

PROCEEDING INTERNATIONAL CONFERENCE

Revitalization of Technical and Vocational Education to Face Industrial Revolution 4.0

Surabaya, July 11 - 14, 2018

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Contribution of Application of Occupational Safety and Health to Mechanical Work Productivity

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Abstract—this study discusses the contribution of safety and health (K3) implementation to the productivity of mechanical work. The purpose of this study is to determine the amount of contribution of the application of aspects of occupational safety and health (K3) to the productivity of mechanical work. The type of this research is descriptive correlational research. The subject of this research is mechanical workshop PT. Astra International Daihatsu Padang, Main Service Station, Jeffri Motor, and Gun Auto Service, totaling 30 people. The study was conducted in three techniques, namely the collection of data using observation, instrument questionnaire dissemination, and documentation. Analysis of this research data using regression correlation technique. Regression correlation analysis was done with the help of computer program. The result of research data for K3 Application variables obtained average value 95, 53 standard deviation 5,117. While Productivity Work Mechanics obtained average value 58.80 and standard deviation 3,418. Based on hypothesis testing, obtained r-value of 0.753> r table 0.361. After the t test, it is known that t count 6.064> t table 1.697. This shows that the hypothesis that there is a positive relationship between the two variables (clear) with a significant level of 5%. From the discussion it can be concluded that the results of this study are appropriate and mutually support by theoretical studies, which generally say that, the application of aspects of K3 contribute positively to the productivity of mechanical work. This means that the higher the application of mechanical K3 aspect the higher the productivity of the mechanical work.

Keywords—Occupational Safety and Health, Working Mechanics Productivity.

I. INTRODUCTION

Globally, the ILO estimates about 337 million workplace accidents occur each year resulting in 2.3 million workers losing their lives. Meanwhile, data from PT Jaminan Sosial Tenaga Kerja (Jamsostek) shows that about 0.7 percent of Indonesian workers have an accident (www.ilo.org). At the global level, occupational safety and health protection also receives the attention of the ILO (International Labor Organization) through various guidelines and conventions on occupational safety and health. As a member of the ILO, Indonesia has clarified and followed various occupational safety and health standards and requirements including the K3 management system. Occupational accidents also affect productivity. Therefore, labor must be maintained, nurtured, and developed to improve productivity. Occupational safety and health plays a role in ensuring the security of production process so that its productivity can be achieved [1].

PT. Astra International Daihatsu Padang, which is a company, engaged in the automotive industry, has the potential to harm workers such as fire, poisoning, and work accidents. Potential fire hazards in the company are caused by non-metallic solid objects (tires, paper, wood, plastics), flammable liquids (gasoline, oil, thinner), electrical goods or items (electrical panels, transformer, computers) as well as objects or metal goods (sodium, magnesium, aluminum). After knowing and understanding the above, it is necessary to socialize the application of good K3 in order to achieve also the desired work productivity. This condition is seen when researchers conduct industrial field practice (PLI) in PT. Astra International Daihatsu Padang, which is the ideal K3 system goes well. As long as the researchers conducted field industry practice (PLI), the company continued to run the K3 system according to the procedure, but actually, the researchers saw some people from mechanics have less awareness about the importance of safety in work, which has an important effect on work productivity and health or safety aspects.

The same condition was observed when the researcher observed some of the public workshops in Padang City, where the OSH system was ideally set, but actually did not work well. The company keeps reminding the K3 system in accordance with the procedure, but the mechanics are less concerned about occupational safety and health systems in workshops, which can hurt themselves and the company. This situation is very easy to find in general workshop engaged in automotive, the main reason of some of the mechanics of the lack of socialization knowledge about safety and health work. Due to lack of knowledge about K3, aspect can cause work accident. which affect mechanical performance. Mechanical productivity is measured by work desires, work skills, work environment, compensation, social security, and employment relationships. In addition, the application of K3 aspect also affects the productivity of the mechanical work itself, because if a mechanic with high K3 aspect value then the work productivity will also increase, which will reduce the number of work accidents in the company or workshop. With the existence of briefing about knowledge aspect K3 in company or workshop hence will be established positive relation between mechanic and company where work.

Mechanics will feel noticed and the company is able to improve results.

