PREDICTORS OF SAFETY COMPLIANCE AMONG THE MANUFACTURING EMPLOYEES IN PENFABRIC MILL 4

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ABSTRACT

More than 2.3 million people in this world die every year because of fatal occupational accidents or work-related diseases. In Malaysia, there are about 50 thousand accidents reported every year and more than 12,000 people suffer from permanent disability and 1,200 people are killed in these accidents every year. Managing risks in an integrated way with the organization's operations has become increasingly important in recent years in order to prevent accidents and the firm's productivity, economic and financial results. Although the employer is responsible for the safety of his workers, the participation of workers is indispensable. One type of behavior that can have an effect on safety performance is safety compliance and adherence to organizational rules, regulations and procedures. This study attempts to determine the predictors of safety compliance in a multinational textile manufacturing organization located in Penang, Malaysia. This survey used questionnaire concerning the predictors of safety compliance in Penfabric Mill 4. A random sample of 243 was selected from the total workforce of 517 from 9 sections of the production. Data analyzed from this study revealed that Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies are factors that have significant correlation with Safety Compliance. Management Commitment, Safety Rules and Procedures and Safety Promotional Policies have significant influence towards the Safety Compliance. Safety Training, Safety Communication and Feedback and Workers' Participation do not have significant influence on Safety Compliance in this organization even though they have a significant correlation.

Keywords: Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies and Safety Compliance.

ABSTRAK

Lebih dari 2.3 juta orang di dalam dunia initerkorban setiap tahun akibat kemalangan industri serta penyakit yang disebabkan pekerjaan. Di Malaysia, didapati 50 ribu kemalangan industri yang dilaporkan setiap tahun dan daripada angka itu lebih daripada 12,000 orang terbabit dengan kehilangan upaya secara kekal manakala 1,200 orang pula kehilangan nyawa. Pengurusan risiko secara berintegrasi menjadi suatu keperluan yang penting pada masa kini demi mengelakkan kemalangan dan mengukuhkan produktiviti serta kedudukan kewangan sesuatu organisasi. Walaupun majikan bertanggungjawab terhadap keselamatan pekerja-pekerjanya, namum penglibatan dan kerjasama pekerja dalam hal keselamatan tidak boleh dinafikan. Salah satu tingkah laku yang mempengaruhi keselamatan adalah pematuhan terhadap peraturan serta prosedur keselamatan yang ditetapkan oleh organisasi. Kajian ini adalah bertujuan untuk meramal faktor-faktor yang mempengaruhi pematuhan terhadap keselamatan di sebuah kilang tekstil bertaraf antarabangsa di Pulau Pinang, Malaysia. Dalam kajian ini, borang kaji selidik mengenai kebarangkalian faktor-faktor yang mempengaruhi kepatuhan keselamatan di Penfabric Mill 4 digunakan. Satu sampel yang diambil secara rawak yang terdiri daripada 243 orang pekerja telah diambil dari jumlah keseluruhan 517 pekerja dari 9 bahagian pengeluaran. Hasil kajian menunjukan bahawa Komitmen Majikan, Penglibatan Pekerja, Latihan Keselamatan, Peraturan dan Prosedur Keselamatan, Komunikasi dan Maklumbalas Keselamatan dan Polisi Promosi Keselamatan mempunyai hubungan yang signifikan dengan Kepatuhan Keselamatan. Komitmen Majikan, Peraturan dan Prosedur Keselamatan dan Polisi Promosi Keselamatan mempunyai pengaruh yang signifikan terhadap kepatuhan keselamatan pekerja. Juga didapati Latihan Keselamatan, Komunikasi dan Maklumbalas Keselamatan dan Penglibatan Pekerja tidak mempunyai pengaruh yang signifikan terhadap Pematuhan Keselamatan di dalam organisasi ini walaupun terdapat korelasi yang signifikan.

Katakunci: Komitmen Majikan, Penglibatan Pekerja, Latihan Keselamatan, Komunikasi dan Maklumbalas Keselamatan, Peraturan dan Prosedur Keselamatan, Polisi Promosi Keselamatan dan Kepatuhan Keselamatan.

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CHAPTER ONE

INTRODUCTION

1.0 Background of the study

Safety Compliance is a behavior that can affect the performance of safety record in an organization. It is the employees' adherence to the rules, regulations and procedures set by their organization, even when not monitored by their employer (Podsakoff et al., 2000). Safety compliance is related to safety climate and also defined as a behavior of following the rules in main safety activities in the organization (Griffin & Neal, 2000). Mearns et al. (2001, 2003) found that accidents at individual level and also workplace level are significantly associated with non-compliance or safety violations.

Every year, the number of people who lose their life due to occupational accidents and diseases related to their work amounts to almost 2.3 million people. This amount comes to about 7,000 people who die every day due to occupational related causes and more than 960,000 workers get injured everyday at work places (Hamalainen, Saarela & Takala, 2009). In Malaysia, there are about 50 thousand accidents reported every year. More than 12,000 people suffer from permanent disability and 1200 people are killed in these accidents (PERKESO, 2011). In recent years, integration between risks management and the organization's operations is becoming important. This integration reduces the accident and at the same time improves the company's productivity and profitability (O'Toole, 2002). The responsibility of accident prevention solely belongs to the employer (Blair & Geller, 2000). Walters (2000) and Versen (1983) have asserted that the cooperation between employers and workers is very important and indispensable even though the

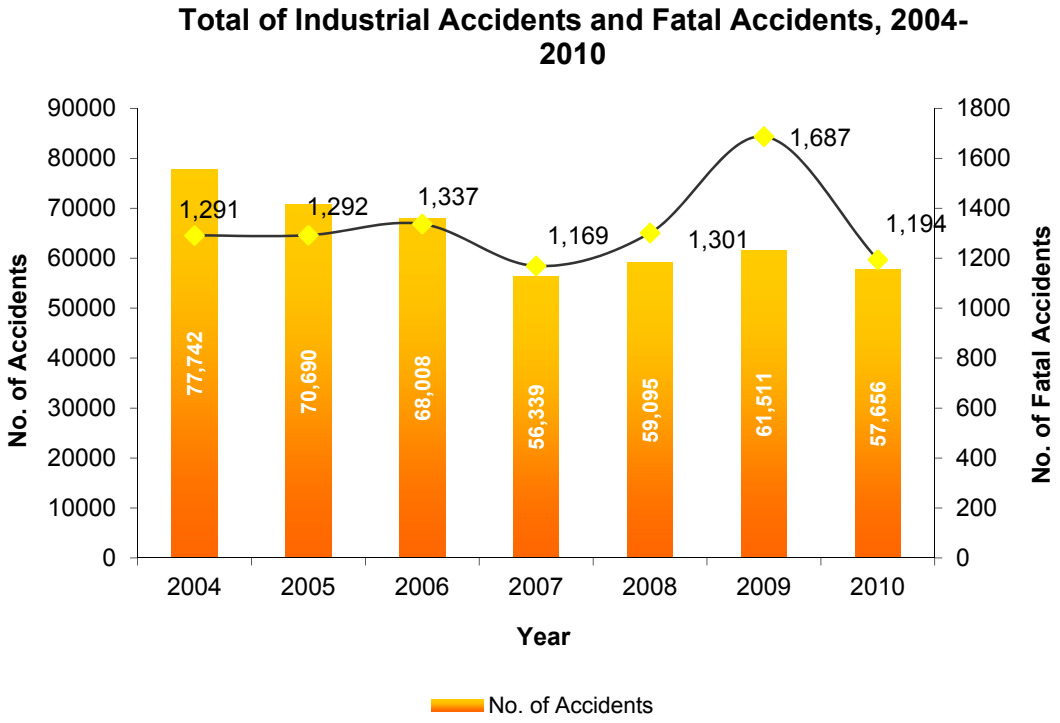
employer is responsible for accident prevention. In order to achieve excellent results in safety performance: the organization's visions and missions must be integrated with safety activities. The accident prevention activities must be more strategic and also organized as human component plays an important role in casual chain of accidents at workplace. Organizations need to encourage the participation and commitment of employees by implementing a proper system in order to manage their work related risk and prevent workplace accidents (Fernández-Muñiz et al., 2007).

Jaselskis and Suazo (1993) claimed that good safety performance could be achieved by taking proper safety measures at workplace. Integrated management of risk and the organization's operation improves firm's accident rates and productivity. A Safety Management Systems can control the risk of workers health. The organization at the same time can also ensure compliance with relation to legal and other legislation. Companies are facing an increasing level of challenges in recent years such as workers retention, employee satisfaction, increasing occupational health and safety regulations, high injuries and illnesses, lost work days, costly medical claims, and rising worker's compensation costs. This system also provides guidelines to companies to develop a solution for these challenges (Goetsch, 2012). Many companies who have implemented Occupational Safety and Health (OSH) have reported fewer health problems, accidents and medical claims. They have also received recognition from insurers. They have also increased their performance to legal requirements and gained recognition from regulators and gained new customers. Their workplace improved and resulted in the improvement in workers retention and satisfaction. They also have benefited from increased production

efficiencies; reduction in accidents, loss of working days and their employees also faced fewer health problems (Bakri et al., 2006).

1.1 The Problem Statement

There are a lot of people who have been killed due to occupational accidents every year. There are also a lot of people who are suffering from many disabilities due to occupational accidents every year. Accidents have caused more deaths compared to those deaths in single and infectious diseases other than diseases related to heart and cancer in an industrial nation (Biggs et al., 2005). In Malaysia, a huge amount of money is being spent every year for the compensation of employees who are killed and involved in accidents. This amount is increasing every year. In the year 2006, the amount of accident compensation in Malaysia is about RM 960 million. This compensation amount increased to RM 1081 million in 2007 and RM 1187 million in the year 2008 (Ministry of Human Resources, 2008). The compensation keeps increasing by year and this situation is very alarming considering that Malaysia will become a developed industrialized nation by the year 2020.



