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Analysis of The Influence of K3 Culture and K3 Training on Work Productivity Through Employee Performance With SEM PLS Method in One of the Automotive Industries of Cikarang Region

Tri Aprianto[1], Erry Rimawan[2], BambangSetiawan[3], Erik Odi Wijaya[4]

Master of Industrial Engineering Program, Universitas Mercu Buana Jakarta

Abstract :

The automotive industry is one of the industry groups that have the risk of industrial hazards and if not managed properly it causes work accidents and affects productivity in the automotive industry itself. This research aims to analyze the influence of K3 Culture and K3 Training on Employee Performance as well as its impact on Employee Productivity on one of the automotive companies in Cikarang. The population in this study is one of the automotive companies in the Cikarang Region as many as 3196 employees, with the number of samples using proportionate stratified random sampling as many as 388 samples. The data analysis method in this study uses the Structural Equation Model-Partial Least Square (SEM-PLS). The results of the study found that K3 Culture and K3 Training had a positive and significant influence on Performance. Performance has a positive and significant influence on work productivity. Performance mediates the relationship of K3 Culture and K3 Training to work productivity.

Keywords: K3 Culture, K3 Training, Perfomance, Productivity, SEM PLS

1. Introduction

The development in the field of industry and technology has increased the source of existing dangers. In addition, factors in the work environment that do not meet occupational safety and health (K3) requirements, unsafe work processes, and increasingly complex and modern work systems can pose a threat to the safety and health of workers. Cases of work accidents that still continue to occur in Indonesia, especially in Bekasi Regency which has the potential for work accidents in the industry, considering the number of automotive industries operating mainly in Cikarang. The automotive industry is one of the industry groups that have the risk of industrial hazards and if not managed properly it causes work accidents and affects productivity in the automotive industry itself.

According to (Hariandja, 2007) K3 is an important aspect in efforts to improve employee welfare and productivity. High work safety will reduce the rate of accidents that cause illness, disability, and death can be suppressed as little as possible. Low work safety will affect health, resulting in decreased productivity. In recent years there have been more than 5,000 deaths while working (Friend &kohn, 2007). Development programs in Indonesia have brought rapid progress in all areas of life, especially in the automotive industry sector. But behind the progress there is a price to be paid by the people of Indonesia, namely the negative impact it causes, one of which is disasters such as accidents due to work, environmental pollution, and occupational diseases that cause thousands of injuries every year (Khasanah & Nawawinetu, 2018).

The application of occupational safety and health culture at work is important to know as an effort to protect from the dangers of work accidents, because of the high risk, it should be noted that K3 culture, where accidents are influenced by many things, such as the level of knowledge, personality, behavior of work in the field (Dyanita, 2018), the company's commitment in the application of K3 culture, compliance with laws and regulations and the application of work procedures, communication between workers in the field, labor competence (Christina et al., 2012), (Silaparasetti et al., 2017), work environment (Shin et al., 2015), work motivation, (Shin et al., 2015) and education level (Amirah et al., 2017).

Training is a way for human resource development, especially for intellectual abilities and human personality with high integrity values with education and training can be viewed as one form of investment, therefore any organization or institution that wants to develop, then education and training for its employees must require great care (Pristyadi & Edy Santoso, 2019).

Based on previous research conducted by (Supardi & Chandrarin, 2021), (Huda et al., 2016), (Amirah et al., 2017) shows that safety leadership, safety culture, training and safety behaviors positively affect safety performance and work productivity.

2. Literature Review

Performance is the behavior of the organization directly related to delivering services. Information about organizational performance is a very important thing to use to evaluate whether the performance process carried out by the organization so far is in line with the expected goals or not. But in fact, many organizations that actually disagree even not infrequently there is information about performance in their organization, also a result of work produced by an employee interpreted to achieve the expected goals (Yuliana, 2019).

According to (Harjanto, 2007) productivity is a measure that can state how well the regulation of resources and their utilization to achieve an optimal target, while in general productivity is a comparison between input (input) and expenditure (output). Input can be interpreted as materials, energy, labor and equipment capital, while output is volume and quality, while in the automotive industry sector, the basic principle of productivity does not change, only aspects reviewed change.

