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Improving Productivity through Work Environment, Training, Health and Safety

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Productivity is a measure of the achievement of a company's set targets and goals. It is an important means of monitoring improvement so that the company's objectives can be obtained effectively and efficiently. This study aims to analyse i) the influence of the work environment on work safety, ii) the influence of the work environment on occupational health, iii) the effect of training on work safety, iv) the effect of job training on occupational health, v) the effect of work safety on work productivity and vi) the influence of work health on productivity. The object of this research was conducted in a bag manufacturing industry located in the Bandung Regency, Indonesia. The data used was derived from a questionnaire taken by 120 respondents employed in the production division. The data were analysed statistically using the Structural Equation Modelling (SEM) method. The results of the analysis, showed the indicator value for the relationship; the working environment variable for work safety, the training variable for occupational health, the work environment variable for occupational health, the job training variable for work safety, the work safety variable for work productivity, and the occupational health variable for work productivity. The highest indicator value for the work environment was 0.63 and was described as pleasantly coloured and decorated according to the needs of the employees. The highest score for job training was 0.81 which delivered training material that was easily understood. The highest value for the work safety variable was 0.74 with the provision of labour protection tools. The highest value for occupational health is 0.69 with the existence of adequate facilities. The highest value for work productivity is 0.75, which showed that employees were responsible for their work. The variable that most influenced work productivity was the work safety variable.

Key words: *Environment, Training, Health, Safety, Productivity, SEM.*

Introduction

The purpose of a company is to make a desired product in order to obtain profits. However, some companies still have not paid enough attention to the work safety of their employees. However, even though this may cause losses to a company, it is necessary for those engaged in the manufacturing and the construction sectors (Nitisemito, 2011).

The number of work accidents that occur affects work productivity causing an increase in the direct loss for businesses. This is what causes the decline in business productivity is workplace accidents.

In most companies, productivity is the most important value and has become a trend in recent studies. Occupational Health and Safety (K3) is a comprehensive program or system related to the prevention of workplace accidents; especially in hazardous workplaces. Higher risks with potential hazards in the workplace can cause workplace accidents. In addition to workplace accidents, there is also the potential of workplace hazards, for example radiation. Radiation can reduce employee health so employees who carry out production processes in a company will be vulnerable to accidents or decreased health. Adequate conditions in the work environment will increase employee productivity and motivate employees to work. Vice versa, if the work environment is inadequate it will result in a decrease in work motivation and an impact on employee work productivity (Dessler, 2009).

Another thing that must be considered in order to support employee productivity is training provided to employees. Training programs provided to employees will increase work productivity. With good training, employee competencies can be developed to support better company operations. The last thing that fosters employee productivity is the work environment of the company. The work environment can encourage good working conditions as well as encouraging employees to optimise their potential and make a worthwhile contribution to the company (Sulistyarini, 2006).

We will focus on one of the leading manufacturing bag companies in Indonesia that also produces accessories such as shoes and sandals. To maintain the brand's position as a market leader, it has utilised several resources to improve the performance of its employees; as this company had several problems in relation to employee’s working conditions.

Based on the performance data there are several factors that influence the decline in employee performance, including:

1. Occupational Health
2. Work Safety
3. Work Environment
4. Job Training

Literature Review

Work Productivity

According to Tohardi in Dessler (2009), work productivity is a mental attitude related to finding improvements to what already exists. According to Ravianto in Sulistyarini (2006) productivity is the attitude of life where today must be better than yesterday, and tomorrow must be better than today. In the workplace this attitude encourages the development of improvements guaranteed to increase productivity.

Productivity is a comparison between the results achieved (output) and the overall resources used (input). In other words, productivity has three dimensions. The first dimension is effectiveness that leads to the achievement of targets related to quality, quantity and time. The second is the efficiency of the inputs in regards to how the resources are utilised or how the work is carried out. The third dimension is the degree of quality with which the output or the production of the output are measured and assessed in productivity (Husien, 2002: 9).

