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Workers' perception overview of the implementation process of construction safety management system (CSMS) in construction projects

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Abstract

The number of workplace accidents in Indonesia still high. BPJS Employment recorded a total of 265,334 workplace accidents in Indonesia in 2022 ^[1]. To address this high level of workplace accidents, the government has mandated the implementation of the Construction Safety Management System (CSMS) in the construction sector. The success of safety management implementation in the workplace is influenced by workers' perception of the implementation of safety management. The purpose of this study was to describe the factors that form workers' perceptions on the implementation of construction safety management. This study employed qualitative testing, namely a systematic literature review using the PRISMA method. Based on this table, it shows that the successful implementation of safety management in the workplace is influenced by workers' perceptions of the implementation of safety management. Factors examined in the above article that have the potential to influence the formation of perceptions include knowledges, attitudes, and practices, as well as social support, unsafe behavior, motivation, OHS training, personal autonomy, situations for action, health information, health facilities, work environment conditions, and occupational safety management. Based on the literature review that has been conducted, the factors that form workers' perceptions of the process of implementing the Construction Safety Management System (CSMS) on construction projects include knowledges, attitudes, social support, organizational culture, safety culture, inspections, work accident investigations, promotion of occupational safety and health, completeness of Personal Protective Equipment (PPE) and Work Protective Equipment provided, education level, worker behavior, occupational safety and health management system, feedback/feedback from suggestions given by workers/employees to company management, worker motivation, work rotation/work shifts, social environmental factors, health facilities and workload.

Keywords: Construction safety management system, perception, accident

Introduction

The number of workplace accidents in Indonesia still high. BPJS Employment recorded a total of 265,334 workplace accidents in Indonesia in 2022. This figure indicates that there are still many potential hazards that fail to resolve risk control. In order to resolve the high rate of work accidents, the government requires the construction sector to implement the Construction Safety Management System. The successful implementation of safety management in the workplace is influenced by workers' perceptions of the implementation of safety management. Based on research from Trimailuzi, Zahrul Harmen, and Henny Yustisia on the perceptions of workers, mandors and supervisors about the importance of implementing safety, occupational health and environmental management systems on construction projects, it is explained that the description of the perceptions of workers, mandors and supervisors about the implementation of safety, occupational health and environmental management systems is 76% or good. This means that workers' perceptions are very good about the importance of implementing safety, occupational health and environmental management systems in construction project work to reduce the number of work accidents and occupational diseases ^[2]. Workers' perceptions are formed by knowledge, attitudes, and practices, as well as social support from the supervisors, for example in the form of guidance and supervision from supervisors.

Knowledge is the ability to know and describe information obtained from sight and hearing. The results of vision and hearing are obtained, among others, through learning, information media both printed and electronic and one's experience. Knowledge is the result of knowing, and this occurs after people perceive a certain object. The magnitude of the influence of occupational safety and health knowledge on employee performance is 0.951 (95.1%). Based on research conducted by Cicilia Iisnahan, it is explained that occupational safety and health understanding has a positive effect on employee performance to work at PT. Usaha Karya Buana [3]. A conclusion can be drawn that knowledge, attitudes, and practices, as well as social support have an influence in forming workers' perceptions.

Materials and Methods: The method used in this research is literature review, which is conducted with several stages that analyze relevantly from several literature studies. This study used a sample of research articles/journals in the Google Scholar, Pubmed, and Springerlink databases. The inclusion criteria for articles are scientific articles published in 2013-2024, using Indonesian-English, in the form of original articles, and in the form of full text articles. Meanwhile, the article exclusion criteria are articles that are not related to workers' perceptions of the implementation process of the Construction Safety Management System in construction projects. Based on the inclusion criteria and exclusion criteria, there are 9 articles to be analyzed. The stages and steps of using the PRISMA diagram in this study are described as follows.

