

## **The Effect of the Physical Work Environment Quality on Field Employee's Performance: In Department of The Fire Prevention and Fire Extinguish Medan**

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**Abstract:** *The work environment contributes to creating a high work system. It can lead to the realization of better organizational goals. This study examined the effect of physical work environment on employee's performance in sample of field employees. The technique of collecting samples is probability by cluster sampling method. The author used Slovin sampling technique so that 94 field employees ( $\alpha = 5\%$ ) were used as research respondents. Data collection method by distributing questionnaires as many as 20 questions, interview and documentation. Data analysis techniques are descriptive statistical analysis and Structural Equation Modelling (Partial Least Squares) to determine the effect of each variable studied. The results specified that physical work environment quality has a significant positif impact on field employee's performance.*

**Keywords:** *employee's performance, physical environment, structural equation model workplace environment*

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### **I. Introduction**

The physical work environment in an organization is a work condition to provide a comfortable atmosphere and work situation of employees in achieving the goals desired by an organization. A good work environment in terms of facilities and infrastructure, will directly or indirectly affect the performance of its employees. According to [1], elements of the work environment in organizations are often neglected in designing compatible work systems. Things that can reduce employee performance related to the physical work environment include dirty work environment, unsafe work environment, noise / noise, lighting, vibration, radiation, air temperature (temperature), humidity (humadity), and poor air quality. According to [2], there are four environmental factors that have an impact on employee productivity, namely lighting, noise, temperature, and furniture.

[3] examined the relationship between employee performance and a comfortable work environment, it can be concluded that an uncomfortable work environment in the office workplace leads to health-related issues and increases absenteeism, high levels of absenteeism which causes a decrease in productivity employee. The results of other studies that investigate the influence of variables on the physical work environment on employee performance are positive and significant are supported by several studies by [4], [5], [6], [7]. Existing research has established a positive relationship between work environment and job performance, [5], [8], [10].

Environmental factors both physical and psycho social will cause an increase in performance [9], [10]. [11] investigated this in studies with research results showing that job performance is strongly influenced by the work environment and worker motivation. This study also confirms the mediating role of motivation in working conditions and the relationship of job performance. Research by [12] provides evidence that it is very helpful to consider the work environment to perform their performance while paying attention to motivate. However, unlike [13] also conducts research and shows that the work environment does not have a significant influence on employee performance.

One of the employees' performance is seen from the reliability of DP2K employees. This is indicated, among others, first, by the increasing availability of fire prevention facilities and infrastructure. Secondly, the achievement of Minimum Service Standards for Fire Management Areas 75% of Medan City. Third, the achievement of Response Time Standards is at least 15 minutes after reporting the incident. Fourth, the sandardization of 24 SOP (Standard Operational Procedure), and finally the fire protection infrastructure facilities in the building of 50 buildings.

## II. Theoretical Review

### 2.1 Employee's Performance

Performance is the work quality and quantity achieved by an employee in carrying out his duties in accordance with the responsibilities given to him/her [14].

Employee performance is determined by several factors, including ability, desire and work environment. Employee performance is influenced by various characteristics of each individual. In developing a competitive and global era, an organization certainly needs high-performance employees. An objective performance assessment will provide appropriate feedback for behavioral change towards increasing productivity. Of course also on the expected employee performance.

### 2.2 Work Environment

According to [14] stated that in general, the type of work environment is divided into two parts, namely: (a) physical work environment, and (b) non-physical work environment. Physical work environment is all physical conditions that exist around the workplace that can affect employees both directly and indirectly [14].

## III. Research Methodology

This quantitative research aims to examine the hypothesis and analyze the influence of the quality of the physical work environment on the performance of field employees's. This research was carried out at the Department of the Fire Prevention and Fire Extinguishing Medan City, North Sumatra, Indonesia for three months. The technique of collecting samples is probability by cluster sampling method.

The population of 189 field workers, 123 field workers were obtained from 2 UPT DP2K selected in Medan City. The author used Slovin sampling technique so that 94 field employees ( $\alpha = 5\%$ ) were used as research respondents. Data types are primary and secondary data. Data were collected using interviews and questionnaires with quantification of Likert Scale.

This research was designed using cross-section data for describing the state of the object of research. Level explanation of this research is association research. The analysis technique is descriptive statistical analysis and SEM (Structural Equation Modeling) to determine the effect of the variable studied. The model used in this study is a causality model or relationship of influence with SEM (Structural Equation model) analysis uses the PLS (Partial Least Square) approach. The purpose of PLS is to help researchers for predictive purposes.

PLS uses an iteration process and each iteration stage produces an estimate. Stage one to test the measurement model (outer model). Consists of three criteria, namely convergent validity, discriminant validity, and composite reliability. Stage two to test the structural model (inner model). The structural model is evaluated by R-Square for the dependent construct of the t-test and the significance of the structural path parameter coefficient.

