

## CHAPTER IV

### RESULTS AND ANALYSIS

#### 4.1 Definitions of Safety Precautions on Site

Construction projects rely on skilled construction experts to bring them through to successful completion. Professional construction managers work on capital projects, which are large-scale, complex, high budget undertakings.

Construction sites are hazardous to the public, workers, and environment due to precarious activities, improper use and maintenance of tools and equipment, and hazardous materials/chemicals. Additionally, vibrations, dust, effluent and sound emitted from activities on site can disturb the balance of the ecology around or manifest as a nuisance to the immediate communities. The OSHA act, The Building Code and the provisions of the Environmental Management and Coordination Act prescribe certain precautions to mitigate these hazards. (encadria.com, 2021)

#### 4.2 Importance of Safety Precautions on Site

A safety and health management system, or safety program, helps workers focus their efforts on improving their work environment and reducing the risk of injury. The goal is to ensure that employees know how to work safely when carrying out their jobs.

Safety rules in the workplace are important to protect employees, customers, and the company's brand reputation. They can reduce on-the-job accidents and injuries, maximize productivity, and improve the work environment and job satisfaction of employees. Serious accidents can cause delays and shut down projects, so construction superintendents need to prioritize safety to ensure projects stay on schedule. Construction superintendents must prioritize safety to

ensure projects stay on schedule, as serious accidents can cause delays and shut down projects.. (ehstoday, 2021)

### **4.3 Elements on site safety precautions in Cyber Jaya, Selangor Malaysia**

This research aims to identify and evaluate the safety management in construction projects to minimize and control health and safety of construction workers. A questionnaire was used to compare experienced professionals working in different construction sites. Previous researches and literature reviews provided theoretical background for the design of the questionnaire.



Figure 4.1 Workers are Working on How is the Waste System Throw to Container Safety

Source: Researcher Data

The construction industry has a high number of fatalities and long-term injuries due to poor construction planning, lack of safety in design, inadequate safety training, worker behavior, inherent safety H&S risk of construction and lack of knowledge of site rules. Figure 4.1 shows that some workers working on the equipment are not wearing complete safety equipment, which is unacceptable in a modern society and makes the industry inefficient.

## 4.2 Questionnaire Results

The most important details are that the questionnaire was taken into consideration, previous researches were analyzed, data collection was analyzed, and finding was investigated to achieve the objectives of the studies. The results of the studies are as follows.

### 4.2.1 Safety Ratio of Construction at MRT Project Site in Cyberjaya

Safety ratios	Percentage
Safety contact with electricity	20%
Struck by moving object	8%
Struck by moving vehicle	0%
Fall from height	54%
Trapped by something	8%
Other damage ( road or pavement )	8%

Table 4.1 Safety Ratio of Construction at Mrt Project Site In Cyberjaya

Source: Researcher Data

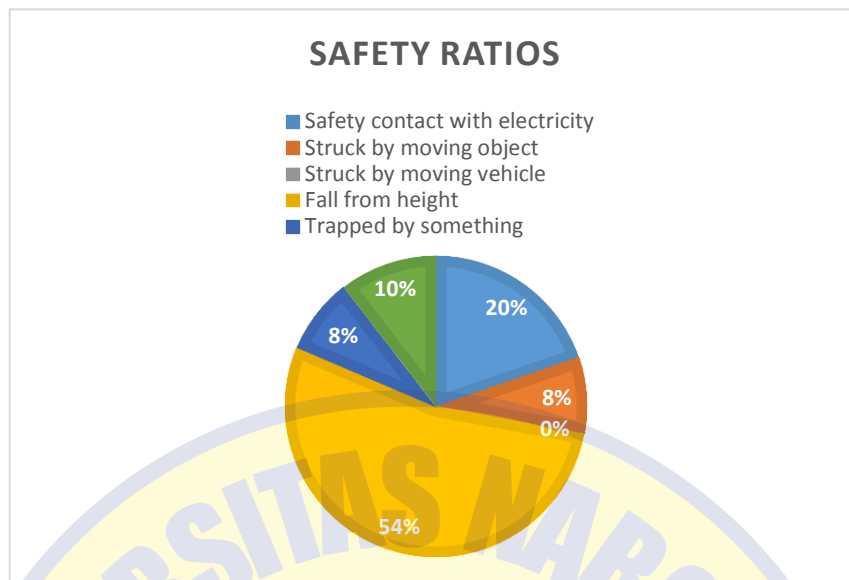


Figure 4.2 Safety Ratio of Construction at Mrt Project Site In Cyberjaya  
Source: Researcher Data

