THE EFFECT OF WORK SAFETY CLIMATE AND WORK SAFETY KNOWLEDGE ON WORK SAFETY BEHAVIOR WITH WORK SAFETY MOTIVATION AS AN INTERVENING VARIABLE

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Abstract

This study aims to analyze how much influence the variable has on work safety climate and work safety knowledge to work safety behavior with work safety motivation as a variable intervention to health workers at Asy-Syifa Sambi Boyolali Hospital. The data used in this study is primary data derived from the distribution of research questionnaires. The population in this study is the health workers of Asy-Syifa Sambi Boyolali General Hospital, both permanent and non-permanent employees, totalling 130 people. The sample in this study was the entire population mentioned above, namely 130 people. The sampling technique used in this study is the census. The study uses analytical techniques of Structural Equation Modelling (SEM) with the AMOS 24.0 analysis tool. The findings show that work safety climate, work safety knowledge, and work safety motivation have a positive effect on workplace safety behavior. Work safety climate, and work safety knowledge have a positive effect on work safety motivation. Work safety climate has a positive and significant effect on work safety behavior through work safety motivation, and work safety knowledge has a positive and significant effect on work safety behavior through work safety motivation. This research shows that companies must establish a good work safety climate and work safety knowledge for employees so that they are able to improve work safety behavior both directly and through intervening work safety motivation variables.

Keywords: Work Safety Behavior, Work Safety Climate, Work Safety Knowledge, Work Safety Motivation

INTRODUCTION

Human resources are a key factor for the success of an organization in achieving its goals. Occupational Health and Safety is one aspect of success for industries engaged in health services to improve the efficiency of organizational operations (Shohamy, 2020). Therefore, organizations must improve employee Occupational Health and Safety so as to reduce or free employees from work accidents and or work-related illnesses, and ultimately be able to increase work efficiency and productivity.

Hospitals are one of the workplaces that have a high potential for work accidents regardless of the decreasing number of Covid-19 cases that have occurred in Indonesia, for example, the potential for Nosocomial Infections. Nosocomial infection is an infection that develops in the hospital environment. Research conducted by the National Nosocomial Infections Surveillance (NNIS) and the Centres for Disease Control and Prevention's (CDC's) in 2002 reported that 5 to 6 cases of nosocomial infection for every 100 visits to the hospital. An estimated 2 million cases of nosocomial infection occur each year in the United States. Therefore, it is very important for health workers to maintain their own safety in order to avoid the threat of disease transmission so that they can treat patients properly by improving work safety behavior.

Behavior is the actual activity that a person has shown in relation to other individuals and the world around them. The term work safety behavior itself is an activity carried out by individuals in a form related to protection. Adi et al., (2021) said that work safety behavior is employee safety activities in the workplace which are expressed by employee actions to build and optimize health and safety in the work environment.

In an effort to improve work safety behavior among employees, there are various factors that are thought to influence work safety behavior, according to Mazzetti et al., (2020) said that the work safety climate has been widely recognized as the main factor influencing work safety behavior. According to Adi et al., (2021) work safety climate (work safety climate) is the result of observations and experiences related to policies, practices, and procedures which in turn shape behavior that prioritizes work safety values in companies or organizations. A positive safety climate is created when interactions between the organization and the project team are guided in such a way that the organization ensures

safe project execution, provides appropriate, and up-to-date Personal Protective Equipment (PPE), and regards safety as its top priority.

In addition to work safety climate, work safety knowledge is also an equally important predictor in improving work safety behavior. Zulkifly et al., (2021) states that occupational safety knowledge is an employee's understanding of work-related safety issues, such as assessing work-related risks and safely completing activities to avoid accidents. Well-designed work safety training will be effective in increasing work safety knowledge which can reduce unsafe behavior and ultimately reduce work accidents.

