

**COMPARATIVE STUDIES BETWEEN
GUIDELINES AND ACTUAL PRACTICE OF
SAFETY ON SITE IN PERSPECTIVE OF PPE**

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**BACHELOR OF CIVIL ENGINEERING
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Thesis submitted in partial fulfilment of the requirements
for the award of the degree of
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**Faculty of Civil & Earth Resources Engineering
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SUPERVISOR'S DECLARATION

I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in term of scope and quality for the award of the degree of Bachelor of Science (Hons) Civil engineering and Earth Resources.

Signature :
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Date : 15th JANUARY 2016

STUDENT'S DECLARATION

I hereby declare that this project report is done based on my original work except citations and quotations which have been duly acknowledge entirely. The report has not been accepted for any degree and is not being submitted concurrently in candidature for any degree or other award.

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Dedication

To my beloved mom, Norlela Yusuf for always be there for me. Thousand thanks to my supervisor Dr. Doh Shu Ing for all guidance throughout completing this research and thesis.

ACKNOWLEDGEMENT

I would like to express my utmost appreciation to those who have contributed to the success of my writing either directly or indirectly. First and foremost I'm thankful to Allah S.W.T for his willing to give the opportunity and good health to finish my writing in given time. The special thanks go to my supervisor, Dr Doh Shu Ing. The supervision, patience and support that he gave truly help the progression and smoothness the completion of this research. The co-operation is much indeed appreciated.

My grateful thanks also goes to safety officer from construction site which are Mr Appudurai from Al- Ambia construction, Mr Haidhar from Kenwingston, Mr Nasruddin from SIAB construction and Mr Hafiz safety officer from DOSH for their time and cooperation in realizing this research paper. They have helped me during interview sessions by provide sufficient information on the Safety issues on site that located on Setapak area.

Last but not least, I would like to express my gratitude to the people around me especially my family and friends who have supported me and provide their advice in this research. I am grateful for the experience shared and the moral support given.

ABSTRACT

Accident in construction industry still occurs even with the enforcement of safety. Workers fail to follow the proper procedures for minimizing hazard and the safety guideline in site .Personal Protective Equipment (PPE) can be significant determining factors between hazard and safety on construction site. The practice of safety guidelines in perspective of PPE with the smallest differential in adoption of actual practice contribute on the occurrence of accidents and its frequencies in Malaysia. This research aims to find out the comparative studies between actual safety on site and DOSH guidelines, determine factors why workers not follow safety guidelines and discuss method to minimize Safety issues on site so advance precaution can be taken to lessen the numbers of accidents. The scope of this research is based on a current construction project in Setapak, Kuala Lumpur area. Site based data collection entailed interview of safety officer or parties that responsible for the safety on site and DOSH officer regarding to the safety

ABSTRAK

Kemalangan dalam industri pembinaan masih berlaku walaupun dengan penguatkuasaan keselamatan. Pekerja gagal mematuhi prosedur yang betul untuk mengurangkan bahaya dan garis panduan keselamatan di tapak Peralatan Perlindungan Personal (PPE) boleh menjadi faktor penentu yang signifikan di antara bahaya dan keselamatan di tapak pembinaan. Amalan garis panduan keselamatan dalam perspektif PPE dengan perbezaan yang paling kecil dalam penggunaan amalan sebenar menyumbang kepada berlakunya kemalangan dan frekuensi di Malaysia. Kajian ini bertujuan untuk mengetahui kajian perbandingan antara keselamatan yang sebenar di laman web dan garis panduan JKKP, menentukan faktor mengapa pekerja tidak mematuhi garis panduan keselamatan dan membincangkan kaedah untuk mengurangkan isu-isu keselamatan di laman web supaya langkah berjaga-jaga lebih awal boleh diambil untuk mengurangkan bilangan kemalangan. Skop kajian ini adalah berdasarkan kepada projek pembinaan semasa di Setapak, kawasan Kuala Lumpur. Tapak pengumpulan data berasaskan melibatkan temuduga pegawai keselamatan atau pihak yang bertanggungjawab terhadap keselamatan di tapak dan pegawai JKKP mengenai garis panduan keselamatan dan isu-isu dalam perspektif Peralatan Perlindungan Peribadi (PPE).

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LIST OF ABBREVIATIONS

| | |
|-------|--|
| PPE | Personal Protective Equipment |
| DOSH | Department of Safety and Health |
| ILO | International Labour Organization |
| CDM | Construction Design and Management |
| OSHA | Occupational Safety and Health Administration |
| PD | Permanent disability |
| NPD | Non- Permanent disability |
| NIOSH | National Institute of Occupational Safety and Health |
| OSH | Occupational Safety and Health |
| HSWA | Health and Safety at Work Act 1974 |
| UK | United Kingdom (UK) |

CHAPTER 1

INTRODUCTION

1.1 Research background

The Involvement of government in worker safety has gone through major changes in past 200 years. During the Industrial Revolution of the 19th century employer were seldom held responsible for the work related injuries of their employees. The common law defences of assumption of risk (the workers knew the job was dangerous), contributory negligence (the worker's action helped cause the accidents), and the fellow workers doctrine (the accident where precipitated by another worker, not the employer) gave considerable relief to employer. Thus the industrial worker often responsible for their own job-site well-being and for any injuries they might receive during the course of their employment.(Jimmie W.Hinze,1997).The number of industrial accidents reported to the Social Security Organization (SOCSO) has declined by 35 percent from 1995 to 2003. SOCSO had received 114,134 reports on industrial accidents in 1995 and in 2003, the number had reduced to 73,858 cases. However, the number of fatalities arising from industrial accidents for the same period only marginally decreased by 0.7 per cent from 828 in 1995 to 822 in 2003 (SOCSO, 2001) .Over the years, the construction industry has consistently been among those industries with the hinger injury and fatality rates. (Jimmie W.hinzie, 1997).The number of construction accidents for the same period on the other hand has increased by 5.6 per cent from 4,406 cases in 1995 to 4,654 cases in 2003. In addition, the fatality rate has increased by 58.3 per cent from 60 cases in 1995 to 95 cases in 2003. The fatality rate from construction accidents are among the highest compared to the overall industry (NSTP, 2000)

By far the largest category is falls, which include people falling from one level to another, people falling at the same level and plant and material falling including a structure or part of a structure collapsing and striking, crushing or burying people. Each year 70-80% of all fatalities and 35-40% of all injuries may be attribute to this cause.

An incident is defined as an unintentional and undesirable event that may or may not result in an injury, and an incident that results in an injury or fatality is defined as an accident. This definition clearly indicates that the occurrence of a construction incident is a random event caused by such factors as window of accident opportunity, chance, and luck, which are frequently mentioned in the incident causation literature (Ramsey 1985; Sanders and Shaw 1988; Reason 1990; McKinnon 2000)

Accidents which is classified into two categories, direct (immediate) and indirect (distant) causes. The direct causes refer to causes which have an immediate effect on workers safety condition example structural failures and insufficient PPE. Nevertheless, what gives room for this unsafe condition on site depends on indirect causes such as poor organization and economic concern (Rita Yi Ma Lin & Sun Wah Poon, 2013).

Accident in construction industry still occurs even with the enforcement of safety. Workers fail to follow the proper procedures for minimizing hazard and the safety guideline in site. Even the best site management of safety cannot prevent all accident without the discipline from workers that performing the job able to fulfil and follow the right instruction in using the equipment. In this research the case study is focused on the comparative between guideline and actual practice of Safety procedures in site in perspective of PPE.

1.2 Problem statement

Accidents occurring at the construction site in Malaysia recorded a worrying increase in numbers by the Social Security Organization and with the unpredictable

accident reported this industry have captured attention and concern from both government and non-government. Based on the report recorded by DOSH top five categories of fatalities in construction site that cause hazard is falls ,electrocutions ,vehicles rollover, personal run over by vehicles and excavation caveins .The practice of safety guidelines in perspective of PPE with the smallest differential in adoption of actual practice contribute on the occurrence of accidents and its frequencies in Malaysia.

The most communities would conclude that the employers are at fault based on methods and ways these accidents occurred. Others believe it is the attitudes and recklessness of the workers themselves that caused these accidents by not following the safety guidelines. Besides safety issue always considered second behind time, quality and cost that are always as main factor. Hectic schedule that result workers careless, irresponsible attitudes and workers negligence.

1.3 Research Aims and Objectives

The aim of this research is to understand the comparative studies between guidelines and actual practice. The following are the objectives in this research

1. To determine factors why workers not follow safety guidelines in perspective of PPE
2. To propose method minimize Occupational Safety and Health issue

1.4 Scope and limitations

The scope of this research is based on a current construction project in Setapak area .Case study method is used to determine the application of Personal Proactive equipment in actual practice of safety following DOSH guideline by the workers in construction site that might contribute to the numbers of hazard in site .The case study is explanatory in context practice of safety procedures among workers in site following DOSH guidelines. This study is limited to the person that responsible for safety on site, to determine application of PPE (Personal proactive equipment) .

A visit to construction site will included in research analysis to interview the workers that involve in the construction site and to observe how far the workers obey the DOSH safety guideline in using PPE (Personal protective equipment) .while perform work. The visit done will highlight the objective of this research.

1.5 Significance of study

Accidents was caused by unsafe act, unsafe condition or both .Accident don't just happen, and in order to improve the overall safety performance investigation need to be carry out in construction site. Through this research, comparative of actual application of PPE (Personal protective equipment) in site and the actual guideline will be able to identify. To figure out the reason accident still occurs in construction site even with enforcement of PPE (Personal protective equipment) among workers. From this study, advance precaution can be taken to lessen the numbers of accidents.

It can be focused to the parties that responsible for the safety on site. The entity that involve work in site must able to monitor the work and frequent basis as well know the relevant safety standard for the task being performed and entity must be able to control behavior means that entity must have the formal or informal authority direct the action of the workers

Meanwhile, safety awareness can be improved among parties that directly involve in construction site, so advance step can be taken to lessen the numbers of accident occurs in site.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The review of this research will be based on several topics which are found to be relevant and influence the outcome of this research. The scope figured in this review will include safety guideline of Dosh and actual practice by workers on site in perspective of PPE

The reason why workers fail to follow the proper safety instructions and method to solve this problem. According from previous research (Huang and Hinze, 2006) the safety in construction industry recorded to be one of the poorest even with the marked improvement in these recent years. Thus this industry also ranked among the most dangerous occupations accounting for a disproportionately percentage. By providing requisite systems, motivations and tools an organization can improve the safety. However, safety is implemented in reason to ensure the construction workers who perform the work on site indeed need to adopt or use adequate safety that related to equipment, tools and system for the provision and control of work environment and human behaviour. PPE is a key to personal safety at the work level and also as significant determining factors between safety and an accidents .Even though OSHA responsible for indicating the safety procedures and policies, which required the workers to wear PPE to decrease employee exposure to hazard.