Source: PERKESO, 2010

Figure 1.1: Total of Industrial Accidents and Fatal Accidents, 2004-2010

Figure 1.1 shows the reported industrial accidents and fatality from the year 2004 to 2010 in Malaysia. There are about 60,000 to 80,000 accidents that have been reported every year during this period. Out of this, about 1,000 to 1,500 are fatal cases.

Table 1.1

Industrial Accidents Reported to SOCSO (2004 – 2010)

Sector	Year						
	2004	2005	2006	2007	2008	2009	2010
Agriculture, Forestry and Hunting	7875	5923	5604	2631	3467	4106	2537
Fishing	107	72	135	-	127	47	27
Mining and Quarry	772	615	541	328	368	404	370
Manufacturing	31372	28454	27066	19228	19041	20747	17573
Construction	501	469	515	493	524	548	648
Electric, Gas and Water Supply	5086	4973	4500	3931	3814	4527	4667
Wholesale and Retail	13194	12200	11783	12298	9714	9425	9437
Transport & Communication	4194	3676	3653	3639	3305	3732	3642
Financial Institutions	5903	5127	5386	542	718	796	840
Hotel and Restaurants	29	53	39	13248	1601	1953	1857
Real Estate and Business	93	157	174	-	4405	4861	4782
Total	69128	61719	59396	56338	47084	51144	46380

Source: PERKESO, 2010

Table 1.1 shows the number of accidents reported to SOCSO by sector. Among all the sectors, the highest number of accidents is reported in the manufacturing industry. About 40% to 50% of the total number of accidents is from the manufacturing sector. Since the manufacturing sector has the highest number of accidents as compared to other sectors, it is very interesting to look into companies with excellent accident records so that other companies can adopt the good practices

in order to reduce the accident rates. Penfabric Mill 4 is a manufacturing mill and has successfully implemented a management system for managing the occupational safety and health in the organization. Safety performance of this company for the past 20 years was excellent. The number of accidents in this Mill has been zero for the past 5 years. The safety management system adopted by this company is based on self-regulation. TORAY (parent company of Penfabric Mill 4) is a multinational company established in 1926 and is much diversified in many sectors such as chemicals, resins, water treatment membranes, fibers, textiles, and others. As such, it has a very long history in Safety and Health Management.

Eventhough this company has adopted safety and health management system; there are still some non-compliances that sometimes can be observed among the employees especially when the supervisors are not around. Examples of non-compliances are failure to wear safety helmets, failure to wear personal protective equipment while handling chemicals, failure to follow standard operation procedures for certain critical jobs and others. Such non-compliances can lead to serious accidents. According to Podsakoff et al. (2000), safety compliances positively affect the safety performance. The top management of this organization is very committed towards safety management. The factory manager is the chairman of the safety committee and he is responsible for the safety management of this organization. The commitment of top management is very important in safety management and studies conducted by Aksorn and Hadikusumo (2008) identified that the most important and influential factor for safety performance is the commitment of the management. The employees in this company follow all the safety procedures, rules and regulations set by the management at the workplace and at the same time participate in all the safety

promotional activities and safety trainings organized by the management. Both management commitment and workers participation are important key factors in an organization and this is in line with the findings of Bakri et al., (2006).

There is a clear organization of resources to manage safety and clear line of communication in this organization. Safety meeting is held once a month. This meeting is chaired by the factory manager and attended by all the representatives from every section. Sectional safety meetings are also held every month by the section managers to communicate important safety information to workers. Notice boards and communication boards are placed in all strategic locations to pass down all pertinent information and news regarding safety. Communication is an essential strategy for the improvement of safety record at workplace that can be achieved by regular communication between managers, supervisors and employees (Vinodkumar & Bhasi, 2010).

This organization is certified under the Quality Management System of ISO 9001 and Environmental Management System ISO 14001. All the work procedures in this organization are very comprehensive with proper safety precautions for every job. Glendon and Litherland (2001) quoted that documented safety procedures and regulations can improve the safety behavior of workers. As Training is an important element in both of the ISO 9001 and ISO 14001 certification systems, the training system in this organization is also very comprehensive. All new employees have to undergo a series of safety training before they are actually put into their actual job. The old employees also undergo refresher training on a scheduled basis in order to maintain their safety consciousness. This is in line with a study carried out by Zohar

(1980), who reported lower workplace accident rates on organizations with good and systematic safety training.

The top management arrange a lot of safety promotional activities to nurture safety consciousness among the employees such as safety slogan competition, safety poster competition, safety week, safety convention and many others. These activities are organized on a yearly basis. Over the years, these activities have somehow helped the organization by creating a safe working culture. Safety programs can help the employer to develop a safe operations systems and at the same time create a safe working environment for the employees. Such an effective safety programme can substantially reduce the accident rates (Abdelhamid & Everett, 2000; Anton, 1989; Rowlinson, 2003).

Specifically, this research aims to examine predictors of safety compliance in this organization. With this pertinent information, recommended courses of action can be considered given to all other manufacturing companies in Malaysia towards improving their safety compliance.

1.2 Information about organization

TORAY PENFABRIC GROUP is a 100% Japanese owned vertically integrated textile manufacturer involving Penfabric Mill 1, 2, 3 and 4. This study will focus on Penfabric Sdn Bhd Mill 4. This mill is located at Plot 117-119 & 200-202, Prai Free Industrial Zone, 13600 Prai, Penang. Penfabric Mill 4 is one of best manufacturers of 100% cotton and polyester and cotton blended woven fabric in the world. The activities taken in this mill are wet and dry processing processes, which are:

i) Pretreatment, which involves Desizing, Scouring, Bleaching, Mercerization and Heat Setting.

ii) Dyeing which involves Pad Dry, Thermosolling and Pad Steaming.

iii) Printing which involves Paste preparation, Printing and Baking

iv) Finishing which involves Chemical Preparation, Padding and Baking.

This mill has approximately 517 staffs that are directly working in the production processes in 3 shifts. The average age of the employees is between 38-42 years old. As the average age is rather high, the top management has instituted a succession plan to continuously bring in new people in place of those retiring at the age of 55. Penfabric is certified to ISO 9001, ISO 14001, OKO TEX (an European certification on the safety of textile products) and is regularly audited by external bodies such as the Malaysian Department of Occupational Safety and Health, Malaysian Department of Environment, SIRIM and major customers concerning occupational safety, health and environment management such as Marks & Spencer, CINTAS, Uniqlo, Limited, and others.

Safety, health and environment management is one of the core principals adopted by the corporate office in Japan. The factory manager is directly in charge of the management of safety, health and environment. He heads the Department of Safety, Health and Environment (SHE). This department is very powerful and very authoritative in terms of the management of safety and health. All departments must comply with the requirements set by this department. Figure 1.2 shows the organization chart in Penfabric Mill 4. As shown in the organization chart, the Safety Health and Environment Department reports directly to the Factory Manager and has

the higher authority as compared to all the other Departments. This mill also has a safety committee. The factory manager is the chairman of this committee and it is represented by members from management, staffs and workers. The Safety Committee meets every month to discuss all the safety issues in the Mill. The Safety Committee carries out safety inspections every month. Corrective and preventive actions will be taken for all the findings and the findings will be discussed in the monthly safety meeting. Apart from these, this mill is also very active in promoting safety campaigns such as Traffic Campaign, Safety Week Celebrations, Basic Safety Campaign, Health Campaigns and others. This mill complies with all the legal requirements and also the requirements set by the headquarters. This mill has a very good track record in terms of safety. The number of accidents for the past 10 years is only 1, which is very low compared to other factories.

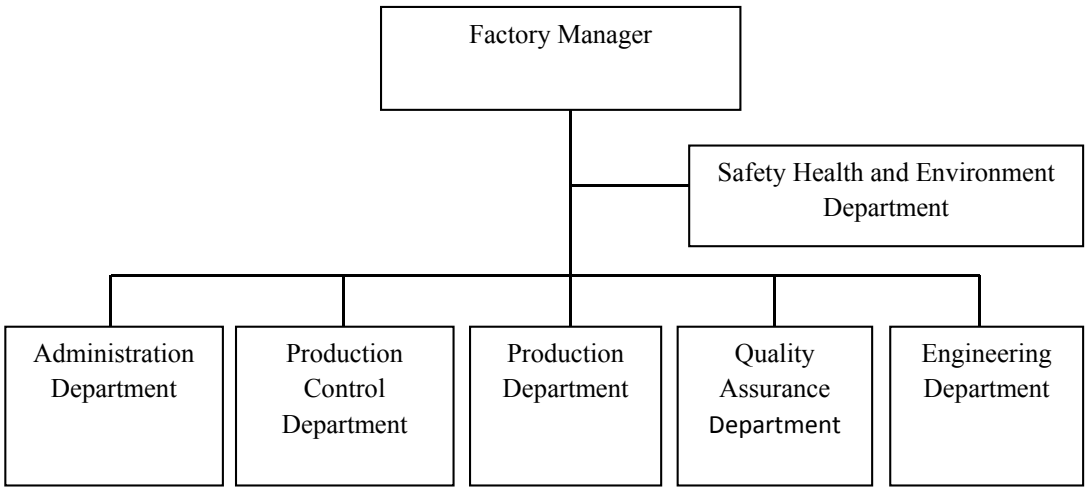


Figure 1.2: Organization Chart of Penfabric Mill 4

1.3 Research Questions

The research intends to answer the questions listed below:

1.3.1 Is there a relationship between Management Commitment and Safety Compliance?

1.3.2 Is there a relationship between Workers' participation and Safety Compliance?

1.3.3 Is there a relationship between Safety Training and Safety Compliance?

1.3.4 Is there a relationship between Safety Communication and Feedback and Safety Compliance?

1.3.5 Is there a relationship between Safety Rules and Procedures and Safety Compliance?

1.3.6 Is there a relationship between Safety Promotional Policies and Safety Compliance?

1.3.7 Do all the Independent Variables (Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies) influence Safety Compliance in this organization?

1.4 Research Objectives

1.4.1 General Objectives

The general objective is to determine the predictors of safety compliance in this company.