According to table 4.1, by percentage 20%, Electrical Safety Signs on Construction Sites. Electrical safety signs are used to alert you of any potentially high voltages, overhead power lines or other electrical hazards that you need to be aware of whilst on-site. by percentage 8%, Struck by moving object is when an object which is rolling, moving, or sliding hits a worker, This includes instances in which a worker is struck or run over by a moving vehicle or instances where a worker is struck-by sliding object or equipment. According to table 4.1 by percentage 0%, Struck by vehicles is the term that Ontario's prevention system uses for the various injuries that occur when workers are hit, or struck, by tools, materials, equipment, or vehicles, just like falls. With percentage of 54%, fall from high is Falls to a lower level are one of the most common causes of persons dying, or being seriously injured in the building sector. One must prevent risks of falling from height, starting from heights of two meters or more, during building and civil engineering work. percentage 8%, trapped by for example hole.

Fatal Accidents resulting from falling materials and objects	Percentage
Insecure loads unsecure equipment and pieces of plant	31%
Collapse of structure	41%
Falls of rocks	28%

Table 4.2 Fetal Accidents Resulting From Falling Materials And Objects  
Source: Researcher Data

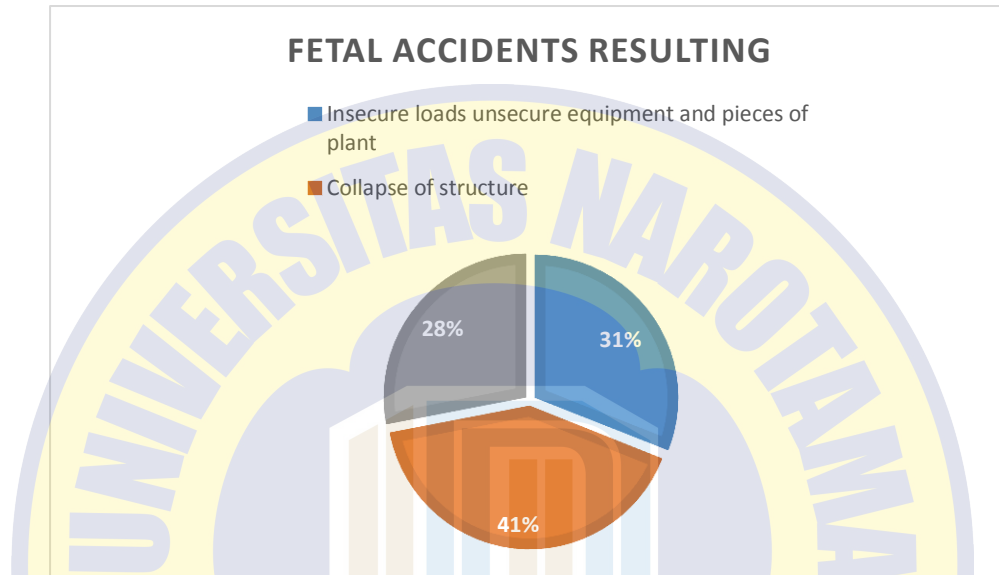


Figure 4.3: Researcher Data Responds of Accident Resulting  
SOURCE: RESEARCHER DATA

The construction worker deaths as shown in figure above insecure loads unsecured equipment and pieces of plant is 31%. Collapse of structure or part of structure is 41% the highest fatal accident in the rate, Structural failure refers to the loss of structural integrity, or the loss of load-carrying capacity in either a structural component, or the structure itself. ... In a well-designed system, a localized failure should not cause immediate or even progressive collapse of the entire structure. Falls of rocks or earth from sides of excavations and tunnels is 28%.

