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- ii. The research focuses to the contractor of class A and class B (PKK) or G6, G7 (CIDB).
- iii. The research also referred to construction worker and other parties who involve in safety construction.

1.6 RESEARCH METHODOLOGY

In this section would explain about the sequence or method that had been used to complete the research. There is several type of data collection that can be used such as quantitative research.

Quantitative Research Method

Quantitative Research protocols have been predetermined and a large number of respondents are involved. By definition, measurement must be objective, quantitative and statistically valid. Simply put, it's about numbers, objective hard data.

Questionnaires

Surveys using questionnaire forms were carried out to obtain data from respondents who are mainly is construction worker and the rest are supervisor that are involve in construction safety.

Interview

Data collection also conducted by having a formal conversations and interviews with a few site safety officers and professionals to gain additional knowledge about appropriate action to overcome deficiencies on safety behavior

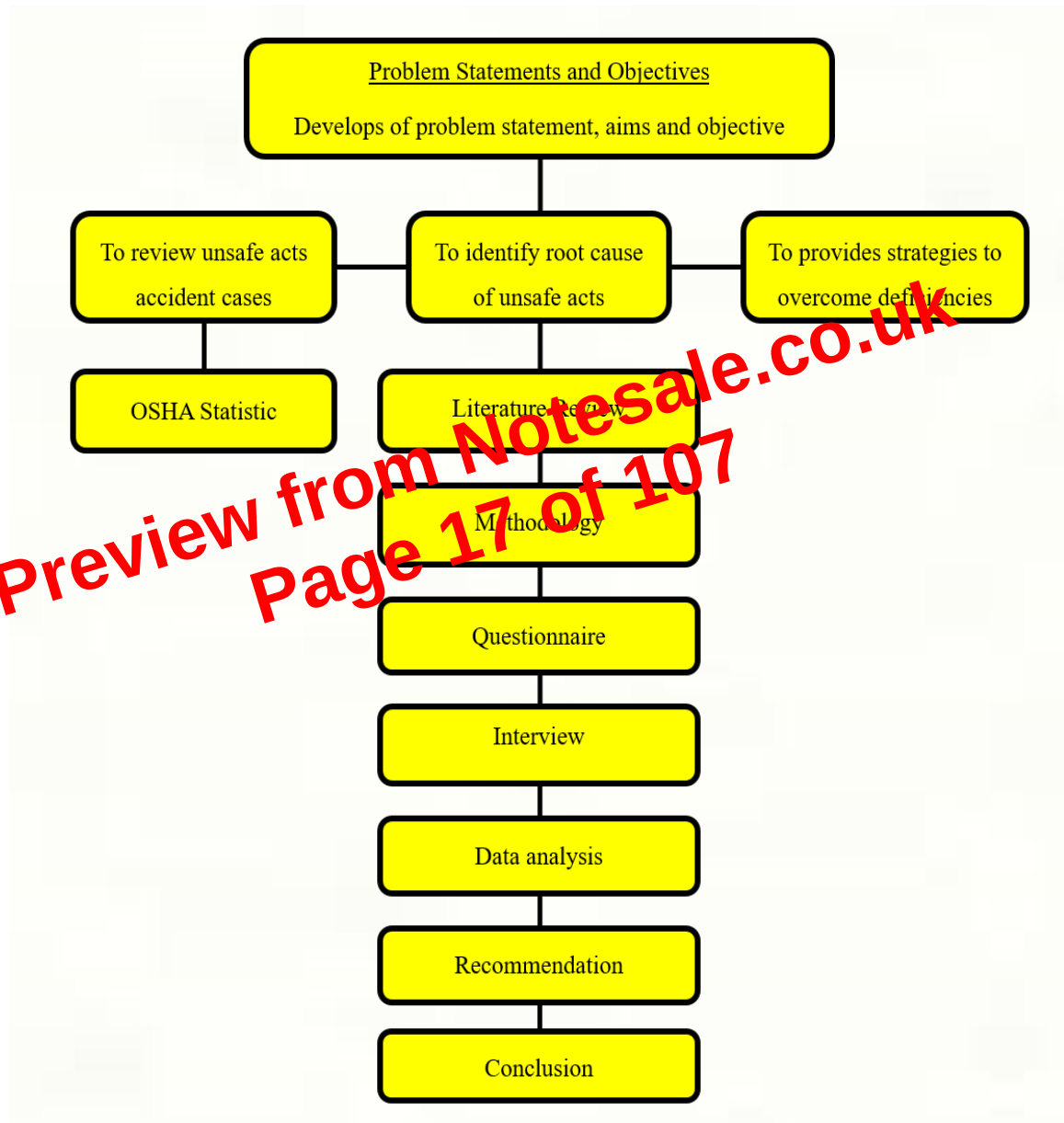


Figure 1.1: Flow of Research Framework

1.8 SUMMARY OF CHAPTER 1

Table 1.2:Summary of chapter 1

Aim	Problem Statements	Research Objectives	Research Questions
Identify the unsafe acts and unsafe outcome in construction project	There are several types of unsafe acts, which can be classified as either errors or violations which causes an Accidents in construction	To clarify this issue it is important to review unsafe acts accident cases in construction industry.	What sector in Malaysia that frequently reported on accident at the workplace?
			What types of accident due of unsafe acts that mostly happened?
	Unsafe acts of workers are considered as major contributors of work-related accidents and injuries on construction sites.	Identifying root cause of unsafe act and construction industry.	What is unsafe act?
			What are the types of unsafe act?
	The statistic of accident at a construction site give us a picture that Malaysian construction industry is one of the critical sectors that need a huge and fast overhaul from the current site safety practices.	To provides strategies to overcome deficiencies	What are the factors of unsafe act?
			What is the best solution on this problem?
			Who parties involve to prevent the problem?

2.5.1.1 Drug and Alcohol