The object of this research is Asy-Syifa Sambi Boyolali Hospital which is a health service institution for the community, Asy-Syifa Sambi Boyolali Hospital has attempted to shape the work safety behavior of medical personnel and non-medical personnel who work there. Problems related to the application of work safety behavior at Asy-Syifa Sambi Boyolali General Hospital, namely that there are still medical workers who are reluctant to use complete personal protective equipment when carrying out medical procedures and are still found medical workers who dispose of medical waste in the wrong place.

Based on the 2017-2020 report on the level of adherence to using PPE at Asy-Syifa Sambi-Boyolali Hospital, it shows that the compliance level of medical personnel at Asy-Syifa Sambi Boyolali Hospital in using PPE is still below the standard set by the Ministry of Health, which is 100%. Medical personnel are required to use complete PPE in every medical action taken to avoid disease transmission and work accidents that may occur. The level of adherence to using PPE that is still below standard can certainly increase the risk of work accidents that have a negative impact on medical personnel.

The study uses the variable work safety motivation as a mediating variable which is expected to bridge the influence between the work safety climate and work safety knowledge variables on the work safety behavior variable. If the company can improve the work safety climate and work safety knowledge in the work environment, it is expected to increase work safety motivation in individual employees. From the work safety motivation that appears in employees will be able to change the behavior of individual employees to do any work with care (Abdullah & Aziz, 2020).

According to Lu et al., (2020), work safety motivation is the willingness of individuals to exert effort to implement safety behavior and the valence associated with this

behavior. Individuals must be motivated to adhere to safe work practices and participate in safety activities in order to prevent work accidents. Meanwhile according to Griffin & Neal, (2000) states that work safety motivation is an individual's desire to do any job with care. Individual desire will result in behavior change (Chopra, 2019; Rybnicek et al., 2019).Griffin & Neal, (2000) argues that the proximate cause of individual safety behavior is safety motivation.

The purpose of this study is to analyze how much influence the variable has work safety climate and work safety knowledge on work safety behavior variables in health workers at Asy-Syifa Sambi Boyolali General Hospital through work safety motivation as an intervening variable.

REVIEW OF LITERATURE

Work Safety Behavior

According to Chen et al., (2021), work safety behavior refers to individual actions taken to protect themselves, such as complying with safety regulations to avoid hazardous incidents. Djastuti et al., (2020) states that work safety behavior is the right approach to reduce accidents in the workplace. Poor implementation of work safety behavior is the main cause of accidents in the workplace. In order to know and examine work safety behavior, it is necessary to have an in-depth understanding of individual actions to work safely. The efforts made by individuals to work in a safe way will be able to reduce the occurrence of accidents in the workplace (Abdullah & Aziz, 2020).

Work Safety Climate

Work safety climate according to Zohar (1980) in Chen et al., (2021) is an integrated set of cognitions regarding the safety aspects of an organization. The safety climate represents the general opinion among members regarding safety-related social units, rules, procedures, and organizational performance (Adi et al., 2021). According to Djastuti et al., (2020), work safety climate is a picture of perceptions related to safety policies, procedures, and practices. These perceptions reflect expectations for the results of employee work behavior.

Employees who perceive their work environment as safe tend to have fewer accidents than those who perceive their work environment as hazardous. In addition,

employee perceptions of the work safety climate can help companies identify elements that need improvement (Adi et al., 2021). A positive safety climate is created when interactions between the organization and the project team are guided in such a way that the organization ensures safe project execution, provides appropriate and up-to-date Personal Protective Equipment (PPE), and regards safety as their top priority.

Work Safety Knowledge

Occupational safety knowledge is employee understanding of safe work methods, as well as proper safety training and teaching in terms of safety-related laws, rules and standards. Zulkifly et al., (2021) states that occupational safety knowledge is an employee's understanding of work-related safety issues, such as assessing work-related risks and safely completing activities to avoid accidents. According to Abdullah & Aziz, (2020), occupational safety knowledge is an understanding of hazards and safety control through safety training.