The research instrument test used validity and reliability tests of 30 respondents outside the research respondents. Validity and reliability test results on 20 questionnaire questions: variable of the quality of physical work environment (12 items), and performance of field employees (8 items) obtained all questions are valid  $r_{count} > r_{table}$  (0.361) and reliable (Cronbach Alpha value  $> 0.60$ ).

Latent Variable	Manifest Variable
The quality of the physical work environment	Lighting THAQ Work Equipment Equipment Layout Work Security
Field Employee Performance	Quantity Reliability Punctuality Ability to work together

Source: Researcher, 2018

IV. Research Results and Discussion

4.1 Descriptive Statistics

Table 2. Research Respondents Descriptive Statistics

Variabel	Frequency	(%)	
Age	31-40	57	60,63
	41-50	26	27,66
	51-60	1	11,71
Sex	Male	94	100
Educational Level	SHS	58	61,70
	Associate degree	22	23,40
	Degree	14	4,90

Source: Researcher, 2018

Table 3. Descriptive Statistic of Physical Work Environment Quality

Statements	Frequency of respondent's response										M e a n	Conclusion
	SA		A		N		NA		SNA			
	f	%f	f	%f	f	%f	f	%f	f	%f		
Lightning	-	-	64	68,1	30	31,9	-	-	-	-	3,68	Agree
Lightning	-	-	55	58,5	39	41,5	-	-	-	-	3,59	Agree
THAQ	2	2,1	63	67	29	30,9	-	-	-	-	3,71	Agree
THAQ	-	-	68	72,3	26	27,7	-	-	-	-	3,72	Agree
THAQ	6	6,4	60	63,8	28	29,8	-	-	-	-	3,77	Agree
THAQ	5	5,3	64	68,1	25	26,6	-	-	-	-	3,79	Agree
Work Equipment	6	6,4	73	77,7	15	16,0	-	-	-	-	3,90	Agree
Work Equipment	1	1,1	77	81,9	16	17,0	-	-	-	-	3,84	Agree
Equipment Layout	25	26,6	68	72,3	1	1,1	-	-	-	-	4,26	Strongly Agree
Equipment Layout	30	31,9	64	68,1	-	-	-	-	-	-	4,32	Strongly Agree
Work Security	33	35,1	61	64,9	-	-	-	-	-	-	4,35	Strongly Agree
Work Security	33	35,1	61	64,9	-	-	-	-	-	-	4,35	Strongly Agree

Source: Researcher, 2018

4.2. Result of SEM Analysis

The measurement model displays the relationship between the construct and the construct and the indicator of a variable. This study has reflective constructs. For the initial research phase of the development of a scale of measurement the loading value of 0.5 - 0.6 is considered sufficient. In this study, the loading factor limit of 0.60 will be used.

Table 4. Result of Outer Loading of the Manifest Variable

	Field Employee's Performance	Physical Work Environment
FEP1	0.839	
FEP2	0.802	
FEP3	0.814	
FEP4	0.844	
PWE1		0.801
PWE2		0.847
PWE3		0.740
PWE4		0.851
PWE5		0.853

Source: Researcher, 2018

From the results in Table 4, the value of the outer model or the correlation between constructs and variables already meets convergence validity because all indicators that have a value of loading factors above 0.60. This shows that the construct for all variables is not eliminated from the model.

**Table 5.**Result of Cross Loading of the Manifest Variable

	Field Employee's Performance	Physical Work Environment
FEP1	0.839	0.662
FEP2	0.802	0.697
FEP3	0.814	0.706
FEP4	0.844	0.675
PWE1	0.606	0.801
PWE2	0.731	0.847
PWE3	0.542	0.740
PWE4	0.767	0.851
PWE5	0.724	0.853

Source: Researcher, 2018

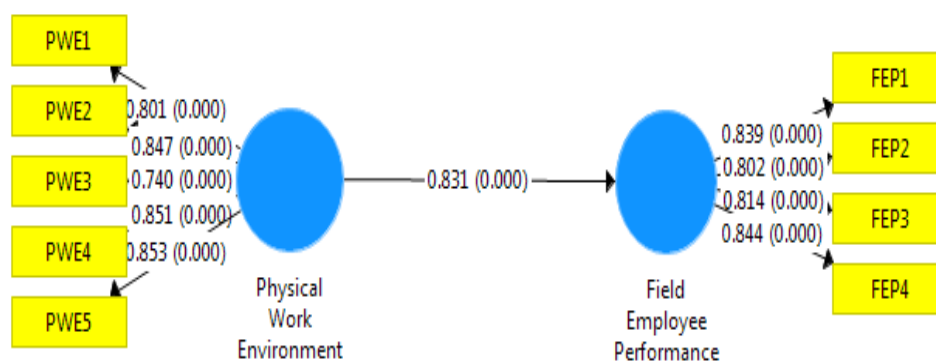
From Table 5 it can be seen that some values of loading factors for each indicator of each latent variable mostly have a value of loading factors that are not the greatest compared to the loading value if it is associated with other latent variables. This means that in general the latent variables already have good discriminant validity where some of these latent variables do not have a measure that is highly correlated with other constructs.