According to Mathis (2002), the benefits of measuring work productivity are to:
1. Encourage workers to improve employee work productivity.
2. Evaluate work carried out for: bonuses and other forms.
3. Enable decision making, for example: promotion, transfer and demotion.
4. Increase training and development needs.
5. Improve career planning and development.
6. Reduce irregularities in the work process.
7. Reduce informal inaccuracies.
8. Provide work prizes or fair rewards to employees

Work Environment

The work environment is defined as a particular situation that is related to work behaviour and conditions for the employees. The work environment can be monotonous which can lead to boredom and interference. From some of these descriptions, it can be said that the work environment is a certain condition or situation around the workplace, which effects employees when working. Schultz (2006) states that the work environment is an important thing to discuss.

The work environment can affect employees who are carrying out the production process. A work environment that is not optimal will reduce employee performance. The work environment can explore work relationships that bind workers to the environment. The work environment is said to support employee work if employees can carry out activities safely, comfortably, healthily and optimally. An unconducive work environment can make work take longer, produce results that are not optimal and employees that are unreliable (Nitisemito, 2011).

There are two types of work environments, namely:
A. Physical work environment
Physical work environment relates to the physical conditions of the work environment that affect an employee or worker in carrying out his work directly or indirectly.
The physical work environment is divided into two categories, namely:

a. The work environment that is directly related to the employees for example: tables, chairs and others.
b. The general work environment for example: the temperature, light, noise, odour and so on in the workspace (Sedarmayanti, 2009).

B. Non-physical work environment
Non-physical work environment takes into considerations work relationships between co-workers and leaders or superiors in the workplace Sedarmayanti (2009). According to Nitisemito (2011) this is an important consideration due to the enormous affect the non-physical work environment has on the motivation of employees and their communication with superiors, and others.

Work Training

Training is often conducted at workplaces, organisations, institutions, or even in educational institutions. The incentive of improved employee performance encourages companies to provide training for employees to improve their skills at work (Mathis, 2002).

Training is a process that deals with certain ways to achieve organisational goals through certain methods. Therefore, the training process is equipped with various objectives, and can be widely accessed. In particular, training provides employees with special rights, and this is the differentiating boundary between training and development. According to Dessler (2009), training is a process of teaching new or existing employees that enables them to improve their performance. Training is useful to improve the quality of human resources (HR) in the workplace.

According to Mathis, R.L. & J.H. Jackson (2004), training is conducted in order to achieve certain goals and training can be classified into several things, namely:

1. Routine training

This type of training is training that is carried out specifically for new employees and is carried out so as to improve the ability of employees.

2. Technical training

Technical training is a type of training that aims to enable employees to carry out their work more correctly and carry out their duties more responsibly.

3. Interpersonal training

Interpersonal training is a type of training conducted to address operational problems and improve good relations within the organisation.

4. Innovative training

Innovative training is a type of long-term focused training in order to improve the ability of employees and organisations in the future.

Work Safety

According to Wilson (2012) the definition of occupational safety is a functional aspect that is positive for the mental work environment. Work safety ensures an environment free from suffering, damage and/or loss in the workplace (Mangkunegara, 2011).

Work safety is a must for every company to implement to prevent work accidents, disability, and death. According to Wilson (2012), there are three reasons for the importance of work safety for companies to do, namely:

1. Moral

Humans in the world use their intelligence to organise. Rights, morals and education are in accordance with human dignity and religious values. The higher the morals that are applied in a company, the higher the attention that is paid to the employee safety.

2. Law

The labour law protects workers in the workplace. Employers are responsible for the health and safety of their workers and will receive penalties in accordance with the labour law if these are not adhered to.

3. Economy

The economic reasons are to avoid huge payouts in compensation and losses that are not only related to the insurance costs, but also other factors in relation to workers.