Work Safety Motivation

According to Lu et al., (2020), work safety motivation is an individual's willingness to exert effort to enact safety behavior and the valence associated with that behavior. Individuals must be motivated to adhere to safe work practices and participate in safety activities in order to prevent work accidents (Kartiko & Sirojuddin, 2020). Meanwhile according to Griffin & Neal, (2000) states that work safety motivation is an individual's desire to do any job with care. Individual desire will result in behavior change (Chopra, 2019; Neel et al., 2016; Rybnicek et al., 2019). Griffin & Neal, (2000) argues that the proximate cause of individual safety behavior is safety motivation.

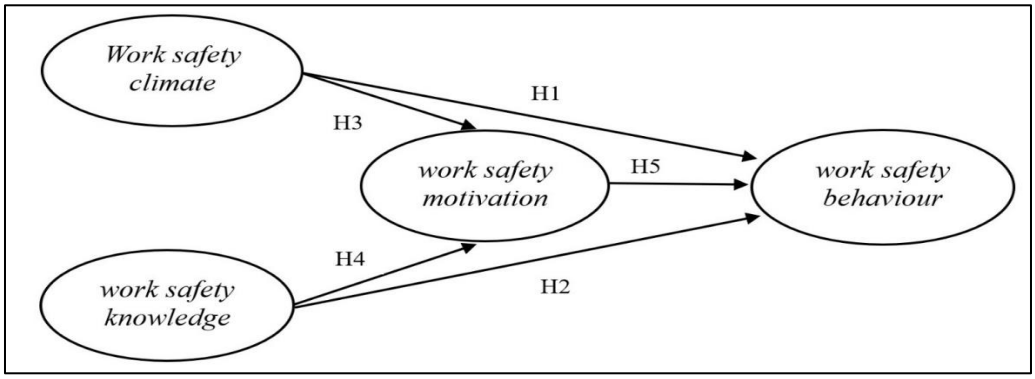

Figure 1
Conceptual Framework
Source**:** (Purnasari, 2013)

H1: Work Safety Climate has positive effect on Work Safety Behavior

H2: Work Safety Knowledge has positive effect on Work Safety Behavior.

H3: Work Safety Climate has positive effect on Work Safety Motivation.

H4: Work Safety Knowledge has a positive effect on Work Safety Motivation.

H5: Work Safety Motivation has positive effect on Work Safety Behavior.

RESEARCH METHOD

The research method used in this study is a quantitative method. Quantitative research methods are designed to test existing hypotheses. The quantitative method is expressed as a number obtained from measurements using a variable scale in research. The population in this study is Asy-Syifa Sambi Boyolali General Hospital health workers, both permanent and non-permanent employees, have the right to provide care to 130 patients. While the sample in this study were all health workers at RSU Asy-Syifa Sambi Boyolali which has the right to provide care to patients. This study used a sample of 130 respondents. The technique used to determine the sample in this study is the census technique, which is a sampling technique when all members of the population are used as samples (Sugiyono, 2016).

The data collection method used in this study was to conduct a survey using a questionnaire. The questionnaire used in this study is a closed questionnaire, where a closed questionnaire will help respondents to answer quickly, and also makes it easier for researchers to analyse data on all questionnaires that have been collected (Sugiyono., 2013). The questionnaire in this study uses a Likert scale because it is more reliable and provides a larger volume of data than other scales (Cooper & Schindler, 2006).This questionnaire uses intervals 1 to 7, where 1 indicates strongly disagree and 7 indicates strongly agree.

Test the quality of the data used in this study is to test the reliability and validity (Ghozali, 2017). This research applies a pilot test which aims to ensure that the questions in the questionnaire can be understood by respondents and is used to test how much the research instrument represents the variable being measured (Ghozali, 2017). The analytical method used in this study is the Structural Equation Model (SEM) which is operated using the AMOS 24.0 program.