Aksorn & Hadikusumo (2007) stated that workers who use drugs and alcohol tend to distort or block their decision-making capability. In general, experimental research has proven that alcohol has a delirious effect on performance due to its effects on memory, thinking and judgments. Drugs users and drinkers regularly experience reduced levels unawareness, a circumstance which could prompt to decision errors and unsafe acts. When the impact of the drug or alcohol is over, a worker might wonder why he did the unsafe act. It was supported by Makalo, Emuze and Monyane (2015) claims that, the risk of use alcohol and drugs among worker on construction site, will resulting in worst injury or will lead to other hazards. In addition, drug and alcohol could influence workers to acts uncontrollable and slow reaction to recognized the hazard in front them.

OSHA stated that all employer has a legal obligation to address alcohol and other drug issues in the construction site through the “duty of care” provision in the OSHA Act. These provision require employers to take all reasonable or practicable step to ensure the health and safety of all workers may be affected by the actions of the contractor or client.

Therefore, the use of drug and alcohol at construction site will bring negative impact among worker at construction site. Most high risk of accident happened when workers use drug or alcohol during performing the task. All parties shall take responsible to address this problem.

2.5.1.3 Fatigue

Earlier investigation on the relationship between fatigue and prolonged driving was discovered by Hakkanen and Summala (2011), found that heavy-vehicle drivers could experience difficulties in staying alert whilst driving, could fall asleep at the wheel, or could experience a near miss situation on the road that contributes to the accident during performing their daily work. Sharpe M. and Wilks D. (2002) suggest that the cause of fatigue include psychological stresses, such as loss or bereavement; and social stresses, such as problems at work.

According Health and Safety Executive (2006) states that, “fatigue cause an increased likelihood (risk) of incidents because of tiredness and lack of alertness. Fatigue may result in a slower reaction to signals or situations and affect the ability to make good decisions and adapt to a constantly changing environment like mining. Consequently, the human error component of incidents is increased along with the risks to health and safety.” Errors are more likely to occur when workers have high levels of fatigue or during times of inflexible or over demanding work schedules (Mansor et.al. 2011). In addition, construction workers are prone to fatigue as construction work typically involves heavy workloads, awkward working postures and prolonged working hours (M. Zhang, L.A. Murphy, and D. Fang, 2015).