1.4.2 Specific Objectives

The specific objective is to determine the level of correlation, relation and differential between independent variables and dependent variables as defined below:

i) To examine the relationship between Management Commitment and Safety Compliance.

ii) To examine the relationship between Workers' Participation and Safety Compliance.

iii) To examine the relationship between Safety Training and Safety Compliance.

iv) To examine the relationship between Safety Communication and Feedback and Safety Compliance.

v) To examine the relationship between Safety Rules and Procedures and Safety Compliance.

vi) To examine the relationship between Safety Promotional Policies and Safety Compliance.

vii) To investigate whether Independent Variables (Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies) influence Safety Compliance.

1.5 Significance of the study

Fatalities and the number of disablement in the manufacturing sector is one of the highest among all the sectors in Malaysia. Companies, which have integrated or adopted the OSH management system reported fewer accidents and medical claims, reduction in lost workdays and increase in the operational efficiencies. These have also increased the recognition from insurers, regulators and at the same time

improved workers job satisfaction and their retention. Eventhough safety management system has been implemented in Penfabric Mill 4 has; there are still some non-compliances that can be found among the employees. These non-compliances can lead to serious accidents. It is very important that the cause of such non-compliances be identified so that proper actions can be taken before it is too late. This study investigates the predictors of safety compliance in this organization. Recommendations and new courses of action can be proposed to the organization in order to further improve their safety management based on the information gained from this study. Information obtained from this study can also be used in other manufacturing organization in Malaysia.

1.6 Scope of the Study

The scope of this research is to determine the predictors of safety compliance among the manufacturing employees in Penfabric Mill 4. The research was conducted over a period of 3 months and it covers the employees working in the production division of Penfabric Mill 4.

1.7 Organization of the thesis

Chapter one provides an overview of the importance of safety compliance in an organization, research questions, objectives, significance and scope of this research.

Chapter two explains the theory related to the research and also the literature review. It includes the Safety and Health Legislation in Malaysia, Legislation Requirement for Employee, Legislation Requirement for Employer, Theory Related to the Study, Safety Compliance, Management Commitment, Workers' Participation, Safety

Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies.

Chapter three explains the methodological aspects of the research which includes the design of the research, the sampling procedure, population and sample, development of the survey instrument, variable specification, questionnaire development, the pilot study and expert judgments, the administration of survey instruments, analysis of data and approval of the organization.

Chapter four explains the data analysis results, which was obtained from the research that had been carried out. The Statistical Package for Social Sciences (SPSS) was utilized in order to analyze the data, which was collected from the study. Pearson Correlation and Multiple Regression analysis were the tools used to analyze descriptive and inferential analysis. The demographic of respondents were analyzed using the frequency analysis. Reliability test, multiple regressions and correlation test were also undertaken in order to study the relationship between factors.

Chapter five discusses the findings from the analysis performed in chapter four. It contains the conclusions and recommendations on the study that had been done based on the analyzed data.

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

This chapter explains the literature review of the research, which includes the Safety and Health Legislation in Malaysia, Legislation Requirement for Employee, Legislation Requirement for Employer, Theory Related to the Study, Safety Compliance, Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies.

2.1 Review of Previous Literature

2.1.1 Safety and Health Legislation in Malaysia

In Malaysia, the Factory and Machine Act (FMA) of 1967 was implemented to protect and safeguard the safety and health of employees at workplace but it covers mainly certain sectors and is also very prescriptive whereby it requires the enforcement to check and regulate the OSH requirements. Robbens (1972) found that people thought OSH was inspectors enforcing regulations, legislations only cover certain industries, workers and hazards and mass of law was difficult to understand and update. Robens further recommended that safety and health implementation be based on self-regulations. The promulgation of Occupational Safety and Health Act (OSHA) 1994 was an important chapter in the management of safety and health at workplace in Malaysia. The OSHA outlines some important duties on employer and employees. Apart from that, there are also some duties

placed on the self-employed persons, manufacturers, designers and suppliers. The fundamental concept of this Act is self-regulation. The main emphasis of the Act is on prevention rather than cure of accidents, injuries and also diseases due to occupation (Bakri et al., 2006). The Occupational Safety and Health Act 1994 was established based on the guiding principle that the safety and health responsibilities at workplace lies on the person who created the risk and at the same time on those who work with the risk. The aims of this Act in simple language are:

i) to take care of the company's employees from risks arising from the workplace activities.

ii) to take care of the people other than the company's employees from risks arising from workplace activities.

iii) to promote a workplace environment that is suitable for both their physiological and psychological requirements.

iv) to have a means whereby there will be a system or approved practices to progressively replace the safety and health legislation and work in combination of this Act for the improvement of safety and health standards.

2.1.2 Legislation Requirements for Top Management

The top management's duty is clearly stated in section 15 of the OSHA. This section describes the need of most of the independent variables in this study, which are the management's responsibility, safety training, communication and feedback, safety rules and procedures and also the safety promotional policies to ensure a safe working place. The employees' safety, health and welfare at workplace are the

responsibility of the employer. In a simple language, the generalization of this section means that:

i) the employer is responsible for the plant maintenance and work system so that they are safe and it poses no risk to the health of his employees as far as practicable;

ii) the employer must make all the arrangements to ensure that the operation, handling, storage and transport of plant or substances are safe and poses no risk to the health of his employees as far as practicable;

iii) the employer must provide information, training to employees' and also supervise the employees' to ensure the safety of his employees' at their workplace as far as possible.

iv) the employer must ensure that the maintanence of the workplace is safe and the access and engress from the workplace are safe from risks.

v) the employer must make sure that the workplace is safe and there are adequate welfare facilities.

Section 16 of the Act requires the employer to have a Safety and Health Policy, which also shows the commitment of the employers to work with his employees'. The organization must show its commitment to safety through a safety policy. It explains the objectives, principles, strategies and also the guidelines that must be adhered to from the perspective of safety behavior at workplace (Fernandez-Muniz et al., 2007).

2.1.3 Legislation Requirements for Employee

Under the OSHA 1994, the representation of employee in occupational health and safety management is deemed important at any workplace. One of the requirements under this Act is having a working safety committee with balanced representation from the management and workers and the safety representatives elected by the employees. The OSHA 1994 also places equal responsibilities to the employees. The section 24 of the OSHA 1994 stipulates the duty of an employee as follows:

i) the employee must take care of his safety and the safety of others who may be affected by his action or ommision at the workplace.

ii) the employee must coorporate with his employer or anyone who discharges duties or other requirements imposed by his employer or any other person who is specified by this Act.

iii) the employee must use protective equipment or clothing provided by his employer at all times in order to protect himself from risks at workplace.

iv) the employee must adhere to the instructions on safety and health instituted by the employer

Based on this Act, the employee must take care of his safety and the safety of others who may be affected by his action or ommision at the workplace. He is also required to coorporate with his employer and complies with any safety rules and procedures related to the safety and health implemented by his employer. As such the workers participation and safety rules and instruction which are also the independent

variables are outlined in this section. Participation of employees' is a necessity from the aspect of legislation. The term 'duty of care' for the safety and health of all the employees at the workplace must be accepted by the employer under the OHSA 1994. This means the employer must know the workplace hazards and take actions to prevent unforeseen circumstances and accidents at workplaces (Ramli et al., 2011). As a conclusion, the employer has the responsibility to provide a safe and conducive workplace, safety training, make available safety line of communication and feedback, safety regulations and procedures related to safety and also promote safety and health through safety policies. The employee has the responsibility to comply and ensure the safety of himself and others who may be affected by his act. This research is to investigate all the predictors of safety compliance.

2.2 Theory related to the study.

According to Geller (1996), in order to encourage the employees to be involved actively, there should be a good safety system and infrastructure. Opportunities for employees to be involved must be designed in order to create a sense of belonging. The Safety systems and processes must be well structured. Total Safety Culture can be attained through a systems approach with an even attention to all other components of the corporate culture (Figure 2.1).

1. Factors of the Environment (for example 5S, housekeeping, equipment, machines, engineering, management systems such as safety policies demonstrating the management commitment, safety procedures, safety communication, safety promotional activities etc.); □

2. Person factors (for example intelligence, knowledge, abilities and the personality of the employees'); □

3. Behavior factors (for example the ability of employees to recognize, communicate, care and comply).

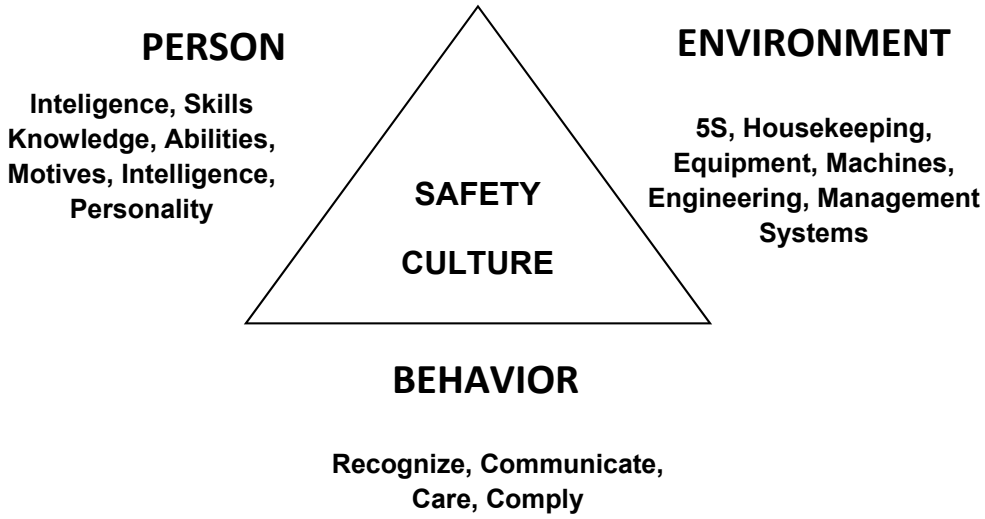


Figure 2.1 A Total Safety Culture (Adapted from Geller, 1996)

Human factors consist of two of the categories. Generally these factors receive less attention as compared to the other environment factor. This is mainly due to the fact that it is not easy to achieve obvious effects to change human factors. For instance, a change in the factors that involve the environment can affect behaviors and attitudes. People adjust their disposition and beliefs to be compatible with their deeds when they choose to change themselves, which can lead to more

change in behavior and attitude. This is a mind boggling situation bearing inter dependability between outer deeds and inner feelings. This brings about little changes in one's attitude and behavior, which contributes to the personal commitment and total involvement of a person. There are some programs that place emphasis on behavior based safety management and some on person based approach. A total safety culture needs the integration between behavior and person approach. Understanding the human influence in corporate culture is called People-Based Safety (Geller, 1996).