RESULTS AND DISCUSSION

Structural Equation Model (SEM)

Full model SEM analysis is an overall model analysis by including indicators on exogenous and endogenous constructs that have passed the Confirmatory Factor Analysis (CFA) test. The research model used for analysis is as follows.

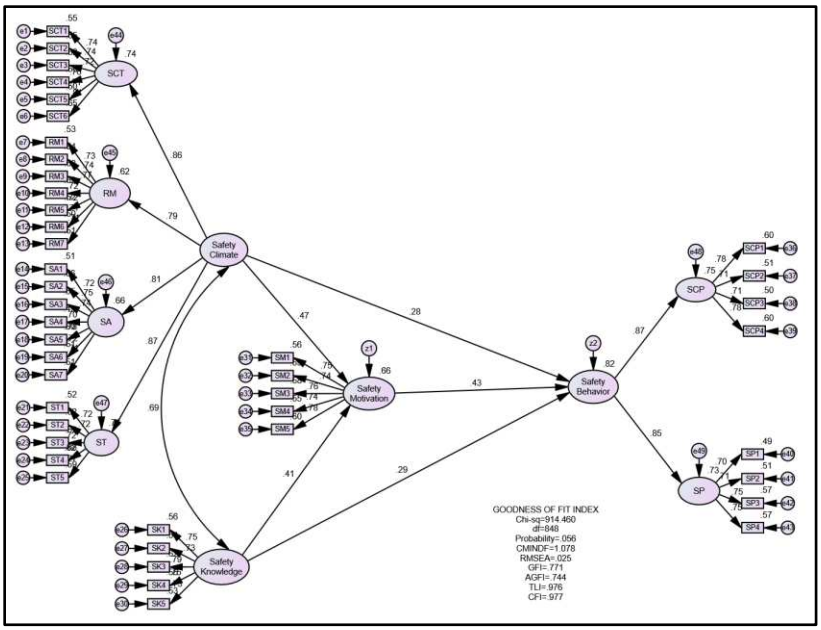

Figure 2
Structural Equation Model (SEM)

Table 1
Structural Equation Model Test Results

Goodness of Fit Index	Cut off Value	Results	Model Evaluation
Chi – Square	≤ 916,857	914,460	Good Fit
Probability	≥ 0,05	0,056	Good Fit
CMIN/DF	≤ 2,00	1,078	Good Fit
RMSEA	≤ 0,08	0,025	Good Fit
GFI	≥ 0,90	0,771	Poor Fit
AGFI	≥ 0,90	0,744	Poor Fit
TLI	≥ 0,90	0,976	Good Fit
CFI	≥ 0,90	0,977	Good Fit

Source: Processed Data (2022)

Table 1 shows that the Chi-square in this study has a value of 914.460 which means it is smaller than the cut off value obtained from the Chi-square table for df 848 with a significance level of 5%, namely 916.857. The significance probability value is above 0.05,

which is 0.056. Therefore, it can be concluded that the model is good. CMIN/DF, CFI, RMSEA, and TLI values can meet the goodness of fit criteria. Even though GFI and AGFI are smaller than the cut-off value, it can still be concluded that the model is acceptable and there is no need to repair the model.

Validity Test

An indicator can be said to be valid if it has a standardized loading estimate value of 0.50. The study shows that all indicators have a standardized loading estimate value above 0.50. Therefore, the indicator is declared valid as a variable measuring instrument.

Reliability Test

The acceptable limit for construct reliability is >0.70. Meanwhile, the variance extracted is > 0.50 (Ghozali, 2017). In this study, the construct reliability and variance extracted values met the cut-off value requirements where the resulting values were above the significance level. Therefore, each indicator used in this study is reliable.

