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# FACTORS INFLUENCING SAFETY BEHAVIOR OF MANUFACTURING WORKERS IN RUBBER WOOD INDUSTRY

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**Abstract**

This study explored the factors influencing safety behavior of manufacturing workers in Rubber Wood Industry. A total of 440 respondents were selected. This research was Quantitative research with the questionnaires as research instrument. The data was analyzed by descriptive statistics and Hierarchical Multiple Regression Analysis.

The result of this research showed that the safety working climate, conscientiousness and safety attitude toward working indicated the safety working behavior at 40.8 percent ($F = 101.816$, $P < .01$). The result can be use as the guideline for the organization to impose safety policy such as safety training provide for the employees whose work related to the specific risks. Wood processing operators need to pay attention on a preparation of personal safety equipment by set up the monitoring system and safety behavior evaluation in working for the benefit of the employees and sustainable growth of the Rubber Wood Industry.

**Keywords:** Safety Behavior, Rubber Wood Processing Industry, Safety Climate, Conscientiousness , Safety Attitude

## Introduction

Currently, the Rubber Wood Processing Industry has a continues growth rate especially the export of rubber wood as a material for furniture making which became very popular among international market. (Pornchaisuree, 2012). Thailand is the world most natural rubber exporter and continue to grow year by year. The agricultural statistic 2013 indicated that Southern Andaman provinces has high potential in rubber production almost as the national average (Southern Andaman Province Development Plan, 2014) There are the highest number of Rubber Wood Processing plant in the South of Thailand (Pluksanusak, 2012). The Southern Andaman Provinceshas 4 million acres of agricultural land which equal 21 percent. Most of them are the Rubber Wood Processing plant. The Rubber Wood Processing plant located in the area of 5 Southern Andaman Provinces which are Ranong, Phangnga, Phuket, Krabi and Trang because of the potential in developing Rubber Wood Processing industry. It's the alternative ways to add value to agricultural products which available in the area (Office of the National Economic and Social Development Board, 2011).

Office of the Compensation Fund, Ministry of Labor (Office of Social Security, 2014) collected statistic of experiencing danger and illness from work of the employees found that 2009-2013 has an average increase of 2.91 per year which classified by severity. Mostly 3 days off from work 70.43 percent, over 3 days off from work 27.39 percent, 1.68 percent dismemberment, 0.48 percent loss of life and total permanent disability has the smallest proportion of 0.01 percent of the total number of employee affected from work. However, when considering the change in severity found that the average rate of total permanent disability have increased 99.06 percent, dismemberment have increased 11.14 percent and loss of life have increased 2.27 percent. The most injured part of the body was hands or fingers which consistent with the job description of food and beverage industry that use sharp equipment in working (Chaichotkij, 2011).

Rubber Wood processing plants use the large tools and machines which related to safety. Most common accidents were from using knife, saw, wood fall over, injured from dust and chemical which was not only effected the workers, materials, machine and the organization but also their family that if the injured person become total permanent disability and unable to work , they have to be the burden for their family to care.

Research Office of National Institute of Development Administration (2010); Osuansri, (2011); Tobua & Sangrasamee, (2007). The use of human labor with large machines and sharp equipment may increase the risk of accident from work. Although the Government introduce measures on this matter related to law to prevent the risk that may cause from work but the injury rate tend to increase.

Therefore, the researchers are aware of the study about the factors influencing safety behavior in working of the manufacturing worker in Rubber Wood Processing Industry to use the empirical evidence to be the guideline for safety development behavioral model, promote safety behavior and decrease the rate of worker's injury from work in the future.

**Research of Objective**

To study the factors influencing safety behavior of manufacturing workers in Rubber Wood Industry.