Safety tools at the construction site	Percentage
Face shield	12%
Ear flugs	15%
Safety shoes	35%
Gloves	100%
Hardhat	100%
Eye Goggles	100%

Table 4.3 Safety Tools at The Construction Site  
Source: Researcher Data

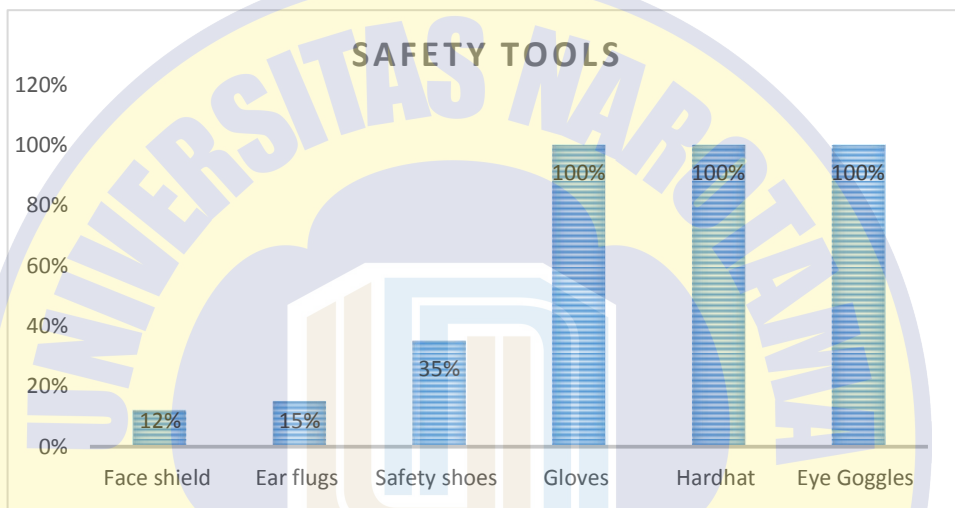


Figure 4.4 Responds of Safety Tools  
Source: Researcher Data

As shown in figure above is 12% , These shields extend from the eyebrows to below the chin and across the width of the employee’s head. Face shields protect against potential splashes or sprays of hazardous liquids. as it shown 15% rate during construction site worker safety, ear plugs is to protect the workers ears from damaging decibels while also keeping the ear comfortable.as shown in figure above 35%, safety shoes is to protects the foot from falling objects or compression, usually combined with a mid-sole plate to protect against punctures from below. as at shown in figure above is 100% worker wearing during construction which is good to protective equipment worn during work projects that cover and protect the hands from the wrist to the fingers. And 100% which is good to protect the head, worn especially by people on building sites or in factories: Construction workers in hard hats 100% which is good to the worker to



wear in construction site during work and is the most protection for the eyes and to protect against more serious eye hazards, like dust, flying particles, molten metal and hot liquids, and should be used whenever a tight seal is required to protect the eyes. This prevents any objects or liquid from slipping through the space between the face and the eye.

The type of organizing analysis	Percentage
Client	12%
Consultant	19%
Contractor	50%
Higher education	12%
Others	7%