**Table 6.** Composite Reliability and Average Variance Extracted

	Cronbach's Alpha	rho_A	Composite Reliability	AVE
FEP	0.878	0.889	0.911	0.672
PWE	0.843	0.843	0.895	0.681

Source: Researcher, 2018

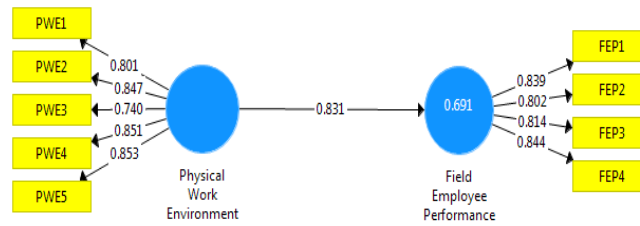
Based on Table 6 it can be concluded that all constructs meet criteria reliably. Constructions are said to have high reliability if the value is 0.70 and AVE is above 0.50. In Table 6, the Composite reliability and AVE (Average Variance Extracted) values for all variables will be presented. This is indicated by the composite reliability value  $\geq 0.70$  and AVE  $\geq 0.50$  as with the recommended criteria.



**Figure 1:** Results of the PLS SEM diagram

Source: Researcher, 2018

The results of testing the hypothesis is the quality of physical work environment has a positive and significant effect on the performance of field employees. The significance value of the quality of the physical work environment is (0,000) dengan  $p < p(0,05)$  and the estimated effect is 0,831. Meaning that the better the quality of the physical work environment in DP2K support, the better field staff performance. It means that the hypothesis is accepted.



**Figure 2:** Results of the PLS SEM diagram  
Source: Researcher, 2018

Tabel 5: R-Square

Variable	R-square
Field Employee Performance	0,691

Source: Researcher, 2018

The Table 5 shows that R-Square value for the field employee's performance variable is obtained at 0.691 (strong category). These results indicate that 69.1% of the variable performance of field employees can be influenced by the variable quality of the physical work environment. The remaining 30.9% is influenced by other factors.

### 4.3 Discussion

The results of the study provide empirical evidence that the quality of the physical work environment has a positive and significant effect on the performance of field employees. The influence of the work environment on employee performance expressed by [15] in [16], the work environment is a measuring tool that will affect employee performance. The influence of the work environment on employee performance. The work environment is a measuring tool that will affect the performance of employees if the work environment in the agency is good.

A work environment that is pleasant for employees through enhancing a harmonious relationship with superiors of colleagues and subordinates and supported by adequate facilities and infrastructures in the workplace will have a positive impact on employees.

Previous research, [3] examining an uncomfortable work environment in an office workplace leading to health-related issues and increasing absenteeism, high levels of absenteeism which led to a decrease in employee productivity. Therefore, it can affect the performance of their employees. It is also stated the physical work environment is an area in an organized organization so that the company's objectives can be achieved. It certainly can produce someone to adjust to the environment in which he works.

Other research results that investigated the influence of physical work environment variables on employee performance has a positive and significantly effect. Next, the research results is supported by several studies by [4], [5], [6], [7]. Existing research has established a positive relationship between work environment and job performance namely [5], [8], [10]. Environmental factors both physical and psycho social will lead to an increase in performance got from the research of [9] and [10].

Descriptive statistical analysis indicates that field employees in the Medan City DP2K have achieved good performance. Through the results of the outer loading which describes the variable physical work environment. That is classified as high is the security of the work environment and security of work equipment that can support the performance of field employees. Through the result of outer loading shows that, in general the dimensions that explain the variable field performance in DP2K are classified as high, namely the quantity and ability to work field workers.

Facts on the ground indicate that the Medan City DP2K is paying attention to several things to create a physical work environment that is comfortable and safe for field employee to support their performance. As can be seen from the results of the outer loading variable physical work environment, namely the lighting needed to do the work, THAQ evaluation (temperature, humidity, and air quality), layout of work equipment and work environment safety in DP2K.

### V. Conclusion

The quality of the physical work environment has a positive and significant effect on the performance of field employees in Department of the Fire Prevention and Fire Extinguish Medan. Rearrangement must be carried out on equipment and machines that support fire fighting operations. An it must be in accordance with the workflow.

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