In any construction process no matter how tight the enforcement of safety among workers but accidents will still occurs. There have been many theories that explain the cause of accident. Human error theories pointed worker as the main factor

of the accident. This approach as mentioned by Abdel Hamid studies the tendency of human to make error under various condition and situations, with the blame mostly fall on human (unsafe) characteristics only. But this theory does not blame the workers as the main problem of accidents, other factors such as design of workplace and task that do not consider worker limitation also take part as the reason why accidents happened (Abdel Hamid and Everett, 2000). In recent statistic released by Occupational Safety and health Administration (OSHA), percentage of workers wear the correct protection is only 64%

According to Ridley 99 percent of the accidents are caused by either unsafe act or unsafe condition or both. (Ridley, 1986). Even though there is presence of other theories but unsafe act which is means human error that directly refer to the workers attitude behavior or act are still the major reason why accident occurs in construction site even with the existence of safety guidelines.

2.2 Safety Management

Safety policy is defined as a published statement reflecting the organization's vision and mission in the relation to the management of health and safety matters (Griffith & Howarth, 2001). In the context of its business activities safety policy must establish the organization corporate philosophy regarding health and safety matters. According to kin and Bonaventura (2006) stated that in their study that safety policy is a written statement of principles and goals which can demonstrate top management commitment to ensure the safe working methods and environment at the construction site. Safety is also a relative freedom from danger, risk, or threat of harm, injury or loss of personnel property whether caused deliberately or by accident according to business dictionary.

As the foundation for a healthy effective safety management program, a company policy is a must. According to Dave Heberle (1998) a company's safety policy should address a number of points critical to safety management. First, employee safety must receive a high priority among all of the other managements concern, a managements believes that accidental injuries are preventable, and that worksite activities can go on,

day after day, week after week, month after month without accidents, all the necessary support to achieve an accident-free environment, including safe equipment and safe procedures will be provide by the company and also supply safety training to all workers so they can work in a safe manner. Next company management responsible for the development and the operation of the company's safety management program and the all the employees, hourly and salaried, must work safely and must follow regulatory safety laws and the regulations plus the company's safety rules and regulations.

Like many other Management activity Safety management consist of planning, Organizing, controlling and communications

2.3 Planning

Planning is a essential stages for Management success and component of the project, including safety. A well planned –operations include a series of deliberate steps where the Safety practice must forecast the needs of the safety department for the coming year.

Pat Perry (2003) affirmed that if CDM Regulations 1994 apply to the construction project, there must be construction Phase Health and Safety Plan before works start on site. For small project even if CDM does not apply because it too small, it is still a good idea to formulate a construction Phase Health and Safety Plan.

Established plans numerous as standard by which the practitioner can judge the safety program performance. It should involve the objective and the mission that the organization want to accomplish. Once the safety objective is established method to achieve objective can be laid out, then timetables and budget can be formulated.

2.4 Risk assessment

Risk assessment are required under the Management and Health and Safety at Work regulations 1999 and all employers are required to assess the risk to workers and other who may be affected by their undertaking. A suitable and sufficient Risk assessment should identify the significant risk arising out of the work, enable the

employer to identify and priorities the measures needed to be taken that all relevant statutory provision are complied with, be appropriate to the nature of the work. Remain in force for the duration of the work and be regularly reviewed.

A principle contractor should carry out Risk assessment for all work activities which employee undertake .Also a principle contractor should receive risk assessments for all the other contractor, sub-contractor and self-employed tradesmen working on the site. These will include details of how the risk from the hazard examples noise-induced hearing loss can be eliminated or reduced. Risk assessment need only identify significant risk involved in carrying out a work activity. Routine risk and everyday risk such as crossing the road to get to the employee car park need not be included .Where anything unusual or uncommon is to be undertaken on the site, a Risk Assessment will be essential.

2.5 Role of safety

Safety is a critical item on construction project for numerous reasons including protecting the welfare of employers, providing a safe work environment and controlling construction cost. With the process of preventing workers injuries and illness itself make the workers more efficient and effective with the project. Education and training are invented to prevent human error that may cause the accidents and to enable workers to perform repetitive task with skill (Paringga, 2010).Safety training is the most effectual tool to attenuate hazard since training can help improve workers skill and abilities to identify hazard. Training includes OSHA required safety information and the Pre-task planning goes into the actual work task risk and corrective action that will prevent the risk from exhibit on the jobsite. With the existence of safety training it can help the employee to prepare the work about to perform, present the job through demonstration with the detailed explanations, the workers able to get involve with the actual hands-on experience and employee able to do the work while still being available for questions and feedback as to the safety and quality of the work.

Safety management system has created the needed for the safety audit which is includes safety inspection. According to Nikolaos and Permana (2007) safety

inspection is one of the important safety practice based on the study they did in Indonesia. Safety inspection can maintain safe conditions and monitoring unsafe practice at workplace.

Discussion regarding to health and safety matters involving all the construction team gathering at workplace and do safety meetings on danger prediction as safety activities at construction site.

2.6 Statistic accidents in Malaysia

Based on the statistic, it was indicate that accident rate in Malaysia construction site is till high and shows that construction industry is one of the critical. DOSH occupational accidents statistics in 2014 and 2013 revealed construction industry was among top 3 sector that have high accidents occurs. In 2013 statistic constitute about 67 death,98 non-permanent disability (NPD),12 permanent disability(PD).Number of death increasing in 2014 with 72 peoples,94 non-permanent disability(NPD) and 6 permanent disability (PD)Record of Dosh also indicated there is a total of 187 construction worker died between years of 2011 and 2013.

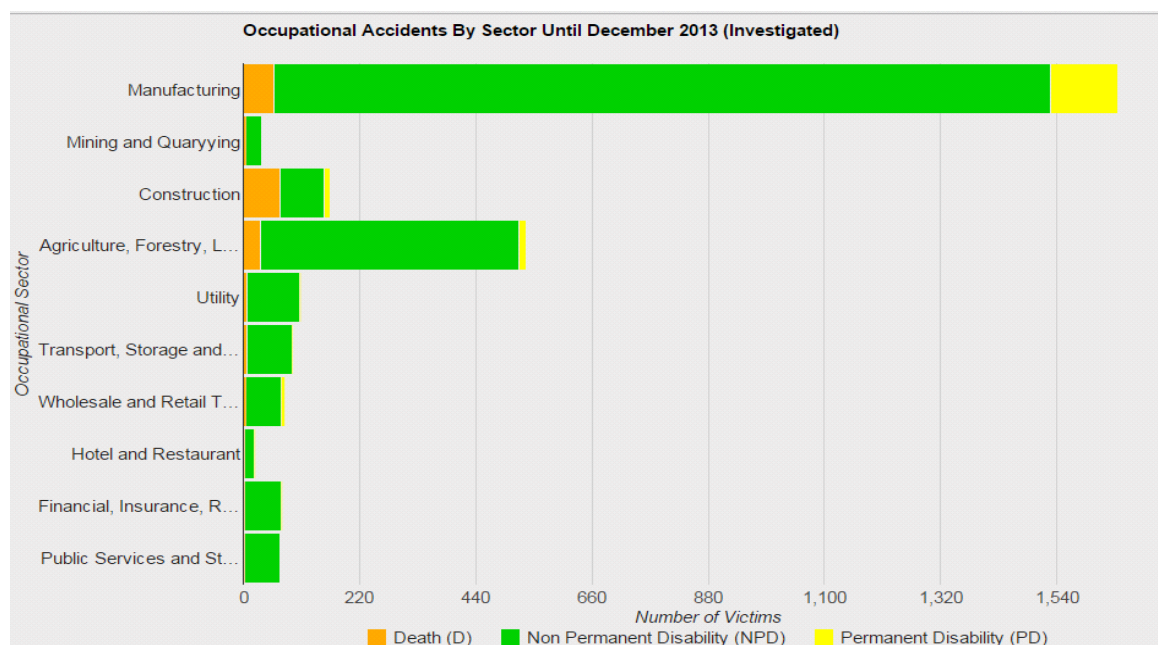


Figure 2.1: Statistic of Accidents in Malaysia by sector in 2013

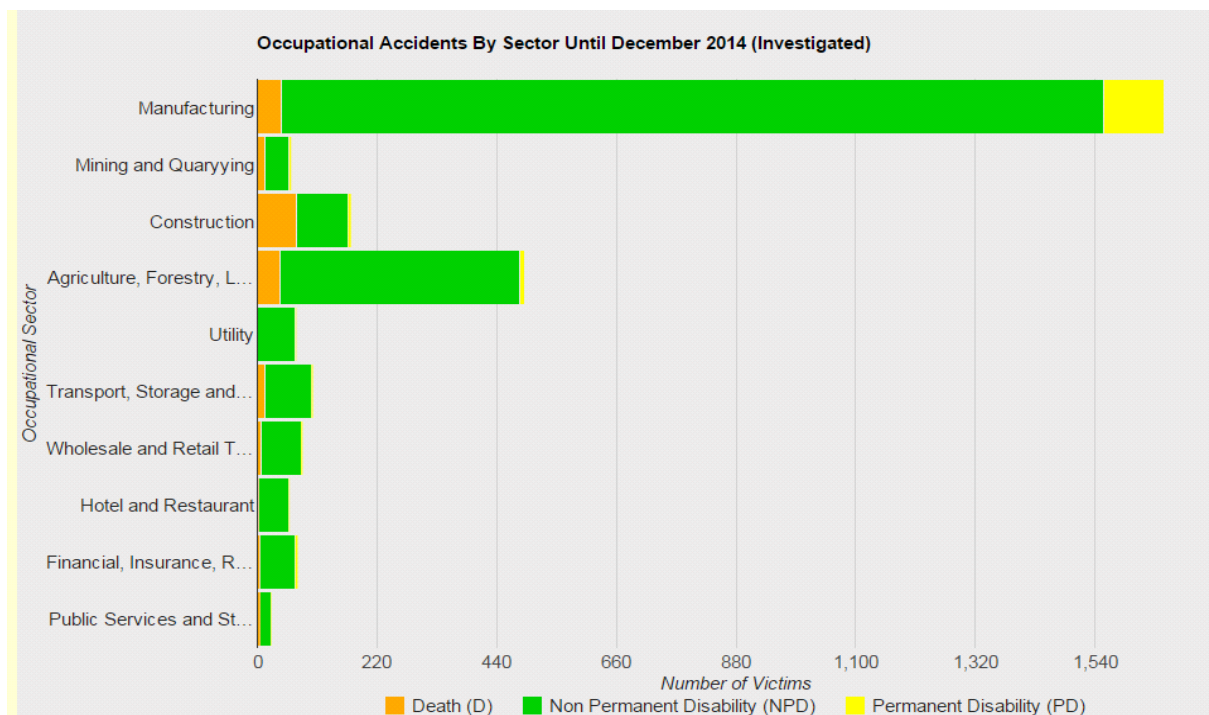


Figure 2.2: Statistic of Accidents in Malaysia by sector in 2014

Source: DOSH (2015)

2.7 Type of accidents

Death on the job has decreased over the years but they still occur. For example according to David L (2010) there are 10,400 works deaths in the United States and the cause is due to vary reasons including those related to motor vehicles, falls, electric current, drowning, air transport, machinery, mechanical suffocations, poison and rail transport.

