The Effect of Workload, Work Environment, and Competence on Employee Performance in the Department of Industry, Trade, Energy and Mineral Resources of North Sumatera Province

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Article Info	ABSTRACT
	Study This aiming For identify influence burden work, environment work, and competence to performance employees at the Department of Industry, Trade, Energy, and Mineral Resources of North Sumatra Province. The approach used in study This is method quantitative with technique analysis multiple linear regression using SPSS. Research This involving all over employees totaling 265 people as population. Data collection was carried out through distribution questionnaire to 73 respondents who were employees at the Department of Industry, Trade, Energy, and Mineral Resources of North Sumatra Province. Data sources used includes primary data and secondary data. The results of the data analysis show that burden work, environment work, and each competency provides influence positive and significant to performance employee. *This is an open access article under the CC BY-SA license.*

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INTRODUCTION

Man is element main in activity organizations and companies, which play a role as a driving force in reach Goal. Management source Power effective and efficient human being can push employee For Work optimally, so that vision and mission company can achieved. This is caused by dependency company to the competence of its employees. Therefore that, company need notice need as well as the pressure faced employees so that their abilities they can maximized. (Harjasa & Swasti, 2022).

Performance basically is What is being done or No done someone who can influence how much big contribution they to organization. Good performance from the employees will bring benefit positive for company. And vice versa, if performance employee not enough satisfying will bring impact negative for company (Dyan & Sumantri, 2024).

Employee performance can influenced by various factors, including load hard work, lack of adequate skills, as well as condition environment work that is not support. Improvement performance employees also contribute positive for company. Therefore that, every company try increase performance his staff For reach the goals that have been set.

The Department of Industry, Trade, Energy, and Mineral Resources of North Sumatra Province (DPPESDM) located at Jl. Putri Hijau No. 6, Medan, is agencies involved in support Governor in manage

affairs governance in the jurisdiction area . This service also carries out task assistance in the sector industry, trade, energy and resources mineral resources in North Sumatra Province, Indonesia.

Following This served table showing performance data employees in the Department of Industry, Trade, Energy and Mineral Resources of North Sumatra Province:

Table 1. Summary of Employee Performance Data at the Department of Trade and Industry Energy and Mineral Resources of North Sumatra Province

No	Group	Employee performance year 2024
		Performance Presentation
1	Group II	55%
2	Group III	90%
3	Group IV	85%

Source: DPPESDM, Data Processed 2025

From the table above, it can be seen that performance Employees of the Department of Industry, Trade, Energy and Mineral Resources of North Sumatra Province are still is at in category less. The cause is Still existence employee Group II which has not been succeed achieve the performance targets that have been set set.

LITERATURE STUDY
Employee Performance

According to (Kurnia & Sitorus, 2022) performance employee is ability overall somebody For Work optimally use reach target work and various created target with more sacrifice A little compared to with the results achieved.

According to (Hasnah et al., 2018) Success A organization depends on performance employees. Therefore that, every company will make an effort increase performance of its employees use reach objective organizations that have set.

(Wardhani & Sebayang, 2024) also an employee is a group functioning individual as non-material or non- financial capital in A company They own real potential, both in nature physique or non- physical, for support continuity and existence company.

(Almaududi et al., 2021) explain employee performance is results obtained somebody in carry out his duties, which are influenced by skills, experience, dedication, and time, according to with standards and criteria that have been determined. Based on various expert opinion, can concluded that performance employee is the output of work done in a organization For reach the goals that have been set and minimize loss.

Workload

Workload is tasks given by the company to employee in period certain. However, sometimes burden the exceed capacity that can handled by employees. Therefore that 's important For adapt burden Work with skills and competencies possessed by each employee. Imbalance in burden Work can cause various problem term length, including stress work. (Rochman & Ichsan, 2021).

According to (Putra & Laily, 2019) Workload is big work assigned by the company to the employees company that must be completed in period time certain.

Environment Work

The work environment plays an important role in the company for every employee. (Firjatullah et al., 2023) states that the work environment good job for employee reflected from harmonious relationship between colleague work, superiors, and subordinates, as well availability facilities and infrastructure adequate support. With Thus, the environment Work can interpreted as factor physical surroundings place work that affects employee, good in carry out task and also aspect others. Environment Work own enough influence big to behavior employee moment Work.

