THE INFLUENCE OF PHYSICAL & NON-PHYSICAL WORK ENVIRONMENT TOWARDS PERCEIVED EMPLOYEE'S PERFORMANCE (CASE STUDY: *TEMPA DAN COR & ALAT PERKERETAAPIAN (TC&AP)* DIVISION AT *PT PINDAD PERSERO BANDUNG*)

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Abstract - In this modern era, the development of industry is very advanced and rapid. This matter supported by technological developments increasingly sophisticated so as to facilitate all human work activities. All work activities that exist within the company include producing good and working system arrangements. One of the most important elements to run the goals of a company is human resources. Human resources can affect the effectiveness in generating output as well as driving business. The work environment is one of the most important factors that can affect the physical condition and human psychology. The purpose of this research is to know how does effect of physical and non-physical works environment on employee performance and the most dominant influence between physical work environment and non-physical work environment. The selected research object is an employee of the division of *TC&AP PT Pindad Persero Bandung*. This is related to the identification of some problems that the employee related to the working environment through interviews. The method used by researchers is multiple linear regressions (MLR). The result of the research shows that the physical work environment is not significant effect on perceived employee performance. The non-physical work environment has significant positively effect on perceived employee performance. Simultaneously the result of work environment variable physical and non-physical has significant effect on employee performance. The results showed that the non-physical work environment had a dominant impact on employee performance of 65.6% compared with the physical work environment variables of 0.34%.

Keywords: *Non-Physical Work Environment, Perceived Employees Performance, Physical Work Environment, Work Environment*

Background
In this modern era, the development of industry is very advanced and rapid. This matter supported by technological developments increasingly sophisticated so as to facilitate all human work activities. All work activities that exist within the company include producing good and working system arrangements. One of the most important elements to run the goals of a company is human resources (Sedarmayanti, 2011). The work environment is one of the most important factors that can affect employee performance because; the work environment can influence the physical condition and human physiology (Sarwono, 2005). The work environment is anything related to work for activities both individuals and teams. The work environment consists of two types of physical and non-physical work environment. Physical work environment is all physical conditions that exist around the work area that directly or indirectly can affect the performance of employees (Sedarmayanti, 2009). While the non-physical work environment is the entire atmosphere that occur related to the relationship work, either work relationship with superiors or relationships with colleagues or relationships with subordinates. Companies should be able to reflect conditions that support cooperation between levels of superior subordinates and who have the same status. The conditions work relationship that should be created such as atmosphere kinship, good communication, and self-control (Nitisemito, 2000). A comfortable working environment will certainly have a positive impact on employee performance.

Conversely, if the work environment is bad it will affect and hamper the performance of employees so that the goals of the company will be disrupted. A good working environment is an environment where employees feel comfortable, free in moving, without any obstacles, free mobilization to do all work activities (Sedarmayanti, 2009). A good and comfortable working environment is a clean working environment away from noise, a warm and cheerful atmosphere, air ventilation and others (Nitisemito, 2000).

Given, the importance of the problem some companies BUMN and Private Company need to identify the factors that influence the high low employee performance to maintain and improve employee performance and prevent employee performance decline. One company that needs to pay attention to the problem is *PT Pindad Persero Bandung*. *PT Pindad* is a defense industry company engaged in the manufacture of military and commercial products in Indonesia. Currently, *PT Pindad* produces five main products there are *Senjata, Munisi, Kendaraan Khusus, Alat Berat, Tempa dan Cor & Alat Perkeretaapian,* and *Bahan Peledak*. This industry cannot be separated from three things that are always related to the material, machine and human. Raw materials became the basis of the company to produce both weapons and other products. Machine as supporters' production process and Human or employees as a business driver.

PT Pindad has a vision of becoming the leading producer of defense and security equipment in Asia in 2023, through product innovation and strategic partnerships. While the mission to execute that vision is to implement a concerted effort in the field of defense and security equipment, as well as industrial equipment to support national development and especially to support the defense and security of the country. Objects in this study are employees in *Tempa dan Cor & Alat Perkeretaapian* (*TC&AP)* division at *PT Pindad Persero Bandung*, located on the street Gatot Subroto No.517, Kebon Kakung, Kiaracondong, Bandung City. Below are interview results that describe the current condition of working environment perceived by some employees at *Tempa dan Cor dan Alat Perkeretaapian (TC&AP)* divisions. Before doing the research, first researcher interviewed to find out the general description of the current conditions work environment in *Tempa dan Cor & Alat Perkeretaapian* division. Interviews were conducted on April 18, 2017 and April 25, 2017. The criteria of the resource persons selected were workers who had long worked in the *Tempa dan Cor & Alat Perkeretaapian* division. Researchers interviewed eight employees who were in the division of *TC&AP* both production and non-production section.