Work safety is all means and efforts to prevent the occurrence of a work accident (Silalahi, 1995). In this case the safety in question is closely related to the machine, the work tools in the process of the foundation of the workplace and its environment and the ways of doing the work. The purpose of occupational safety is to protect the safety of the workforce in carrying out its duties, protect the safety of everyone who is on the job site and protect the safety of equipment and production sources so that it can always be used efficiently. Work safety takes precedence in working to avoid accidents. According to Sumakmur (1981) an accident can be interpreted as an unwanted and unexpected event, whose occurrence can cause disaster or loss. An accident is an event that can ruin a pre-planned or pre-planned plan.

The SEM model was first invented by Joreskorg in 1978, then sem using PLS was developed by would in 1985 and Lomoller in 1989. The main purpose of SEM-PLS is to maximize the variance of the endogenous latent variables described. In contrast to covariance-based SEM to produce a covariance matrix based on theory without focusing on the variants described. A special feature of SEM-PLS is that the relationship model between variables must be unidirectional, in contrast to SEM which models relationships between reciprocal variables. The advantage of SEM-PLS is the impatience of normal distributed data and can be used for small sample sizes (Harahap, 2018). The first gererasi technique is already widely used by science researchers. However, over the past 20 years, many researchers have turned to second-generation techniques that can overcome the weaknesses of first-generation techniques. The method is SEM (structural equation modeling) which can use variables that cannot be measured directly by indicator variables. SEM consists of two types: Covariance-based SEM (Covariance-based-SEM) and SEM-PLS. CB-SEM is a multivariate analysis used to confirm a theory that is a systematic relationship between several variables that can be tested empirically. CB-SEM is used to determine how well the proposed theory of the model estimates the covariance matrix for sample data. SEM-PLS is a multivariate analysis used to develop theories in exploratory research (Hair et al, 2017). SEM-PLS has a single-headed arrow that represents the direction of the relationship. Single-headed arrows are considered predictive relationships and with strong theoretical support, can also be interpreted by causal relationships.

Demonstrating the importance of safety culture, Latief et al., (2017) states that the project's safety culture attributes including leadership, policy strategy and employee behavior, affecting safety behavior, processes, systems and performance. Similarly, Musonda et al., (2021) observed that a positive culture leads to improved Health and Safety performance.

The importance of safety culture, Latief et al., (2017) states that the project's safety culture attributes including leadership, policy strategy and employee behavior, influencing safety behavior, processes, systems and performance. According to Rachman & Pujiastuti, (2018) performance assessment can help a leader in anticipating and preventing employee dissatisfaction. Changes in employee attitudes are signs of a change in employee job satisfaction. Seeing the importance of performance assessment for both offices and employees, the performance assessment process must be carried out objectively and thoroughly. An objective performance assessment will provide feedback between supervisors and subordinates who are synergistic. Subordinates will gradually understand the objectivity of work and be able to encourage the office productivity climate with their work performance.

Occupational safety and health training is a training organized and directed to equip, improve, and develop the ability, productivity, and welfare of the workforce (Putri et al., 2018). The training that is done can be aimed at both old and new employees. While for old employees also need to learn and be trained with the aim to improve poor performance, learn new knowledge and technology and skills, as well as to adjust to the development of the organization and new organizational policies (Permatasari & Supiyan, 2020).

Occupational Safety and Health (K3) is indeed one of the requirements to increase employee work productivity that is closely related to production results (Kamaru, 2020). Maulidina, Rimawan & Kholil (2017) in his research mentioned

in an effort to increase productivity on ships / fleets in the company did calculations to find out the factors. Supported by performance based on the results of the implementation of the training that has been implemented, according to (Hendrawan, 2020) training on job safety provides knowledge and guidance to the workforce so that the workforce understands the work it does and the dangers that arise at work and realize to use personal protective equipment in work so that the workforce can work safely and still be able to improve its performance.

Performance is the result obtained by employees both in quantity and quality for the implementation of duties and responsibilities given from their companies (Elshifa et al., 2020). Conceptually according to (Mulyapradana et al., 2020) performance is the result achieved by a person within a certain period of time based on established working standards. The impact felt if you have good employee performance is that the growth of work productivity can increase (Kharis et al., 2021).

Based on the literature review above, the hypotheses presented in the study are:

H1: K3 culture has a positive and significant effect on employee performance.

H2: K3 training has a positive and significant effect on employee performance.

