than that of the work environment, indicates that occupational health has a strong role in maintaining employees' ability to remain present, focused, and capable of completing their work [33]. The indicator of absenteeism due to illness became the highest aspect, with a mean of 4.1912, while employee physical condition became the lowest aspect, with a mean of 3.9780.

This influence occurs because work at a container terminal requires physical endurance, concentration, and mental readiness. Healthy employees are better able to work steadily under operational pressure. The company has attempted to maintain productivity through the implementation of work procedures, safety supervision, working hour regulation, and attention to working conditions that support employee health.

This shows that work attendance is relatively maintained, but physical endurance and fatigue still need to be managed properly. In container terminal work, physical and mental health strongly determines accuracy, concentration, and work endurance.

This finding is consistent with Anoraga's view that employee work productivity is influenced by various factors, one of which is employee health [3]. This finding is also in line with studies conducted by Aprilia et al. [13][31], Liukae et al. [33], and Sulaeman et al. [32],

which proved that occupational health partially has a positive and significant effect on work productivity.

5.4. The Simultaneous Effect of Work Motivation (X1), Work Environment (X2), and Occupational Health (X3) on Work Productivity (Y)

The simultaneous test results show that the calculated F value of 85.736 was greater than the F table value of 2.748, with a significance value of 0.000. This finding proves that work motivation, work environment, and occupational health jointly have a significant effect on work productivity [32].

The R Square value of 0.801 and the Adjusted R Square value of 0.791 show that the three variables were able to explain work productivity strongly [33]. This means that productivity is not only determined by technical ability, but also by work drive, environmental comfort, and employee health conditions [9][12][33]. Practically, the productivity of container terminal employees does not depend only on work systems and equipment, but also on work motivation, environmental conditions, and employee health.

This simultaneous influence occurs because container terminal operations require a combination of work enthusiasm, supportive work areas, and good physical and mental conditions. The company has improved productivity through standardized work systems, modern operational facilities, work target distribution, interunit coordination, and supervision of work implementation so that employee output remains maintained.

Work motivation became the most influential factor because it had a B value of 0.384 and a beta value of 0.383 [15]. This is logical because motivated employees respond more quickly to targets, take more initiative in overcoming operational obstacles, and become more responsible for the quality of work results compared with employees who merely work according to routine.

The results of this study are consistent with Anoraga's opinion that employee work productivity is influenced by various factors, including employee work motivation, education, work discipline, skills, work ethics, cooperation ability, nutrition and health, income level, work environment, work climate, technological sophistication, adequate production factors, social security, leadership management, and opportunities for achievement [3].

Conclusion

This study concluded that work motivation, work environment, and occupational health had positive and significant effects on employee work productivity at PT Belawan New Container Terminal, both partially and simultaneously. Work motivation was the most dominant variable, with a regression coefficient of 0.384 and a beta value of 0.383. The research model had strong explanatory power, with an Adjusted R Square value of 0.791, meaning that 79.1 percent of the variation in work productivity could be explained by the three independent variables.

The company is advised to strengthen work motivation through a clear target system, achievement based appreciation, employee involvement in operational problem solving, and development of work initiative. The work environment needs to be improved through supervision of area cleanliness, improvement of lighting and air circulation, and more open communication from supervisors. Occupational health needs to be maintained through periodic health examinations, fatigue management, safety education, and work stress monitoring. These efforts are expected to improve timeliness, work quality, and the stability of employee productivity..