Table 4.4 The Type of Organizing Analysis  
Source: Researcher Data

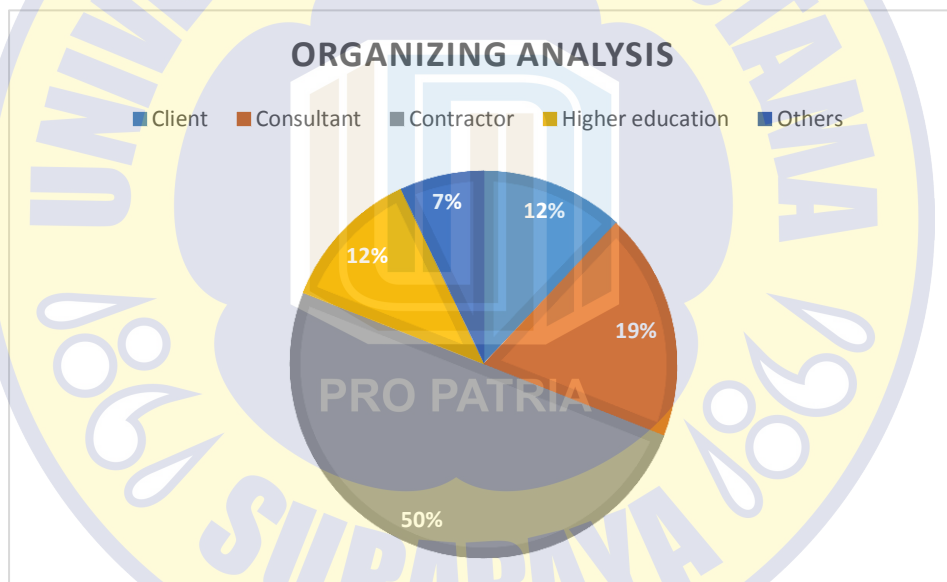


Figure 4.5 Responds of Organizing Analysis  
Source: Researcher Data

As it shown in figure above rate is 12%, and Client management is about improving the project experience, simplifying the process, exceeding expectations, and reducing stress for the client. It focuses on creating powerful client relationships and puts the client first. And it shown in figure above is 19%, Consultant is Job Duties for Project Management Consultants. Project management consultants bring specialized skills and knowledge to assist

companies in making the best possible business decisions. They typically provide oversight and leadership in executing projects from planning to completion. And it shown in figure 4.3 is 50%, contractor job in project management is Quality management, Contract administration, Safety management, Construction management professional practices (manage the team working on the project, define each person's role and responsibilities, etc.) And it shown in figure 4.3 rate is 12% , and Higher education project management can be very different from regular business projects. It involves unique issues like student recruitment, community oversight, and accreditation.

The responsibilities of management regarding the implementation of safety and health in the organization	Percentage
Yes	80%
No	20%

Table 4.5 Involvement of Company Based on Health and Safety Care Source  
 Researcher Data Source

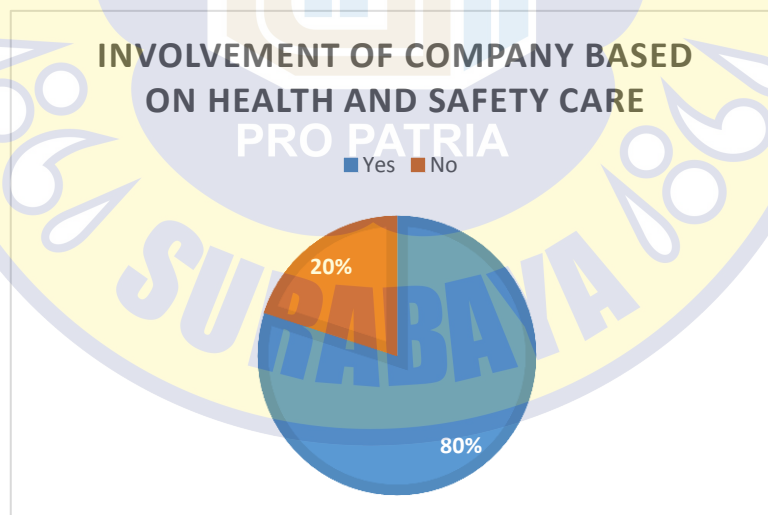


Figure 4.6 Responds of Health And Safety Care  
 Source: Researcher Data

Ensuring that each members' actions and decisions at board level always reinforce the message in the organization's Safety Statement.



Preventing a mismatch between individual board member’s attitudes, behavior or decisions and the organization’s Safety Statement so as not to undermine workers belief in maintaining good safety and health standards.