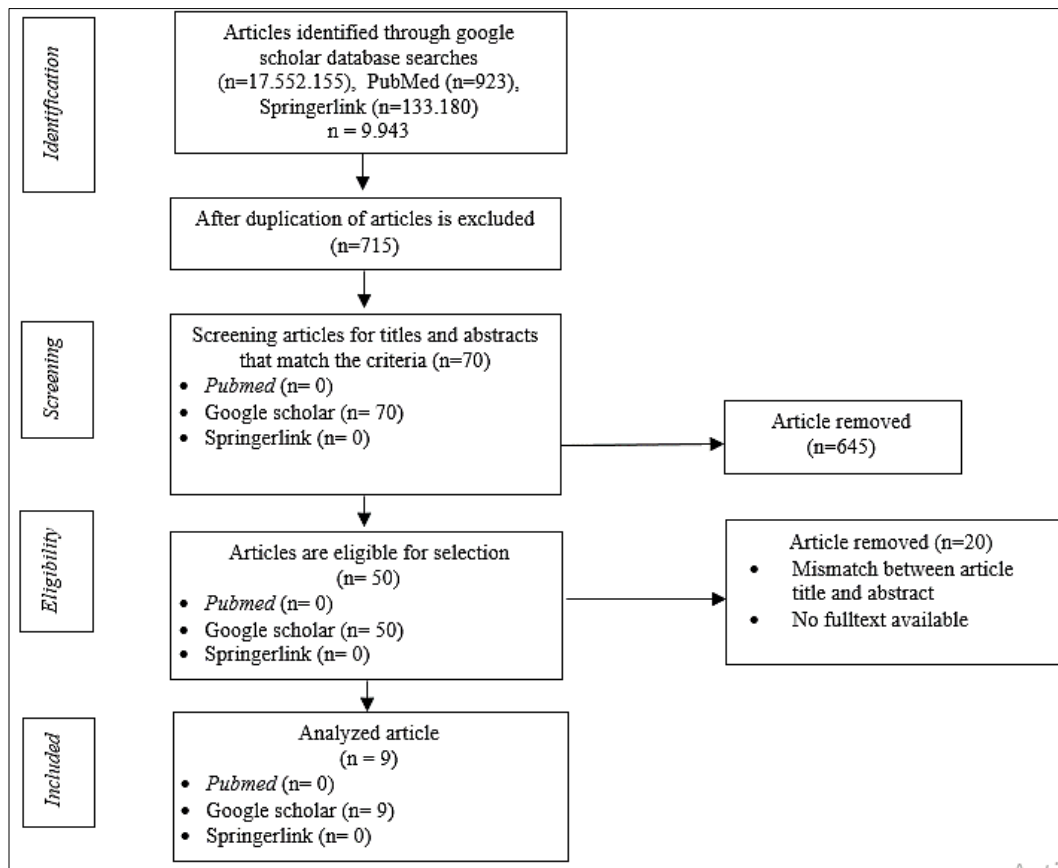


Fig 1: PRISMA Flow Diagram

Results: This study finds the definition of factors that form worker perceptions and behaviors can be seen in the following table:

Tabel 1: Recapitulation of Articles and Journals

No	Title, Researcher, Year	Method	Result
1	The Influence of Occupational Health and Safety on Toll Road Construction Project Worker Accidents. (Annisa Aprilia, Sitti Safiatius Riskijah, Suhariyanto, Juni 2020).	Observational analytic by distributing questionnaires to 100 workers as respondents. Data were analyzed using Hazard Identification, Risk Assessment, and Risk Control (HIRARC) and multiple linear regression analysis methods using the SPSS 16 software.	The high accident category and the regression equation $Y = 5.621 - 0.436 X1 - 0.478 X2$ show that, in terms of partial influence, X2 (health) has a more significant influence on reducing Y (accidents) by 0.751 compared to X1 (safety) which is 0.748. However, overall, the combined effect of X2 (health) and X1 (safety) on R2 (coefficient of determination) is 77%, indicating that the implementation of Occupational Health (X2) and Safety (X1) plays a strong role in determining the accident rate (Y).
2	Analysis of Identification and Perception of	Observational analytics by distributing	Identification of the implementation of