References

- [1] R. Herliyana and K. Kholik, "Analisis pengetahuan kerja, kemampuan kerja, dan kepemimpinan terhadap kinerja karyawan JNE Cabang Utama Medan," *Jurnal SOMASI (Sosial Humaniora Komunikasi)*, vol. 6, no. 1, pp. 155–172, 2025.
- [2] R. Risnaini and E. Wakhyuni, "The effect of workload, work relationships, and work facilities on employee productivity at PT JNE Medan Main Branch," *Journal of Research in Social Science and Humanities*, vol. 5, no. 2, 2025.
- [3] P. Anoraga, *Manajemen Bisnis*, ed. rev. Jakarta: Rineka Cipta, 2023.
- [4] D. Nasution, W. Suryani, and M. Y. Siregar, "Analysis of the implementation of TOS upgrade and the use of VMT on operational performance with the accuracy of container data as an intervening variable at Terminal B of PT Belawan New Container Terminal," *Journal of Applied Business Administration*, vol. 10, no. 1, pp. 160–172, 2026.
- [5] F. S. R. Lubis, S. Arrazy, E. Eliska, and A. K. Batubara, "Faktor risiko kelelahan kerja pada operator Internal Transfer Vehicle (ITV) di PT Belawan New Container Terminal," *Jurnal Biomedika dan Kesehatan*, vol. 8, no. 2, pp. 116–126, 2025.
- [6] M. H. Fathahillah, A. I. Sagala, and V. Saragih, "Analisis pencapaian standar kinerja box ship hours pada produktivitas bongkar muat di Terminal B PT Belawan New Container Terminal," in *Proceeding of National Seminar on Maritime and Interdisciplinary Studies*, vol. 4, no. 1, pp. 176–183, Dec. 2025.
- [7] A. M. Birowo and R. F. Ahsani, "Pengaruh motivasi kerja, lingkungan kerja dan disiplin kerja terhadap produktivitas kerja karyawan di Pabrik Tahu Sari Klaten," *PENG: Jurnal Ekonomi dan Manajemen*, vol. 2, no. 1, pp. 460–471, 2025.
- [8] M. S. Hasibuan, *Manajemen Sumber Daya Manusia*, ed. rev. Jakarta: Bumi Aksara, 2021.
- [9] I. Ipijei and Y. R. Tawenem, "Pengaruh lingkungan kerja fisik dan motivasi kerja terhadap produktivitas pegawai pada Dinas Kesehatan Kabupaten Merauke," *Papsel Economic Journal*, vol. 2, no. 3, pp. 1–8, 2025.
- [10] S. Fajar, "Analisis pengaruh lingkungan kerja, jaminan kesehatan, insentif dan motivasi terhadap produktivitas pegawai Bank BNI Kantor Cabang Pembantu Sumbawa Barat Nusa Tenggara Barat," *KNOWLEDGE: Jurnal Inovasi Hasil Penelitian dan Pengembangan*, vol. 5, no. 2, pp. 312–320, 2025.
- [11] B. W. Soetjipto, *Paradigma Baru Manajemen Sumber Daya Manusia*. Yogyakarta: Amara Book, 2022.
- [12] S. T. Heldianto, E. Septyarini, and T. R. Purnamarini, "Pengaruh lingkungan kerja, motivasi kerja, dan kompensasi kerja terhadap produktivitas kerja karyawan PT Madu Baru Bantul," *Ekonomis: Journal of Economics and Business*, vol. 9, no. 1, pp. 82–85, 2025.
- [13] A. Aprilia, B. Bakaruddin, and M. Misral, "Pengaruh keselamatan dan kesehatan kerja (K3), motivasi kerja, dan disiplin kerja terhadap produktivitas kerja karyawan pada PT Wanasari Nusantara Kabupaten Kuantan Singingi," *Jurnal Ilmiah Mahasiswa Merdeka EMBA*, vol. 5, no. 2, pp. 640–652, 2025.
- [14] P. K. Suma'mur, *Higiene Perusahaan dan Kesehatan Kerja (HIPERKES)*. Jakarta: Sagung Seto, 2024.
- [15] S. Nurhayanti, A. D. Nugroho, and N. K. Kusmayati, "Dampak motivasi kerja dan keselamatan terhadap produktivitas kerja karyawan PT Ometraco Arya Samanta," *RIGGS: Journal of Artificial Intelligence and Digital Business*, vol. 4, no. 2, pp. 1610–1617, 2025.