Over the years falls are the most frequent accidents that occurring in site thus gives the highest rate in fatalities and injuries. Construction fall accidents especially fall of person from height accidents is the major type of accident that commonly occurred in construction industry and it was mainly due to fall from platform, fall from scaffolds, fall from roofs, fall from ladders and also fall from aerial lifts (Huang and Hinzi, 2003).

Fall accidents in construction project have long been major problem and the prevention of accidents involving falls from height remains a high priority for the construction industry (Glasgow Coledoian University, 2015). Elbeltagi and Hegazy (2002) stated that the major cause of accidents in the construction is due to falls .Falls that can result in fatalities which include people falling from one level to another, people falling at the same level and pant and material falling. Following by struck by falling objects, stepping on objects, caught in between object and other type. These common types of accidents happen in low-rise building due to recklessness and complacency attitude in workers.

Motor vehicles accidents is category of accident that resulting from involving mechanically or electrically powered vehicles excluding rail vehicles that occurs on or off the road. Poisoning category divided into two sub categories. First, poisoning by gases and vapours caused by incomplete combustion or from carbon monoxide. Second is by solid and liquid that result from ingestion of drugs ,medicine ,recognized solid and liquid poisons, mushroom and shellfish .Drowning is include work-relate and nonwork-related drowning incidents, but excludes those associated with floods or other natural disaster.

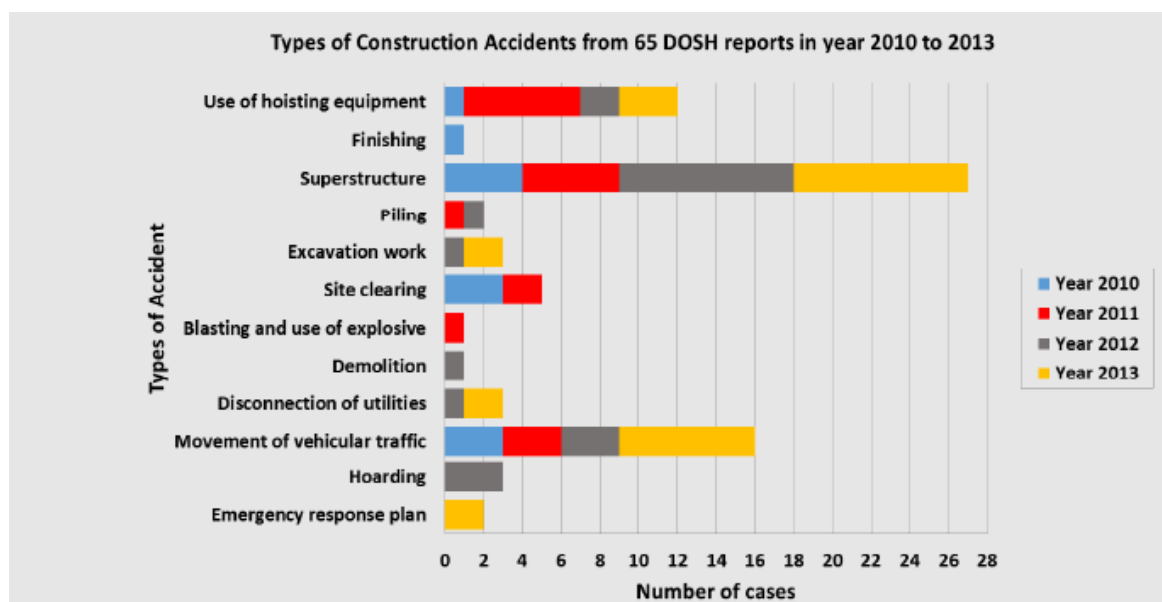


Figure 2.3: Statistics of accidents in Malaysia by types of accidents

| | Date | Accident | Location |
|-------|-------------|--|------------------------------------|
| i. | 21 Jan 2007 | Fall from roof | Construction Site, Negeri Sembilan |
| ii. | 12 Mar 2007 | Fall from 7 th to 2 nd floor | Construction Site, Kuala Lumpur |
| iii. | 28 Mar 2007 | Fall of worker from platform of scaffolding | Construction Site, Melaka |
| iv. | 02 Apr 2007 | Fall from Height | Construction Site, Selangor |
| v. | 14 Apr 2007 | Fall from 6 th floor | Construction Site, Selangor |
| vi. | 01 Jun 2007 | Fall from 1 st floor | Construction Site, Selangor |
| vii. | 20 Aug 2007 | Fall from scaffolding | Construction Site, Negeri Sembilan |
| viii. | 10 Oct 2007 | Crushed to death by excavator | Logging Site, Sarawak |

Figure 2.4: Statistics fall accidents in Malaysia by location

Source: DOSH (2015)

2.8 Cause of accidents in Malaysia

Accidents were classified into two main factors, which is human factor and physical factors. Tam et al (2004) stated that poor awareness from main leaders, lack of training, lack of organization commitment, uncontrolled operation, lack of certified skill labor, lack of personal protective equipment (PPE), unsafe equipment, lack of technology and poor information flow.

Besides, According to David L. Geostch (2010) the most common factors that contribute to accidents are physical hazard, environmental hazard, human factor, lack of safety regulation and poor communication within or among workers. There are several theories of accidents causation that can explain why do accidents happen that can be used to predict or to prevent accidents.

2.9 THEORIES EXPLAIN ACCIDENTS

2.9.1 Domino Theory of accidents causation

Herbert W. Heinrich after studying 75,000 of reports on workplace accidents in 1920 concluded that 88% of workplace accidents are caused by unsafe act that committed by others fellow workers, 10% are caused by unsafe condition and 2% of workplace accident are unavoidable. He studied that laid the foundation for his Axioms of Industrial Safety and his theory of accidents causation which also known as domino theory. Heinrich theory has two central points. Injuries are caused by the proceeding factors and removal of the central factor an unsafe act or hazardous condition negates the action of the preceding factors and, in so doing, prevent accidents and injuries.

2.9.2 Human factor theory

These factors ultimately caused by human error .Overload, inappropriate respond and inappropriate activities are three main factors that lead to human error. Overboard is person capacity of such factors or workers ability, state of mind, training, physical condition and stress. For examples when a person capacity in any time is unbalance with load that person carrying at a given time. The person or the workers is responsible and added burdens due to environmental factors, internal factors and situational factors. Inappropriate activities when a workers perform task that they does not know how to do and inappropriate respond is when a workers respond to any situation that can cause hazard.

2.9.3 Accident/Incident theory

This theory is extension of the human factors theory and introduces new elements such as ergonomics traps, the decision to err, and system failure .A variety pressure such as peer pressure, deadlines and budget factors can cause a person decide to behave in unsafe manner. Thus, syndrome "it won't happen to me" also can influence the decision. System failure is important component since it shows potential the potential for a casual relationship between management decision and safety. Moreover it also established management's role in accidents prevention.

2.9.4 Epidemiological theory

Epidemiological theory is a study of casual relationship between environmental factors and disease. Since others theories mostly focus on accidents and resulting injuries Epidemiological encompasses the issues of industrial hygiene that concern environmental factors that can result on disease, sickness or other forms of impaired health. The key components are predisposition characteristic and situational characteristics. These characteristic taken together can result in or prevent condition that may result in accidents

There are vary root cause of construction accidents. Table below listed the root cause, including description and example:

| Root cause | Description | Example |
|---|---|---|
| Lack of proper training | An employee was not properly trained in recognizing and avoiding job hazards. | A new employee is sent up to work on a sloped roof without being trained on the proper use of the fall restraint system and ties off to a deficient anchor. |
| Deficient enforcement of safety | An employee's supervisor (or other individual with safety oversight responsibilities) knew that prescribed methods for avoiding hazards were not being followed, but neglected to enforce safety standards. | A foreman ignores an employee who repeatedly does not use the fall restraint system provided him/her. |
| Safe equipment not provided | An employer does not provide an employee with equipment necessary to minimize hazards. | A foreman does not provide his/her crew members with proper fall restraint systems when such systems are needed. |
| Unsafe methods or sequencing | The normal sequencing of construction tasks does not occur, resulting in a task being inherently more hazardous than is typical. | A general contractor insists that a carpenter start framing before the foundation is properly backfilled. |
| Unsafe site conditions | The site is inherently more hazardous than are typical construction sites. | Poor housekeeping, a broken ladder, or a structurally deficient work platform |
| Not using provided safety equipment | An employee is provided with proper safety equipment but does not use it properly or does not use it at all. | A trained and experienced tradesperson who has been provided with an appropriate fall restraint system refuses to use it. |
| Poor attitude toward safety | An employee may have been properly trained, but does not properly avoid job hazards due to a "tough-guy" mentality, laziness, or a perception that prescribed methods would unduly slow job progress. | A tradesperson who has been trained on the proper use of ladders refuses to face the ladder when walking down it. |
| Isolated, sudden deviation from prescribed behavior | A normally competent and safety-conscious employee suddenly and unforeseeably performs an unsafe act due to fatigue, preoccupation, or likewise. | A trained and experienced tradesperson who has been using a proper fall restraint system suddenly forgets to tie himself/herself off. |

Figure 2.5: Root cause and descriptions of accidents happen

Source: Rahim (2013)

2.10 Safety precaution

According to Rosli Ahmad (2008), good safety program would certainly help in reducing injuries at construction site and also to minimize construction cost, increase productivity and profitability and more importantly it could save lives of workers and consequently contribute positively to the construction industry and whole nation. HSW act stated that the employer is to provide such information as is necessary to ensure the health and safety at work of his employees. The primary medium for making safety information available is print. Company can provide (1) safety handbook that contain safety policy statement, general introduction, employer's responsibility. (2) Company safety literature for managers. Managers represent employer to all staff necessary to ensure their safety. (3) Safety and health enforcement and legislation to enhance capabilities of enforcement agencies and review existing regulations.(4)Provide safety and health training and education for workers

2.11 Personal protective equipment (PPE)

The personal protective equipment (PPE) is define as all equipment including clothing affording protection against the weather which is means to be worn or held by a person who performing work at site ad which to protect against risks to their health or safety, for example -gloves, high-visibility clothing, safety helmets, eye protection, footwear and safety harnesses. Under the management of Health and Safety at work Regulation 1999 employers are needed to carry out workplace risk assessment enabling the employers to choose the most appropriate means of reducing any risk to an acceptable level and minimize or eliminate risk as close as possible from the source of risk and protecting others workers in the site.

Before entering the construction site the workers or employees were trained about PPE in aspects of when is PPE necessary to be used, the proper use of PPE, what kind of PPE is needed in performing certain type of work, the limitation of PPE in providing protection, how to put on, adjust, wear and take off PPE in safest way and lastly the workers was also required to know how to do proper maintenance procedures for PPE.

Indicated by Dorji and Hadikusumo (2008). Many workers refuse to wear PPE with various reasons such as feel uncomfortable with the gears while performing their job at site and consider it as an obstacle to their work output. Besides The International Labour organization (1996) revealed that some of the workers felt uncomfortable while wearing any types of PPE and it directly decreases their work performance. The personal Protective (PPE) at work regulations 1992 place responsibilities on employers to implement certain basic health and safety requirements regarding the provision and use of PPE. The radio communication Agency is committed to effectively applying them. Employers should use, maintained and cleaned the PPE provided with accordance with the training, instruction information received with sense of responsibility.