With the implementation of K3 aspect very helpful in handling the problem. Therefore, the existence of K3 seeks to ensure the safety and health of workers and the environment in order to realize the nuances of work that is safe, healthy and safe and support work productivity for the mechanics as well as on the consumer in the company.

A. Work Productivity

Technically productivity is a comparison between the results achieved (output) with the overall resources required (input). Productivity implies a comparison between the results achieved with the role of unity labor time [2]. Productivity is also defined as the level of efficiency in producing goods. The most famous productivity measure relates to labor that can be calculated by dividing the expenditure by the amount used or the number of hours worked by the employee. From the above understanding can be concluded that work productivity is the ability of employees in production compared with inputs used, an employee can be said to be productive if able to produce goods or services in accordance with expected in a short time or precise.

B. Factors Affecting Work Productivity

According [2], there are several factors that affect productivity, among others:

- Sourced from work
- It comes from the employees themselves
- Education
- Physical and spiritual health
- Work environment
- Managerial Factors
- Motivation
- C. Measurement of Productivity

According [2] measurement or assessment of company productivity is a measure of productivity or employee performance, a system used to assess and know whether an employee has done a good job. Measurement or assessment of employee productivity absolutely must be done to determine the achievement that can be achieved by every employee, whether good, medium, or less. Performance appraisal is important for every employee and useful for the company. It is used to set further policy actions. With the measurement of productivity or work performance means that the subordinates get the attention of superiors that encourage subordinates to be more passionate in working, provided that the measurement process or assessment is honest and objective and there follow-up. Follow-up measures allow employees to be promoted, demoted, developed or remunerated (compensated) raised.

The expected benefit of the company from this measurement or assessment is to know the condition of skill and ability of each employee on a regular basis, as the basis of personnel planning especially improvement of working condition, improvement of quality and result of work as base of development and utilization of employees optimally. As for the employee is that he can know any ability through the value of the less, enough or good. Knowing the deficiencies means that the worker can fix them for the future

D. Definition of Occupational Safety and Health

According [3], work safety is all the means and efforts to prevent the occurrence of an accident work. In this case, the safety concerned is closely related to the machine, the work tool in the process of the workplace ground and its environment and the ways of doing the work. The purpose of work safety is to protect the safety of the workforce in performing its duties, to protect the safety of everyone at the workplace and to protect the safety of equipment and production sources in order to always be used efficiently. Safety of work is preferred in work to avoid accidents. Definition of occupational safety and health according to Decree of Minister of Labor R.I. No. Kep. 463 / MEN / 1993 is the safety and health of work is a safeguard aimed at the workforce and others in the workplace / company is always safe and healthy, and every source of production can be used safely and efficiently.

E. Purpose of Occupational Safety and Health

According [4], to as far as possible provide a safe and healthy working conditions to every worker and to protect human resources.

F. Relationship between Occupational Health and Safety with Work Productivity

That if the company executes the safety and health management system properly, then the company will get many benefits, one of which is increasing work productivity due to decreasing the number of days lost due to workplace accidents [5]. Considering that, K3 program and employee work productivity become important to be studied, because both of these factors can affect the productivity of company in its aim to achieve vision and mission of company. In order for the company must strive to pay attention to worker safety and health in order to increase employee productivity and increase profit or profit from the company.

II. METHOD

Research flow in this research, research will see the relation of safety and health aspects to work productivity in mechanics. Based on the background of the problems and the theoretical basis that has been mentioned above, can be seen the relationship between K3 (X) aspect variable with the dependent variable of mechanical work productivity (Y) in the following chart:



The type of this research is descriptive correlational research. According [6] explains that correlation research is a study that aims to find whether there is a relationship and if there is, how closely the relationship and mean or not that relationship. Based on the above explanation it can be concluded that the correlational method aims to see the relationship and its strengths, as well as to make an estimate based on the strength or weakness of that relationship. The stronger the relationship the higher the contribution.

The sample is part of the population to be retrieved and processed in the research data. [6] states that: if the population or object is less than 100 then samples of the existing population to be sampled, and is a population study, but if the population is more than 100 then for samples only taken from 15% to 20% or 20% to 25% or more. From the opinion, the author makes the entire population of all the mechanics in the workshop of PT. Astra Daihatsu, Utama Service Station, Jeffri Motor, and Gun Auto Service were samples from this study, where the number of samples was 30 people.