Scope of research

1. The population used in the research was 1,105 manufacturing workers from 89 Rubber Wood factories in Southern Andaman provinces (Ranong, Phangnga, Phuket, Krabi and Trang) with licensed to operate since December 2014. Calculate the sample group by using Proportional Stratified Random Sampling with reliability level of 99 percent and discrepancy rate (e) of 0.05 (Jaeger, 1980, mentioned in Jamonmarn, 1994) and considered with the initial agreement in determination of sample size use in Cuasal Relationship Model
with at least 20 workers per 1 variables. This research used 22 variables (Hair et al., 2010) which the sample group size of 440 workers.

2. The variables derived from the concept study and literature review related to the safety behavior and factors influencing safety behavior determine 5 variables of the operational specific term which 4 components of safety climate, (Neal et al., 2000; Mohamed, 2002; Kines, 2011) 6 components of conscientiousness (Tantaleela, S. (2012); Costa & McCrea, 1992) and 4 components of safety attitude (Guldenmund, 2000; Siu et al., 2003)

3. Research Duration

Duration of 12 months from January 2017 – December 2017

**Research Methodology**

1. Research Methodology

This research is a Quantitative Research to study the factors influencing safety behavior in working in Rubber Wood Industry.

2. Research process

Determining the background of the problem, determine the research objectives, study and analyze the theory and the related documents, develop conceptual framework from the theory, concept and the literature review by using the survey research. The data collected using the closed end questionnaire. The statistic use to analyze the data was the descriptive statistic which include frequency, percentage, mean and the explanation of variable

influences on safety behavior in working by using Hierarchical Multiple Regression Analysis.

The researchers develop the questionnaire from the theory concepts and the safety behavior in working in the Rubber Wood Industry related research which consist of 7 sections : Section 1 Personal information with the checklist such as gender, age, education level, marital status, employment duration for 8 questions. Section 2 : There are 12 questions for the safety climate factors. Section 3: There are 8 questions for safety attitude factors. Section 4 : There are 12 questions for conscientiousness. Section 5 : There are 10 questions for work safety behavior.

The assessment of research tools, the researchers conducted a content validity analysis by the professional expert to check the consistency of the questionnaire in term of language and the content.

The professional expert considered the question and the research objectives or the definition of research (Rovinell, & Hambleton, 1977) The result from the Analyzation of the consistency index analysis were from 0.60 - 1.00 after that try out the revised questionnaire which modify from the recommendation of the professional expert with 30 non-sample workers to analyze the reliability tools by the use of internal consistency with Cronbach's alpha coefficient and the reliability equal to 0.844 (Kanlaya, 2013; Cronbach, 1951)

3. Data collection

The researchers conducted the research by coordinated with Human Resource Department to collect the data from 440 employee representatives from 89 factories which took 8 weeks to get back 100 percent of the questionnaires reply after that analyze the collected data statistically.

4. Data analysis

The researchers use descriptive statistic which include frequency, percentage, mean and the explanation of variable influences on safety behavior in working by using Hierarchical Multiple Regression Analysis.

**Research Results**

The sample Group of this research were mostly male with the age between 30 - 39 years old, the education level were higher than high vocational level, married and live together, experience in work lower than 5 years, the production supervisor and the sample group were mostly in Trang.

The consideration of the overall work safety behavior were high when consider the independent variable found that the safety climate in working were high, safety attitude were range very high and the conscientiousness were also range very high which show in Table 1.

**Table 1** : Average, Standard Deviation and work safety level of work safety behavior Climate.

| | $\bar{X}$ | S.D. | Level |
|---|---|---|---|
| Work safety behavior | 3.97 | 0.66 | High |
| Work safety behavior atmosphere | 3.94 | 0.69 | High |
| Work safety attitude | 4.33 | 0.51 | Very High |
| Conscientiousness | 4.23 | 0.48 | Very High |

Before the researchers analyzing the ability to predict, a preliminary test was performed include the distribution of all variables is in a normal curve, independent

variable and dependent variable is a continuum variable with linear relationship. From the test of variables correlation found that all predictive variables were used to analyze the predictive ability for work safety behavior which was analyzed in Hierarchical Multiple Regression Analysis.