	Safety Management in Construction Projects. (Suriati Abd. Muin, Rani Bastari Alkam, Oktober 2020).	questionnaires as research instruments to 30 workers to determine workers' perceptions of the implementation of the occupational safety and health management system.	work safety management in the BCA Main Branch Office Panakkukang Building construction project is made in the form of a checklist, namely 54.54% of work safety management elements, have been implemented and 45.45% are not fully implemented. For the work safety management checklist, 45.45% have been implemented, 36.36% are not fully implemented and 18.18% are not implemented. Workers' perceptions of work safety management at the construction project site of the BCA main branch office building in Panakkukang, where the average percentage who answered strongly agree was 48.61%, agreed 41.11%, moderately agreed 7.78%, disagreed, 2.22% and strongly disagreed, 0.28%. This shows that on average the workers strongly agree.
3	Perceptions of Workers, Foremen and Head Masons on the Importance of Implementing Safety, Occupational Health and Environmental Management Systems in Construction Projects (Trimailuzi, Zahrul Harmen, Henny Yustisia, Maret 2013)	This research is descriptive which uses the populations that consist of five major construction companies in Padang. The treatment of the samples uses a quota sampling method on 45 respondents that consist of 25 workers, 10 supervisors, and 10 workers chiefs. The technique used in taking and treating the data is distributing the questioner sheets, and interviewing the respondents. This research consists of 3 subvariables for worker respondents as follow: planning, provision of health and safety facilities, and application.	The description of the perceptions of workers, foremen and head builders about the implementation of safety, occupational health and environmental management systems is 76% or better. This means that workers' perceptions are very good about the importance of implementing a safety, occupational health and environmental management system in construction project work to reduce the number of work accidents and occupational diseases.
4	The Effect of Occupational Health and Safety Knowledge on Construction Employee Performance at PT. Usaha Karya Buana Kota Kupang (Cicilia Lisnahan, Asrial dan Paul G. Tamelan, Juni 2022)	Descriptive observational by distributing questionnaires to 30 respondents. The collected data is processed and further analyzed using the F-test analysis technique, which aims to determine the final conclusion of a survey whether there is a significant influence or not.	The results showed that there is a positive influence of occupational health and safety knowledge together on employee performance to work at PT Usaha Karya Buana with evidence of the Fcount (27.712) > Ftable (4.210) with a significance of 0.000 so H0 is rejected and Ha is accepted, meaning that occupational safety and occupational health significantly affect the improvement of employee performance at PT Usaha Karya Buana Kupang City. There is a positive influence of occupational health and safety knowledge on employee performance at PT Usaha Karya Buana with evidence of the value of $t_{count} > t_{table}$ (77.097 & 43.196 > 1.701). The magnitude of the influence of occupational health and safety knowledge to awareness of occupational health and safety behavior is 0.951 (95.1%). Occupational health and safety knowledge can affect employee performance to work at PT. Usaha Karya Buana Kupang City.
5	The influence of knowledge, attitude and work environment conditions on perceptions of the application of occupational safety and health. (Arief Hartono, Sutopo, Oktober 2018)	Observational analytic purposes to determine the influence of knowledge on the perception of the application of occupational safety and health, the influence of attitudes, work environment conditions, knowledge on the perception of the application of K3. The population of this study consisted of 95 students.	The results showed that knowledge had an effect on the perception of occupational safety and health implementation by 5.6%. Attitude has a positive effect on the perception of occupational safety and health implementation by 7%. Work environment conditions have a positive effect on the perception of occupational safety and health implementation by 8.3%. Knowledge, attitudes and work environment conditions together affect the perception of occupational safety and health implementation by 15.2%. ^[4]
6	Relationship between Knowledge, Attitude, Training, and Supervision with Perception of SMK3 Implementation. ^[5] (Dina Lusiana Setyowati, Diana Pratiwi, M.	Observational analysis. The population and sample of this study were 47 workers of PT PLN (Persero) Mahakam Sector PLTGU Tanjung Batu Unit. The sampling technique	The results showed that there was a relationship between knowledge (p=0.029), attitudes (p=0.002), and occupational health and safety training (p=0.028) with