Based on result of interview some employees in *TC&AP* division they complain about the working environment condition which disturb their comfort in working. The condition of the work environment that they complain like some of the working room that feels hot and stuffy during the day because the company does not provide air conditioner, the wall color conditions in the work room that feels so monotonous because the company policy to maintain the original form of the room, some employees also complained about non- Between the permissible threshold values and the measurement results of the room conditions in fact in the production workspace. These conditions are factors of physical work environment such as noise which should be a maximum allowable threshold value of 85 Dba (K3LH) but in fact exceeds the threshold value of 99-103.8 dBA. Next is the illumination, the permitted threshold value of 200 Lux (K3LH) but in fact exceeds the threshold value of 657-1226 Lux. Then the temperature in the production workspace of the allowable threshold value is 28 ºC (K3LH) but in fact exceeds the threshold of reaching 28.6 ºC.

Literature Review
The literature review of this study explained about theories relating to the influence of work environment towards perceived employees performance. Furthermore, will be explained previous research related the influence of work environment towards perceived employee performance
According (Sedarmayanti, 2011) work environment has effect on employee performance. In his book, Sedarmayanti explains that the work environment is all the equipment and materials that work in the area where someone is working. The work environment divided into two types there are physical work environment and non-physical work environment. Physical work environment are all physical conditions that exist around the work area that directly or indirectly can affect the performance of employees. The physical condition can be caused by inappropriate lighting, temperature, humidity, air

circulation, noise, mechanical vibration, smelly, layout and office supplies, color, music and security. The non-physical work environment is an environment that is closely related to the working relationship. Work relationships such as relationships among employee and relationship between supervisor and employee.

Dr. K Chandrasekar (2011) *"Workplace Environment and Its Impact on Organizational Performance in Public Sector Organizations".* The main purpose of this study is determining what factors that can affect the performance of employees, especially in the sector of public organizations. Indicators of working environment which the researcher use is workroom and facility, relationship with supervisor in work environment, equality of treatment given in work environment, communication, conducive working environment, and security. This study uses quantitative data and the results show that in the sector of public organization already provides a good working environment for its workers. Therefore it does not significantly affect their performance.

Emmanuel Mejekodunmi Ajala (2012) *"The influence of Workplace Environment on Worker's Welfare, Performance and Productivity".* The purpose of the study was to analyze the effect of the workplace environment on workers' welfare and productivity in the governmental screens in Ondo State, Nigeria. The results of these studies show that workplace features and good communication networks in the workplace affect the welfare, health, morale, efficiency, and worker productivity. Indicator used in work environment variable is lighting, noise, workroom, cleanliness, temperature, and air circulation.

Research Framework

Table 2.4 Research Framework
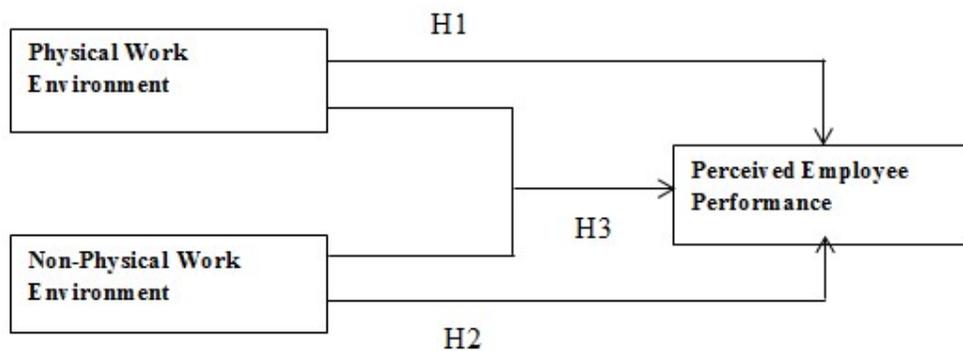
Hypothesis

Hypothesis is a tentative conclusion to a problem formulation in research. This provisional conclusion based on existing theories will then be tested through existing data (Sugiyono, 2009). Hypothesis is a presumption that must be tested in advance the truth in the form of facts or data through the research process (Dantes, 2012).