The results of the initial analysis found that work safety climate, conscientiousness and work safety attitude were able to predict the safety behavior in working as 40.8 percent ($F = 101.816$, $P<.01$) showed in Table 2.

**Table 2** : Multiple Regression Correlation Coefficients of the variables predict work safety behavior in Rubber Wood Industry.

| Variables | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| 1. Work safety atmosphere | .538* | .385* | .311* |
| 2. Conscientiousness | | .357* | .330* |
| 3. Work safety attitude | | | .162* |
| $R^2$ | .290 | .394 | .412 |
| Adj $R^2$ | .288 | .391 | .408 |
| $R^2$ change | .290 | .104 | .018 |
| F Value | 178.716 | 141.803 | 101.816 |

P < .01

**Discussion of Research Results**

From the study found that :

1. Safety atmosphere factor can predict safety behavior in working of manufacturing workers in Rubber Wood industry at .01 level of significance which consistent with the research of Neal and Griffin (2006) stated that safety atmosphere has an influence on the sensibility of the person that can motivate them to act accordingly to the safety atmosphere. If the employee realizes that the organization is concerned about their well being, they will realize that they have to act as beneficial to the organization such as if the workers realize that the organization prioritize on work safety they have to follow the instruction and act accordingly.

2. The conscientiousness factor use to predict work safety of manufacturing worker of Rubber wood industry at .01 level of significant which consistent with the research of Tantaleela. (2012) which studied on variables predicting the safety driving behavior of the driver and found that conscientiousness can be able to predict safety driving behavior of the driver at the percentage of 49.1 at .01 level of significant which also consistent with the research of Nanaphoonsin. (2007). Found that conscientiousness can predict work safety behavior. Authur & Graziano. (1996) mentioned that the person with conscientiousness tend to have more social responsibility and less risky behavior. The driver with higher self discipline will not violate the regulations and tend to have higher driving safety behavior.

3. Safety attitude factor predict the work safety behavior of Manufacturing workers in Rubber wood industry at .01 level of significance which mentioned as Henning et al., (2009) that safety attitude have different effect on the behavior as well as the study of Phoo-ngernkham. (2009) which can be summarize that attitude is the personal concept or thinking concept which reflects person's behavior.Personal expressions and behavior may affected from personal attitude. The study of McGovem et al., (2000) indicated that if the person has negative attitude toward risk behavior they tend to have more work safety behavior. By understanding the attitude development may help to increase safety behavior in the workplace. Therefore, the safety attitude will lead to have more safety in the workplace.

**Suggestions**

The result of factors influencing safety behavior in working of manufacturing worker in Rubber Wood industry can be improve and apply in order to bring the highest benefit to the industry. The researchers suggestions are as follows :

1. **Suggestions for the government sectors**

1.1 The government sectors need to determine the action plan and providing assistance to promote effective safety work for the workers.

1.2 The Government sectors need to prepare the safety training for the workers gives advice follow up the performance and give recommendation for personal related safety of the factories to promote the safety activity for the higher safety work behavior.

**2. Suggestions for the organization**

2.1 The organization may use the research finding to be the information for impose the policy and support worker's quality of life who works in the factories. As well as increase the benefit of effective works and have better working climate.

2.2 The organization need to prepare safety budget plan for the training and improve the environment that promote work safety behavior.

2.3 The organization need to issue rules, regulations and the safety instructions for all the workers to raise their safety awareness.

**Suggestions for the future research**

1. The researchers have suggestions for the future research as follows :

1.1 There should be additional qualitative studies by using different tools such as group discussion, observation or in-depth interview and action study in order to have in depth information to benefit in various area that can be apply in designing safety workplace for the workers.

1.2 There should be the study of the affect or the correlation of Intervening variable that might influence on the safety behavior which give more detail in the conceptual framework.

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