Competence

According to (Arief & Nisak, 2022) competence is a efficiency - dependent properties Work somebody to characteristics base in connection because consequence with the standard used reference. With consider level competence, impact competence source Power man to productivity Work own implications practical in planning source Power humans, and things This can seen with to describe competence knowledge and skills. Most of characteristics the more realistic and relative shallow for employee. Competence refers to knowledge, skills, abilities, or characteristics personal someone who is direct influence performance his job. In every company, employee own different skills.

METHOD
Research Methods
Study This use approach correlational with approach quantitative assisted by the SPSS 22 program which aims to For know connection between two variables or more. Research This discuss about influence variable free (Workload, Environment Work, and Competence) towards variable bound (Employee Performance). The types of data included in study This are primary and secondary data. Primary data is sample research obtained direct from existing participants. In the research this is secondary data collected from various source like journals and the internet. Approach study quantitative is method that collects data through questionnaire containing a series questions, and the results served in form number.

Research Location
Study This held at the Department of Industry, Trade, Energy and Mineral Resources of North Sumatra Province located at Jl. Putri Hijau No.6 Medan.

Population and Sample
(Sudaryono 2019), stated that Population is all object or subject that has characteristics and qualities certain that is made reference by researchers For analyzed before take conclusion. In the research This population used is all over employees at the DPPESDM of North Sumatra Province totaling 265 people. (Sugiyono., 2017) said if subject not enough out of 100 it would be better taken everything so that study nature population. However if amount subject more Lots so can taken sample as much as 10-15%, 15-25%, or more. Therefore That in study This sample used as many as 73 respondents.

RESULTS
Multiple Linear Regression Test
(Priyatno 2019) multiple linear regression analysis is conducted to determine the interaction between two or more independent variables and one dependent variable. Multiple regression is a method used to analyze multivariate data. This method aims to predict the value of the dependent variable (Y) by involving more than one independent variable. In this context, multiple regression analysis is implemented to test the effect of workload (X1), work environment (X2), and competence (X3) on employee performance (Y).

Following This can served results testing multiple linear regression on table following This:

Table 2 Multiple Linear Regression Test Results Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.50	3.153		.143	.887
	Workload	.148	.060	.197	2.454	.017
	Environment Work	.491	.090	.460	5,471	.000
	Competence	.334	.079	.351	4.210	.000

a. Dependent Variable: Employee Performance

Source: Data processed by SPSS, 2025

Based on Table 2 above obtained multiple linear regression as follows: $Y = 4.50 + 0.148 X_1 + 0.491 X_2 + 0.334 X_3 + €$

Interpretation from equality multiple linear regression is:
a. constant value a of 4.50 indicates that performance employee experience improvement of 4.50, with assumption that coefficient variable burden work, environment work, and competence own mark coefficient zero (fixed).
b. Coefficient For variable burden Work show influence positive of 0.148 against performance employee. This means, if burden Work increase by 1, then performance employees will also increase of 0.148.
c. Coefficient variable environment Work own influence positive to performance employee of 0.491. In other words, if environment Work increase by 1, then performance employees will also increase of 0.491.
d. Coefficient variable competence show influence positive to performance employee of 0.334. If the competence increase by 1, performance employee estimated will increase of 0.334.

Hypothesis Testing

Simultaneous Test (F-Test)

(Ghozali 2018) The F test is used For know whether all variable free in the regression model in a way simultaneous influence variable bound. Criteria For performing an F test involves comparison between F value count with F table value. If the calculated F value more big from F table value, then hypothesis zero (Ho) will rejected based on mark significance. If the value significance not enough of 0.05, then Ho is rejected, whereas If mark significance more big of 0.05, Ho is accepted. The table below This to expose Simultaneous test results:

Table 3 Simultaneous Test Results ANOVA [a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	793,672	3	264,557	41,575	.000 [b]
	Residual	439,068	69	6.363		
	Total	1232.740	72			

a. Dependent Variable: Employee Performance

b. Predictors: (Constant), Competence , Workload , Environment Work

Source: SPSS Processed Data, 2025

Based on information contained In Table 3 above, it is obtained F value count of 41,575, while The F table value at $\alpha = 0.05$ was recorded of 2.74. Significance the probability obtained is also far below 5% (0.05), namely of 0.000. < 0.05 which proves that H5 is accepted and Ho is rejected. This means that can it is said that the regression model in study This show that burden work, environment work and competence in a way together influential positive and significant to performance employee at the Department of Industry, Trade, Energy and Mineral Resources of North Sumatra Province.