Analyzes by percentage to the company (good in safety site )	Percentage
Client	6%
Designer	9%
Contractor	42%
Consultant	3%
Principal designer	10%
Project manager	27%
Other	2%

Table 4.6 Analyzes By Percentage To The Company Good In Safety Site

Source: Researcher Data

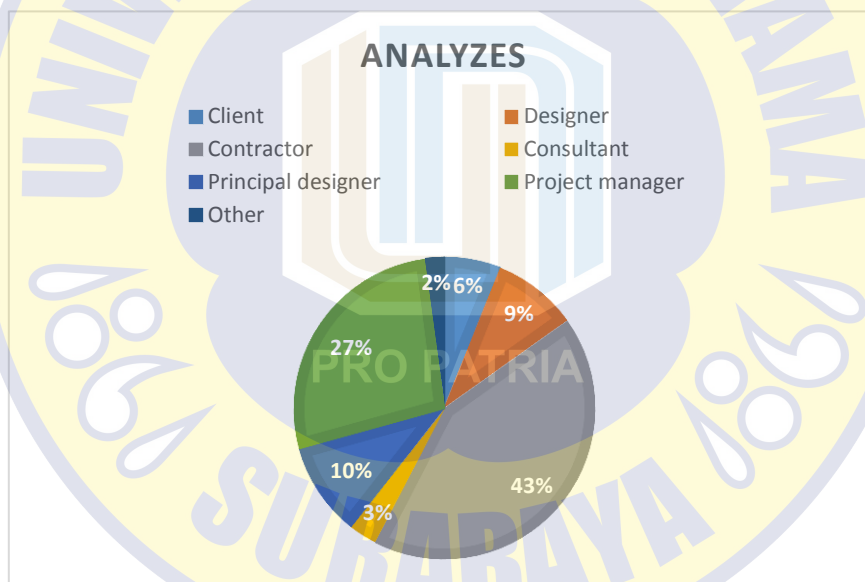


Figure 4.7 Responds of Analyzes

Source: Researcher Data

It is shown above the figure rate by percentage above 6%, the client is responsible for the success of a construction project, they oversee every aspect, including the planning, execution, monitoring, control and closure, client also will plan and arrange visits to potential, new and existing clients to ensure they have everything they need.

Designer as it shown above the figure rate by percentage 9% , designer job is involved with estimating the cost of constructing a project based on the goals of the designer and owner (design concept) and the project's scope, all while achieving optimal quality. Contractor as it shown above the figure rate by percentage 3% .

Type of the following accident is most likely to cost lost working time injuries to workers	Percentage
Contact with electricity	2%
Contact with machinery	15%
Lifting and handing injuries	4%
Struck by falling or moving objects	11%
Strip , trip , fall same level	32%
Falling from high	36%

Table 4.7 Type of the Following Accident is Most Likely to Cost Lost Working Time  
Source: Researcher Data