Hypothesis Test

Testing the hypothesis in this study is based on the Critical Ratio (CR) value of the causality relationship as follows:

Table 2
Hypothesis Test Result

			Estimate	S.E.	C.R.	P	Label
Work Safety Motivation	<---	Work Safety Climate	.572	.151	3.787	***	par_40
Work Safety Motivation	<---	Work Safety Knowledge	.405	.117	3.455	***	par_41
Work Safety Behavior	<---	Work Safety Climate	.330	.164	2.008	.045	par_42
Work Safety Behavior	<---	Work Safety Knowledge	.278	.128	2.169	.030	par_43
Work Safety Behavior	<---	Work Safety Motivation	.427	.151	2.830	.005	par_44

Source: Processed Data (2022)

H1. Work Safety Climate has a positive and significant effect on Work Safety Behavior

Based on Table 2, it can be shown that the CR value meets the criteria > 1.96, which is equal to2.008 and has a significance of 0045≤ 0.05. Thus, hypothesis 1 which reads work safety climate has a positive and significant effect on Work Safety Behavior, is declared accepted. It explains that the better the work safety climate that employees have, will have a positive effect on work safety behavior. A good perception will help workers to improve their work safety, so that workers will show safety behavior every time they do their job. This is confirmed by longitudinal studies (Neal & Griffin, 2006a) which shows that safety climate is able to predict changes in safety behavior, which will minimize accidents. A positive safety climate can motivate workers and increase their knowledge about work safety, which leads to reduced violations of worker safety rules and procedures.

H2. Work Safety Knowledge has a positive and significant effect on Work Safety Behavior

Based on Table 2, it can be shown that the CR value meets the criteria > 1.96, which is equal to 2,169 and has a significance of 0,030≤ 0.05. Thus, hypothesis 2 which reads work safety knowledge has a positive and significant effect on work safety behavior, is declared accepted. The better work safety knowledge possessed by employees; this will increase work safety behavior. The research is in line with what has been described by (Neal & Griffin, 2006a) that safety knowledge is one of the things that influence the occurrence of safety behavior carried out by employees when doing work. Safety knowledge as individual knowledge in policies, procedures and practices related to work safety. Knowledge of work safety in management will influence how these workers apply safety behavior when doing work.

H3. Work Safety Climate has a positive and significant effect on Work Safety Motivation

Based on Table 2, it can be shown that the CR value meets the criteria > 1.96, which is equal to3,787 and has a significance of 0,030≤ 0.05. Thus, hypothesis 3 which reads work safety climate has a positive and significant effect on work safety motivation, is declared accepted. The better the work safety climate, the better the work safety motivation. Safety climate is an image or perception that exists among employees about the conditions

of work safety in the environment where they work (Pardede, 2019). This perception is very dependent on the situation and safety conditions that actually occur in the environment where they work. They found that employees who have the perception that their organization is very concerned about work safety have led to compliance behavior with work safety procedures, where safety motivation is the intermediary (Neal & Griffin, 2006b).

H4. Work Safety Knowledge has a positive and significant effect on Work Safety Motivation

Based on Table 2, it can be shown that the CR value meets the criteria > 1.96, which is equal to3,455and the significance value of P is described by *** which means the value is <0.001. Thus, hypothesis 4 which reads work safety knowledge has a positive and significant effect on work safety motivation, is declared accepted. It means that good work safety knowledge from employees will affect work safety motivation. The results of this study also indicate that the higher a person's knowledge of safe behavior, the higher their motivation, as shown by their adherence to safe work procedures. Individuals who have an understanding of work safety and have the desire will be able to comply with rules and carry out work procedures that guarantee their safety in carrying out tasks in their work unit (Syarifah & Adiati, 2018)

H5. Work Safety Motivation has a positive and significant effect on Work Safety Behavior

Based on Table 2, it can be shown that the CR value meets the criteria > 1.96, which is equal to2,169 and the significance value of P is described by *** which means the value is <0.001. Thus, hypothesis 5 which reads work safety motivation has a positive and significant effect on work safety behavior, is declared accepted. It means that the higher the employee's safety motivation, this will improve employee work behavior. Behavior is basically goal-oriented. In other words, a person's behavior is generally motivated by a desire to achieve certain goals (Winardi, 2004). Work safety motivation refers to an individual's desire to exert all efforts to carry out safety behavior and the valence associated with that behavior (Neal & Griffin, 2006a). Probst and Brubaker (2001) found that work safety motivation had an effect on compliance with work safety procedures up to

6 months later. So, employees who have work safety motivation should carry out this behavior.