H3: Employee Performance has a positive and significant effect on productivity

H4: Employee Performance mediates K3 Culture's relationship to Productivity

H5: Employee Performance mediates K3 Training relationship to Productivity

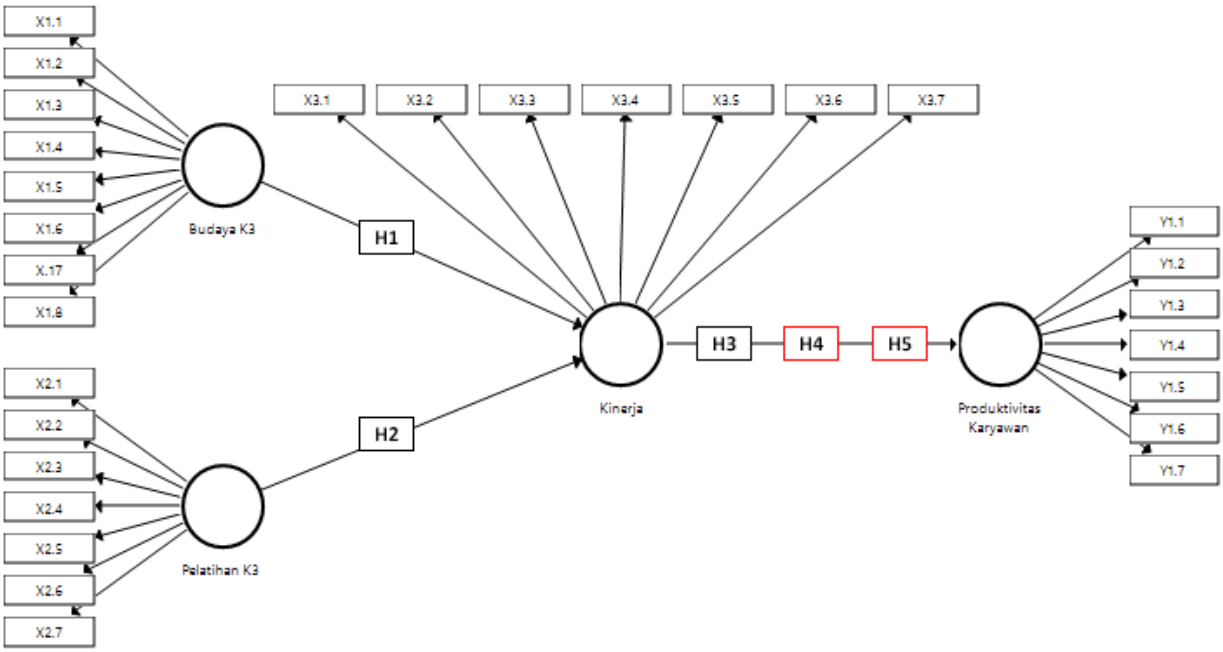

Figure 1: Proposed conceptual model

3. Methodology

Respondents in this study came from the divisions of one of the automotive companies in Cikarang Region, the division consisted of Production, HR & GA, ACC & Finance, Corporate Planning, Purchasing, Engineering Office, and Total Customer Satisfaction. In each division then has its own sub-division and in the sub division there is another department. The number of respondents used as a sample in this study was 388 respondents.

Tabel 1. Distribution of Respondents by Department

Division	***Sub Division***	***Department***	***Sample***	***Percentage***
PRODUCTION	*Manufacturing*	*Manufacturing Stamping*	7	1,80%
		Manufacturing Welding	79	20,36%
		Manufacturing Paint	32	8,25%
		Manufacturing Assembly	96	24,74%
		Manufacturing Engine	13	3,35%
		Maintenance	12	3,09%
	Production Engineering	*PE Stamping*	1	0,26%
		PE Welding	2	0,52%
		PE Paint	1	0,26%