The top management's commitment is an important factor in safety performance (Zohar, 1980). When the organizations take proactive measures on safety, it benefits in reduced lost time due to accidents and also workers compensations success (Garrett & Perry, 1996). Comprehensive safety regulations and procedures improve safety behavior of workers and have significant correlation with accidents rates. The safety rules and procedures are important for achieving safety compliance and good safety performance (Didla et al., 2009). Good communication between the top management and employees leads to trust and creates a climate that makes employees alert to hazards at workplaces and this is an important characteristic of a strong organization (Pidgeon, 1991). The communication system in an organization influences the safety performance (Cohen, 1977; Cox and Cheyne, 2000; Mearns et al., 2003; Vredenburgh, 2002). Feedback on safety-related behaviour increased the safety compliance (Komaki et al., 1980). The safety promotion activities at workplace decreases the costs for employers. This is due to the reduction in health claims, treatment costs at hospitals, insurance and also absenteeism (Forrester et al., 1996). Committed and dedicated employees can be

formed through safety promotional activities which demonstrates the commitment and responsibility of the top management to the wellbeing of employees. Workers participation in these promotional activities creates ownership on management's safety initiatives which will be eventually accepted by its employees (Dejoy et al., 2010).

Safety training is a management's tool that helps to orientate employees on safety compliance in order to reduce accident rates. Participation of employees on safety trainings will create ownership and these employees are likely to be more positive towards changes (Griffin & Neal, 2000). An organization with good safety training has lower accident rates (Zohar, 1980). Workers participation refers to voluntary safety behaviors where an employee participates in safety programs that create safe working environment. Safety compliance would be the role required by the job whereas safety participation is the behavior, which is beyond the formal role (Griffin & Neal, 2000). The employees need knowledge, capabilities and skills in order to carry out a task in an effective and safe manner. Knowledge and skills at the same time help employees to identify risks and enables them to carry out their job in compliance to the requirement. These knowledge and skills are provided by Safety Trainings. Adherence to safety rules and procedures or safety compliance affects the safety performance of an organization. Non-compliances are associated with incidents at workplaces in a very significant way (Mearns et al., 2003; Podsakoff et al., 2000).

Safety compliance will lead to a good safety performance. Good safety performance will further result in fewer accidents, less damage, lower insurance cost, lower medical cost, lower liability and lower legal cost. This will result in

better productivity, quality, efficiency, competitiveness and better company image. A good satisfactory working condition provides many benefits. The beneficiaries of safe working conditions are both direct and indirect. Since the employeees are the most affected by accidents, they are the direct beneficiaries. The employers are also the direct beneficiaries because such working conditions avoid losses and improves its profitability. Management commitment, safety training, safety communication and feedback, workers participation, safety rules and procedures and safety promotion policies are the predictors of safety compliance. This chapter introduces all the variables and their relationship that existed in the literature and will be discussed extensively with some of the results from the past literatures that are similar or contradicts.

2.3 Safety Compliance

There are two kinds of safey behaviors that are Safety Participation and safety Compliance. Safety compliances are the activities that the employees' must carry out in order to sustain the standard of safety at workplace. When employees do not comply or adhere to the safety rules and procedures, their behaviors are refered to as "unsafe behavior" or in another word "safety violations". Thus, dangerous or non-compliance and safety compliance are the two opposite ends. Safety participation, on the other hand, means the free will type of safety behaviors (Griffin & Neal, 2000). The Safety compliance therefore is part of the formal role, which is related to the work, whereas safety participation is a freewill safety behavior, which is beyond the formal role related to work.

Griffin and Neal (2000) defined safety compliance behavior as behavior of following the rules and has been clearly seen associated with safety climate. According to Podsakoff et al. (2000) safety compliance and following organizational safety regulations and procedures is a safety behavior that influences the safety performance. Mearns et al. (2001, 2003) revealed greater degree of non-compliances were significantly associated with the increase in incidents at individual and also worksite level. Safety Compliance covers those behaviors, which are related with following establish safety rules and procedures. The safety participation behavior may not directly result in the safety of workplace. It however helps in developing a working place that promotes safety. In order to maintain a safe work place, employees must carry out activities that are related to safety compliance (Griffin & Neal, 2000). Griffin and Neal (2000) have given the idea that safety compliance and safety participation are behaviours that are related to both the task and contextual dimensions.

Braithwaite and Grabosky (1985) conducted studies on 39 coalmines fatality disasters from the UK, Australia and USA. They found that 33 disasters were caused by serious violations of mining laws. They also found that violation is also the component of the causes, or made the situation of the disaster worse. These findings are also backed up by a study in 1991 which was released by the NSW Department of Mineral Resources. In this study, it was found that 83% of the strata movements fatal accidents in coal mines during the period of 1972-1990 were closely linked with non compliances (Roylett, Russell, Ramon & Blyth, 1991).

2.4 Management Commitment

In 1992, a study was conducted at the Veteran's Hospital. This study revealed that the management commitment was the guiding force behind the initiative to reduce the number of cases of injury. The Medical Center Director himself was very committed to the safety management. This project would not have achieved success without participation and support from top management (Garrett & Perry, 1996). In another study, Vrendenburgh (2002) found that when the top management takes extra measures which are proactive to protect their employees results in financial benefit from the expenses associated with workers accidents compensation. Thus, the number of injuries at smaller hospitals were found to be higher than the larger ones. These findings may be due to the fact that these institutions have a less comprehensive safety program, causing them to take a more reactive approach to prevent injuries.

In an interview conducted by Less (1996), it was found that the work force in Bhopal was brought down from 450 to 150. The workers were also made to carry out tasks that they had not been trained and qualified. At the same time, the number of production staffs on the Methyl Isocyanides plant was brought down from 12 persons to 6 persons. According to Pareek (1999), the management of Bhopal did not take the trouble to hire professionals in order to improve the safety measures at their workplace. There were a number of accidents that took place before the tragedy in 1984. There were at least six accidents before the serious accident took place in 1984. One of the accidents that took place in 1982 and had resulted in a worker's death. These accidents were the warning signs but they were totally being ignored. The management and the civil authorities did not take any action to investigate and analyse the situation. As a result there were no preventive measures taken in order to

prevent future accidents (Gupta, 2002). It was also reported that the temperature, pressure, level alarms which were installed on Tank 410 had not been functioning for more than one year. Therefore the rise in pressure on Tank 410 was ignored until the tank cracked and released the deadly gas (Lees, 1996). Bowander (1987) observed that the mistakes due to human, error and due to the system and technicalogical problems triggered the Bhopal disaster. Accroding to him, the parent company's safety team had already pointed out that the practices of safety in the plant were poor two years before the incident took place in 1984. The top management did not act on the report and at the same time the local government also did not take any serious action on earlier accidents. The articles on the newspaper predicting disasters were also being ignored.

The explosion at Esso Australia in 1998 killed 2 people and resulted in the distruption of gas and hot water supply for most of Victoria for almost 2 weeks. There was an accident about 4 weeks earlier arising from cold temperature. If preventive actions were taken in this accident, the explosion could have been avoided. The report also shows that numerous modifications that were made to the plant since start-up and the plant drawings were updated. The isolation points were not clearly shown and the workers were unable to isolate the system and leakages continued for 53 hours. HAZOP had not been conducted on this plant or otherwise it would have pointed out the hazards prior to accidents. The downsizing of staffs and increase in the operator's responsibility were pointed out as one of the causes of explosion. Insufficient training and lack of supervision by the top management were also identified as main causes (Institution of Chemical Engineers, 1999).

An authentic safety culture is needed so that everyone commits themselves and participates in the occupational safety and health. Commitment from the management is really needed in order to create an authentic safety culture. Such kind of commitment must begin from the management. Fernández-Muñiz et al. (2009) identified the following critical key factors for an effective and good safety and health management. These key aspects are capable of reducing workplace accidents:

1. The Organization must develop a policy on safety to show the commitment to safety and health management. The Organization must express it's objectives such as the principles and guidelines related to safety and health at workplace.

2. The Organization must promote a safe behavior by providing incentives of either rewards or punishment. The organization must also involve the employees in the process of decision making or by means of consulting them on safety and health matters.

3. Improving the ability of the employees by providing training and developing their competences. When the employees are trained on safety their ability and attitude in preventing risks at workplace will improve.

4. Communicating the risks and transfering the information about how to control the risk at the workplace.

5. Developing organised policies and action plans to prevent incidents and accidents and planning an emergency response procedure in order to take quick action in case there is an incident. The policies will avoid accidents and the emergency planning will reduce the adverse effect.

6. Continuous improvement will be seen in the organization through control and review of activities. Analysis of working conditions within the company and inter company will execute control of activities.

Safety needs to be closely linked together with the plans and also the decision of the organisation in order to achieve excellent results in prevention. The accident prevention activities must be strategic and cover the whole organization. Thus, organizations must encourage the commitment and participation of employees and also come up with a proper system to manage their risks (Fernández-Muñiz et al., 2009). Consequently, there will be a very great change in the employees's mentality and behaviour. This change will lead to a true safety culture. Zohar (1980) revealed that the success of an organization's safety programme mainly depends on the commitment of the top management to safety. This commitment from the top management can be seen through management participation in safety committees, participation in the safety promotional activities, training programs, safety considerations during job designs, joint participation in safety inspection and review of work activities. On the part of the management, the safety commitment must result in an observable activity. The commitment must be seen and must be demonstrated in their behaviour as well as their work. Studies conducted by Aksorn and Hadikusumo (2008) identified that top management commitment factor is the most influential among all the sixteen critical success factors that he considered in his study. Awareness programmes and communication between the employees' and management were the results of strong management commitment.