Table 3
Intervening Test Results

Variable Relationship	Test Statistic	p value
Work Safety Climate > Work Safety Motivation > Work Safety Behavior	2,26604913	0,02344838
Work Safety Knowledge > Work Safety Motivation > Work Safety Behavior	2,18995689	0,02852736

Source: Processed Data (2022)

Based on Table 4, it can be proven that work safety climate and Work Safety Knowledge have a positive and significant effect on work safety behavior through work safety motivation because the Sobel test statistic score is greater than 1.96 and also the p value is less than 0.05.

CONCLUSION

Based on the results of the data analysis that was carried out in the previous chapter, the following conclusions can be drawn: a) Work safety climate positively affects Work Safety Behavior; b) Work Safety Knowledge positively affects Work Safety Behavior; c) Work Safety Climate positively affects Work Safety Motivation; d) Work Safety Knowledge positively affects Work Safety Motivation; e) Work Safety Motivation positively affects Work Safety Behavior; f) Work Safety Climate positively and significantly affects Work Safety Behavior through Work Safety Motivation; g) Work Safety Knowledge positively and significantly affects Work Safety Behavior through Work Safety Motivation.

There were limitations to the sample because the researchers could not make all the health workers of Asy-Syifa Sambi Boyolali Hospital a research sample, while the health workers who were not used as the research sample were general practitioners and specialist doctors. Some of the variables in this study have not been studied specifically by previous researchers, so researchers find it difficult to find the literature on a research variable.

Further research should take the overall sample of the research object with predetermined sample criteria. Researchers can use other research objects, for example in the manufacturing industry or the construction industry and add or replace variables according to company problems as research objects related to work safety behavior.

REFERENCES

Abdullah, K. H., & Aziz, F. S. A. (2020). Safety Behaviour in the Laboratory among Chemical Engineering Students: An S-O-R Paradigm. *Journal of Behavioral Science*, *15*(3), 51–65.

Adi, E. N., Eliyana, A., & Hamidah. (2021). An Empirical Analysis of Safety Behaviour: A Study in MRO Business in Indonesia. *Heliyon*, *7*(2), e06122. https://doi.org/10.1016/j.heliyon.2021.e06122

Chen, W. T., Merrett, H. C., Huang, Y. H., Bria, T. A., & Lin, Y. H. (2021). Exploring the Relationship Between Safety Climate and Worker Safety Behavior on Building Construction Sites in Taiwan. *Sustainability (Switzerland)*, *13*(6), 1–21. https://doi.org/10.3390/su13063326

Chopra, K. (2019). Indian Shopper Motivation to Use Artificial Intelligence: Generating Vroom's Expectancy Theory of Motivation Using Grounded Theory Approach. *International Journal of Retail and Distribution Management*, *47*(3), 331–347. https://doi.org/10.1108/IJRDM-11-2018-0251

Cooper, D. R., & Schindler, P. S. (2006). *Metode Riset Bisnis Volume 2* (R. Dewi (ed.); 9th ed.). Jakarta: PT. Media Global Edukasi.

Djastuti, I., Perdhana, M. S., Raharjo, S. T., & Udin, U. (2020). Safety Behavior of Manufacturing Companies in Indonesia. *Quality - Access to Success*, *21*(174), 147–151. https://doi.org/10.1201/9780429202629-31

Ghozali, I. (2017). *Model Persamaan Struktural Konsep Dan Aplikasi Program AMOS 24* (Cetakan ke). Badan Penerbit Universitas Diponegoro.