Occupational Health

Occupational health is a vital thing that must be considered by superiors. Because with good working health, employees will work better and rarely get sick. This will make employees more resilient and more able to work longer at the company. According to Mangkunegara (2011), healthy working environments are free of the risk of physical, mental, or emotional suffering. According to Nitisemito (2011) states According Sedarmayanti (2009), " Occupational health is physical and mental health. Health can suffer due to illness, stress (tension) or an accident. The poor health of employees will result in high absenteeism and low productivity. "

Occupational health according to Flippo, in Kusnendi (2003), is divided into three areas, namely:

1. Physical Health
    a. Physical check-ups at the time of placement
    b. Regular physical check-ups for all employees
    c. Access to well-equipped medical clinics
    d. Availability of medical personnel and experts who specialise in industrial hygiene

2. Systemic and Preventive Attention to Health
    a. Periodic checks for proper sanitation

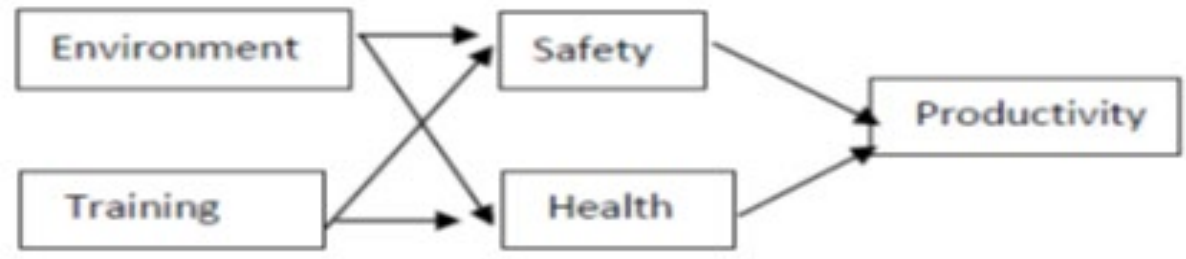
3. Mental Health
    a. Availability of counselling; psychologists and psychiatrists
    b. Working with psychologists and psychiatrists from outside the organisation
    c. Debriefing company employees is related to the nature and problem of mental health
    d. Development and maintenance of human relations learning programs.

Research Methods

Descriptive Research

This research was conducted systematically to find answers to the problems that were occurring. Research can also be interpreted as a series of activities carried out in several stages. This research describes the data obtained from primary and secondary information. The research strategy designs are also divided into two types, namely qualitative and quantitative. Qualitative design is a form of research that uses a lot of nominal and ordinal data, while the quantitative design of data is interval and ratio.

Figure 1. Research Framework



The object of the study consists of several variables such as work environment, occupational health, work safety, job training and work productivity. This study is utilising a case study in the Production Division of a company located in Bandung Regency with the following two factors:

1. This company is a company engaged in the retail industry and the distribution of bags and other equipment, with several brands that are of interest to the public. The problems that need to be resolved are primarily in the production division – the core of the company.
2. The production division has a performance trend that decreases every year based on the data from the company; however, the company's target is increasing with the competition in the industrial sector.

In this study a model approach is designed that explores the influence of work environment, occupational health, work safety and job training on work productivity. The problem that occurs in the company is that there are factors that influence each variable. Systematic steps have been taken to solve the problem so that the research can achieve its objectives. It commences at the preliminary stage then moves onto the data analysis and collection stage, and completes at the final stage of conclusions and suggestions.

Types and Data Sources

Data can be interpreted as facts and figures that have not been processed. The type of data used in this study according to its type is primary data.

1. Primary Data

Primary data comes directly from the source of data specifically collected from the selected respondents and is directly related to the problems under study (Cooper and Emory, 1995).

2. Secondary Data

Secondary data is related to the problem studied and can be obtained through literature, research journals, magazines and document data which are needed to compile research.