2.12 TYPE OF PPE

2.12.1 Goggles and Face Shield

Worn every time performing work which can avoid foreign objects getting into the eye such as during welding, cutting, grinding, nailing or when dealing with concrete or harmful chemicals or when exposed to flying particles. Besides goggles and face shield were choose base on anticipated hazards and worn when exposed to any electrical hazard including work on energized.

For eye protection equipment and protective measures must meet the following specification or requirements which are provide adequate and protection against the particular hazards for which they designed and importantly it must be comfortable for the workers to wear.

2.12.2 Hearing Protection

Hearing protection is crucial safety equipment since the workers on site were exposed to high noise levels that cause hearing loss or impairment. According to OSHA protection against the effect of noise exposure shall be provided when the sound levels exceeds those shown in table below;

| Duration per Day, hours | Sound level Dba Slow Response |
|----------------------------|----------------------------------|
| 8 | 90 |
| 6 | 92 |
| 4 | 95 |
| 3 | 97 |
| 2 | 100 |
| 1 1/2 | 102 |
| 1 | 105 |
| 1/2 | 110 |
| 1/4 or less | 115 |

Table 2.1: Permissible Noise Exposures

There are three main types of hearing protections: earmuffs, earplugs and canal caps. Earmuffs consist of a pair of plastics domes that cover the ears, with a connecting spring band that adjust to various head sizes and ear position and provides the tension to seal the domes against the head. Generally earmuffs provide the greatest amount of attenuation, easier to fit and monitored and can be used with infected or collapsed ear canals. For Insert or plug type protector fit is fit directly into the ear canal. Come in many configurations and made of rubber, plastic or silicone, It is less expensive than others two types. less cumbersome to wear, carry and store and more comfortable in hot, humid workplace. Canal cap protectors consist soft pads fastened top springy head-band.

2.12.3 Rubber Boots with Steel Toes

Safety boots or rubber shoes is worn to prevent crushed toes when working around heavy equipment or falling object. There are many types of footwear such as light, low-cut leather safety shoes for climbing jobs, normal safety shoes for heavy-duty work, rubber or plastic safety wellingtons or gumboots which to provide protection against corrosive substances, chemicals and water. According to studies undertaken by the Bureau of Labour Statistics, most workers who suffer foot injuries are not wearing protective footwear at the time. Not surprisingly, the lion's share of injured employee work for employers who do not require that their workers wear safety shoes or boots on the job

2.12.4 Hand Protection

Workers must wear the right gloves for the job such as heavy duty rubber gloves for concrete work, welding gloves for welding, insulated gloves and sleeves when exposed to electrical hazards.

Gloves fall into four categories or types. First, chemical resistant which are designed to protect against a wide range of chemicals as well as from nuisance hand injuries. For general purpose there are cotton gloves, cut-resistant gloves and leather gloves are designed to protect against cut, snags, punctures , and abrasions, but not chemical and liquids. Third is product protection or clean room gloves, provide barrier between hands and product to help protect the workers from the product. Last is special purpose gloves that application for hot and cold temperatures.

2.12.5 Head Protection

All workers should wear hard hat while entering the work site or where there is potential for object falling from above or due to striking against object or structures. The main objective of protective helmet is to minimize the rate and level which impact forces are transmitted to the brain, neck and spine. A secondary goal of helmet is to partially protect the head, face and neck from electrical current and from other environmental hazards such as sun rays, rain, snow, wind, and extreme temperatures.

Since safety helmet has reinforced ribs on top for impact strength, a rain gutter round the side and rear to guide water away, and can be fitted with a chin strap which is safe and quite comfortable to wear. Safety helmets also available in many design and was made for specific purposes. There are two basics types of hard hat. Type 1 hard hats have a full brim not less than 1 1/4 inches wide around the entire helmet. Type 2 hard hats include helmets without brims but having a bill or peak in the front to help protect the eyes and face. Next there are four classes of helmets.

| Class | Function |
|---------|--|
| Class A | For general services and protection against impact hazard. Some defens against low-voltage electrical current |
| Class B | For general services and protection against impact hazard. Some defens against high-voltage electrical current |
| Class C | Some impact protection, but no voltage .Usually made of aluminium. |
| Class D | Impact protections, fire resistant, and will not conduct electricity. Made chiefly for firefighter. |

Table 2.2: Classes of helmet

Source: Jime H.Winze (2003)

Thus, some helmets also contain Kevlar fibers giving them great resilience and resistance to impact. Hard hats consist of a shell and suspension system. The shell actually bends or flexes under impact, resulting in some absorption of energy .By stretching slightly and disturbing the force of impact equally to the wearer's head, the suspension system then absorbs impact energy that isn't handled by the shell's denting and flexing.

2.11.6 Fall Protection

2.12.6.1 Harness

Harnesses fall protection system and pieces of safety equipment on the market. Compare to belt there are numerous reasons to use body harnesses because when fall occurs, belt deliver vicious jerk and severe impact to a person midsection which has had disastrous effect to many workers. A full body harness will suspend a person in a setting position where the buttocks will absorb most of the load. The harness will distribute the falling shock forces fairly evenly throughout the body through the use of a sliding D-ring and subpelvic straps.

Harnesses offer shock absorbing design for body, and they are adjustable for good fits, with buckles and hardware designed not to cause injury upon impact. Harnesses also have shock absorbing lanyards a fall protection devices whose jobs begin at once a fall occurs. They're attached at both ends one end to a full body harness that someone is wearing, and the end to a sturdy anchor point. If a person falls and an impact load is placed on the lanyard, the woof material is progressively torn apart, helping to absorb the initial shock of the fall, as well as quickly and smoothly decelerating the person.

2.11.6.2 Self-retracting lifelines

Self-retracting lifelines are fall arrest devices using self-retracting cables. They combine locking mechanisms with energy-dissipating components that allow almost immediate yet smooth fall arrest. They're fully automatics, and require no adjustment by the users. Self-retracting lifelines typically anchored to a point above the back attachment D-ring of a full body harness. They are designed for use on jobs on vertical, horizontal or inclined planes. Because self-retracting lifelines involve components that are not able to be fully inspected by the users, the unit should be inspected by manufacturer at least once per year under normal operating conditions.

2.13 Green Card

Green card is a identification card for personnel who or will be working on site .CIDB green card training will provide information, instruction and training to construction workers about the safety & healthy aspect that should be practice in construction site to minimize the accidents in the workplace

2.14 Safety Officer

Safety officer are the person who registered under prevision of regulation 6(1), Occupational Safety and Health Regulation 1997. There the representative from their department and the one who responsible to communicate with Environmental Health and Safety. This position is fulfil by a person that designated by Department head.

Safety officer responsible inspect the department to ensure the site or workplace meets the safety specification. They also have to respond to various unsafe condition or hazard, such as electrical hazard, loose stair treads or others and will take next action by requesting repairs. Safety officer will correct unsafe condition or action through regular line of authority, even though they might exercise emergency authority to stop or prevent unsafe act when immediate action is needed.

2.15 Guidelines of Safety and Health in Site Construction

According to Dosh guidelines and other regulation construction site risk not only for construction workers but also for the public who are live near the site or move around. This guideline applies to all places of works in building operation and work of engineering construction activity in Malaysia covered by Occupational Safety and Health Act 1994, the Factories and Machinery Act 1967, and all the regulation made there under.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The main objective of this chapter is to discuss the method that will be used in this research. It is also a major component in order to achieve the objective of the decision. Besides, through this chapter we can see that the step is generally adopted to know how to collect, analyze, and interpret data. It covers the aspects of research design, research process, population and sampling, data aggregation techniques, development of instruments, and data analysis adopted.

The best method has been chosen to carry out this research. The studied method includes case study method, handling interviews, and distribution of interviews.

3.2 Data Collection

Data collection methods allow the researcher to collect information regarding the object of study (people, objects, phenomena, and about the setting in which they occur). It will be difficult to answer our research in a conclusive way if data collected are haphazardly.

3.2.1 Case study

A case study is a problem to be studied, which will reveal an in-depth understanding of a case or bounded system, which involves understanding events, activities, processes, or one or more individuals (Creswell, 2000). Compared to other methods, case study can be classified as the most flexible research design because it allows the researcher to attain. Case study as a research strategy comprises an all-encompassing

method with the logic of design incorporating specific approaches to data collection and to data analysis

3.2.2 Interview

The interview is used widely to supplement and extend our knowledge about individuals(s) thoughts, feelings and behaviour, meanings, interpretation. It is a data collection technique that involves oral questioning of respondent, either individually or as a group .The interview collected detailed personal information from individuals usually in to one situation using oral questions .

Interview can be done with varying degrees of flexibility. One way to provide more structure than in the completely unstructured informal conversational interview, while maintaining a relatively high degree of flexibility, is to use the interview guide strategy (Patton, 1990).Interview guide is by list in outline form the topics and issues that should be covered in interview by qualitative measurement that allow the interviewer to adapt the wording and sequencing of questions to each particular interview. The interview guide will ensures that different interviewers will cover the same material and keep focused on the same predetermined topics and issues, while at the same time remaining conversational and free to probe into anticipated circumstances and responses.

From the interview session ,the reason why most of the workers on construction site cannot follow the proper instruction in using PPE or in handling machine while performing theirs work will be figure out .Different sets of questions with similar scope will be used as reference during execution of interview.

The parties involve during interview sessions is the workers that performing the work on site, engineer, contractor and production manager. Interview questions will be distribute beforehand to the involve parties that they can prepare before interview to make sure that the interview can be carried out smoothly and the answers given will be fulfil the objective of this research.

Note taking is of course essential in this observation process. Hand written note taken at time if the information is necessary for the research. Tape recorder that commonly used can be beneficial so the tape can be transcribing word by word.