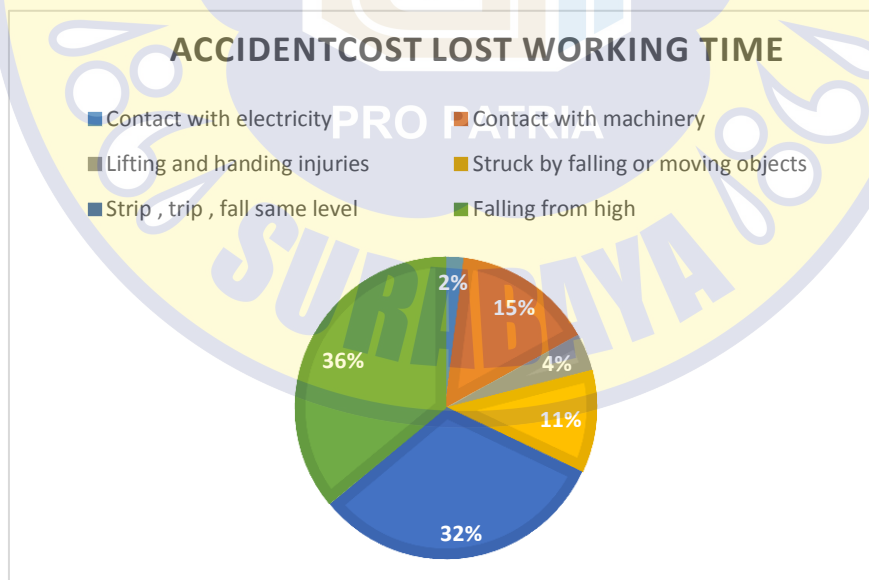


Figure 4.8 Responds of Accidentcost Lost Working Time  
Source: Researcher Data

Construction work often involves starting from the ground up, and there are hazards present that can jeopardize the health and safety of all workers. Connecting with electricity is an accident rate of 2% according cause, and 15% according causes. Where the machine or equipment itself was not properly designed or manufactured, or lacked proper warnings, the injured construction worker may have a products liability or defective products case. Where the construction equipment or machinery caused injury due to the way it was maintained or used, this is more likely a labor law case, and a contractor, or construction site owner, or both, must be sued. Construction equipment and machinery accident lawyers who represent workers in the Syracuse community are intimately familiar with regulations.

Construction site injuries can be caused by a variety of factors, such as failed hydraulic pumps, faulty compressed air lines, defective cables, improperly erected ladders, loose parts from a tool of any kind, defective drills, badly designed saws, malfunctioning pumps, flawed bulldozers, dangerously designed or used forklifts, untrained crane operation, unchecked wrecking balls, backhoe misuse, rotten wooden pallets, and more. Lifting and handing injuries are one of the most common causes of injuries in the workplace, and employers must implement measures to reduce the risk of injury and ensure that potentially hazardous loads are labelled with weight information. Falling from high is the leading cause of construction site accidents resulting in injury or death, and workers who are six feet or more above a ground-floor level are at risk for serious injury or death. Struck by falling or moving objects is an accident rate by percentage 11% according, and rolling objects usually involve a worker being struck by a vehicle or heavy equipment while it's in motion. Strip trip, fall same level, and falls from high are the leading causes of workers, compensation claims in the construction industry.

Safety and health workers	Percentage
Working overtime	46%
Focus on time and cost rather than safety	38%
The inherent risk of construction	43%
Tiredness or fatigue	20%
Smoking at the site	40%

Use of mobile phone	58%
Lack of knowledge of site rules	15%
Non wearing of personal protective equipment	20%
Inadequate safety training	46%
Lack of collaborative working	19%
Poor construction planning	2%
Complexity of project	19%
Worker behavior	40%

Table 4.8 Safety And Health Workers

Source: Researcher Data

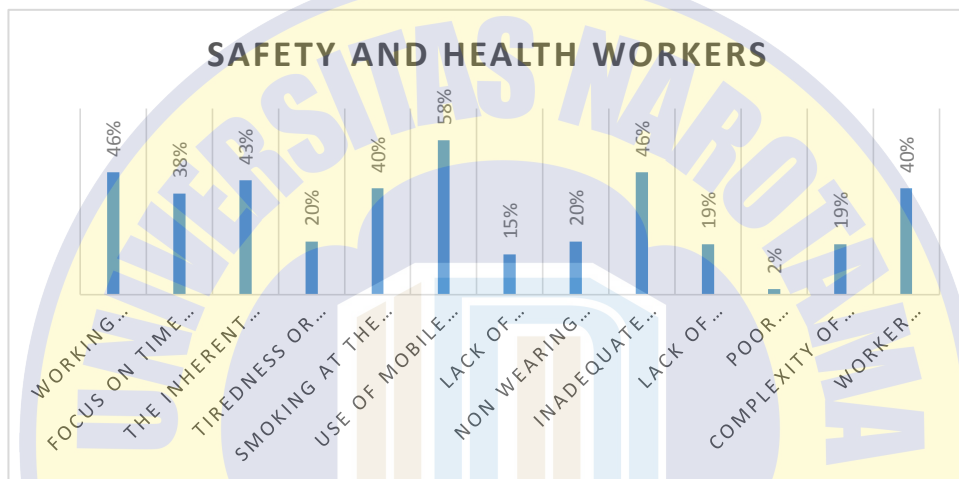


Figure 4.9 Responds Of Safety And Health Workers

SOURCE: RESEARCHER DATA

Overtime work is often seen as a safety net to ensure that work is done quickly and efficiently. The inherent risk of construction as manager is 43%, and fatigue or fatigue is 56%. A good fatigue risk management plan should state the organization's commitment to managing the safety risks associated with fatigue, specify scope, and define the roles and responsibilities of all applicable parties. Acceptable limits may be set by the company itself or by state, federal or industry regulations. The plan should document all areas of potential risk in the workplace, address the highest risks first, and allow employees to contribute.