2.5.1.4 Ignoring to wear Personal Protective Equipment (PPE)

According to Health and Safety Executive (2006) states that personal protective equipment (PPE) is equipment that will protect the user against health or safety risks at work. It can include items such as safety helmets, gloves, eye protection, high-visibility clothing, safety footwear and safety harnesses. It also includes respiratory protective equipment. T. C. Keng and N. A. Razak (2014) explained PPE as any equipment worn by a person at work to protect him against risk to safety and health and any additional accessory designed to protect him while performing task. In addition, it is important to provide PPE at construction sites. Similarly, Paringga (2010) agreed that in order to have a safe and healthy condition at construction sites, it is essential to PPE to the workers.

According to Occupational Safety and Health Administration (OSHA) stated that, 89 percent of the workers reported failure to wear their personal protective equipment (PPE) at work, in areas where the equipment was required. According to Clarke (2014) claim that, 89 percent of safety professionals said they had observed workers not wearing safety equipment when they should have been. Twenty-nine percent said this had happened on numerous occasions. There are several types of PPE that workers need at the construction site such as head protection equipment, face and eyes protection equipment, ear protection equipment, hand protection equipment, foot protection equipment, respiratory equipment and body protection.

to absenteeism, low employee morale, high accident and turnover rates as well as increasing medical expenses of many organizations (Wahab, 2010). Notably, previous studies have shown that work stress can be physically and mentally harmful to workers and it is related to physical condition, organizational structure, interpersonal conflict, personal characteristics and nature of work (Lath, 2010).

Stress is not limited to any particular profession (Lath, 2010). According to Campbell (2006) found that in the United Kingdom, construction professionals were increasingly viewing their work as being stressful. Linda *et al.*, (2003) identified the nature of production processes that take place in the construction industry as being responsible for making construction work a dangerous and stressful occupation. This goes to suggest that work stress is a major threat to the attainment of sustainable growth in the construction industry in particular and economic development of any nation in general.

Kennedy (2005) noted that construction project stress is the manifestation of factors that negatively erode values from the project, and thus make desired goal unattainable. Work overloads, working long hours and role ambiguity are known to be leading causes of stress among workers in construction projects (Lath, 2010). Previous studies show that the general sources of stress among construction sector workers are quantitative work load, tight time schedule for work, lack of career guidance, poor communication among participants and bureaucracy.

Therefore, stress among construction worker can divided into four elements include time pressure, workload, poor communication and poor working environment, (See figure 2.10).

Therefore, Time pressure tends to poor work set-up prior to task commencement, interruptions whilst working, and the pressure to meet deadlines and lastly cause accidents at construction site.

2.5.2.3 Workload

According to Jian Ai Yeow (2014) stated that, an individual whose work demands have gone over the limit, it is likely that they are unable to mobilize their work effectively. They are bound to face emotional stress such as mental strain, tension and pressure. In another study, it was found that stress can function like as it is a physical and mental condition which can affect the effectiveness of work and concentration of hazard. (Lawson et al, 2001).

According to Zakaria (2012) claim that, accident are more likely to occur when workers have high levels of fatigue or during times of inflexible or over demanding work schedules.

In addition, overload of work can cause physical injured among worker during completing the task given.

Therefore, work overload can lead the workers to works under pressure and finally lose concentration of hazard at construction site.

and others. It is supported by Wahab (2010) which claimed that, unsafe physical conditions can be a potential source of work stress, particularly when individuals must confront the threat of injury.

Also Lin and Chan (2009) found that temperatures above 30°C and relative humidity above 74% posed health threats to construction workers in Taiwan. They noted that physically overloaded construction workers were among the most vulnerable to the negative impact of temperature on their health and productivity. Most recently, it was found that noise, cold, conflict with one another, unintended and unforeseen phenomena, search for optimal solutions consistent with client's budget and time frame, reaching comprises, moving and rearranging work schedules and other potentially intolerable conditions constitute stressors to workers in the construction industry in Nigeria (Wahab, 2010).

Therefore, poor working condition is one of the influence elements of stress among construction workers. Proper handling and management of site working is important to make sure sources of stress are removal.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter discusses all of the methodology that is used in this research to gain in-depth information on unsafe acts in construction projects. Based on the objectives of the research, these methodologies are identified at the initial stage of research, as guidance for the research.

3.2 RESEARCH STRATEGY

Data collection method used by this research is quantitative research data. Quantitative research uses traditional statistical and mathematical methods for measuring results conclusively. The key advantage of using quantitative research data is able to summarize huge information sources as well as facilitate good comparisons over time and across categories.