There are some terms of hypothesis in this research:

H1 = The physical work environment positively influence the perceived employee performance
H2 = Non-physical work environment positively influence the perceived employee performance
H3 = The physical and non-physical work environment positively influence the perceived employee performance

Methodology

The population for this research is employee of *Tempa dan Cor & Alat Perkeretaapian PT Pindad*. Number of employees in *TC&AP* division is 201 employees. The instrument used in this study is to distribute questionnaires relating to the work environment and perceived employee performance. Total statements in the questionnaire amounted to 28.

This study used multiple linear regression method (MLR). Because at the beginning researchers still use the type of ordinal scale data while for the purposes of multiple regression analysis is the interval scale. According to Riduwan & Sunarto (2010), transforming ordinal data into usable interval data to

meet some of the parametric analysis requirements for which the data is minimal interval. The simplest transformation technique used MSI (Method of Successive Interval). In addition the next step, the requirement to meet the use of MLR method then must pass the Classical Assumption Test. The classical assumptions test is a statistical test to measure the extent to which a regression model can be called a good model. The regression model is called a good model if the model meets the classical assumptions of *multicollinearity*, *autocorrelation*, *heteroscedasticity* and *normality*. The process of testing the classical assumption using SPSS is done simultaneously with the regression test process so that steps use the same work step with the regression test.

Analysis Data

All of item questions have score of coefficient correlation more than 0.3 so that all of item consists of 28 questions are **valid**. It means that all questions and data can be used to analysis in this research. Then the value of Cronbach's Alpha is 0.891, because Ri = 0.891 > 0.6 so that the data is **reliable**. It means that the data can be used to analyses in this research.

All stage of classical assumption test are passing. For step normality test, the value 2-tailed asymp score at 0.933 which is more than 0.005 for comparison. So the data used is normal data distribute. Multicollinearity test, the VIF value for both variables is 1.436 which is p-value more then 1000, so that the model has met the assumption of non-multicollinearity. Homocedentisty, p-value of physical work environment is 0.096. Then a p-value of non-physical work environment is 0.268. So all p-value of the both variables show the number > 0.05 so there is no heteroscedasity in the both variables or both the variables are homocedensity. Autocorrelation test, Durbin-Watson value in regression model is 1.939 the Durbin-Watson value falls between the values of du = 1.6785 and 4-du = 2.4323 so that it is in an area of no autocorrelation. Thus, the data **does not autocorrelation.**

Multiple Linear Regression

Based on **Table 4.8** explained that as much as 60.5% independent variable that is physical and non-

Table 4.8 **Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.785a	.616	.605	.3003575

a. Predictors: (Constant), Non-Physical Work Environment, Physical Work Environment

physical work environment allowed influencing variable dependent that is perceived employee performance. That is, 60.5% of physical and non-physical work environment can affect perceived employee performance. If the physical and non-physical work environment in *TC&AP* division increase, then perceived employee performance will be increased by 60.5%. While the rest that is equal to 39.1% perceived employee performance is influenced by other factors.

Table 4.9 **ANOVAa**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	10.286	2	5.143	57.009	.000b
	Residual	6.405	71	.090		
	Total	16.691	73			

a. Dependent Variable: Perceived Employee Performance
b. Predictors: (Constant), Non-Physical Work Environment, Physical Work Environment

Based on **Table 4.9** showed that Sig value F of 0.000 (p> 0.05) can be concluded **H3 is accepted**, it means that the variable of physical work environment and non-physical work environment have significant effect to the perceived employee performance.

Table 4.10 **Coefficientsa**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.155	.267		4.331	.000

Physical Work Environment	.034	.077	.039	.442	.660
Non-Physical Work Environment	.656	.076	.763	8.660	.000

a. Dependent Variable: Perceived Employee Performance

Based on **Table 4.10** shows regression model as follow:

$Y = 1.155 + 0.034 X_1 + 0.656 X_2$

Y = Perceived Employee Performance

X_1 = Physical Work Environment

X_2 = Non-Physical Work Environment

The interpretation is as follow:

• **a = 1.155** indicates if the value of independent variable are constant, then the value of Y is **1.155.** This means that if the value of physical and non-physical work environment do not change then the value of the perceived employee performance variable do not change as well.