2.5 Workers' Participation.

In 1992, the Department of Veterans Affairs Medical Center (VAMC) in New Jersey made a study. They started a program to bring down the time lost due to injury cases. In this programme, the participation of workers from all the management and worker levels at all stages of the safety program was emphasized. This lost-time injury was dramatically reduced within 1 year of implementation. The main element in successful injury prevention programs at the hospital was Participation (Garrett & Perry, 1996). In other studies, lower injury rates were observed at workplaces, which used employee participation teams. Lower injury rates were also found in those workplaces that carried out internal safety patrol and audits (Havlovic & McShane, 1997) and those workplaces that provided OHS feedback (Gershon et al., 2000).

Safety participation refers to voluntary safety behaviors that employees get involved and participate in matters related to safety and health at workplace. This includes the review and accident investigations at workplace, periodic safety inspections of workplace and safety and health meetings. Therefore, employee safety participation can be defined as employee behaviours that help to create a safe environment. Safety compliance is a component of work role whereas safety participation is freewill behavior, which is beyond the work role (Griffin & Neal, 2000). All the activities undertaken by an organization will create particular hazards to the people working for and on behalf of the organization. Biggs et al. (2005) suggests that proper employee participation in an organization is a supporting factor in the effective implementation of occupational safety and health management. Management commitment and workers' participation are two important elements in

the safety and health management. They are important in the formation of positive beliefs, practices, norms and attitudes among all the companies (Bakri et al., 2006).

Workers' participation results in the communication between management and employees within the organization. Workers' participation is based on the behaviour that involves single employee or a group of employee in the organization (Vredenburgh, 2002). Participation varies from complete participation to no participation. A situation where the managers or superiors make all the decision is called no participation. Full participation is where everyone in the organization is involved in the process of decision-making. The employees who do the work are the most qualified people to make proposals for improvement because they know their job as well as their risk. If these employees are allowed to participate in the matters related to safety and health at workplaces, they can contribute in creating a safe workplace (Khairiah, 2008). There is no single good way to run an employee participatory programme aimed at influencing occupational safety and health. There are many ways that employees can and should participate in the safety activities. Here are some of the areas where an employee can participate in the company's safety activities:

i) Safety & Health Committee

ii) Hazard identification, Task Analysis and Safety Assessments,

iii) Reporting of Hazards, Unsafe Conditions, Housekeeping Inspection Team, etc.

iv) Evaluations or audits, Internal Audit Team, etc.

v) Emergency Preparedness, Fire Drill / Chemical Spillage Drill / First Aid Team, Inter Department Housekeeping Competition, etc.

vi) Evaluation and revision of standard operating procedures (SOPs) and work instructions Training programs

vii) Safety and Health Week or Month, Awareness Campaign / Exhibition / Display/No Smoking Day, Zero Accident Competition (Monthly, Quarterly or Yearly), Employee of the month (to include Safety criteria), Contests and competitions, Newsletter/Bulletin, Safety message through gifts, souvenirs, Safety and Health Contests/Competitions, Slogan, Logo & Poster Drawing Competition, Safety and Health Quiz, Safety Suggestion Competition etc.

viii) Personal Health Monitoring / Medical Check Up/ Blood Donation Campaign

Workers are experts in their own work so the knowledge about risks comes with their own personal experience. They have the knowledge of risks, disruptions in the process (everyday hazards) and circumstances that produce or trigger accidents. They also have the near miss experiences that are valuable for the accident prevention measures. However, they will be affected seriously by lack of information, training, communication and feedback, job satisfaction problems, if they are left out from participation. Employees can keep an eye on potential hazards and contribute to the prevention of industrial accidents (Soehood, 2008). A lack of participation may develop a negative effect towards the implementation of occupational safety and health management system. Participation of employees has

shown to decrease in the frequency and severity of injuries due to work (O'Toole, 1999). Gevers (1983) pointed out five points that supports participation. The five points are:

i) employees can keep an eye on potential hazards and contribute to the prevention of industrial accidents,

ii) ensuring workers' co-operation in the safety promotion through their involvement.

iii) definition and solution of safety and health problems through the ideas, knowledge and experience of workers.

iv) Industrial democracy through participation of employees in safety matters by allowing them to be associated with the decision affecting them. The employees are allowed to be part of the decisions that are affecting them

v) effective and equal partnership by the co-operation between employer and employees which are important in order to improve the working conditions.

Participation results in trouble free workplace and this will reduce the pressure faced by the employees and employers. It is also good and at an advantage to use employees' experiences to prevent faults, using participative methods in occupational safety and health. This reduces the risk and workload that takes into account the age and makes the best from the experiences of newer and older employees. In other words, the safety knowledge is shared between all employees. Employees must be encouraged to participate actively in the safety activities. When the management encourages the employees to participate, the employees get

motivated and goes way out to support the management programmes. The following are the steps that can be taken in order to get good participation from employees:

i) Employer takes active role to demonstrate that safety is a priority to protect employees and good support in terms of time and monetary allocation.

ii) Actions taken on employees' suggestions are with regards to safety

iii) Recognition for employees' participation in safety activities – organization chart for safety committee, ERT, safety inspection members etc.

iv) Recognition that safety involvement is a special privilege as compared to others

v) Recognition in terms of monetary awards, added bonus, souvenirs, special training opportunities, trips, achievement awards

vi) Performance Appraisal – Special criteria to recognize those who are involved in safety activities.

Geldat et al. (2010) found that worker and management collaboration through joint safety and health committees will continue to generate and maintain a safe and healthy workplace. Workplaces having joint safety and health committees with greater worker involvement and management executives had lower injury rates. The top management has the right to make safety decisions on OSH issues at workplaces. The operational policies and informal actions are the value and manifestation of a commited top management.

A postal survey was conducted by Shannon et al. (1996) on more than 400 manufacturing companies with the workforce of at least 50 employees. Those companies with managers and supervisors who encourage more participation in decision-making by the employees recorded lower lost time injury. These companies have the responsibility of safety and health in every manager's job description and harmonious management-worker relations. They also have the short and long term plans and long-term career commitment plans. Their performance appraisals has a provision for safety and health topics. These companies also show demonstration of top management commitment with senior managers attending the safety and health meetings regularly. There are certain guidelines for involving employees in the OSH management system. These guidelines are important to ensure that employee participation is valued by the management or it will become a barrier to the sucessful safety and health management system. Some of the guidelines are outlined below:

i) There must be clear protocols for participating in the safety activities. If there are no proper guidelines, those employees who don't get a chance to get involved might feel left out.

ii) Visible support from management in terms of budget and time. If the management is not supportive, the employees' may feel that their participation is not valued and may not support the programme.

iii) Resources and Training – employees need the basic understanding legislation, standards, inspection criteria, incident investigations, hazard identification, regulatory compliance, ergonomics, hierarchy of controls, etc., depending on their area of involvement.

iv) Communication and Feedback – Employee's involvement in the safety and health process is a condition of employment. Every employee must maintain a safe working environment.

v) Actions taken on employees suggestions – all suggestions should be responded to in a timely manner with an explanation of how and when the suggestions will be implemented or if it cannot be implemented, then they should be told why not, as well as given alternative controls to be implemented.

vi) A statement of safety policy – employees must know that they will not be reprisad if they participate in safety programs.

vii) Detailed and timely communications – the ideas of sucessful employees must be shared. Success will breed further success and the word gets other employees motivated to participate.

viii) Opportunities – workers must be allowed to influence safety and health programs and operations.

2.6 Safety Training

The Texaco refinery, Milford Haven accident report in 1994 shows that there were many modifications to the plants and processes. Eventhough no one was killed, it was found that adequate training were not given to operators so that they can to handle all these new modifications (Kletz, 1998). Investigations on the explosion at Esso in Australia shows that the plant's drawings were updated after going through all the modifications. The points of isolation were not shown and the workers were adequately trained to control the leakages which lasted for 53 hours. Among the main causes for the accident were inadequate training and also insufficient supervision (Institution of Chemical Engineers, 1999).

Safety trainings must be provided to the employees so that they will become active participants of all safety and health programmes. Safety trainings provide employees with new knowledge, skills and these will make them capable of handling their work safely. Safety trainings also help them to detect risks at workplaces and the precautions that they must take in order to rectify or reduce these risks (Fernandez-Muniz et al., 2007). The organization must put in place a systematic and comprehensive safety and health training programme for all employees in order to improve the standard of safety and health. The organization must arrange a system of mentoring these new employees or use a guardian (buddy) system to nurture safety and health culture to the new employees (Vredenburgh, 2002). Zohar (1980) revealed that organization with good safety training for employees have lower accident rates. Safety training is a management tool and it can be measured by the activities related to training of current employees, train new employees, safety discussions during meetings, training on how to handle emergency situations,

support to participate in safety and health training programs, identification of hazard and assessment trainings and others. Depending on their position and involvement at workplace, employees will treat and react differently to the training. It is more likely that employees will support and be more positive about the changes when they take ownership of the training programs. Employees will not be interested in the implementation of safety programs if they are not involved in the process of safety and health program development (Griffin & Neal, 2000). Building a safety culture will be a real challenge in this situation.

Vredenburgh and Cohen (1995) found that when hazard identification at workplace is trained, the employees' level of perceiving danger and compliance to procedures and warnings will increase. Safety training will provide the means for accidents to be more predictable. An employee with safety consciousness can recognize risks, dangerous actions and understand the consequences of violations as compared to those who frequently get hurt (Vredenburgh, 2002). The organization should understand these differences and must institute a system for training new employees. Providing a guardian or buddy for these employees can help the new employees to adopt the safety system. The organization should also put in place a continual training and education for both new employees and old employees in safety and health issues to maintain the level of safety from time to time (Roughton, 1993). In a study conducted by Vinodkumar and Bashi (2010), they concluded that safety training is an important safety and health management element. Safety training enhances the safety knowledge, safety participation, safety motivation and also safety compliance. Employees who have undergone safety and health training have more understanding and knowledge regarding safety behavior and at the same

time understand the organizational safety incentive systems. They will also adhere to proper safety procedures. Actual compliance on safety can be predicted by safety knowledge (Griffin & Neal, 2000). Safety knowledge is also positively related to the employees' perception of job safety (Probst & Brubaker, 2001).