Division	*Sub Division*	*Department*	*Sample*	*Percentage*
		PE Assembly	2	0,52%
		PE Plant	4	1,03%
		PE Engine	1	0,26%
	Production Strategy	*Project Control*	1	0,26%
		Continuous Improvement System	1	0,26%
	Production Control	*Lauching Control*	2	0,52%
		Production Schedulling	1	0,26%
		Part Arrangement	2	0,52%
		Material Handling	40	10,31%
		KD Logistik	1	0,26%
	Quality Control	*Body Inspection*	12	3,09%
		Assembly Part Inspection	11	2,84%
		Final Inspection	20	5,15%
		Quality Assurance	2	0,52%
HR &GA	*HR*	*HR Business Partner*	2	0,52%
		HR Services	2	0,52%
	GA	*General Affair*	2	0,52%
		HSE & Security	2	0,52%
ACC & FINANCE	*Accounting*	*Asset Control*	1	0,26%
		Budget Control	1	0,26%
		Corporate Accounting	1	0,26%
		Invoice Verification	1	0,26%
		Tax	1	0,26%
	Treasury	*A/R A/P, F/X, BANK RM*	1	0,26%
		Cash Flow, Payment	1	0,26%
		Treasury	1	0,26%
CORPORATE PLANNING	*After Sales*	*Accessory Planning*	1	0,26%
		After Sales Planning	2	0,52%
	Corporate Strategy	*Import Export*	2	0,52%
		Industry Policy	1	0,26%
		Planning & Coordinating	1	0,26%
	IT	*IT Application*	2	0,52%
		IT Infrastructure	1	0,26%
		IT Planning	1	0,26%
PURCHASING	*Purchasing Planning*	*Purchasing Planning*	1	0,26%
	Purchasing General	*Indirect Material Purchasing*	1	0,26%
		Parts Purchasing	2	0,52%
		Raw Material & Processing	2	0,52%
	SIP	*Purchasing Engineering*	3	0,77%
		SIP	2	0,52%
ENGINEERING OFFICE		*Body*	1	0,26%
		Chassis & Power Train	1	0,26%
		Interior & Electrical-Electronic System	1	0,26%
TOTAL CUSTOMER SATISFACTION		*Field Quality*	2	0,52%
		Vehicle Audit	1	0,26%
		Warranty & Quality Planning	1	0,26%
Total			**388**	**100,00%**

Data collection for this research was conducted at one of the automotive companies in the Cikarang Region. The data consists of primary data, research data obtained directly from the original source through the dissemination of questionnaires to 388 respondents. Other data is secondary data in the form of reports, documents or other sources obtained indirectly from the source. They are analyzed with data analysis statistics using smart PLS applications. Smart PLS applications determine the relationship between K3 culture, K3 training, performance, and work productivity.

Table 2. Variables, Dimensions, and Indicators

Variable	Dimension	Indicator
K3 Culture	Use of APD	X1.1
	The Danger Predicting Movement	X1.2
	Communication between workers	X1.3
	Management support	X1.4
	Implementation of 5R	X1.5
	K3 policy	X1.6
	K3 Rules and Procedures	X1.7
	Work Environment	X1.8
K3 Training	Employee Competence	X2.1
	Work motivation	X2.2
	Certification	X2.3
	Training Instructor	X2.4
	Learning Facilities	X2.5
	Method used	X2.6
	Training materials	X2.7
Employee Perfomance	Leadership	X3.1
	Work discipline	X3.2
	Work ability	X3.3
	Work motivation	X3.4
	Working Conditions	X3.5
	Teamwork	X3.6
	Compensation	X3.7
Productivity	Employee absenteeism	Y1.1
	Production targets	Y1.2
	Employee responsibilities	Y1.3
	Timeliness	Y1.4
	Production Ouput	Y1.5
	Quality of Work	Y1.6
	Labor Efficiency	Y1.7

4. Result

In this study, tests were conducted, with culture variables K3 (X1), K3 training (X2), performance (X3), and productivity (Y) being variables with formative indicators. Formativeization through testing of the outer model multicollinierity (using VIF) < 7. After that the examination of the significance of outer weight (using p-value outer weight) < 0.05 (Joseph F. Hair et al., 2013). Measurement of structural model (inner model) i.e. Multicolinarity Test Inner Model (using VIF) < 7, Coefficient of Determination (using R2) 0.25, 0.50, or 0.75, Influence measure (using F2) 0.02, 0.15, or 0.35, Predictive Relevance (using Q2) > 0.000, Fit Model Evaluation (using SRMR, Chi-Square, NFI) SRMR < 0.10, Chi2 > 0.9, NFI is a %better than null model, and Path Coefficient (using Coefficients, T-Statistics, P-Values) Coefficients are in the value range of -1 up to +1, T- Statistics > 1.96, P-Values < 0.05 (Joseph F. Hair et al., 2013). Figure 2 is an early-stage study model.