Partial Test (t-Test)

(Ghozali 2018) stated that the t-test was used For identify whether every variable free individually have significant influence to variable bound in the regression model. Criteria For performing a t-test is with compare t - value with t table value. If the value significance more small from 0.05, then hypothesis zero (Ho) is accepted; conversely, if mark significance more big of 0.05, then Ho is rejected. Based on comparison between the calculated t number and the t table, we can interesting conclusion as following: if t count number more big from the t table, then Ho is rejected, whereas If t count number more small from the t table, then Ho is accepted. The following This is t-test results of variables free to variable bound:

Table 4 Partial Test Results Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.450	3.153		.143	.887
	Workload	.148	.060	.197	2.454	.017
	Environment Work	.491	.090	.460	5,471	.000
	Competence	.334	.079	.351	4.210	.000

a. Dependent Variable: Employee Performance

Source: SPSS Processed Data, 2025

In the research This amount sample study is n = 73 so obtained t table = 1.666 at sig. 0.05. From the table above can outlined partial test results as following.:

1. The results obtained are as follows: that t count of 2.454 while the t table of 1.666 and significant of 0.017, so the calculated t of 2.454 > t table 1.666 and significant of 0.017 < 0.05, p. This prove that H1 is accepted and Ho is rejected which states that the Workload (X1) is partial influential positive and significant on Employee Performance (Y).

2. The results obtained are as follows: is t count of 5.471 while the t table of 1.666 and significant is 0.000, so t count of 5.471 > t table 1.666 and significant of 0.000 < 0.05, p. This prove that H2 is accepted and Ho is rejected which states that Environment Work (X2) in partial influential positive and significant on Employee Performance (Y).

3. The results obtained are as follows: is t count of 4.210 while the t table of 1.666 and significant is 0.000, so t count of 4.210 > t table 1.666 and significant of 0.000 < 0.05, p. This prove that H1 is accepted and Ho is rejected which states that Competence (X3) in general partial influential positive and significant on Employee Performance (Y).

Coefficient Test Determination (R2)

(Ghozali 2018) stated that coefficient determination (R²) shows how much big variable independent capable explain variable dependent. The R² value ranges from between 0 and 1. The more approach number 1, then the model is getting better Good in explain variable dependent. If R² is low, it means variable independent only explain part small variation variable dependent.

Table 5 Coefficient Test Results Determination (R2) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.802 ª	.644	.628	2.52256

a. Predictors: (Constant), Competence , Workload , Environment Work

Source: Data processed by SPSS, 2025

Based on Table 5 above can seen that number Adjusted R Square 0.628 which can called coefficient determination in matter This means 62.8% performance employee can obtained and explained by the load work, environment work, and competence and the remaining 37.2% can explained by factors or other variables.

DISCUSSION

1. Workload Impact On the Performance of Employees of the Industry, Trade, Energy and Mineral Resources Service of North Sumatra Province

Research results on analysis multiple linear regression of 0.148 and based on the t-test the calculated t was obtained of 2.454 > from t table 1.666 with sig 0.017 < from sig 0.05. It can be concluded that burden Work in a way partial influential positive and significant to performance employees at the Department of Industry, Trade, Energy and Mineral Resources of North Sumatra Province, where H1 was accepted and H0 was rejected. This show that burden Work own role important in increase performance employee. This is show that burden Work employee own impact significant to performance they. The more balanced distribution task in the company, the more optimal the performance employee in finish not quite enough answer they. This is in line with study (Rochman & Ichsan, 2021) who stated that improvement burden work that is not balanced with ability employee can cause stress work, but if managed with Good burden Work can increase efficiency and productivity employees . Another study conducted by (Putra & Laily, 2019) also found that burden structured work with Good can increase effectiveness Work employee.