Occupational safety and health trainings are key elements in a successful accident and disaster prevention programme in an organization. Safety and health trainings improve behavioural skills and give related knowledge and also make accidents more predictable (Vinodkumar & Bhasi 2010). Organizations depend on their employees' skills and initiatives in order to resolve problems by changing their work methods. Employees must take the responsibility for safety. Pfeffer and Veiga (1999) revealed that training can change the attitude towards safety and this will lead to change in their safety behavior. Employees must receive occupational safety training in order to correctly do their job and to actively participate in a safety program. Training is a process where the shortfall or gap between their knowledge and the job requirement which may impact the safety are met. In a learning enviromment that is supportive the employee will learn the skills to carry out the job safely (Ajzen, 1991). Employees' safety performance improves as they are trained on safety rules, regulations and procedures, (DeJoy et al., 2000; Harvey et al., 2001; Zohar, 2002). Roughton (1993) described that safety training is a tool that can be used to make incidents more predictable and avoidable. Organizations should put in place safety training programs to improve the safety standard.

2.7 Safety Communication and Feedback

The Zeebrugge ferry disaster report stated that those who were in position did not improve safety. The legal authority that can legally enforce the safety also did not do it. The report also stated that on many previous occasions ferries were sailing without their doors being properly closed. However these occurances were not brought to the knowledge of the safety directors (Spooner, 1995). Studies conducted by Cohen (1977), Cox and Cheyne (2000), Mearns et al. (2003) and Vredenburgh (2002) showed that the safety performance of an organization is influenced by the effectiveness of communication within organizations. These studies also accept that safety communication is a management practice which can be measured using items related to some elements such as hazard reporting system, policies for safety and health issues, communication of safety issues between managers and employees and also the opportunity and freedom to discuss safety and health matters in meetings. Zohar (2002) found that good communication resulted in a decrease in micro accidents in a research between supervisors and workers in the maintenance of heavy duty equipment. This study also showed that the usage of Personal Protective Equipment increased with good communication of the health risk.

Good communication in the organization is the key component of a good organization. It leads to trust in safety and health management which is the fundamental element of strength. Organizations must have an appreciation of the employees in order to create a working climate whereby they are alert to hazards. Significant information must be made available to employees (Pidgeon, 1991). Feedback to employees is important in order to influence the safety practices. According to Kletz, (1993) the behaviour that results in industrial accidents are

typically not new occurrences and the role of safety communication and feedback concerning employees performances are very important. The cause of the accidents lies in the past accidents where the effect was not serious and the employee beside him was not affected. Studies on safety communication and feedback shows that feedback on safety and health related behaviour increased the safety compliance (Komaki et al., 1980). Safety communication and feedback can be achieved by the following ways (Zin & Ismail, 2012):

i) Employers can communicate the importance of safety and health through visible behaviour. Employees will then adopt their own behaviour after recognizing what employers regard as important. The safety and health culture in an organization can undermine by the absence of positive behavior of employer.

ii) The organization must come up with a written safety policy statement concerning the commitment, direction, safety and health roles and responsibilities, performance standards and also the hazard identification findings, risk assessments and risk control.

iii) The employer and employee must be able to meet face to face with issues related to safety at their working place. Ideally employees should have the freedom to voice out during safety programmes. The employees must be able to contribute towards safety. This will make the employees feel that they are appreciated and thay are a part of the organization of safety and health.

An effective way for improving safety at workplace is by having regular communication between managers, supervisors and employees (Vinodkumar & Bhasi, 2010). Various researchers have also concluded that the safety behavior is influenced by the effectiveness of communication in the organisation (Cox & Cheyne, 2000; Mearns et al., 2003; Vredenburgh, 2002). Fernandez-Muniz et al, (2007) concluded that the safety behavior of employees is very much related to the level of safety communication and also the transfer of information pertaining to the risks and how to prevent such risks. Safety communication favours regular interactions between employees, supervisors and managers.

Communication on employees' performance is important because as mentioned earlier, the behaviours that has resulted in accidents are normally not repeated occurrences (Vredenburgh, 2002). The risks related to the employees and workplace must be provided and communicated to the employees in order to encourage a working climate where the workers are alert towards hazards (Fernandez-Muniz et al., 2007; Pidgeon, 1991). The knowledge of such kind of risks can be passed on to to the employees through memos, precautions, instructions, charts, diagrams and discussions on behavior at safety meetings (Roughton, 1993).

2.8 Safety Rules and Procedures

Organizational procedures are policies that are related to formal procedures and instructions. Group level procedures are detailed instructions, which are related to the work group functions. Individual level procedures are those procedures and work instructions related to tasks of an individual. Individuals or employees' safety behavior is the fundamental for an organization's system to function properly

(Guldelmund, 2007). The behavior of the employee is not confined to complying with the organization's regulations and procedures but when they understand their individual role and contribution in the promotion of safety and health clearly. In other words, the employee participates in the creation of safety rules and procedures for the job. The management must give them this freedom and authority. Glendon and Litherland (2001) reported that the enforcement of written safety rules and procedures by the management could improve safety behavior of employees. Cox and Cheyne (2000) and Mearns et al. (2003) found that safety rules and procedures are having good correlation with accident rates in their offshore safety studies. In order to achieve good safety performance, the organization needs employees who can participate proactively in safety and health activities and follow all the organization's safety regulations and procedures (Didla et al., 2009).

2.9 Safety Promotional Policies

Organizations should develop committed employees through effective implementation of safety promotional policies. These employees will become a strong foundation. The safety promotional activities should consistently demonstrate the management's commitment to the employees' safety and health in order to augment safety at workplace. When a strong foundation is achieved, the management can implement specific workplace safety initiatives without any objections or hestitations from the employees. The activities will be well perceived as the top management's commitment in continuing general support for its employees. Subsequently, such initiatives will be accepted by its employees more readily (Dejoy et al., 2010). Safety promotional activities have resulted in reduced

medical claims, hospital costs, insurance costs and also costs due to absentism. This decrease has resulted in decreased costs for employers (Forrester et al., 1996). Geldat et al. (2010) reported that encouragement of career commitment, safety awards, and taking statistics of injury occurrences are formal policies that can reduce the workplace injury rate.

Vinodkumar and Bhasi (2011), found that safety promotion policies should be incorporated with the management programmes and should not be left to stand by itself. The safety promotional policies should be incorporated with other elements such as safety training, safety communication, safety rules and procedures, workers' participation in safety, top management's commitment and others. These factors will help the organizations to implement efficient and effective safety management systems, that will facilitate the prevention of work-related accidents and health problems (Parker et al., 2006; Paul & Maiti, 2008).

The best way in improving site safety performance is through proactive Safety programs (Hislop, 1991; Tam et al., 2004). Safety programmes that are effective can create a safe working environment for the employees and help the management to come up with safer means of operations. This will substantially reduce the accidents (Abdelhamid & Everett, 2000; Anton, 1989; Rowlinson, 2003). Furthermore, good safety culture can be embedded in organizations through an effective safety program because an effective safety programme can encourage cooperation between management and employees.

2.10 Conclusion

This chapter deals with literatures concerning predictors influencing safety compliance. This study focuses on six aspects of safety compliance which have been consistently discussed in prior studies, namely: management commitment (Fernández-Muniz et al., 2009), workers' participation (Biggs et al., 2005; Gevers, 1983; O'Toole, 1999; Khairiah, 2008; Vredenburgh, 2002), safety training (Fernandez-Muniz et al., 2007; Griffin & Neal, 2000; Vredenburgh, 2002; Zohar 1980), safety communication and feedback (Cohen 1977; Cox & Cheyne 2000; Mearns et al., 2003; Vredenburgh 2002), safety rules and procedures (Cox & Cheyne 2000; Glendon & Litherland 2001; Guldelmund 2007; Mearns et al., 2003), and safety promotional policies (Dejoy et al., 2010; Forrester et al., 1996; Geldat et al., 2010). The researcher postulates these factors to the prevention of injuries and accidents at the workplace. A better understanding of these factors will help other companies to achieve similar performance in the management of occupational safety and health.

Fatalities and the number of disablement in the sector of manufacturing are one of the highest among all the sectors in Malaysia. Companies, which have implemented the occupational safety and health management system, have benefited from lower medical, insurance and accident claims, recognition from regulators and also increased operational efficiencies due to the reduction in lost workdays. Penfabric Mill 4 is a good example in the occupational safety and health management for other companies in Malaysia. This study investigates the factors influencing safety compliance in this organization. From the information gathered in this research, recommendations and new courses of action can be recommended to

the organization in order to further improve their safety management. Information obtained from this study can also be used in other manufacturing organizations.

The study is very interesting because it is focused on Safety Compliance in a Japanese Multinational Manufacturing company located in Malaysia for about 40 years and has a long history in the field of safety and health management system. There has not been any study conducted in a huge multinational textile mill like this in Malaysia. The parent company Toray is also involved in many types of industries and as such the safety management has evolved with many past experiences from many other parts of the world. With all the past experiences, the Top Management has placed much emphasis on safety management, Workers' Participation, Safety Trainings, Safety Communication and Feedback, Safety Rules and Procedures and also the Safety Promotional Policies. As the safety management in this organization is built on extensive experience gained from a variety of industries based on many parts of the world, the information gathered for this study therefore can be very beneficial and serve as a benchmark for all other companies in the world. All the information obtained from this study will contribute a great deal to the current literature, which is mostly based on experience of single individual companies.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter explains the methodological aspects of the study. It includes the research design, the sampling procedure, population and sample, development of the survey instrument, variable specification, questionnaire development, the pilot study and expert judgments, the administration of survey instruments, analysis of data and approval of organization.