	Sultan,2018)	used, the total population, so the number of samples in this study was 47 people. The independent variables in this study are knowledge, attitude, K3 training, and supervision. The dependent variable is the perception of SMK3. Data collection used a questionnaire that was compiled by the researcher and had been the validity tested on 15 workers of the Karang Asam PLTD. Data analysis uses software programs including univariate analysis, and bivariate (chi square test at α 5%).	perceptions of SMK3, while the supervision variable ($p=0.109$) was not related to labor perceptions of SMK3 implementation. Attitude is the most important factor related to labor perceptions of SMK3.
7.	Correlation between Intention, Social Support, Health Information, Personal Autonomy, Situation to Act in Changing Nurses' Behavior of Sorting Medical Waste in Al Islam Hospital Bandung. ^[6] (Surdiyah Asriningrum,2018)	Observational analysis. Data collection from questionnaires with 40 respondents taken from 465 nurses selected by proportional random sampling technique. In determining the number of research samples using the Lynch formula to get a minimum of 40 people. Reliability testing using the Cronbach's Alpha method. The validity test purposes to measure whether a questionnaire is valid or not by correlating the scores of each variable with the total score through the Anova test (Analysis of variances). Data collection using a Likert scale question instrument.	The results of the statistical analysis show that the correlation between intention (X1) =11%, social support (X2) =0.31%, health information or health facilities (X3) =1.1%, personal autonomy (X4) =0.01% and situation to act (X5) =0.003%, has a positive relationship in influencing nurses' behavior change.
8	Analysis of the Influence of Perceptions and Attitudes of Occupational Safety and Health on Safety Behavior in Maintenance of Railway Facilities. ^[7] (Ajeng Tyas Damayanti, 2023)	Observational analysis. This study uses an attitude measuring instrument, namely the Likert scale. The test of measuring instruments was conducted in a used try out, which was directly imposed on the real subjects. The classical assumption test analysis technique used is multicollinearity test, heteroscedasticity test and normality test. Multiple Regression Analysis is used to determine how much influence more than one independent variable has on one dependent variable. The hypothesis tests conducted are the F test and the t test. The coefficient of determination (R ²) can see how far the model's ability to explain the variation in the independent variable. The validity test is conducted through questions that have been proven valid can be included in the measurement. Meanwhile, invalid question items are removed and not included in further data analysis. The reliability test is conducted to see the accuracy of the measuring instrument to make a measurement. The reliability test is conducted by comparing the R value of the results. R results seen in Cronbach's alpha will be compared with the reliability statistics value. If the number obtained is \geq then can it can be concluded that the measuring instrument is acceptable, good and reliable.	Hypothesis 1 concerning the influence of occupational safety and health perceptions on safety behavior is proven by a descriptive variable of 89.4 and this occupational safety and health perception has a greater influence than occupational safety and health attitudes. The linear regression result is 0.263. The t test result is 2.372 with a significance of 0.031. This proves that hypothesis 1 is acceptable. Hypothesis 2 regarding the influence of occupational safety and health attitude on safety behavior is proven by a descriptive variable of 85.1. The linear regression results show a result of 0.337 and at test of 3.568 with a significance of 0.001. Thus hypothesis 2 is said to be acceptable.
9	Factors associated with unsafe behavior in service workers of PT Agung Automall Jambi Branch. ^[8] (Ulfa Monalisa, Subakir, Renny Listiawati, Maret 2022)	Observational analysis. The sample of this study was 47 employees in the service section of PT Agung Automall Jambi Branch. The research instrument was a questionnaire. Data collection techniques by conducting interviews. Data analysis using the chi square test.	The results showed that 63.8% had less motivation, 57.4% had low knowledge, 63.8% had a negative attitude and 51.1% had unsafe behavior. The results of bivariate analysis showed that there was a significant relationship between the motivation p-value 0.027, knowledge p-value 0.028, attitude p-value 0.013 to unsafe behavior in service workers at PT. Agung Automall Jambi Branch in 2021.

Based on this table, it shows that the successful implementation of safety management in the workplace is influenced by workers' perceptions of the implementation of safety management. Factors examined in the article above that have the potential to influence the formation of perceptions include knowledge, attitudes, and practices, as well as social support, unsafe behavior, motivation, occupational health and safety training, personal autonomy, situations for action, health information, health facilities, work environment conditions, and occupational safety management.

Explanations related to these factors will be reviewed further in the following sub-chapter discussions.

Discussion

Based on this table, it shows that the successful implementation of safety management in the workplace is influenced by workers' perceptions of the implementation of safety management. Factors examined in the article above that have the potential to influence the formation of perceptions include knowledge, attitudes, and practices, as well as social support, unsafe behavior, motivation, occupational health and safety training, personal autonomy, situations for action, health information, health facilities, work environment conditions, and occupational safety management.

Explanations related to these factors will be reviewed further in the following sub-chapter discussions.