2. Influence Environment Work On the Performance of Employees of the Industry, Trade, Energy and Mineral Resources Service of North Sumatra Province

Research results on analysis multiple linear regression of 0.49 and based on the t-test the calculated t was obtained of 5.471 > from t table 1.666 with Sig 0.000 < from Sig 0.05. It can be concluded that environment Work influential positive and significant in a way partial to performance employees at the Department of Industry, Trade, Energy and Mineral Resources of North Sumatra Province, where H2 was accepted and H0 was rejected. This show that environment Work own role important in increase performance employee. It means the more Good environment work given so performance employee will the more increased. This is show that factor environment Work own role important in increase effectiveness and productivity employees at the Department of Industry, Trade, Energy and Mineral Resources of North Sumatra Province. These results in accordance with study (Harjasa & Swasti, 2022) which shows that environment supportive work like adequate facilities and relationships harmonious work can increase performance employee in a way overall.

3. Influence Competence On the Performance of Employees of the Industry, Trade, Energy and Mineral Resources Service of North Sumatra Province

Research results on analysis multiple linear regression of 0.334 and based on the t-test the calculated t was obtained of 4.210 > from t table 1.666 with Sig 0.000 < from Sig 0.05. It can be concluded that competence in a way partial influential positive and significant to performance employees at the Department of Industry, Trade, Energy, and Mineral Resources of North Sumatra Province, where H3 is accepted and H0 is rejected. This means the more Good development career undertaken so will the more good performance too employees at the Department of Industry, Trade, Energy, and Mineral Resources of North Sumatra Province. This means the more tall level competencies possessed employee so will the more good performance is also produced. Competencies that include knowledge, skills and attitudes suitable work with duties and responsibilities answer

employee give significant contribution to improvement productivity and effectiveness work. The results supported by research (Arief & Nisak, 2022) which confirms that Competencies that include skills, knowledge and attitudes good job own role important in increase performance employees. The study also revealed that competence is one of significant factors in influence employee performance. In addition study (Kurnia & Sitorus, 2022) stated that adequate competence allow employee Work more effective and efficient in reach objective organization.

4. Influence of Workload, Environment Work and Competence On the Performance of Employees of the Industry, Trade, Energy and Mineral Resources Service of North Sumatra Province

Based on simultaneous f test results show that obtained The calculated f result is 41.575 > from the f table 2.74 with Sig 0.00 < from Sig level 0.05. Then it can be concluded that burden work, environment work and competence in a way simultaneous influential positive and significant to performance employees of the Department of Industry, Trade, Energy and Mineral Resources of North Sumatra Province, where H5 was accepted and H0 was rejected. With thus results study positive and significant the show that burden work given Already Enough Good so that performance employee can increased. Environment comfortable work Already Enough Good so that performance employee can increased. Competencies applied Already in accordance so that performance employee can increase and satisfaction perceived work employee Already satisfying so that performance employees also increased. So that in a way overall matter the rated can support employee For can Work optimally and achieve the objectives of the Department of Industry, Trade, Energy and Mineral Resources of North Sumatra Province. The results supported by research (Hasnah et al., 2018) with state that combination factor burden work, environment work, and competence own influence big to performance employee in a organization.

CONCLUSION
Based on results research, data analysis and discussion, then can withdrawn conclusion as following:
a. Workload in a way partial show positive and significant influence to performance employee at the Department of Industry, Trade, Energy, and Mineral Resources of North Sumatra Province.
b. Environment Work in a way partial influential positive and significant to performance employee at the Department of Industry, Trade, Energy, and Mineral Resources of North Sumatra Province.
c. Competence employee in a way partial influential positive and significant to performance they are at the Department of Industry, Trade, Energy, and Mineral Resources of North Sumatra Province.
d. Workload, environment work, and competence in a way simultaneous give influence positive and significant to performance employee at the Department of Industry, Trade, Energy, and Mineral Resources of North Sumatra Province.

Suggestions
1. Recommended to Head of the Department of Industry, Trade, Energy and Mineral Resources of North Sumatra Province to do evaluation burden Work employee in a way periodic use avoid the occurrence excess burden work that can hinder productivity.
2. The Department of Industry, Trade, Energy and Mineral Resources of North Sumatra Province is advised For repair aspect environment work. Improvement supporting facilities and infrastructure comfort employee moment Work become very important thing.
3. The Department of Industry, Trade, Energy and Mineral Resources of North Sumatra Province is also advised For more active in provide training and development programs competence. This effort aiming For increase ability employee in carry out duties and responsibilities he answered.
4. Recommended to the Department of Industry, Trade, Energy and Mineral Resources of North Sumatra Province to be more notice performance employee. With Thus, employees expected can finish work in accordance with deadline time and more thorough in finish it, through good supervision towards the work process they.

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