Quantitative research also allows for greater accuracy of results gotten and Quantitative research also totally eliminate bias. Quantitative research usually filters out all external factors and if well designed, it provides unbiased and real results.

CHAPTER 4

RESEARCH FINDING AND ANALYSIS

4.1 INTRODUCTION

This chapter is to analyze the data collection from the questionnaire where the data was collected from the targeted respondent. There were about 175 copies of questionnaires from the total of 5 sites in area Shah Alam, Selangor. Each site, 35 questionnaires will be distributed. The questionnaires were distributed directly from the researcher to the respondents on construction site. Out of 175 copies questionnaire, there only 130 copies that gets the feedback from the targeted respondents. Therefore, it is only representing 74% from the overall of the targeted respondents.

In this chapter, the data finding were presented in three sections where the first section explain about the respondent's background. At the second section it will represent on investigation about the types of unsafe acts. Lastly, third sections will explain about root cause of unsafe acts in construction site.

4.2 CHALLENGES DURING DATA COLLECTIONS

There are some challenges during the data collection of this research. The questionnaires are design in English and Malay language, some of the respondents cannot

According to the table 4.9, the highest mean score of individual factor was ranked to ignorance of using PPE (3.25). At the second ranking is represented by laziness (2.98) and the third is fatigue (2.85). Then followed by lack of experience (2.05) and the last ranking is represented by drug and alcohol (1.39).

Based on the result, ignorance from workers to wear PPE is the main reason of unsafe act occurs in construction site. The result is similar to a study conducted by T. Aksorn, and B. Hadikusumo (2007) who has reported that construction worker in Thailand are rarely wear PPE. in facts, only 5 % of the worker were found to wear PPE tools. From the questionnaire, it was discovered that most of the worker feel confident to carry out the work without wear PPE tools. The factor such as age, experience and position is the main reason to ignoring PPE tools during performing the task. From the survey conducted, many of them is skilled workers and have experience around 5-10 years. Besides that, most of respondent believe that the possibility of getting an accident is low because mostly not experience on accident at construction site. Therefore, the ignorance of workers to wear PPE tools due of confident is the reason of unsafe acts occurs in construction site.

5.2.2 OBJECTIVE 2

This objective is to identify root cause of unsafe acts. The concept of unsafe acts has been explaining in chapter 2. From data analysis that have been done, the result indicates that routine violation is mostly performed among workers at construction site. Most of them believe able to complete the task without follow the safety procedure. For the individual factor that influence of unsafe acts, the result shows that ignoring to wear PPE tools due of over confident is the highest factor that influence unsafe acts in construction site. This happen because most of them are skilled worker and have more experience to works in construction site. For the job factor, overload is the major influential factor among workers. Perhaps, this situation happens because most of them are skilled worker, who have skilled to complete the task compare to other workers. Therefore, skilled and experience worker and all are more trusted by top Management to carry out a lot of task. Why, for management factor, lack of safety practice is the most influential factor for unsafe acts in construction site. No training provided by top Management towards their workers about safety.

5.2.3 OBJECTIVE 3

This objective is to provides strategies to overcome deficiencies. In this part, data collection is conducted by interview session. All the data has been discussed in chapter 4. However, researchers realize that most of the interviewee have mentioned that corporation between parties is the key of safety to be successful implemented in construction site.

PART B: TO INVESTIGATE THE TYPES OF UNSAFE ACTS

Please tick your (✓) answer in appropriate box below

1	2	3	4	5
Strongly Disagree	Disagree	Moderately Agree	Agree	Strongly Agree

In your experience, please rate the major types of unsafe acts that you ever made and experienced with

Code	Types of Unsafe acts	1	2	3	4	5
Unintended Action						
E-001	I often fail to execute work correctly					
E-002	I often forget to do certain task while perform my job					
M-001	Safety rules are too restrictive and complicated					
M-002	I was assigned to unfamiliar jobs					
Intended Action						
V-001	I am confident in doing my job regardless of safety procedure					
V-002	I will continue with my job even with minimal safety tools					
V-003	I will try to complete the task even I am not familiar with it					

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