3.1 Definition of Key terms

In this study, the following terms are defined as such:

3.1.1 Safety Compliance

Safety compliance is a behavior and defined as employees' adherence to the policy of the organization, rules, standards, regulations and procedures even when the employees are not being monitored and it can affect the safety performance of an organization (Podsakoff et al., 2000). Safety compliance also means rule following behavior with regards to safety requirements (Griffin & Neal, 2000).

3.1.2 Management Commitment

Management commitment means the degree to which management values the safety of his employees. This commitment can be manifested through actions like participation in safety committees, safety training programs, safety consideration during the design stage and periodical review of activities and workplace (Vredenburgh, 2002).

3.1.3 Workers' Participation

Workers' Participation refers to voluntary safety behaviors that workers get involved and participate in matters related to safety and health at workplace (Griffin & Neal, 2000). The degree of participation can vary from no participation where the managers or superiors make all the decisions is called and full participation is where everyone in the organization is involved in the process of decision-making (Vredenburgh, 2002).

3.1.4 Safety Training

Safety Training provides employees with the knowledge, capabilities and skills that they need to perform their work safely and Safety Trainings help employee to identify the hazards, risks and precautions that they must take in order to identify, correct, prevent or minimize these risks (Fernandez-Muniz et al., 2007).

3.1.5 Safety Communication and Feedback

Safety Communication and Feedback refer to the degree where information about the possible risks in the workplace and the steps to handle or rectify those risks in an organization are channeled to employees and good communication between management and employees is an effective element of management in order to improve the workplace's safety performance (Fernandez-Muniz et al., 2007).

3.1.6 Safety Rules and Procedures

Safety Rules and Procedures are a set of standards that an employee needs to follow in order to work with the risk at workplace and the enforcement by the top management can improve safety behavior of employees (Mearns et al., 2003). Studies conducted by Cox and Cheyne (2000) and Mearns et al. (2003) showed that safety rules and procedures are important factors and it has significant correlation with accident rates.

3.1.7 Safety Promotional Policies

Safety Promotional Policies can be defined as safety management practices for creating awareness among workers by organizing programs such as zero accident campaign, safety week celebrations, traffic safety promotions, healthy competitions among workers and others (Vinodkumar & Bhasi, 2011).

3.2 The Research Framework and the Hypothesis of the Study

The aim of this research is to determine the predictors of safety compliance. There were two groups of variables, namely dependent and independent variables that were studied. The dependent variable is the safety compliance. The independent variables were management commitment, workers' participation, safety training, safety communication and feedback, safety rules and procedures and safety promotional policies. Figure 3.1 shows the theoretical framework of this study.

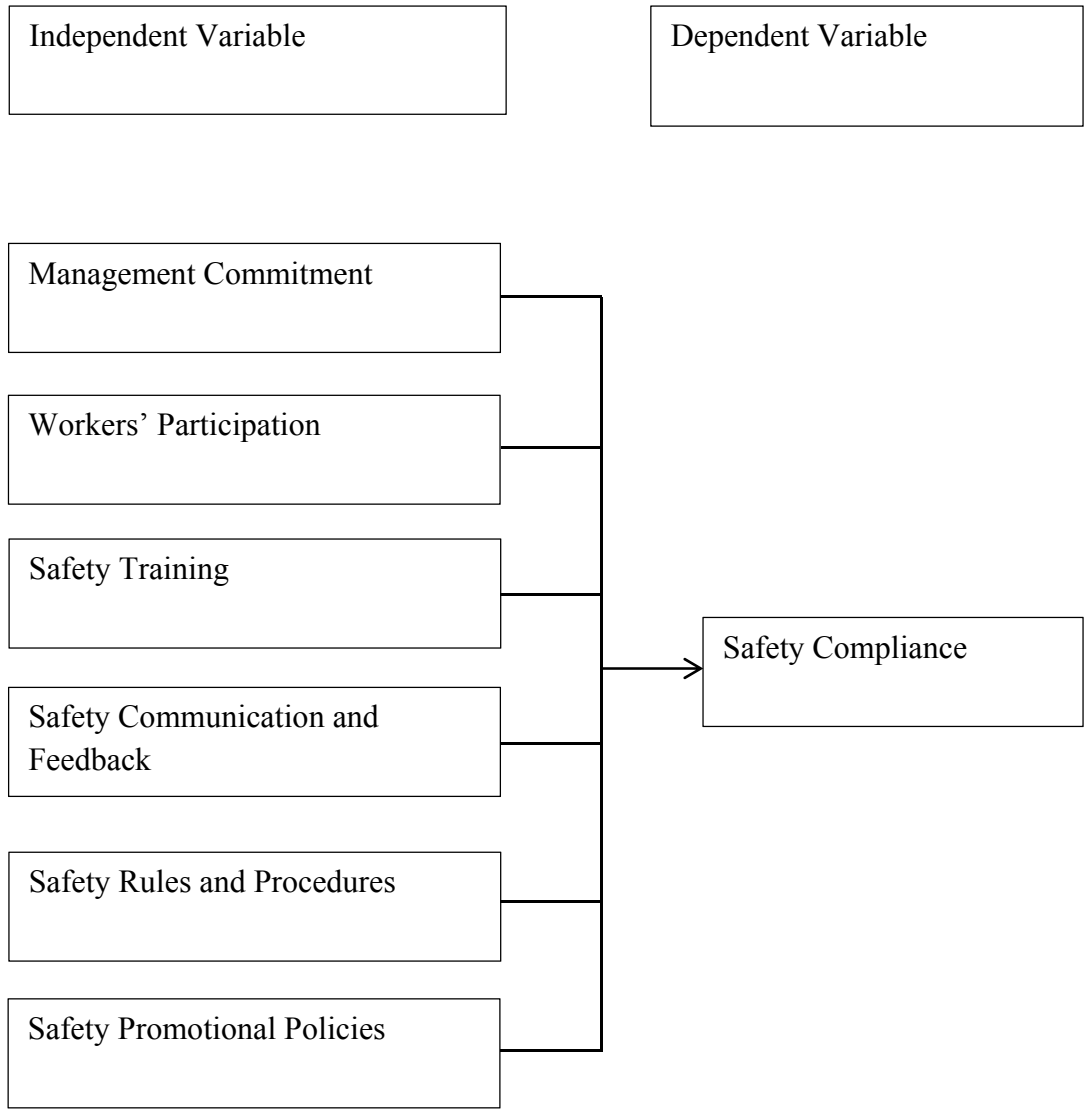


Figure 3.1: Theoretical Framework

There are all together seven (7) hypothesis conjectured for the purpose of this study. The alternative hypothesis posited is as stated below:

i) Management Commitment and Safety Compliance

Management Commitment was the guiding force behind the initiative to increase the safety compliance and reduce the number of cases of injury (Garrett & Perry, 1996). Management Commitment positively affects the safety compliance and safety

performance (Podsakoff et al., 2000). Studies conducted by Aksorn and Hadikusumo (2008) identified that the most important and influential factor for safety compliance and performance is the management commitment on safety issues. Vinodkumar and Bhasi (2011) found positive correlation between Management Commitment and safety compliance.

Based on the findings of relationship between Management Commitment and Safety Compliance from various literatures, Hyphothesis 1 was postulated.

Hypothesis 1: There is a significant relationship between Management Commitment and Safety Compliance in this organization.

ii) Workers' Participation and Safety Compliance

Workers' Participation was the main element in safety compliance, which leads to successful injury prevention (Garrett & Perry, 1996). Lower injury rates and high safety compliance were observed at workplaces that use workers' participation teams (Havlovic & McShane, 1997). Biggs et al. (2005) found that workers' participation in an organization is a supporting factor in safety compliance.

Based on the findings of relationship between Workers' Participation and Safety Compliance from various literatures, Hyphothesis 2 was postulated.

Hypothesis 2: There is a significant relationship between Workers' Participation and Safety Compliance in this organization.

iii) Safety Training and Safety Compliance

Organization must put in place a systematic and comprehensive safety training for all employees in order to improve the safety compliance and the standard of safety and health (Vredenburgh, 2002). Zohar (1980) revealed that organization with good

safety training for employees have higher safety compliance and lower accident rates. Safety trainings help employees to detect risks at workplaces and the precautions that they have to take and this improves the safety compliance (Fernandez-Muniz et al., 2007).

Based on the findings of relationship between Safety Training and Safety Compliance from various literatures, Hyphothesis 3 was postulated.

Hypothesis 3: There is a significant relationship between Safety Training and Safety Compliance in this organization.

iv) Safety Communication and Feedback and Safety Compliance

Fernandez-Muniz et al, (2007) concluded that the Safety Compliance of employees is very much related to the level of Safety Communication and Feedback. Studies conducted by Cohen (1977), Cox and Cheyne (2000), Mearns et al. (2003) and Vredenburgh (2002) showed that the safety compliance and performance of an organization is influenced by the effectiveness of Safety Communication and Feedback within organizations.

Based on the findings of relationship between Safety Training and Safety Compliance from various literatures, Hyphothesis 4 was postulated.

Hypothesis 4: There is a significant relationship between Safety Communication and Feedback and Safety Compliance in this organization.

v) Safety Rules and Procedures and Safety Compliance

Glendon and Litherland (2001) reported that the enforcement of written Safety Rules and Procedures by the management could improve safety compliance of employees.

Cox and Cheyne (2000) and Mearns et al. (2003) found that Safety Rules and Procedures are having good correlation with safety compliance in their offshore safety studies.

Based on the findings of relationship between Safety Rules and Procedures and Safety Compliance from various literatures, Hyphothesis 5 was postulated.

Hypothesis 5: There is a significant relationship between Safety Rules and Procedures and Safety Compliance in this organization.

vi) Safety Promotional Policies and Safety Compliance

Geldat et al. (2010) reported that Safety Promotional Policies are formal policies that can improve the Safet Compliance and reduce the injury rate at workplace. Safety Promotional Policies have resulted in Safety Compliance which leads to reduced medical claims, hospital costs, insurance costs and also costs due to absentism (Forrester et al., 1996).

Based on the findings of relationship between Safety Promotional Policies from various literatures, Hyphothesis 6 was postulated.