3.3 Research process

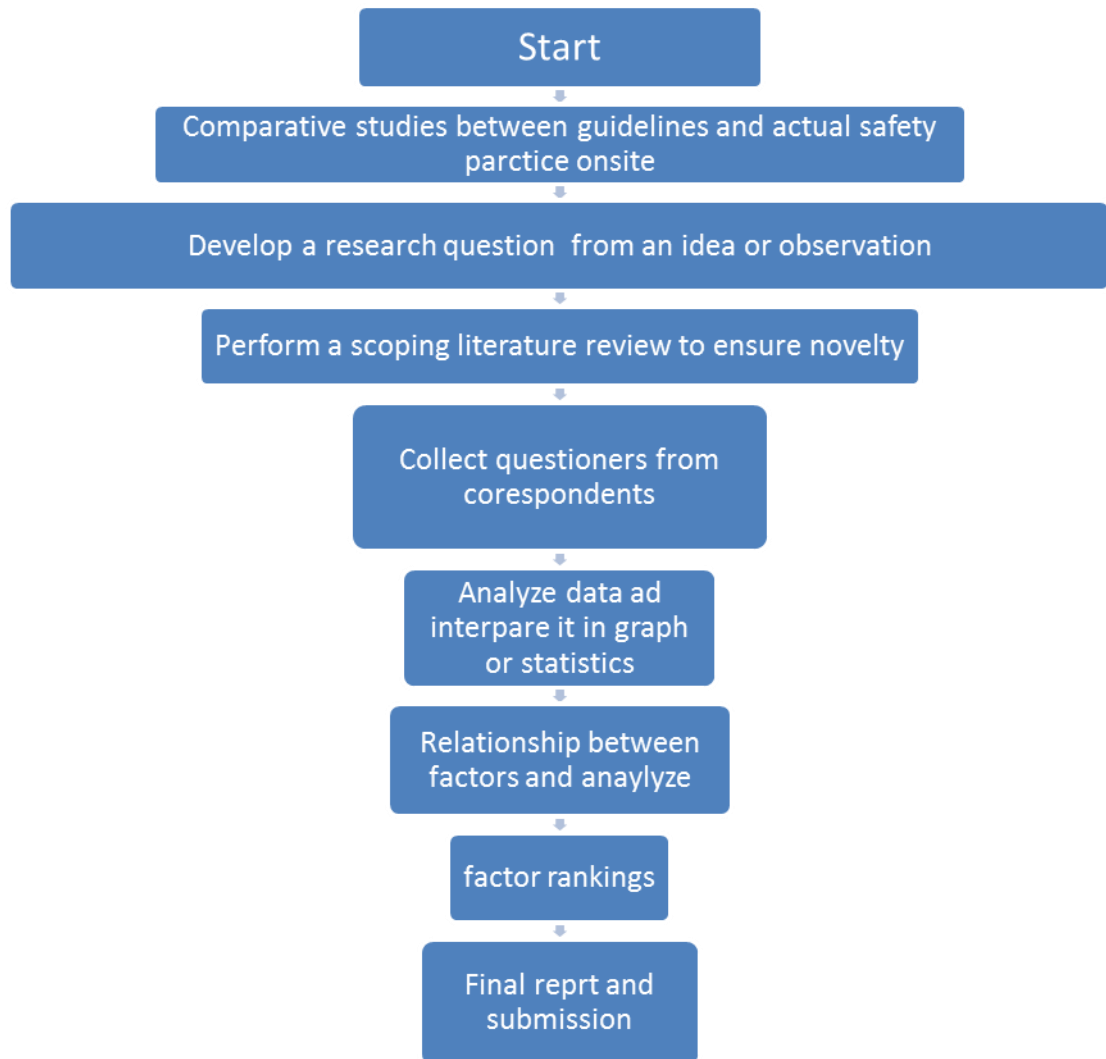


Figure 3.1: Methodology process

As provided above is the basic presentation work flow for the completion of this project.

CHAPTER 4

DATA ANALYSIS AND DISCUSSION

4.1 Introduction

The question was distributed during the interview session with the safe manager and safety office from DOSH comprises of the actual safety on site and safety guidelines by DOSH in perspective of PPE .The questioned was designed regarding to their specialty and knowledge on safety so both respondent will able to rank and provide information or opinion. It was noticed that at some questions slight amendments had to be done according to the view given by the respondent in order to make sure there are relation between the questions and the answers given by the respondent.

The respondent had short briefing regarding to the questions that will be asked so they able provide best fitting data as the basic interview session. Both respondent are frequently informed throughout the whole interview session on the parameters studied and durations involved to make sure that answers and opinions meets the interview objectives.

4.2 Description on Analysis

The following explanation and details will state comparative studies between safety on site and the actual guidelines by DOSH on perspective of PPE; (1) Reason's

why workers did not follow the safety guidelines, (2) Method proposed to minimize safety issues. Description will be based on the interview, site visit, and safety training schedules. The explanations for each question may or may not have both opinions of safety management from site and safety officer from DOSH as the input are from interviews questions.

4.2.1 REASONS WHY WORKERS DID NOT FOLLOW SAFETY GUIDELINES (DOSH OFFICER)

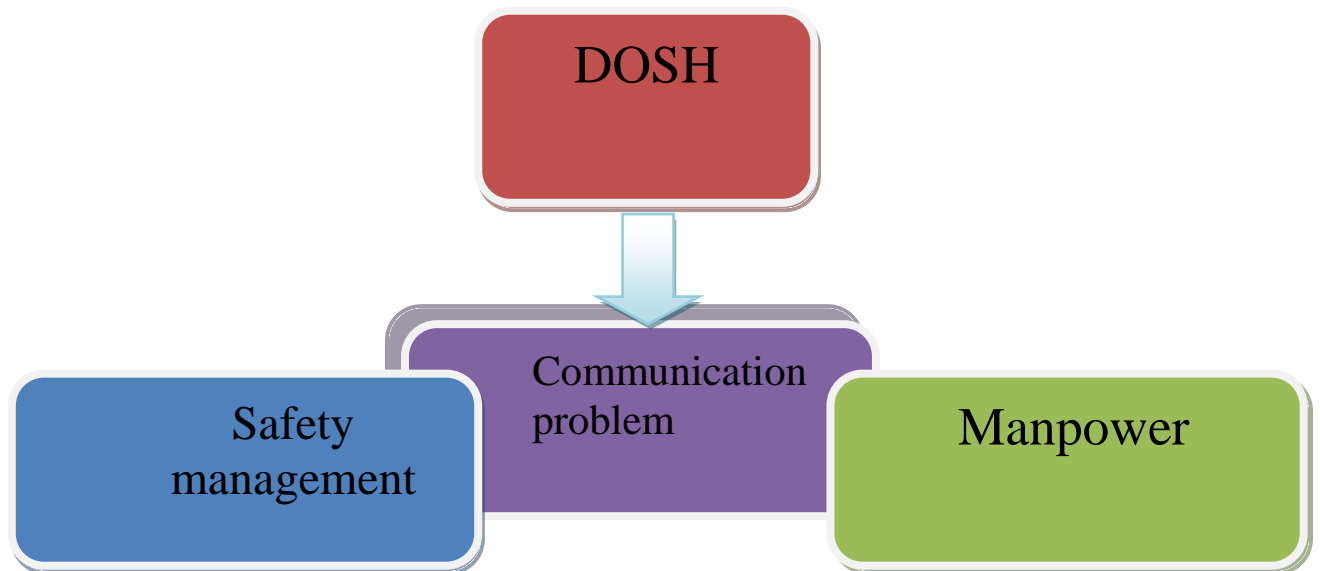


Figure 4.1: Reasons why workers did not follow safety guidelines (dosh officer)

4.2.1.1 Safety Management

According to Dosh , safety management is the main keys to ensure the workers follow the safety guidelines .An effective safety management will help to reduce the numbers of risk on hazard .It was stated that ,for project that cost more than 20 million it is a must for the company to have their own safety officer. A good safety management know how to practice a good housekeeping at their worksite. A poor

housekeeping can result in many serious problems such as low morale, excessive generation of waste, fires and accidents. A proper housekeeping standard includes clean all tools, equipment, and work areas at the end of each workdays, and keep things reasonably clean and orderly while working.

Besides, DOSH also stated that why workers failed to follow the safety guidelines by use PPE on site is due to weakness of safety management itself, for example if the safety management did not perform properly on steps to successful health and safety management which is including policy, organize, planning and implementing, measuring performance and reviewing performance. After having identified the overall health safety policy and objective for the site, the safety management might be fail in organizing part so the objective and the policy of the safety cannot be delivery to the workers. Organize which is major step to ensure the workers understand about safety which is having four crucial components.

According to Work regulation 1992 the PPE is apply in all work environments. It was stated the employers have duty to provide to the employees, without charge, all necessary personal protective equipment which has been identified as necessary within the Risk Assessment. However there are some safety management did not do so by not providing enough PPE and gave inadequate information, instruction and training about to wear PPE especially harness because fall is the most frequent accident that occurs on site. Even if harness is provided if workers fail to understand how to wear it, workers can fall high places.

4.2.1.2 Manpower

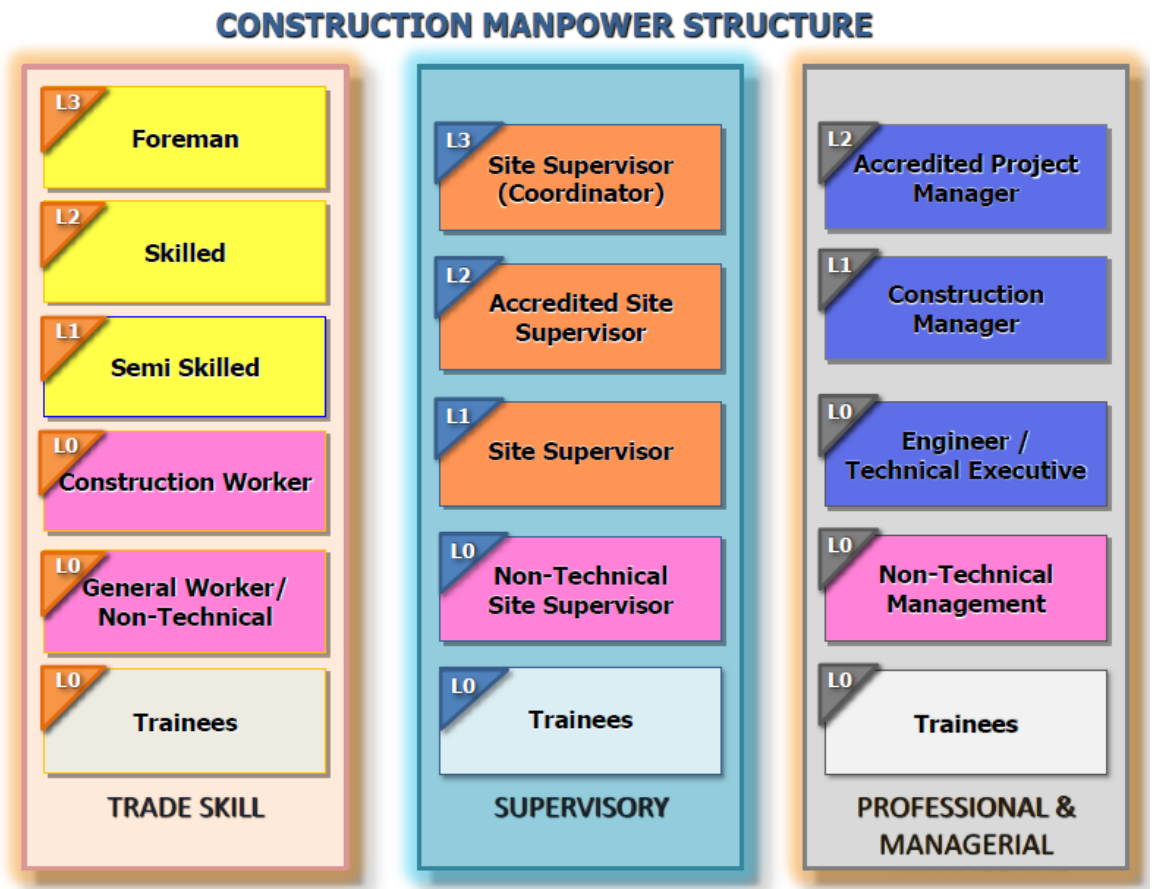


Figure 4.2: Manpower structure

Source: DOSH (2015)

With the layers of Sub contractors, the awareness of safety might be decrease. According to DOSH most of the time Sub-Con did not provide their workers with the right PPE to perform certain work on certain times. Besides DOSH Stated that workers that not provided with PPE would not ask their contractor supervisor for provision of PPE because they were mobilized workers and worked on temporary basis. Since lack of awareness on safety the construction workers itself were not sure whether they have to wear protective equipment on the construction site. They felt it is inconvenient and uncomfortable when wearing protective equipment on work. Moreover, construction

supervisor paid little to the workers performing work and they were never advised to rectify their unsafe behaviour or instructed to wear protective equipment.