III. RESULTS AND DISCUSSION

The data of this research consist of two variables that is application of aspect K3 (X) and work productivity of mechanic (Y). This data description discloses information about average, middle score, most emerging score, standard deviation, diversity, range, lowest score, highest score and total score.

A. K3 Aspects of Application Implementation

Application of Aspect K3 is one of the variables studied in this study that is as independent variables. Before conducting questionnaires to the respondents conducted first test the validity and reliability questionnaire

Class	Interval Class	Frequency	Percentage
1	82-86	1	3,33
2	87-91	7	23,33
3	92-96	8	26,66
4	97-101	12	40
5	102-106	1	3,33
6	107-111	1	3,33

Table 2. Frequency Distribution of K3 Aspect of Application Implementation

From the tabulation listed in the table above, then we can see in the form of the following histogram.

30

100%

Σ



Fig. 2. Application of K3 Aspect

Based on the basic calculation of Aspect K3 is known that the answer score spreads from the lowest score 83 and the highest score 107, so the range of scattered values in the sample is 24 and standard deviation 5,117. The average score of achievement score of aspect of K3 is 86, 84% and entered into high category.

B. Variable Productivity Work Mechanics

variables

From the research that has been done obtained data that describe the results of the productivity of mechanical work. Obtained basic statistical calculation of the productivity of mechanical work.

Table 2. Frequency Distribution of Work Mechanic Productivity

Class	Interval Class	Frequency	Percentage
1	52-53	1	3,33
2	54-55	10	60
3	56-57	1	33,33
4	58-59	-	-
5	60-61	7	23,33
6	62-63	11	36,66
Σ		30	100%

From the tabulation listed in the table above, we can see in the form of the following histogram.



Fig. 3. Histogram Productivity Work Mechanics

Based on research data Working Mechanics Productivity note that the scores spread from the lowest score 52, the highest score 63, so the range of scattered values on the sample is 63-52 = 11 and standard deviation 3.418. The average achievement rate of mechanical work productivity score was 84% and entered into good category.

C. Relationship of Variable Application of K3 Aspect (X) and Productivity of Mechanical Work (Y)

The result of data description about application of K3 (X) and mechanical work productivity (Y) variables, it can be explained the relationship between the two variables in the sum table form and the overall average of respondent value. Moreover, detailed by using linear regression chart.



Fig. 4. Graph of the relationship of variables X and Y

The relationship of X and Y variables can be explained that there is an average assessment of all respondents and is represented by a linear line that extends from the lowest average value to the highest value with the gradient Y = 0.7908 (X) + 0.7659. Shows that there are significant differences in data from the overall where, in the application of the aspect of K3 is high and also has high work productivity, on the other hand on the application of low K3 aspect also produces work productivity is also low and can be concluded that application of aspect K3 strongly contribute to work mechanic productivity.

Based on hypothesis testing, obtained r-value of 0.753> r table 0.361. After the t test, it is known that t count 6.064> t table 1.697. This shows that the hypothesis that there is a positive relationship between the two variables (clear) with a significant level of 5% empirically. The application of K3 aspect contributes positively to the productivity of significant mechanical work. This means that the higher the application of mechanical K3 aspect the higher the productivity of the mechanical work, otherwise the lower the implementation of the K3 aspect the lower the productivity of mechanical work. It can be concluded it is explained that in a

company or workshop that has a number of mechanics can be measured the value of its work productivity with the value of work safety and health (K3) mechanics itself, and the company easily to measure productivity mechanical work. So the company or workshop can provide input and debriefing about the application of aspects of K3 to the mechanics who lack knowledge of aspects of K3 in order to get work productivity with a high value, the higher the productivity of work on the company or workshop the greater the income and profits in the can.

IV. CONCLUSION

The existence of correlation or correlation of application of K3 aspect contribute positively and significantly with the productivity of mechanical work, with coefficient of calculated r (0.753)> r table 0361) and t count (6.064)> t table (1.697) at 5% significant level. The Strength of the Relationship of K3 Aspect Application to Mechanical Work Productivity of 56.8%. There is a positive relation on variables of K3 aspect (X) aspect to work productivity variable of mechanic (Y), which if a mechanic apply K3 aspect well then will get high work productivity value.

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