Table 2: Definition of Terms

No.	Terms	Term Definition	Indicator	How to Measure and Measure Results
1	Knowledge	Knowledge is a thinking process carried out by humans. Knowledge is gained by science, through observation, experimentation, classification and analysis. ^[9]	The knowledge that workers have of the PPE that must be used and the work protective equipment that must be installed to work on construction projects, especially OHS requirements for implementing work at height and welding work.	Using interviews by asking questions.
2	Attitudes.	Attitude is a readiness or willingness to act, and not an executor of certain motives. Attitude is not yet an action or activity, but a "predisposition" to an action or behavior. The attitude is still a closed reaction, not an open reaction to open behavior. ^[10]	a. Workers' attitudes about the urgency of using PPE and preparing work protective equipment on projects, especially PPE that must be used at height, namely full body harness and work protective equipment for work at height in the form of body hardness anchors, lifelines, and fall arrest slap nets.	Using interviews by asking questions.
3.	Social support	Social support as a form of assistance is consists of various types, namely emotional support, appraisal support, information support, and instrumental support and is available from members of the social network. ^[11]	a. Support from superiors and work mates in fulfilling the occupational health and safety requirements of work at height.	Using interviews by asking questions.
4	Worker's behavior.	Human behavior is all human activities or activities, both directly observed, and those that cannot be observed by outsiders. Bloom classifies it into 3 types of behavior, namely Cognitive, Affective and Psychomotor, other experts call Knowledge, Attitude and Action, while Ki Hajar Dewantara, calls it Cipta, Rasa, Karsa or Peri mind, Peri taste, Peri action. Forms of behavior seen from the point of view of response to stimulus, then behavior can be divided into two, namely: 1. Closed behavior, closed behavior is a person's response to a stimulus in a veiled or closed form. The response or reaction to this stimulus is still limited to attention, perception, knowledge / awareness, and attitudes that occur cannot be clearly observed by others. 2. Open behavior, open behavior is a person's response to a stimulus in the form of real or open action. The response to	a. Frequency of workers using body hardness when doing work at heights b. The frequency with which workers attach body hardness to a pedestal or anchor when performing work at heights. c. The frequency with which workers shorten the body hardness rope when using the body hardness in work at height. d. The frequency of workers working in workplaces with fall protection ropes attached as a support for the body hardness. e. The number of times workers work in workplaces where slap nets are installed to prevent falls. f. Frequency of workers reprimanding friends or coworkers who do not use body hardness when working at heights. g. Frequency of workers being reprimanded by friends or coworkers or a supervisor for not using body hardness when working at heights. h. The frequency of workers using welding personal protective equipment in the form of welding masks and welding gloves.	Using interviews by asking questions. Each answer will be analyzed with reference to Permenaker No. 8 of 2010 concerning PPE and Permenaker No. 9 of 2016 concerning Occupational Safety and Health at Work at Height as well as behavioral science theory, behavior-based safety, domino theory, and social support theory. ^{(13),(14)}