• **b1 = 0.034** indicates that if the value of the physical work environment variables increases then the variable perceived employee performance will also increase by **0.034**. This means that if companies pay full attention to the physical work environment desired by employees then perceived employee performance will be increase. But then the value of Sig. for physical work environment is equal to 0.660 (p> 0.05) therefore **H1 is rejected**, it means that the physical work environment variable has no significant effect on perceived employee performance.

• **b2 = 0.656** indicates that if the value of the non-physical work environment variables increases then the perceived variable of employee performance will also increase by **0.656**. This means that if companies pay full attention to the employee's non-physical work environment then perceived employee performance will increase. The value of Sig. for physical work environment is equal to 0.000 (p< 0.05) therefore **H2 is accepted,** it means that the non-physical work environment variable has significant effect on perceived employee performance

Conclusions and Recommendation

Based on the results and analysis in chapter four, the physical work environment has no significant effect on perceived employee performance. It proved by H1 rejected. While the non-physical work environment significantly affect perceived employee performance. It means if the non-physical work environment in the division of *TC&AP* good it will increase performance perceived employees. It proved by H2 accepted. Both the physical and non-physical work environment simultaneously affects the perceived employee performance. It proved by H3 accepted. It means that if both variables are increased then the perceived employee performance will increase as well. The result showed that non-physical work environment has dominant effect on perceived employee performance 65.6% compared to physical work environment variable 0.34%.

Recommendations

Based on the conclusions of the study, although the physical work environment is no significantly on perceived employee performance but the company in this case human resources need to pay full attention to the condition of physical work environment because it can affect the condition of employee physiology. The researcher suggest for further research should the respondents be separated based on length of work and production or non-production section. Because it may be for some workers who have been working for a long time is not too concerned with the comfort of the work environment because it is familiar with working environment conditions both physical work environment and non-physical work environment. Then the workspace in the non-production section is usually more comfortable than the workspace in the production section will probably have a very contrasting effect for both.

References

Ajala, E. M. (2012). The influence of Workplace Environment on Worker's Welfare , Performance And Productivity. *African Educational Research Network*.

Amstrong, M. (1999). *Manajemen Sumber Daya Manusia. Terjemahan Sofyan dan Haryanto.* Jakarta: PT Flex Media Komutindo.

Anindita, A. (2011). Construct Questionare". By Annisa Anindita Zein "The Effect of Organization Culture & Leadership towards Lottemart Wholesale- Soekarno Hatta's Post-Acquiistion Performance.

Arep, I. (2003). *Manajemen Sumber Daya Manusia.* Jakarta: Universitas Trisakti.

Azizah, A. (2015). The Influence of Employee Engagement to Employee Performnace at PT Telkom Bandung.

Azlan. (2015). The Effect Of Physical Environment Comfort on Employees' Performance In Office Buildings.

Chandrasekar, D. K. (2011). Workplace Environment and Its Impact on Organisational Performance in Public Sector Organisations. *IJCBS*.

Choizes. (2017, April Senin). Skala Likert. *Pengertian Skala Likert dan Contoh Cara Menghitung Kuesioner*.

Diavolo, P. (n.d.). Kinerja Karyawan.

Dwi. (2011, November Thursday). ANALISIS REGRESI LINIER BERGANDA. Retrieved on 20 Aug 2017. http://duwiconsultant.blogspot.co.id/2011/11/analisis-regresi-linier-berganda.html?m=1

Fath, R. A. (2015). Pengaruh Lingkungan Kerja Non-Fisik dan Karakteristik Pekerjaan Terhadap Kepuasan Kerja (Study Pada Karyawan Hotel Bintang di Yoggyakarta).

George Kafui Agbozo, I. S. (2017). The Effect of Work Environment on Job Satisfaction: Evidence from Banking Sector in Ghana. *SciencePG*.

Ginanjar, R. A. (2013). Pengaruh Lingkungan Kerja Terhadap Kinerja Karywan pada Dinas Pendidikan, Pemuda dan Olahraga Kabupaten Sleman.