Due to volatility of workforce safety performance of the workers was affected because it put them under pressure. Supervisors are often accused of imposing pressure on workers by settling deadlines for them to meet. This condition makes workers to put the safety as not their main priorities as their main objective is to finish the job in time. Thus, workers will performing task on rush and negligence the usage of PPE since it might reduce the productivity of the workers. Instituting competitions between crews can also be source of pressure.

Some supervisors are tempted to modify the estimates to give workers a harder goal to pursue. Their intent is to make the workers feel that their performance levels are below average, and they hope that these realizations will have good motivating influence on the workers. However the adjusted goal is unduly harsh, the result contributes to the larger number of injuries as the workers are stressed and distracted by the imposed pressure. Because the workers were stress they failed to think rational and mostly effected by their emotions and hardly to obey the safety guidelines.

The relationship between foremen and new workers are also effect the safety performance of the workers. When the workers were first assigned to the foreman is also when the foremen role in workers safety begin. If the foremen failed to provide training for all workers regarding their experiences in the early stages before entering the construction site. Maybe due to failures of the foremen on the early stages to provide the right and effective training for the workers, the workers will not able to realize the importance of safety and the consequences that might be face by not following the safety rules.

The foreman plays a pivotal role in worker safety. Foreman have should have an ongoing relationship with their workers, so it is reasonable that they are instrumental in influencing their safety. Sometimes the workers did not follow the safety guidelines because the foreman fizzle in motivating the crew members and provide the necessary leadership to accomplish work by ensure no workers get involved in injuries during the

work process.. So it is important for foreman to deliver necessary guidance to ensure the work delivered safely.

4.2.1.3 Communications issue

Most of the labors on construction site come from poor countries such as Indonesia, Bangladesh, Nepal, India and many more. Besides, most of the workers have lower educational level due to the family background that might be not given them opportunity regarding to education so the workers having problem when it comes to communications. Some workers find it difficult to understand the safety guidelines and takes time for them to digest information regarding to safety. Besides, since the workers did not familiar with rules it was found that it was really hard for them to obey safety guidelines.

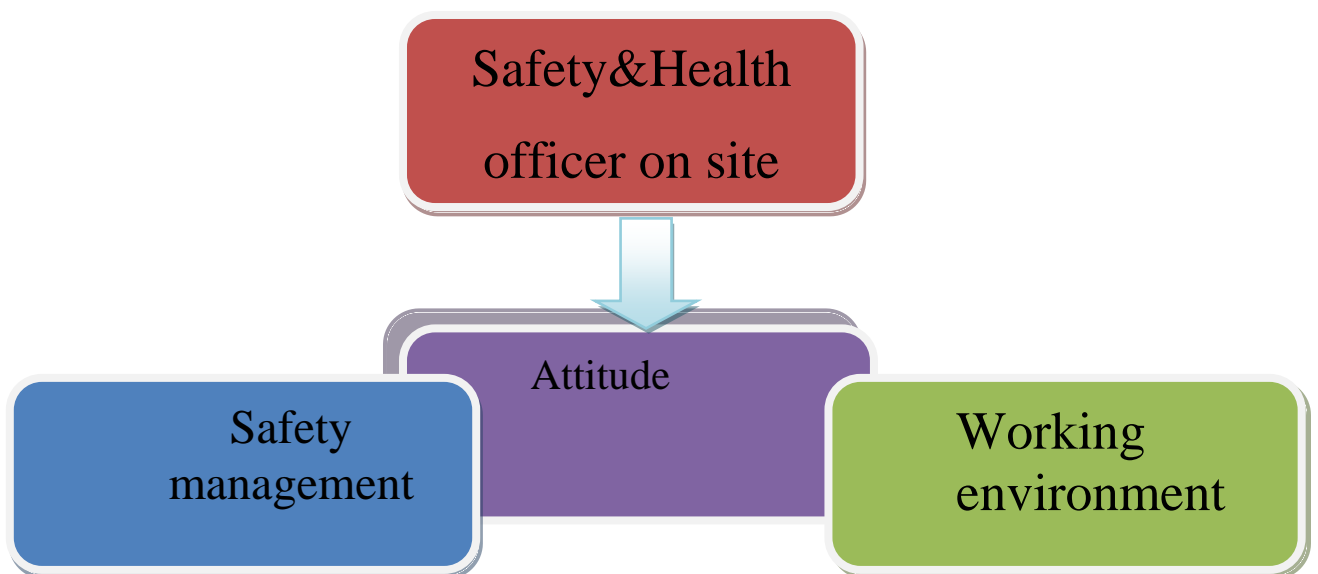
One of the problems observed was lack of clear communications between workers and the employees. During the induction or training some foreign workers did not able to fully understand the safety guidelines due to communications problems. Since workers come from many others any different countries and did not speak English or Malaysia languages. Information regarding safety or guideline are hardly bring to pass to the workers.

Besides, even though the safety management have provided all program for the workers to increase safety awareness among them or includes briefing , training and induction about safety instruction and guidelines but if workers unable to acquire the information correctly the workers will not able to perform work following the right procedures or using the right tools and PPE. Moreover, it is really important for the workers to have received the exact information and guidelines that related to safety issues especially on site.

For safety meeting, since labour having problem in communicating due to language barriers the safety management usually provide leaders for each group according their countries, this leader must comprehend in both language as they act as middle person to conveys and translate all the points and issued discussed during the

meeting. However, the transmission of the information might be not fully delivered since the workers did not received it directly from the supervisor or safety officer.

4.2.2 REASONS WHY WORKERS DID NOT FOLLOW SAFETY GUIDELINES (SAFETY AND HEALTH ON SITE)



**Figure 4.3: Reasons why workers did not follow safety guidelines
(Safety and health on site)**

4.2.2.1 Safety Management

The safety management plays a very crucial role to minimize the numbers of accidents that can be avoided from happen. According to safety manager, a safety management should enforce the safety guidelines among workers and make sure them to follow it .According to Dosh employers should provide all PPE for all their workers while on site. The safety policy for each construction company is different, some of the

company obeys the Dosh guidelines but there are some of it might not, and the implementation of safety in each company also different. There are some company did not follow the Dosh guidelines by not providing enough PPE such as safety boots and helmets.

The workers itself have to buy their own safety boots and gloves and responsible for the ownership, in other case the safety management can provide those PPE but the payment to buy it must be claim from workers salary. This situation can contribute to the reason why workers did not have all PPE or have defects on PPE since workers think it is burdensome for them to invest money for PPE which is supposedly provided by the Safety management.

Besides, it was said on guidelines that safety management responsible in provide training for all workers before entering site. A weak safety management system will affect the awareness of safety on site. Since the system of safety management on site is poor so it cannot improve the moral and productivity as well reduce workers compensation cost related injuries and illness will be more obvious. From previous research stated that, contracting organization surveyed claimed that their management does not include provision of PPE as part of its safety commitment in their site safety plans. This clearly indicates that some organization does not have a strong commitment to workers safety in terms of defining appropriate policies for provision of PPE.

4.2.2.2 Attitude

According to safety officer on site, even though all the PPE is provided by the management the workers still stubborn to use safety equipment and to obey the right work procedures because they assume that safety is not important. Furthermore workers were ignorance to use PPE because they think they can perform work without getting injured, this kind of mind set was influenced by culture of the life way that the workers practice in their countries before coming to Malaysia to work which is they might be

have done before construction work without using PPE and perform it safely and they believe that safety can be sure for others work too.

Attitude also related to the human errors. Due to attitude and behaviour of workers they will tends to commit involve in human error. Human error which is falls into three main groups, slips, lapses and mistakes. Slips and lapses are caused by momentary memory loss often due to lack of concentration or attention. For example while performing work, workers might slips and fail to carry out the correct actions for a task. This finding was support by other previous research Phil Hughes in 2005 stated that mistakes occur when wrong action takes place but the person believes the action to be correct. Mistakes can be disclose as the recklessness of the workers itself, which is even with the information and reminder provide regarding to safety guidelines they still do mistakes by not wearing PPE.

There are two type of mistakes that commonly done by the workers, rule based mistakes, this is usually occurs among workers when a rule or procedure is remembered or applied incorrectly. With rule based mistakes workers attends to do not use PPE during performing work or using not the right PPE while performing work. Second is Knowledge based mistakes, this type is not really related to the cause why workers fail to follow safety guidelines, since this type is occur when calculations rule s used are in appropriate

Workers on site whom breaking the safety rule or procedures and it is become routine not to use the recommended procedures for task for examples workers did not wearing harness while performing at high is called Routine Violations. Routine violations are common type of violations that frequently occurs on site among two others type which are situational and exceptional violations. According to safety officers sometimes the subcontractors did not provide the workers with PPE was the main reason why workers did not wear PPE. This situations is known as situational violations since the correct equipment or PPE did not available while it is needed to

perform any certain type of work. While for exceptional violations it is rarely happen and usually so does not contribute to the reason why workers not using PPE.