		the stimulus is clear in the form of action or practice. ^[12]		
5	Organizational culture.	The integrated unity of a group in an organization is rooted in the values that are espoused or in the assumptions that are made, agreed upon, and recognized by all members of the group. ^[15] A concept often used to describe shared company values that influence members' attitudes and behaviors. ^[16]	Conformity of employee behavior to the values and rules of the company/organization culture.	Using interviews by asking questions.
6	Safety Culture.	A subcomponent of corporate culture, which refers to the individual, occupation, and organizational characteristics that influence and are influenced by health and safety. ^[15]	Conformity of employee behavior to the safety culture values adopted by the company/organization.	Using interviews by asking questions.
7	Occupational Safety and Health Management System.	Risk control processes and the creation of safe and productive employment, which are included in the company's management system. ^[17]	Conformity of employee behavior with the values and regulations in the guidelines for implementing occupational safety and health management in Government Regulation No. 50 of 2012 concerning occupational safety and health management systems and Minister of PUPR Regulation No. 10 of 2021 concerning construction safety management systems.	Using interviews by asking questions.
8	Reward and punishment).	Rewards are mandatory company programs that want employees to excel and be able to work beyond company targets. Punishment means removing positive consequences so as to lower the likelihood of repeating unwanted behavior in the future. ^[15]	The rewards and punishments given are related to the fulfillment of the Personal Protective Equipment requirements that must be used and the Work Protective Equipment that must be installed on the construction project.	Using interviews by asking questions.
11	Inspection.	A science to determine the state or condition of an object, fabrication or manufacturing process, as well as the environment. Inspection is a thorough check or direct examination of the application of rules, duties and others. ^[19]	The conformity of the inspection results of the fulfillment of the requirements for Personal Protective Equipment that must be used and Work Protective Equipment that must be installed on construction projects.	Using interviews by asking questions.
12	Work accident investigation	Accident investigation is a way of finding the facts related to an accident, its causes and developing measures to address and effort to control the risks. ^[20]	The suitability of the results of the investigation to fulfill the requirements of Personal Protective Equipment that must be used and Work Protective Equipment that must be installed on construction projects.	Using interviews by asking questions.
13	Completeness of Personal Protective Equipment and Work Protective Equipment provided	Completeness of availability of Personal Protective Equipment and Occupational Protective Equipment provided. ^[21]	Suitability Completeness of Personal Protective Equipment and Work Protective Equipment provided to fulfill the requirements of Personal Protective Equipment that must be used and Work Protective Equipment that must be installed on construction projects.	Using interviews by asking questions.
17	Social Environmental Factors.	A sociological review means a look at the relationships between people, groups and groups in society. Between people, relationships between groups and relationships between people and groups, in the process of social life. In the pattern of these relationships which are commonly called social interactions. ^[22]	Social environmental conditions that support the fulfillment of the requirements for Personal Protective Equipment that must be used and Occupational Protective Equipment that must be installed on construction projects.	Using interviews by asking questions.
18	Occupational safety and health promotion.	Occupational Safety and Health Promotion are an effort implemented to encourage and strengthen workers' awareness and behavior about occupational safety and health so as to protect workers, property, and the environment. ^[23]	Promotion of Occupational Safety and Health related to the fulfillment of requirements for Personal Protective Equipment that must be used and Work Protective Equipment that must be installed on construction projects.	Using interviews by asking questions.
19	Unsafe behavior.	Unsafe behavior is a dangerous or	Unsafe actions that do not support the	Using interviews by

		unsafe behavior that can cause work accidents that cause injury losses to death. ^[8]	fulfillment of requirements of Personal Protective Equipment that must be used and Work Protective Equipment that must be installed on construction projects.	asking questions.
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Bandura's model of reciprocal determinism has been adapted to reflect the concept of safety culture. The model contains three elements that include subjective internal psychological factors, observable safety-related behaviors and objective situational features. In this adaptation, internal psychological factors (i.e. knowledge, attitudes and perceptions) are assessed through a safety climate questionnaire, actual ongoing safety-related behaviors are assessed through checklists/inspections developed as part of behavioral safety initiatives, while situational features such as social support, organizational systems in place, are assessed through safety management system audits/inspections. As each of these components of safety culture can be measured directly by itself, or in combination, it becomes possible to measure safety culture in a meaningful way across different organizational levels^[16]. According to Lawrence Green, the factors that determine behavior so as to cause positive behavior are:

Predisposing factors

Predisposing factors are antecedent factors of behavior that become the basis or motivation for behavior. This factor includes several elements, namely elements of knowledge, attitudes, beliefs, values (traditions, norms, social, experience), demographics. The behavior of pregnant women will be motivated to take Fe tablets if pregnant women know the benefits of the Fe tablets. The mother's belief in the benefits of Fe tablets will prevent or treat anemia.

Enabling factors

Enabling factors are antecedent factors of behavior that allow a motivation or aspiration to be carried out. A pregnant woman will easily get health services if there are health workers, puskesmas or hospital facilities. Included in this factor is the availability of health resources in the form of health workers, health facilities and infrastructure, skills, and affordability of health resources, all of which support or facilitate the healthy behavior of a person or community.

Reinforcing factors

This factor is an accompanying factor or one that comes after the behavior exists. Pregnant women will always do their pregnancy checks at health facilities or at health workers if they are supported by or always reminded by people around them such as husbands, parents, friends. Included in this factor are family, friends, husband, health workers^[24].

Safety tools that are often used in industry are as follows:

Safety Helmet

The most important function of a safety helmet is to protect the head from falling and colliding objects directly. This safety equipment is quite vital equipment for workers in the Industrial world. Safety Helmet is very helpful for workers because it protects the head from the danger of being hit by hard objects such as iron pipes or stones that fall while

workers are in the work area. Safety Helmet has various designs that have different shapes according to their respective functions. In addition, the color of the helmet used indicates the type of work^[25].