Assessment of Formative Model Measurement Results (Outer Model)

Table 3. Outer VIF Results

Indicator		VIF
Use of APD	X1.1	1.353
The Danger Predicting Movement	X1.2	1.221
Communication between workers	X1.3	1.212
Management support	X1.4	1.307
Implementation of 5R	X1.5	1.262
K3 policy	X1.6	1.320
K3 Rules and Procedures	X1.7	1.274
Work Environment	X1.8	1.395
Employee Competence	X2.1	1.290
Work motivation	X2.2	1.364
Certification	X2.3	1.306
Training Instructor	X2.4	1.396
Learning Facilities	X2.5	1.321
Method used	X2.6	1.377
Training materials	X2.7	1.316
Leadership	X3.1	1.464
Work discipline	X3.2	1.262
Work ability	X3.3	1.223
Work motivation	X3.4	1.262
Working Conditions	X3.5	1.338
Teamwork	X3.6	1.423
Compensation	X3.7	1.198
Employee absenteeism	Y1.1	1.312
Production targets	Y1.2	1.203
Employee responsibilities	Y1.3	1.288
Timeliness	Y1.4	1.219
Production Ouput	Y1.5	1.303
Quality of Work	Y1.6	1.240
Labor Efficiency	Y1.7	1.250

Based on testing VIF values for all indicators on both K3 Culture variables, K3 Training, Performance, and Work Productivity less than 7, therefore, cholinearity is not an issue between construct dimensions. Once the multicollinierity test is complete, it can be continued with an examination of the significance of the outer weight.

Table 4. Outer Weight Significance, Outer Loading and Outer Loading Significance

	P-Values Outer Weight	Outer Loading	P Values Outer Loading
X1.1 -> K3 Culture	0.015	0.599	0.000
X1.2 -> K3 Culture	0.000	0.564	0.000
X1.3 -> K3 Culture	0.000	0.625	0.000
X1.4 -> K3 Culture	0.004	0.573	0.000
X1.5 -> K3 Culture	0.000	0.639	0.000
X1.6 -> K3 Culture	0.000	0.633	0.000
X1.7 -> K3 Culture	0.002	0.572	0.000
X1.8 -> K3 Culture	0.000	0.660	0.000
X2.1 -> K3 Culture	0.000	0.675	0.000
X2.2 -> K3 Culture	0.000	0.691	0.000
X2.3 -> K3 Culture	0.004	0.597	0.000
X2.4 -> K3 Culture	0.000	0.687	0.000
X2.5 -> K3 Culture	0.000	0.652	0.000
X2.6 -> K3 Culture	0.000	0.641	0.000
X2.7 -> K3 Culture	0.007	0.588	0.000
X3.1 -> Employee Perfomance	0.000	0.718	0.000
X3.2 -> Employee Perfomance	0.000	0.572	0.000
X3.3 -> Employee Perfomance	0.000	0.578	0.000
X3.4 -> Employee Perfomance	0.000	0.596	0.000
X3.5 -> Employee Perfomance	0.000	0.600	0.000
X3.6 -> Employee Perfomance	0.000	0.724	0.000
X3.7 -> Employee Perfomance	0.000	0.614	0.000
Y1.1 -> Productivity	0.000	0.655	0.000
Y1.2 -> Productivity	0.000	0.626	0.000
Y1.3 -> Productivity	0.001	0.585	0.000
Y1.4 -> Productivity	0.000	0.562	0.000
Y1.5 -> Productivity	0.000	0.673	0.000
Y1.6 -> Productivity	0.000	0.602	0.000
Y1.7 -> Productivity	0.000	0.587	0.000

Based on Table 4 it can be seen that all indicators have a p-value outer weight < 0.05 which means that all formative indicators have been appropriate and can proceed at the stage of examination of the inner results of the model.

Assessment of Structural Model Measurement Results (Inner Model)

After the model is estimated to meet the criteria of the measuring model (outer model), the next test of the structural model (inner model). Based on the VIF inner test that the K3 Culture variable and K3 Training have VIF for all variable constructs below 7. Thus, all independent variables have a VIF value of < 7 so that it can be interpreted that there is no multicollinerity between independent variables.