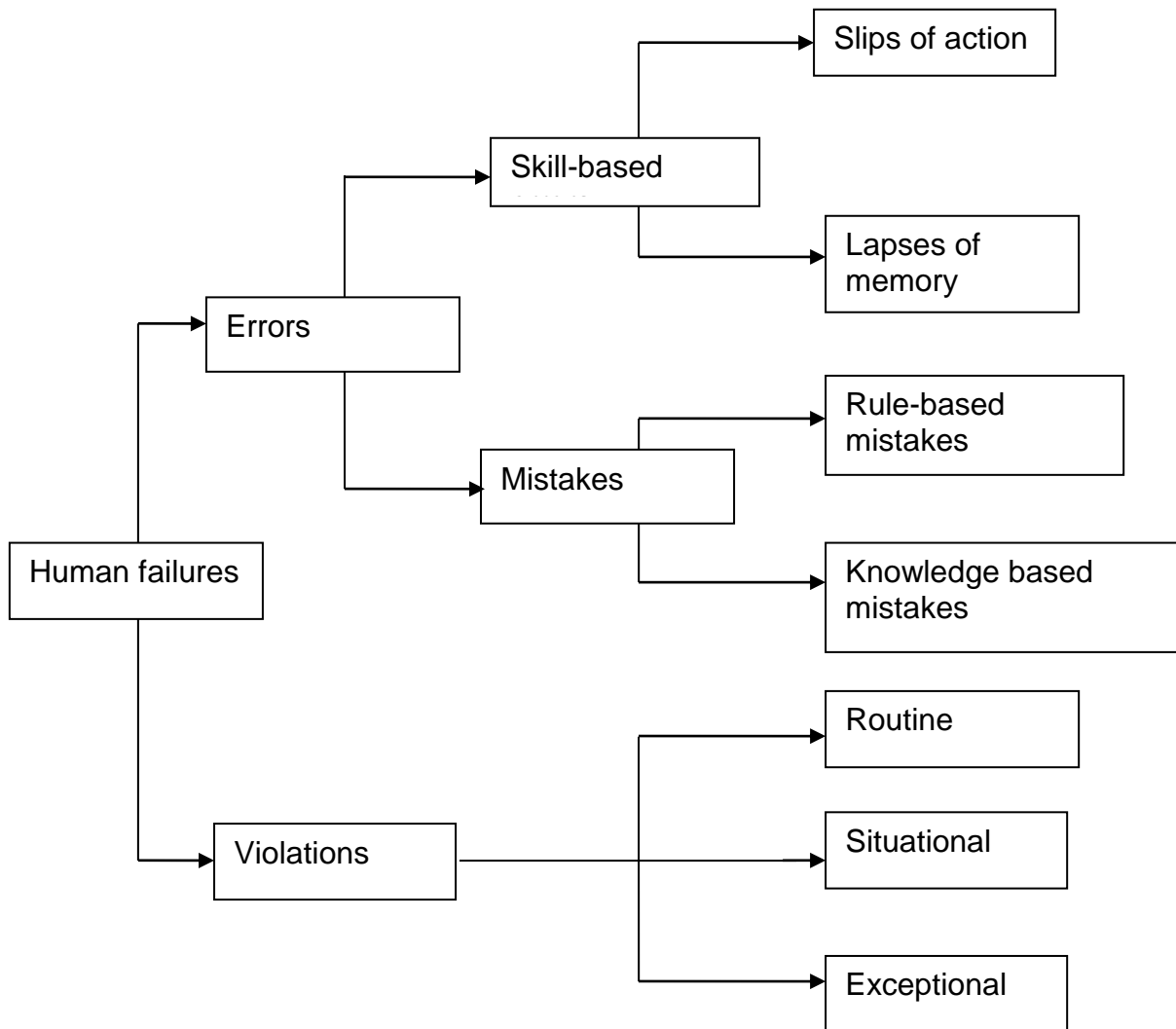


Figure 4.4: Human errors and violations

4.2.2.3 Working environment

Other reason why workers do not like to use PPE because the workers complaint that they are facing stress problem wearing it particularly in hot, sunny weather, confined and poor.

Ventilated areas. Since the fabric materials is heavy and cause trouble to breath plus with hot weather workers find excuses not to use PPE .Besides workers feel that wearing PPE all time is flat out uncomfortable or does not fit right for examples workers on site usually experienced bulkiness when using large gloves because the one that available on market are much smaller. Having to work for 8 to 1 hours a day with something that uncomfortable can take a tool on anybody and force them to take it off.

With the construction of work volume workers more focus how to finish the job or work on the right time and as fast as they can without put the usage of PPE while executing the work as main priorities. Thus, influence from others colleagues of workers also can become reason why workers did not use PPE. In situations if there is one workers who did not use PPE the other workers will questioning why they have to use PPE and end up deciding not to wear PPE.

With this kind of environment and culture among workers it will not helpful and encourage the workers itself to practice safety guidelines. If the workers have a good and healthy working environment, the bonds between workers is in good conditions, they will take care of each other and will keeps remains about each other's safety. With this workers will be more aware about usage of PPE among them and can to ensure each one of them to wear PPE so able them to carry our task safely and without any of them involve in any injuries.

4.2.3 Method Propose to minimize safety Issues (DOSH)

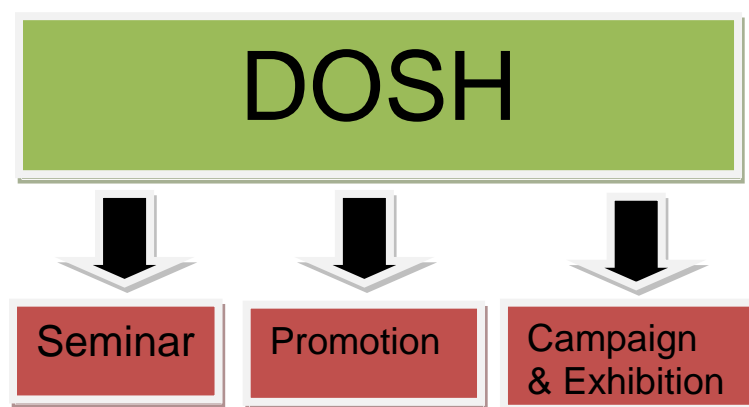


Figure 4.5: Method propose by DOSH

4.2.3.1 Seminar

Seminar will be conducted by DOSH such as Seminar Kebangsaan Keselamatan & Kesihatan Pekerjaan and which is involved safety & health officer. This seminar will be held if there is anything that has to be updated that regarding to the safety issues

According to DOSH in 2014 they come up with 9 sessions for seminar:

- Session 1 - Transforming OSH - preventive culture
- Session 2 - Contract management
- Session 3 - Niosh a new dimension
- Session 4 - Future Strategies
- Session 5 - New directions
- Session 6 - Getting the message to workplace
- Session 7 - Critical analysis
- Session 8 - Smart prevention
- Session 9 - Practical approach

The seminars discuss the national accident rate, that happen between year 2004 until 2014 and the target for 2015. Data from The International Labour Organization (ILO) were discussed and it was estimated that about 2.2 million peoples die every year globally from occupational accidents and diseases, while 270 million suffer serious non- fatal injuries.

Thus on this seminar DOSH also discuss on objective achieved during 2014 and target 2015 was examines. The element of general principles of preventions was explained, eliminated of the occupational hazard .giving appropriate instruction to the workers, evaluations of hazard which cannot be avoided and adapting to technical progress. For safety and health culture DOSH come up with 4 strategies, Government leadership in OSH, and effective of management at workplace, OSH partnership and networks, strategic alliances on OSH internationally.

Planning of construction project were discussed on contract management part, which it includes scope of work, list of hazards and contract period. The main purpose is to provide guidance to employers or clients and contractors in managing OSH in contract situations and define the roles and responsibilities of employer or client and contractor on OSH management.

4.2.3.2 Promotion

Promotion about safety done by DOSH through Mass Media and electronic. According to DOSH this is one of the effort to improve occupational safety and health awareness among workers, employers. And customers. Through this promotion the department disseminated information and provided guidance pertaining to the safety and health legislation.

Among activities publicity and promotional activities conducted by DOSH include giving talk as well as training on occupational safety and health, for training it is usually focus on workers that going to work on site. Furthermore, according to Dosh they also use radio and television as another medium to spreads safety among peoples as well to promote it. Through Radio and television it will be easier to retrieving message about safety to public since most of the peoples will listen to radio or watch television, besides with promotion like it able to reach out peoples from any others places effortlessly. With television , video about or 15 second will be aired during commercial break, the videos will be tells about any issues about safety so peoples who watched it can gasp the importance of safety and to practice it, the video can be in short story or documentary.

However, the duration of the video might be to short and not all peoples can catch it up, but compare to others through television and radio it can attract more audience to watch it or to give attention since it is more interesting and creative compare to others method of promotion which is using memo or flayers.

4.2.3.3 Campaign and Exhibition

In other to minimize safety issues, DOSH also organise campaign and exhibition on occupational .Every year Kempen Keselamatan was launched. Activities regarding safety will be conducted and involve many peoples as a way to increase safety awareness among peoples. Usually In this during campaign, events will be held for one week and many activities regarding to safety will be conducted.

In our country Minggu Keselamatan dan Kesihatan Pekerjaan Negara (OSH week) will be held in the second week of July every year. This event also one of the government effort to disseminate the any latest issues of occupational safety and health to all employee, workers in practice safety culture in their work place.

During Minggu Keselamatan dan Kesihatan pekerja, recognition will be given to each industry include construction industry, figures, chief executive officer, media and organizations that had demonstrate outstanding performance in occupational safety and health in Malaysia. With this recognition, hoped it will encourage and motivated the construction industry to improve their performance safety and health in Malaysia in others to minimize accidents on site.

Moreover, with this approach it will show the commitment and the determination of the government to implement the Safety and Health managements system by the employers beside to improve employee productivity and produce a safe work environment and hope all the peoples that involves will give cooperation to make it success.

4.2.4 Method Propose to minimize safety Issues (Safety Management)

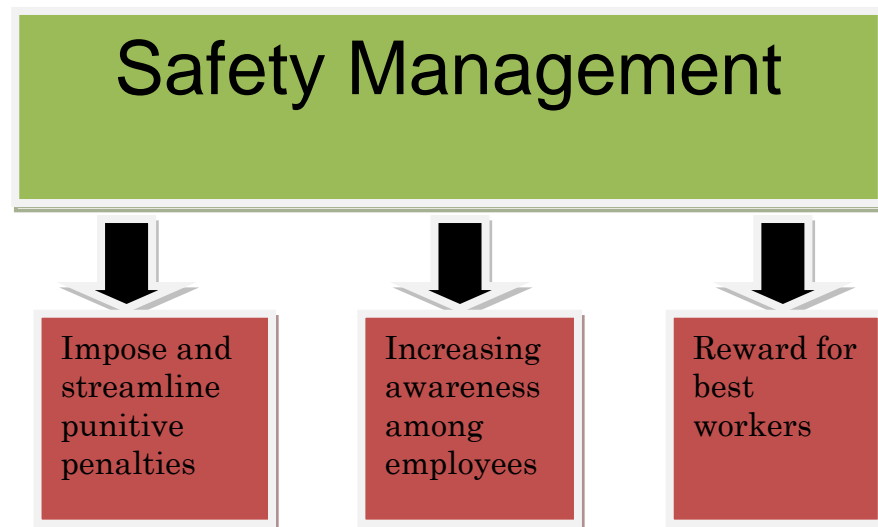


Figure 4.6: Method propose by Safety management

4.2.4.1 Impose and streamline punitive penalties

In order to minimize safety issues and also to avoid workers from repeating the same offences, safety management should imposed penalties on any workers that fail to follow safety guidelines or wear PPE. Penalties include warning for first offence and following by charges of correction and confiscation of the legal income. With this method workers will be more alert about safety and will obey the rule. Amount of charge for each type of penalties can be different for each. According to safety officer on site , the amount charge for penalties is different in any company, the amount of penalty should be reasonable for the workers to pay but at the same time can increase the awareness safety awareness and after the first penalties they will not make the same mistakes again.