Hair, J. (2006). *Multivariat Data Analysis.* New Jersey: Pearson Education Inc.

Haq, A. (2015). Regression. SPSS, 2016, *Uji Validitas dan Reliabilitas dengan SPSS*, May 18, retrieved on 20 May 2017 from http://www.spssstatistik.com/uji-validitas-dan-reliabilitas-dengan-spss/

Haynes. (2008). The Impact of Office Comfrot on Productivity. *Journal of Facilities Management*.

Hidayat, A. (2013, Augs Monday). Interprestasi Regresi Linear Berganda dengan SPSS. Retrieved on 20 Aug 2017 https://www.statistikian.com/2013/08/interprestasi-regresi-linear.html

Holger, A. a. (2013). Impact Of Sustainable Office Buildings on Occupant's Comfort and Productivity.

Mangkunegara. (2002). *Manajemen Sumber Daya Manusia.* Bandung: Remaja Rosdakarya.

Nitisemito, A. (2000). *Manajemen Personalian: Manajemen Sumber Daya Manusia Edisi 3.* Jakarta: Ghalia Indonesia.

Pirjo, K. (2010). Effect of Reduced Summer Indoor Temperature on Symptoms, Perceived Work Environment and Productivity in Office Work.

Pratiwi, F. P. (2014). Measuring the Level of Employee Job Satisfaction and Identify Factors Influencing Job Satisfaction Using Descriptive Index Questionnaire: Case Study in PT Heartwarmers Main Office.

Purnomo, A. (2014). Pengaruh Motivasi dan Lingkungan Kerja Terhadap Kepuasan Kerja Karyawan PT Hyup Sung Indonesia Purbalingga.

Putra, W. (2012, September Sabtu). Analisis Statistika. *Menentukan Jumlah Sanple dengan Rumus Slovin*.

Ramadhani, R. (2014). Pengaruh Kompensasi Karyawan Terhadap Kinerja Pada PT ASDP Indonesia Ferry (Persero) Cabang Padang.

Ramesh, K. V. (2014). The Effect of Indoor Office Environment on The Work Performance, Health, and Well-Being of Office Workers.

Robinson, M. (1991). Ergonomic Modernization of an Office Environment and Its Effect on Physical Discomforts, Job Satisfaction, Work Environment Satisfaction, and Job Performance.

S, A. T. (2009). Multiple Linear Regression (Bagian1):Teori.

Sabhrina, A. (2014). Analyzing Leadership Affecting Employees Performance with Organizational Culture As Moderation Variable Case Study At PT Pins Indonesia. Ayu Shabrina Putri.

Safrizal, R. (2012, March Saturday). Bentuk Skala Pengukuran Dalam Penlitian.

Samuel, T. A. (2010). The influence of work environment on workers.

Sandra, S. (1996). Employee Satisfaction With The Work Environment: Importance of Facility Services.

Satrio, R. (2014). The Role of Motivation in Improving Performance of Members in Non-Profit Organization: Case Study Wanadri.

Sedarmayanti. (2009). *Sumber Daya Manusia dan Produktivitas Kerja.* Jakarta: Manju Mundur.

Sedarmayanti. (2011). *Tata Kerja dan Produktivitas Kerja Edisi 3.* Bandung: Maju Mundur.

Sofyan, I. (2013). Peran Lingkungan Kerja dalam Peningkatan Kinerja Karyawan.

Statistics. (2017). Multiple Regression Analysis using SPSS Statistics. Retrieved on 28 Aug 2017 https://statistics.laerd.com/spss-tutorials/multiple-regression-using-spss-statistics.php

Sugiyono. (2005). *Metode Penelitian Administrasi.* Bandung: Alfabeta.

Syarief, D. (2015, Desember Selasa). Teori Manajemen dan Organisasi.

Veel-Brice, S. L. (2010). Intentional Injury in the Workplace: Identification and Prevention of Physical and Non-Physical Workplace Violence.

Veelee-Brice, S. L. (2010). Intentional Injury in the Workplace: Identification and Non-Physical Workplace Violence. *University of Washington*.

Weran, L. (n.d.). Analisis Faktor-Faktor yang memengaruhi Kinerja Karyawan.