Analysis of Direct Effect, Indirect Effect, and Total Effect

After identifying the types and sources of data, the next step is to do a direct effect, indirect, and total effect analysis on the variables studied. This is done in order to be able to analyse the strength of the relationship or influence between constructs in both direct, indirect and total relationships. Explanation of variables including direct effect variables, indirect effects variables, and total variables are as follows:

1. Direct effect is the coefficient of a line with a one-end arrow and occurs in two constructs directed by a one-way arrow line.
2. Indirect effects are effects that arise through an intermediate variable and occur in two constructs that are not directed by a one-way arrow line.
3. Total effect is the effect of various relationships; the total effect is a combination of direct effects and indirect effects.

Data Collection and Data Analysis Phase

Next is the stage of data collection and data processing that is needed to support the research. Questionnaires were distributed as a method to be used in this study. The filling out of this questionnaire was done by customers. The data is collected as an input for the research so that the method chosen can be determined as the correct method to use.

The analysis phase is done after processing the data, then analysing the hypothesis testing. The results of the data processing analysis will be carried out by a discussion of correlation with the theory or previous research. The data analysis phase in this study uses the quantitative method of Structural Equation Modelling (SEM). The reason for choosing SEM is because to know and analyse and answer the regressive research hypothesis or the relationship between the independent variables to the dependent, a comprehensive test tool is needed and SEM is a suitable method as this process diagram explains the flow of hypothesised relationship variables.

In this case, the data collection method used in this study is:

1. Field studies: namely data collection techniques by making direct observations on the object of research. This field study uses two forms of activities, namely:

a. Observation: which is the retrieval of data or information by directly observing the object being studied to find out the actual conditions.
b. Questionnaires: which are data collection techniques carried out by distributing a written and structured list of questions to respondents to obtain information about the problem under study. The type of questionnaire used was a questionnaire containing multiple-choice questions.

2. Literature Review: namely data retrieval by studying books and documents related to the main points of research concerning Work Environment, Training, Safety, Occupational Health, and Work Productivity in addition to the location of research. This aims to capture secondary data as reference material in helping to analyse the problems that exist in the field by using documentation techniques, namely re-recording of available resources.

Validity

The SEM validity technique used in this study is convergent validity and discriminant validity. It has been explained previously that these two validities are generated from the Structural Equation Model.

Reliability

Reliability is a measure of the internal consistency of the indicators of a construct that shows the degree to which each indicator indicates a general construct. In other words, how specific things help each other in explaining a common phenomenon. The use of reliability measures such as *Cronbach's alpha* does not measure unidimensionality but assumes that the unidimensionality already exists at the time *Cronbach's alpha* is calculated. In the SEM technique construct reliability is assessed by calculating the reliability index of the instrument used from the model.

Normality

The SEM model if estimated using Maximum Likelihood Estimation requires the assumption of normality assumptions. The easiest normality test is to observe skewness value.

Results and Discussion

The company that was studied was founded in 1993, starting with limited facilities. That is, it started the business by producing and selling from the same premises. In 1994 the company established a wall climbing venture that was very popular with its high percentage of ‘nature loving’ consumers, and which was seen to be a sign that the Company cared for their customers. In 1994, the company won the trust of another big company as a partner in the distribution of this product and the company distribution channel first succeeded in entering the Bali market in the same year.

The object of this research was carried out in the production section of company employees totalling 120 production division employees.

Discussion

Table 1: Parameter Estimation of *Regression Weights*

⟸		*Estimate*	*S.E.*	*C.R.*	*P*	*Label*
Safety	*Environment*	*0.275*	*0.298*	*2.923*	*0.036*	*par_35*
Health	*Training*	*0.172*	*0.096*	*2.597*	*0.048*	*par_37*
Health	*Environment*	*1.889*	*1.120*	*2.687*	*0.045*	*par_39*
Safety	*Training*	*1.077*	*0.124*	*8.665*	***	*par_40*
Productivity	*Safety*	*0.095*	*0.055*	*2.831*	*0.038*	*par_36*
Productivity	*Health*	*0.061*	*0.082*	*2.749*	*0.042*	*par_38*

Relationship between Work Environment and Work Safety

The results of testing the hypothesis shows that the influence of the work environment on work safety is accepted. From data processing, it is known that the CR (Critical Ratio) value for the influence between work environment variables on work safety as shown in table 4.20 is 2.923 with a P value (Probability) of 0.036. Both of these values show results that meet the requirements, which are above 2.00 for CR (Critical Ratio) and below 0.05 for P (Probability).