Safety Vest (Reflector Vest)

This vest is equipped with an illuminator, which is a material that can glow when exposed to light. This glowing material will make it easier to recognize the position of workers when in the dark. Generally, in the industrial world, operations take place for 24 hours where the tendency for work accidents to occur at night. This is usually because the lighting in the industrial area is not so good, so that often workers who are in the industrial area are not visible. This reflective vest is important to prevent unwanted things such as being hit/run over by heavy equipment vehicles.

Safety Shoes

Safety Shoes look like ordinary shoes, but are made of leather coated with metal with thick and strong rubber soles. Safety Shoes serve to prevent fatal accidents that befall the feet such as being hit by sharp or heavy objects, hot objects, chemical liquids, etc.

Safety Goggles/Glasses (Safety Glasses)

These safety glasses are different from glasses in general. The difference lies in the lens / glass that covers the eyes thoroughly, including the side parts that are not protected by ordinary glasses. By using these safety Goggles/Glasses, workers are protected from exposure to dust in industrial areas or splashes of oil during the drilling process. These glasses have various types depending on the needs and type of work. For people with minus or plus glasses, special lenses are provided according to their needs. To be sure, these lenses cannot be made of glass, because if there is an impact and the lens breaks, the glass fragments will actually endanger the user.

Safety Mask/mask respirator (Air Filter)

Safety masks function as air filters that are inhaled when working in places with poor air quality (e.g. dusty, toxic, etc.). In various industrial areas, there is a lot of dust, which can cause respiratory health problems in the long term. There are various types of masks available, ranging from dust masks to special masks for dealing with volatile chemicals.

Safety Gloves

Serves as a hand protective device when working in places or situations that can cause hand injuries. The use of Safety Gloves is mandatory in the industrialized world. This is because workers interact a lot (touch) objects that are hot, sharp, or at risk of being injured by scratches while doing their work. The use of safety gloves also varies according to the type of work. There are safety gloves specifically for jobs such as mechanics / mechanics, some are specifically for jobs related to chemicals, or jobs such as welding.

Ear Plugs (Ear Safety)

Ear Plugs function as a protective device that is attached to the ear when working in a noisy place. Ear plugs are a hearing protection device from noise. The use of earplugs prevents workers from experiencing hearing loss such as hearing loss due to exposure to noise while working in work areas that have high noise levels or working with equipment that emits high noise. Generally, our hearing devices are only able to withstand the amount of noise up to 80-85 dB. Ear plugs also have various shapes and types according to their designation at work.

Self-Rescuer

In emergency conditions due to fire or the discovery of toxic gas, this tool can be a savior for workers. This tool is designed to supply oxygen independently to workers. It won't take long, but it will hopefully give workers enough time to find a way out or reach a more permanent place of refuge.

Safety Boot

In industrial areas that are generally slippery and muddy, boots are a basic necessity. Short shoes will only cause the feet to sink into the mud. Boots should also be equipped with metal soles to protect the toes.

Safety Belt

Serves as a safety device when using the transportation or other similar equipment (cars, heavy equipment, planes, helicopters, etc).

Raincoat

Serves to protect workers from splashing water while working (for example working in the rain or washing tools). Direct and continuous exposure to water can lead to the onset of diseases such as influenza and fever, which in turn will interfere with the optimization of the work of these workers ^[26].

Fall protection device points, according to OSHA 29 CFR 1926.502 on safety and health regulations for the construction (fall protection), and there is a collective fall arrest safety net. Individual fall prevention devices (lanyard, anchorage, and carabiner). The use of lanyard types must be adjusted to the type of height work, the level of height of a job, and the burden of workers because each type of lanyard has different specifications, namely the number of straps, thick diameter and length of the lanyard. Personal fall arrest devices (vertical and horizontal lifeline) ^[26].

Conclusion

Based on the literature review that has been carried out, the factors that shape workers' perceptions of the implementation process of the Construction Safety Management System in construction projects include knowledge, attitudes, social support, organizational culture, safety culture, inspection, work accident investigation, promotion of occupational safety and health, completeness of personal protective equipment and work protective equipment provided, level of education, worker behavior, occupational safety and health management system, feedback/input provided by workers/employees to company management, worker motivation, work rotation/shift work, social environmental factors, health facilities and workload.

Advice

To find out how much contribution each factor has the potential to shape workers' perceptions, further researchers should test further so that it is known what factors have the greatest contribution in shaping workers' perceptions of the process of implementing the Construction Safety Management System in construction projects.

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