- [16] N. Nugraha, Y. Iskandar, and M. N. Lestari, "Pengaruh lingkungan dan motivasi kerja terhadap produktivitas kerja: Suatu studi pada PT Yasotex Mandiri Tasikmalaya," *Business Management and Entrepreneurship Journal*, vol. 6, no. 2, pp. 69–81, 2025.
- [17] H. H. Nopitasari, R. Setianingsih, and D. Hastuti, "Pengaruh lingkungan kerja, beban kerja dan motivasi terhadap produktivitas karyawan PT Padasa Enam Utama," *Jurnal Ilmiah Mahasiswa Merdeka EMBA*, vol. 4, no. 1, pp. 1632–1640, 2025.
- [18] D. Arifin, N. Ardian, and H. Triana, "Analysis of rewards and punishments for improvement public sector employment ethics policy in Medan," *Journal of Management, Economic, and Accounting*, vol. 3, no. 2, pp. 523–528, 2024.
- [19] D. Arifin, N. Ardian, and H. Triana, "Analysis of the improvement of reward and punishment policies on employee work discipline at the State Civil Service Agency in Medan," *Multifinance*, vol. 2, no. 1, pp. 18–25, 2024.
- [20] I. Gusnita, D. Arifin, and S. Samrin, "Analysis of work ability, work discipline, and non-physical work environment on the performance of ASN employees at the North Sumatra Provincial Manpower Office," *Journal of Management, Economic, and Accounting*, vol. 5, no. 2, pp. 993–1004, 2026.
- [21] O. U. Enelis, Y. Anwar, and I. Malikhah, "The influence of work environment, organizational culture, and work discipline on employee performance at PUD Pasar Kota Medan," *Journal of Management, Economic, and Accounting*, vol. 5, no. 2, pp. 1331–1344, 2026.
- [22] J. S. Gulo, H. M. Ritonga, and Y. Diana, "Analysis of service quality, trust, and corporate image on customer satisfaction at Brastagi Supermarket Gatot Subroto Medan," in *Proceedings of International Conference on Islamic Community Studies*, pp. 1037–1049, Oct. 2025.
- [23] N. Azhari, A. Setiawan, and T. Wahyono, "Analysis of work facilities, work discipline, and work communication on the performance of ASN employees at the Ministry of Religion Office of North Sumatra Province," *Journal of Management, Economic, and Accounting*, vol. 5, no. 3, pp. 1521–1530, 2026.
- [24] H. M. Ritonga and E. D. Surya, "The effect of competency development on employee performance at the North Sumatra Human Resource Development Agency," in *Proceedings of International Conference on Islamic Community Studies*, pp. 7517–7526, Oct. 2025.
- [25] H. M. Ritonga and H. Lubis, "The influence of product quality, price and service quality on consumer satisfaction: Coffeetree case study in Medan," *International Journal of Economic, Technology and Social Sciences (INJECTS)*, vol. 3, no. 2, pp. 199–204, 2022.
- [26] F. Firmansyah, S. S. Batubara, and R. Andika, "The impact of work climate and burnout on employee performance with job satisfaction as a mediating variable: Evidence from North Medan Samsat," *International Journal of Economic, Technology and Social Sciences (INJECTS)*, vol. 6, no. 1, pp. 222–232, 2025.
- [27] F. Firmansyah, K. F. Ferine, and N. Nizamuddin, "Analysis of the use of information technology and organizational culture on employee performance with competence as an intervening variable at the Panca Budi Development University, Medan," *International Journal of Social Science, Education, Communication and Economics (SINOMICS Journal)*, vol. 2, no. 5, pp. 1435–1450, 2023.
- [28] F. Firmansyah, K. F. Ferine, and N. Nizamuddin, "Determinants of performance of development Universitas Pembangunan Panca Budi Medan," in *International Conference on Health Science, Green Economics, Educational Review and Technology*, vol. 5, no. 1, pp. 357–372, 2023.

- [29] D. Arifin and E. D. Yanti, "Analysis of motivation, commitment and organizational culture on employee achievement," *Prosiding Universitas Dharmawangsa*, vol. 3, no. 1, pp. 714–727, 2023.
- [30] M. Mursalin, M. Martina, T. Darmawati, and S. Puspita, "Pengaruh motivasi, komunikasi kerja dan lingkungan kerja terhadap produktivitas kerja pegawai DPMPPTSP Kota Palembang," *Jurnal Media Wahana Ekonomika*, vol. 21, no. 4, pp. 762–772, 2025.
- [31] R. Aprilia, E. Kartika, and S. Nathanael, "Pengaruh lingkungan kerja, kesehatan kerja, keselamatan kerja terhadap produktivitas karyawan: Studi kasus PT Optima Sinergi Convestama Kota Semarang," *Jurnal Ilmiah Aset*, vol. 26, no. 1, pp. 23–28, 2024.
- [32] A. Sulaeman, Y. D. Rahayu, R. K. Hadi, and K. Komarudin, "Pengaruh disiplin kerja, keselamatan dan kesehatan kerja terhadap produktivitas karyawan PT Santoso Teknindo di Tangerang," *Scientific Journal of Reflection: Economic, Accounting, Management and Business*, vol. 8, no. 2, pp. 437–443, 2025.
- [33] B. L. Liukae, T. Timuneno, and R. E. Nafie, "Pengaruh keselamatan dan kesehatan kerja terhadap produktivitas kerja karyawan PT Gabriel Gabryela Jaya Kupang," *GLORY Jurnal Ekonomi dan Ilmu Sosial*, vol. 6, no. 2, pp. 337–346, 2025.