Relationship between Work Environment and Occupational Health

The results of testing the hypothesis shows that the presence of the influence of the work environment on occupational health is received. From data processing, it is known that the CR (Critical Ratio) value for the influence between work environment variables on occupational health as shown in table 4.20 is 2.687 with a P value (probability) of 0.045. Both of these values show results that meet the requirements, which are above 2.00 for CR (Critical Ratio) and below 0.05 for P (Probability).

Relationship to Work Safety Training

The results of testing the hypothesis shows that the presence of the influence of job training on work safety is accepted. From data processing, it is known that the CR (Critical Ratio) value for the influence between work training variables on occupational safety as seen in table 4.20 is 8.665 with a P value (probability) of 0.000. Both of these values show results that meet the requirements, which are above 2.00 for CR (Critical Ratio) and below 0.05 for P (Probability).

Relationship between Job Training and Occupational Health

The results of testing the hypothesis shows that the presence of the influence of job training on occupational health is accepted. From data processing, it is known that the CR (Critical Ratio) value for the influence between work training variables on occupational health as shown in table 4.20 is 2.597 with a P value (Probability) of 0.048. Both of these values show results that meet the requirements, which are above 2.00 for CR (Critical Ratio) and below 0.05 for P (Probability).

Relationship between Work Safety and Work Productivity

The results of testing the hypothesis shows that there is a relationship between occupational safety and work productivity. From data processing, it is known that the CR (Critical Ratio) value for the influence of work safety variables on work productivity as shown in table 4.20 is 2.831 with a P value (probability) of 0.038. Both of these values show results that meet the requirements, which are above 2.00 for CR (Critical Ratio) and below 0.05 for P (Probability).

Relationship between Occupational Health and Work Productivity

The results of testing the hypothesis shows that the presence of occupational health on work productivity is accepted. From data processing it is known that the CR (Critical Ratio) value for the influence between occupational health variables on work productivity as shown in table 4.20 is 2.749 with a P value (probability) of 0.042. Both of these values show results that meet the requirements, which are above 2.00 for CR (Critical Ratio) and below 0.05 for P (Probability).

Conclusion

Based on the results of the analysis and discussion in the previous section, conclusions can be drawn from the research as follows:

1. There is an influence of the work environment on work safety. So, the first hypothesis in this study is accepted. This means that the work environment has an effect on employee safety. So, the better the work environment, the greater the employee safety.
2. There is an influence of the work environment on occupational health. So, the second hypothesis in this study is accepted. This means that the work environment affects the work health of employees. So, the better the work environment the greater the employee health.
3. There is an influence of work training on work safety. So, the third hypothesis in this study was accepted. This means that job training has an effect on employee safety. So, better job training will improve employee safety.

4. There is the influence of job training on occupational health. So, the fourth hypothesis in this study is accepted. This means that job training has an effect on the work health of employees. So, better job training will improve the work health of employees.
5. There is the influence of work safety on work productivity. So, the fifth hypothesis in this study was accepted. This means that the work environment has an effect on employee safety. So, the better the work environment the greater the employee safety.
6. There is the influence of occupational health on work productivity. So, the sixth hypothesis in this study is accepted. This means that occupational health has an effect on employee work productivity. So the better the work health the greater the increased work productivity of employees.
7. The variable that most influences work productivity is the work safety variable.

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