When a safety incident does happen, the plan should have a procedure for investigating whether fatigue has played a role and how it may be managed in the

future. The law permits smoking in outdoor workplaces, such as construction sites, unless an employer or a local ordinance bans it.

Rates by percentage for using a mobile device on a construction site are 58%, 15%, 20%, and 46%. The worker who doesn't know the rules is 15%, the worker who is coordinated is 20%, the employee pays for the people, and the greater the level of PPE protection, the greater the associated risks. As a result of inadequate safety training, workers are exposed to a greater risk of injuries and more severe injuries than they would be exposed to in a workplace with proper safety training. If the workers are injured, they must be able to obtain workers' compensation benefits.

The main risk involved in collaboration for construction development are lack of trust, complacency, dependence, exploitations, clash of corporate culture and poor performance of any of the partners. When it comes to project management, adequate definition of the project's scope and a proper planning phase are critical to success. Complexity affects the modeling, evaluation, and control of projects and the objectives of time, cost, quality and safety. The negative of work behavior ratios 40% and 60% can lead to lost project time and cost. Safe design is about integrating hazard identification and risk assessment methods early in the design process to eliminate or minimize risks of injury throughout the life of a product.

More emphasis on health and safety during planning phase	Percentage
Very significant	50%
significant	40%
Neutral	8%
Insignificant	2%

Table 4.9 More Emphasis On Health And Safety During Planning Phase

Source: Researcher Data

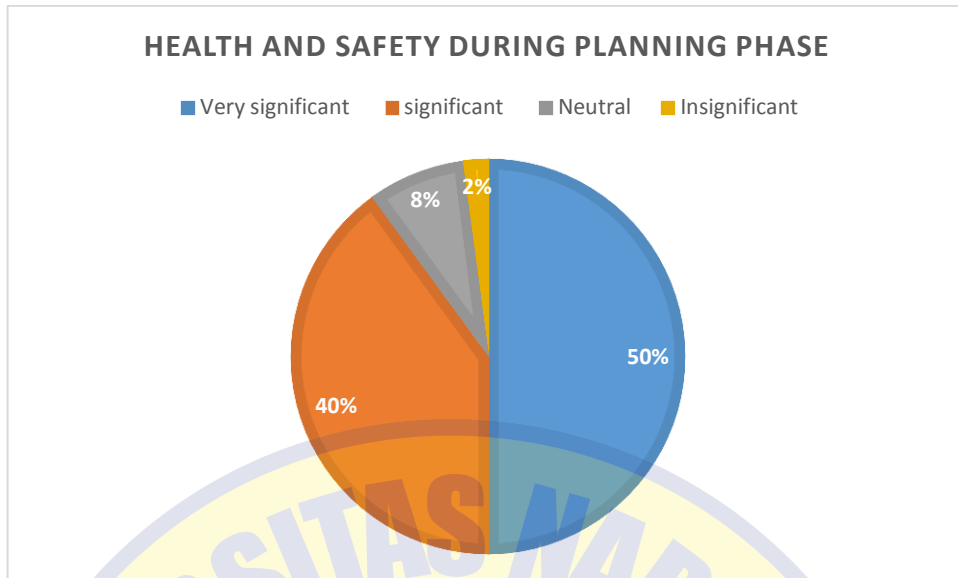


Figure 4.10 Responds Of Health And Safety During Planning Phase  
Source: Researcher Data

The rate of the managers is 50% which is good for significant cause the main important is health and safety for project during working in construction site.