Griffin, M. A., & Neal, A. (2000). Perceptions of Safety at Work: A Framework for Linking Safety Climate to Safety Performance, Knowledge, and Motivation. *Journal of Occupational Health Psychology*, *5*(3), 347–358. https://doi.org/10.1037/1076-8998.5.3.347

Kartiko, A., & Sirojuddin, A. (2020). Effect of Work Environment and Motivation on Employee Performance at PT. Karya Mandiri Gresik. *Indonesian Interdisciplinary Journal of Sharia Economics (IIJSE)*, *3*(1), 85-95. https://doi.org/10.31538/iijse.v3i1.751

Lu, Y., Taksa, L., & Jia, H. (2020). Influence of Management Practices on Safety Performance: The Case of Mining Sector in China. *Safety Science*, *132* (December 2019), 104947. https://doi.org/10.1016/j.ssci.2020.104947

Mazzetti, G., Valente, E., Guglielmi, D., & Vignoli, M. (2020). Safety Doesn't Happen by Accident: A Longitudinal Investigation on The Antecedents of Safety Behavior. *International Journal of Environmental Research and Public Health*, *17*(12), 1–13. https://doi.org/10.3390/ijerph17124332

Neal, A., & Griffin, M. A. (2006a). A Study of The Lagged Relationships Among Safety Climate, Safety Motivation, Safety Behavior, and Accidents at The Individual and Group Levels. *Journal of Applied Psychology*, *91*(4), 946–953. https://doi.org/10.1037/0021-9010.91.4.946

Neal, A., & Griffin, M. A. (2006b). A Study of The Lagged Relationships Among Safety Climate, Safety Motivation, Safety Behavior, and Accidents at The Individual and Group Levels. *Journal of Applied Psychology*. https://doi.org/10.1037/0021-9010.91.4.946

Neel, R., Kenrick, D. T., White, A. E., & Neuberg, S. L. (2016). Individual Differences in Fundamental Social Motives. *Journal of Personality and Social Psychology*, *110*(6), 887–907. https://doi.org/10.1037/pspp0000068

Pardede, S. D. (2019). Analisis Pengaruh Keselamatan dan Kesehatan Kerja (K.3) dan Jaminan Sosial Tenaga Kerja (Jamsostek) Terhadap Semangat Kerja Karyawan pada PT. Mitra Pratama Mandiri Jaya Perkasa Medan. *Jurnal "JUMANSI STINDO."*

Purnamasari, W. (2013). *Pengaruh Safety Climate Terhadap Safety Performance Dengan Safety Knowledge dan Safety Motivation Sebagai Variabel Intervening Studi Pada Karyawan Operasional Departemen Produksi PT. DOK dan Perkapalan Surabaya (Persero)*. Universitas Airlangga.

Rybnicek, R., Bergner, S., & Gutschelhofer, A. (2019). How individual needs influence motivation effects: a neuroscientific study on McClelland's need theory. In *Review of Managerial Science* (Vol. 13, Issue 2). https://doi.org/10.1007/s11846-017-0252-1

Shohamy, E. (2020). *The Power of Tests: A Critical Perspective on The Uses of Language Tests*. Routledge.

Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif dan R&D.* Alfabeta.CV.

Sugiyono. (2016). *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.

Syarifah, D., & Adiati, R. P. (2018). Safety Performance pada Pekerja Beresiko Tinggi Ditinjau dari Keperibadian, Pengetahuan dan Motivasi Keselamatan Kerja. *Jurnal Psikologi Dan Kesehatan Mental*, *3*(1), 23–230.

Zulkifly, S. S., Baharudin, M. R., & Hasan, N. H. (2021). Safety Leadership and Safety Knowledge-Attitude-Behaviour (KAB) in Malaysia's manufacturing SMEs : A Higher Order Two-Stage Approach of PLS-SEM. *Preprints*, *June*, 1–17. https://doi.org/10.20944/preprints202106.0527.v1