SITE RULES AND REGULATIONS

The following are the site rules and regulations and their associated penalties for infringement or breach of any site rules and regulations. AL- Ambia Sdn Bhd has Zero tolerance policy. Any workers found to be infringing or in breach of site rules and regulations would be penalised without warning. In addition to the penalties, any cost incurred by AL- Ambia sdn bhd to rectify or remedy the consequences of the offences would be back charged to the trade contractor's accordingly. Repeat offenders would be removed from site if they commit the same offence more than once.

| AL-AMBIA SDN BHD SITE RULES AND REGULATIONS | PENALTIES (Per offence & Workers) |
|---|--|
| 1. No illegal workers allowed on site at all times. all workers must have relevant CIDB passes | RM 1,000.00 |
| 2. Personnel Protective Equipment must be worn at all times while on site (Safety Helmets, Safety Boots, Safety Harness and gloves, etc or as directed) | RM 100.00 |
| 3. No eating and drinking at site, only at designated area | RM 100.00 |
| 5. Site Housekeeping must be carried out daily | RM 500.00 |
| 8. No baring of bare body allowed on site | RM 100.00 |
| 9. All equipments must be in good working conditions, properly earthed and with no exposed wirings | RM 100.00 |
| 10. Full-time site supervision at all times | RM 500.00 |
| 11. Authorized Workers Pass to be worn at all times | RM 100.00 |
| 12. Attendance at all required Site meetings | RM 200.00 |
| 13. Attendance at all Safety Toolbox Meetings | RM 100.00 |
| 14. Obey all instructions given by AL- Ambia staff at all times | RM 500.00 |
| 15. Do not cause damage to site property, fittings or fixtures | RM 1000.00 |
| 16. Do not cause disturbance to the public | RM 500.00 |
| 17. Do not carry out hot works without hot work permit | RM 500.00 |
| AL-AMBIA SDN BHD SITE RULES AND REGULATIONS | PENALTIES (Per offence & Workers) |
| 18. Do not carry out works of any nature without approvals of AL- Ambia staff | RM 500.00 |
| 19. Do not misuse or interfere any safety equipment at site | RM 500.00 |
| 20. Obey all instruction given by SHO | RM 500.00 |
| Prepared by | Approved by |

Figure 4.7: Example of Penalty system

Source: AL- Construction Company

4.2.4.2 Increase awareness among employees

Increasing awareness among workers, especially those who new to the field of construction is important. In addition to regular meeting and training session, a short videos, statistics and posted reminders everywhere was done to constantly stressing the importance of safety and also improving the PPE compliance.

A constant reminder should be provided to the workers so able them to keep in mind how important the safety are, which is can involve death and injuries. Managements can involve their workers on safety dialogues that can be done in everyday conversations so the managements able to know the level of the awareness of their workers towards safety, make sure safety is addressed at shift changes, weekly meetings and anytime there is job change. The managements also able to ask for the workers itself what kind of method that can be done that effective can increase safety awareness among them and importantly able to figure out concerns that face by the workers and come out solutions to overcome the issues.

Other than that, vocational training can be conducted to workers that performing specific works and have to use certain equipment or tools so they will using it in right procedures and makes sure the workers are properly trained. Which is in this training it will train the workers on safety expectations, and any safety risk and precautions that relevant to their job duties. Since fall are on one of the leading causes of death, so it is really important to the protection program is effective, should have a specific fall managements plan for each project where the risk of falls is present.

A regular inspection on PPE should be done regularly, this is one of the best managements out there to improve safety. Inspection can uncover safety risk caused by worn equipment, unsafe behavior or misplaced tools and give chance the workers to correct them before using it wrongly and can caused an accidents.

4.2.2.3 Reward for best workers

Rewards should be given to the best workers that follow the safety guidelines all the time as a motivation to others workers to follow the same and obey the safety rules. With this rewards such as bonus or vacation workers will be more dedicate doing work and follow the safety guidelines. Motivation significantly influences the productivity of the workers to obey the safety guidelines.

A good management should keep them workers motivated, they can do that by recognize the workers good work. Most of the workers do not receive recognition and those who do not receive enough of it, so the workers find they work hard and their effort to follow the safety procedures might be useless and invisible. Incentives and rewards are really useful to encourage good health and safety on site among workers. By doing it, it can encourage peoples to follow safety guidelines or procedures on site, encourage participation in safety initiatives, encourage reward and reinforce specific safe behaviours, and reward those who achieve outstanding health and safety performance.

Types of incentives or rewards that can be given to workers, such as one-off prizes, for individuals, or for a group. For examples for some company will done monthly give vouchers or hampers, a monthly scheme whereby those receiving reward vouchers for observed safe behaviors have their name entered into prize draw to receive cash prize or gift voucher for shop. Moreover, there is another approach, such as safety raffle, which is month draw for all workers that received a ticket for behaving safely and someone can receive it in term of cash. Other prizes could include shop gift vouchers, which is very useful for the workers to buy their daily needs such as foods clothes and others. With vouchers they can swap it with their needs in return. Also there and then reward can be done, reward that involve a single observed safe act resulting in small reward, for example voucher schemes such as breakfast vouchers as rewards which is can be offer a free canteen meal and drink in workplace or site.

With all this rewards and incentives by the safety managements on site will show immediate recognition of a safe behavior and good practice that is observed by the individual receiving the rewards and their peers. The workers will be more motivated since their feel that their effort to follow the safety is worth it and appreciated. With this, workers will find in easier to obey the safety guidelines since there are rewards provided by the managements.

CHAPTER 5

RECOMMENDATION

5.1 Introduction

In this part of the research writing, it will conclude the findings and analysis that were explained in details in chapter 4. Detailed recommendations will be provided on interest apart general recommendation on this research.

5.2 Summary of study

Based on the analysis done, it can be concluded that among the top reasons why workers fail did not wear PPE is according to DOSH and safety officer on site is due to weak safety managements and followed by other reasons which is attitude, manpower, educations level and working environment.

All this reasons was given by both safety and health officer from DOSH and site constructions during interview sessions.

5.3 Safety Management on site

5.3.1 Conduct tool box meeting everyday

Tool box meeting should be done everyday minimum 15 minutes with all personnel. Tool box meeting should be held in the early morning and can be conducted by project management personnel, field supervision, or foremen. All construction personnel should be required to attend toolbox meetings, or the contractor can ask the

subcontractor to conduct their own toolbox meeting with their personnel. Daily safety meeting topics can include safety rules, hazards, corrective actions, accidents preventions, and review of accidents and near accidents. According safety officer on site, most of the company held tool box meeting but once or twice a week or if there any emergency cases regarding to safety that needed to be informed to all workers, so the productivity of safety awareness was not that effective than if tool box conducted every morning likes some other countries, Japan that have less numbers accidents on Construction site.

By conducted everyday tool box meeting it will allow the entire worker that related to project to know the current progress of the project and discuss any challenged faced. Besides, the workers will keep remainder the safety and did not easily forget the safety guidelines. Those meeting also are used to review the effectiveness of the project safety efforts, to resolve and health and safety issues, to provide forum planning safe construction activities and to plan ahead for new or changed operations and o update the accidents preventions program.

5.3.2 Safety supervision more specific

There are safety inspection officer on each area, in machineries and PPE so the problems able to determine because it is more obvious. With this method the problem arise on specific area such as safety that related to PPE can covered in more depth so the problem that regardless to PPE, such as why workers did not wearing PPE while performing work can be figure out easily since the focus is on PPE.

With the focus more specific on one area, problem likes lack of supervision and communications workers can be avoided. Besides, it will more easily to approach the workers and through this problem among workers and issues that facing by the workers can be known for examples why it is hard for them to obey safety guidelines which mostly by virtue of their own attitude itself.

5.3.3 Improve communications

Since many problem in health and safety arise due to poor communication between management and workforce, at the same level within organization that arises from ambiguities or, even, accidental distortion of a message. There are three basics methods of effective communications in health and safety are verbal, written and graphic.

Communication by speech or word of mouth is verbal communication. If using verbal communication , supervisor, foreman, safety officer or anyone who in charge of safety meeting should using relatively simple pieces of information or instruction while giving briefing with reference to safety.

Writing communication can be execute in many form from simple memo to the detailed report, If a safety management would like to do a safety remainder to workers they can use memo that contain one simple message and it should be written in straightforward and clear language so it will easily understand by the workers and easily red read by the workers if passing by. In construction site , the most common written communications is through notice board, but for the notice board to be effective is need to be well positioned within the workplace and there is need to be regular review of the notices to ensure that they are up to date and relevant.

Last is using graphic communication. Graphic communication might be helpful for foreign since they cannot understands languages very well because graphic communication is use drawings, photograph and poster. By using this method pictures of PPE can be put on poster so the workers will keep reminds to wear them on site .

5.4 DOSH

5.4.1 Improve safety and Health act

The health and safety law of United Kingdom (UK) built upon The Health and Safety at Work Act 1974 (HSWA). This act provides the basis for UK health and safety law and it is further supported by sets of regulations. It serves to protect people in and around. The HSWA provided the basis for British health and safety law and come out as response to expanding, ever more detailed health and safety law.

Malaysia safety and health act was enforcing since 1994. The original Safety and Health was adopted from British safety and Health act. Thus there are some deficiency in Malaysia safety and health Act 1994. Safety Health and Act should be more specific in explaining the safety guidelines, the current Safety and Health is too general compared to others countries safety and health act such as British which is more details. Malaysia safety and health act should be more specific and detailed like British Act which is more consolidated much legislation and provided for the development of a personal responsibility approach to health and safety .

5.4.2 Government should invest more cost on Safety

Our government did not provide enough cost for safety. Compare to developed countries they have allocations for safety since that countries have high taxes compare to our countries. Cost for safety is high and sometimes the safety managements of the construction company itself cannot afford it, Due to this, some the construction site does not provide safety net for high rise building so that is why fall is a the common type of accidents happen on site.

Other than that, due to lack of budget on safety, safety managements on construction site did not provide inadequate PPE for all workers on site. So the workers have to responsible for their own PPE. If the government invest more money on safety , safety program can done in other to increase awareness of safety in each individual and safety management cannot come out any excuse why they fail to provide PPE for their workers.

5.4.3 Labor should learn Bahasa Malaysia or Basic English.

According to DOSH safety officer , since communication is one of major problem that contribute to the reasons why workers did not follow the safety guidelines , so they suggest an idea that all workers from other countries should learnt basic Malaysia or English before coming to Malaysia to work. With this initiative the communication will be become easier, the two communications between workers and supervisor can be done without involving translator. The information can be conveys effectively to workers.

The courses can be taught in their countries in duration for 3 months as preparation before coming to Malaysia, and certificate will be given to all workers that successfully attends this class. With this certificate workers can works on construction site in Malaysia then training and induction can be carried out smoothly.

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APPENDICES

INTERVIEW QUESTIONS FOR SAFETY OFFICER ON SITE AND FROM DOSH.

The Case study done here is to understand and relate all relevant factors that cause (1)why workers fail to follow safety guidelines, (2) Method propose by the safety management and DOSH to minimize safety issues

Why workers did not follow the safety guidelines? State **THREE (3)** main factors.

- a. _____

- b. _____

- c. _____

What is method propose to minimize safety issues? State **THREE (3)** method.

- a. _____

- b. _____

- c. _____

What are the recommendations that can suggest to encourage workers on site follow the safety guidelines? Please provide THREE (3) solutions:

a. _____

b. _____

c. _____