Table 5. Coefficient of Determination

	R Square
Employee Perfomance	0.681
Productivity	0.598

The value of R-Square (R2) or coefficient that the accuracy of employee performance and productivity is relatively moderate with R-Square (R2) values of 0.681 and 0.598. Effect Size (f2) test results had a score of 0.284 (k3-performance culture), 0.211 (K3-performance training), 1,488 (performance-productivity). Predictive relevance (Q2) calculation results 0.264 (performance) and 0.219 (productivity) > 0.000. Goodness of Fit SRMR results < 0.10, Chi2 > 0.9, and NFI show that the model in this study is 88% (0.876) better than the null model.

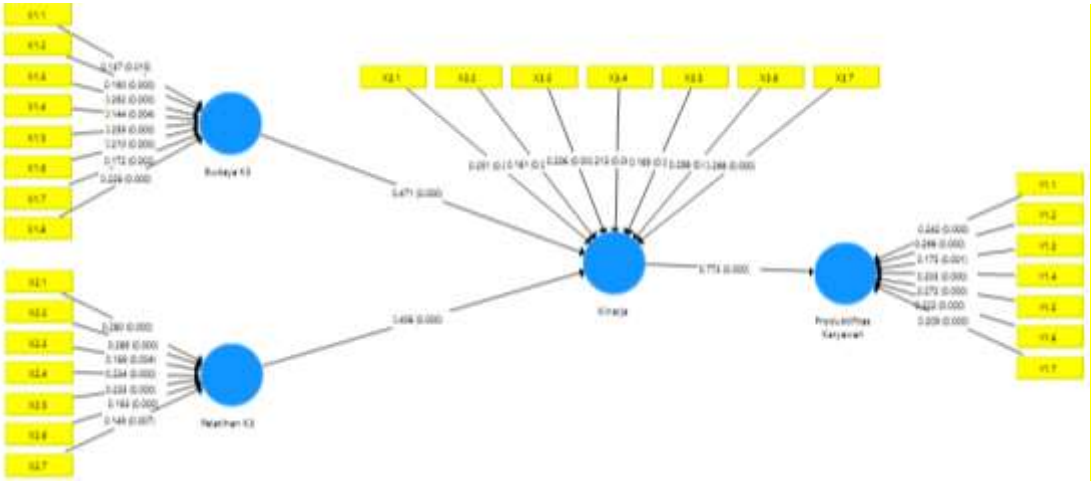

Figure 2. Hypothesis Testing Results

Direct Effect

Table 6. Direct Effect Hypothesis Testing Results

	Coefficient	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
K3 Culture -> Employee Perfomance	0,471	0,476	0,045	10,530	0,000
Employee Perfomance -> Productivity	0,773	0,779	0,023	33,854	0,000
K3 Training -> Perfomance	0,406	0,409	0,044	9,224	0,000

Indirect Effect

Table 7. Indirect Effect Hypothesis Testing Results

	Coefficient	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
K3 Culture -> Emplpoyee Performance Produktifitas -> Productivity	0,364	0,370	0,037	9,907	0,000
K3 Training -> Emplpoyee Performance Produktifitas -> Productivity	0,314	0,318	0,037	8,519	0,000

Based on the results of p-value testing on hypothesis testing it can be known that all relationships have a relationship influence because the value is below 0.5. The results of the original sample test in hypothesis testing can be known that all relationships have a positive relationship direction because the value is close to +1. The results of t-statistics testing on hypothesis testing can be known that all relationships have a significant relationship direction because the value is above 1.96.

5. CONCLUSION

Statistical test results using Smart PLS, there is a positive and significant influence between K3 culture and K3 training with performance. There is a positive and significant influence between performance and productivity. Performance mediates the relationship between K3 culture and K3 training on productivity. Analysis through Smart PLS obtained problems in the Work Environment indicator on K3 cultural variables, namely the work facilities available today are not adequate enough to support the application of K3, on the Instructor Training indicator on K3 training variables, namely K3 training has not been done by professional instructors, on leadership indicators on performance variables Currently available work facilities are not adequate enough to support the implementation of K3, and on the indicator of employee absenteeism on the productivity variable that is absenteeism in work. Therefore, by improving these factors, it can significantly improve performance and productivity.

CONFLICT OF INTEREST

The author insists that there is no problem in stating this scholarly work.

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