Great penalties for poor health and safety practice	Percentage
Very significant	60%
significant	40%
Neutral	0%
Insignificant	0%

Table 4.10 More Emphasis On Health And Safety During Planning Phase  
Source: Researcher Data



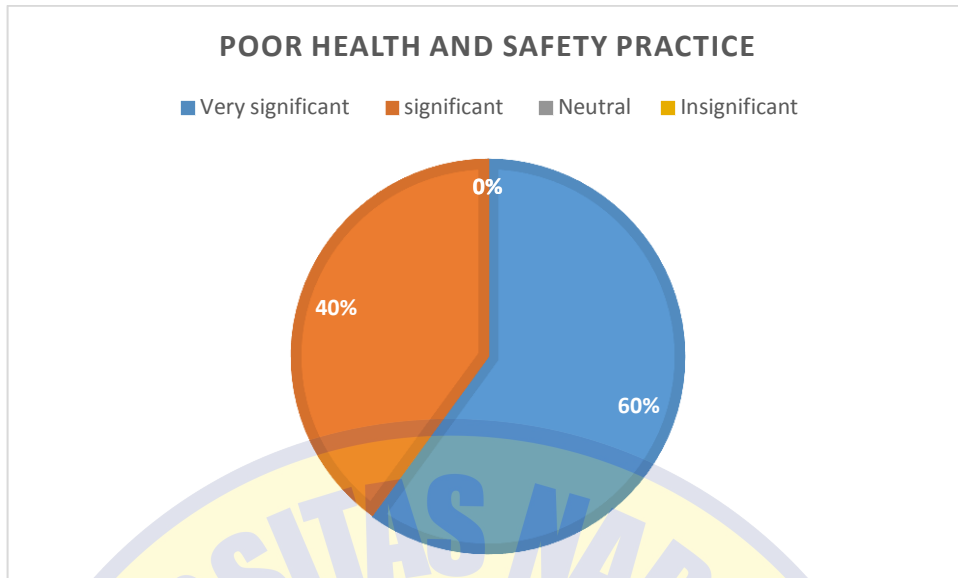


Figure 4.11 Responds Of Poor Health And Safety Practice

Source: Researcher Data

The rate of manager is very significance which is percentage 60% , and significance rate is 40% which is good for the project.

Health and safety training course help site workers	Percentage
Very significant	75%
significant	25%
Neutral	0%
Insignificant	0%

Table 4.11 Health And Safety Training Course Help Site Workers

Source: Researcher Data

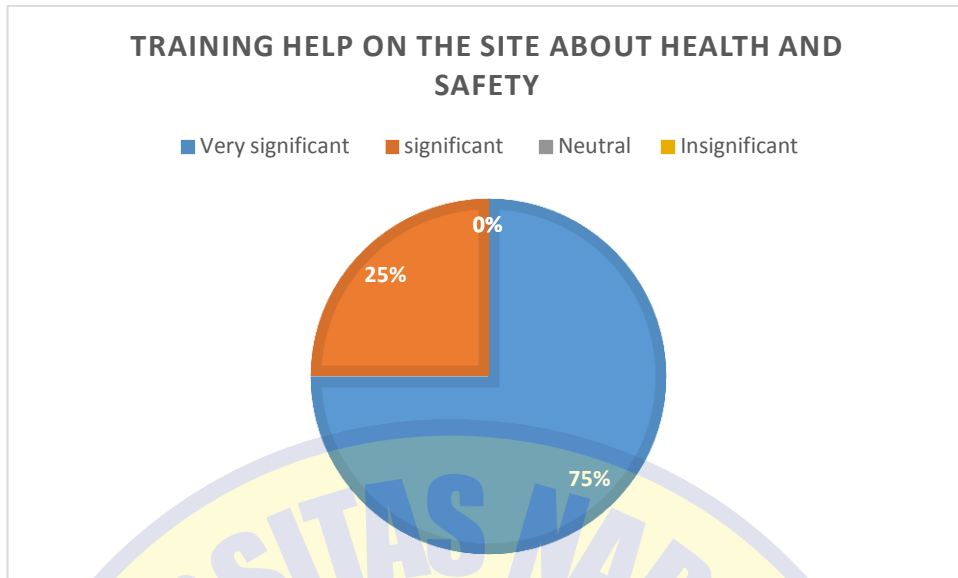


Figure 4.12 Responds of Health And Safety Training Course Help Site Workers Source: Researcher Data

The rate of manger 75% very significance, and the training for workers safety will avoid risk of the safety and health so that the workers are going to work safely and easily in the site.