Hypothesis 6: There is a significant relationship between Safety Promotion Policies and Safety Compliance in this organization.

vii) Management Commitment, Safety Training, Safety Communication and Feedback, Workers Participation, Safety Rules and Procedures, Safety Promotional Policies influence Safety Compliance in this organization.

Management Commitment is the main reason behind that infuuence safety compliance and safety performance (Fernández-Muniz et al., 2009; Garrett & Perry, 1996; Podsakoff et al., 2000). Workers' Participation leads to successful injury prevention and safety compliance (Biggs et al., 2005; Garrett & Perry, 1996; Gevers, 1983; Havlovic & McShane, 1997; O'Toole, 1999; Khairiah, 2008; Vredenburgh, 2002). Safety training influences the safety compliance and the standard of safety and health (Fernandez-Muniz et al., 2007; Griffin & Neal, 2000; Vredenburgh, 2002). Organiztion with good safety training for employee have higher safety compliance and lower accident rates (Zohar, 1980). Safety Compliance of employees is very much related to level of Safety Communication and Feedback within the organization (Cohen, 1977; Cox & Cheyne, 2000; Mearns et al., 2003; Vredenburgh, 2002). Documented Safety Rules and Procedures influences the safety compliance in the organization (Cox & Cheyne, 2000; Glendon & Litherland, 2001; Guldelmund, 2007; Mearns et al., 2003). Safety Promotional Policies are formal policies that can reduce the injury rate at workplace which influence Safety Compliance (Dejoy et al., 2010; Forrester et al., 1996; Geldart et al., 2010).

Based on the all the above findings from various literatures on the influence of Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies, Hyphothesis 7 was postulated.

Hypothesis 7: Management Commitment, Workers Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures, Safety Promotional Policies influence Safety Compliance in this organization.

3.3 Research Design

This proposed research study was designed to determine the factors influencing the safety compliance in Penfabric Mill 4. The flow of the research design is shown in Figure 3.2.

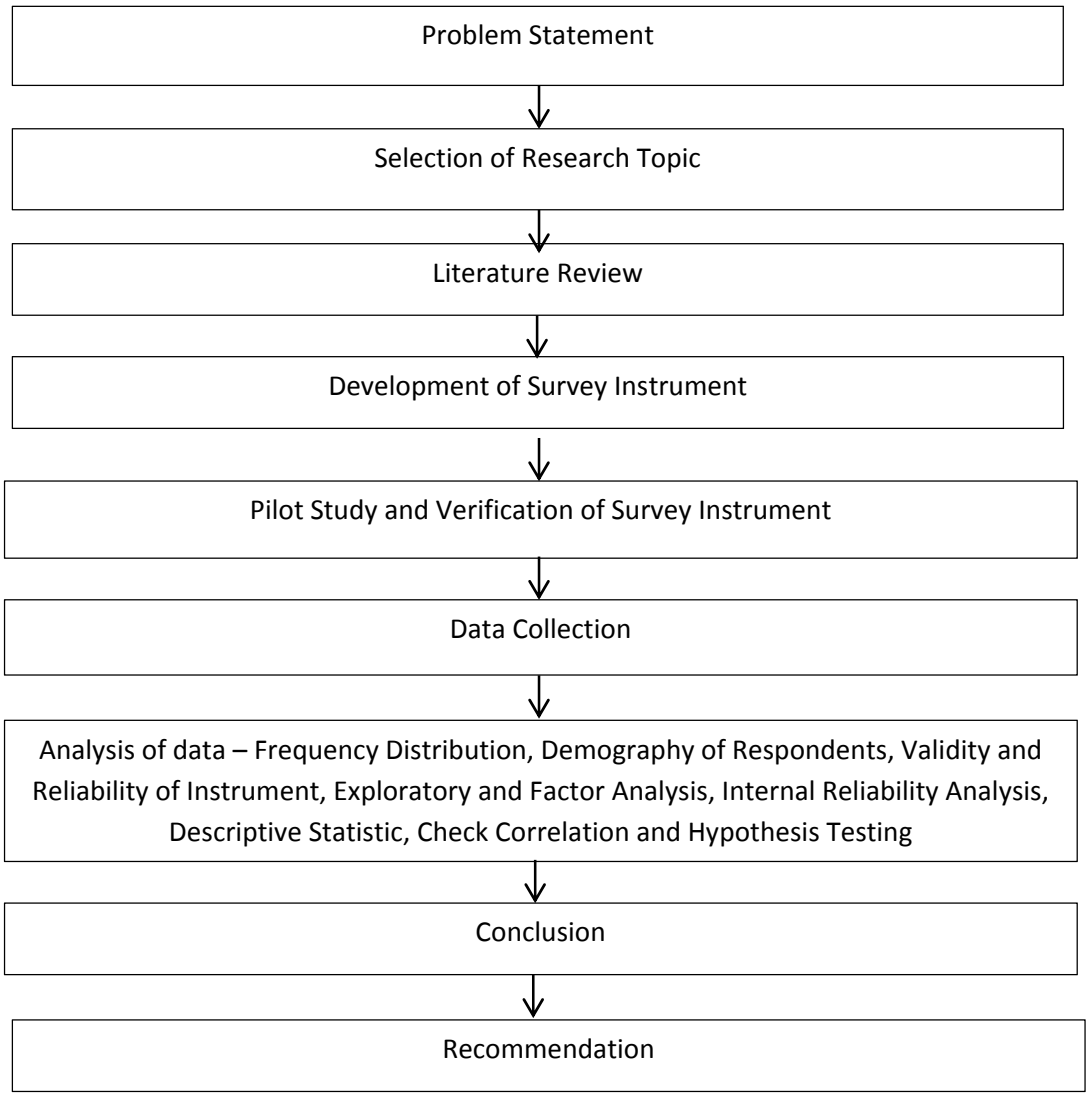


Figure 3.2: Flow of Research Design

First of all, the problem statement was made. This was followed by the selection of research topic and literature review. A survey instrument was deployed and a pilot study was made in order to verify the survey instrument. After the verification, data collection was made. Conclusion and recomentation were made after the data were analysed. Non-experimental research design was used and the researcher had no

control over the variables involved. The independent variables of the study are Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies. The dependent variable is Safety Compliance

3.4 The Sampling Procedures

3.4.1 The Population of the Study

The research focused on production employees of Penfabric Mill 4. Table 3.1 shows the distribution of manpower population among the departments in Penfabric Mill 4. Production employees were selected as the population because they are directly related to the safety management system in this Mill. Employees from Accounts, Sales and other supporting departments were not considered as they are under the Corporate Management Team and not directly involved in the management system. There are about 517 employees who are directly involved in the production activities of this Mill. They are working at various departments such as Production; Quality Assurance; Engineering and Administration. The Production Department consists of 4 sections, which are Bleaching, Dyehouse, Printing and Finishing. The Quality Assurance Department consists of 2 sections that are Technical and Make-up Room. The unit of analysis is the individual. The distribution of manpower throughout these departments is shown in Table 3.1

Table 3.1

The Distribution of Manpower among Departments

Department	Section	Population	Samples
Quality Assurance	Technical	37	20
	Make Up	39	24
Production	Bleaching	85	45
	Dyehouse	102	60
	Printing	18	10
	Finishing	93	52
Engineering	Engineering	39	24
Administration	Administration	11	7
Production Control	Production Control	15	8
	Total	517	250

3.4.2 The Sample of the Study

The population of this study is 517. The minimum number of sample required for this study is 226 based on the table for determining random from a determined population for research activities (Krejcie & Morgan, 1970), which is about 44%. However a total of 250 questionnaires were distributed. Non Proportionate Stratified random sampling was used in this study where the population was first divided into meaningful segments. After that subjects were drawn in proportion to their original numbers in the population (Sekaran & Bougie, 2010). A minimum of 44% of

employees in each section was selected. Table 3.1 shows the number of employess taken from every section for this research.

3.5 Measurement of Variables/Instrumentation

3.5.1 Questionnaire Design

In order to achieve the objectives of the research, the researcher has designed the questionnaire with the following considerations;

i) The questions were chosen and arranged in a group consistent with the independent variables.

ii) The researcher translated the questions in dual languages (Bahasa and English) to facilitate the understanding of the respondents.

iii) The language used can be easily understood.

iv) The questionnaire was designed as a self-explanatory to ensure that respondents can complete the questionnaire by themselves.

v) The time taken for the completion was about 15-20 minutes.

3.5.2 Selection of Survey Instrument

The researcher decided to use questionnaires as a tool in the research survey. This survey instrument was derived based on the following journals shown in Table 3.2:

Table 3.2

Source of Survey Instrument

Variables	Item	Source	Scale	Previous Alpha Values
Safety Compliance	7	Vinodkumar, M.N. & Bhasi.M. (2010)	1= Strongly Disagree to 6= Strongly Agree	0.76
Management Commitment	9	Vinodkumar, M.N. & Bhasi.M. (2011)	1= Strongly Disagree to 6= Strongly Agree	0.96
Workers' Participation	5	Vinodkumar, M.N. & Bhasi.M. (2011)	1= Strongly Disagree to 6= Strongly Agree	0.98
Safety Training	6	Vinodkumar, M.N. & Bhasi.M. (2011)	1= Strongly Disagree to 6= Strongly Agree	0.99
Safety Communication and Feedback	5	Vinodkumar, M.N. & Bhasi.M. (2011)	1= Strongly Disagree to 6= Strongly Agree	0.98
Safety Rules and Procedures	5	Vinodkumar, M.N. & Bhasi.M. (2011)	1= Strongly Disagree to 6= Strongly Agree	0.99
Safety Promotional Policies	5	Vinodkumar, M.N. & Bhasi.M. (2011)	1= Strongly Disagree to 6= Strongly Agree	0.94

Note: The Alpha values were taken from Vinodkumar, M.N. & Bhasi.M. (2011)

The questionnaire comprised of 2 sections and had 48 items. The questions were divided into two sections.

Section A This section consisted of 6 questions on demographics namely gender, age, educational background, ethnic, occupation and years of service in the company.

Section B This section consisted of 42 questions. These questions were in relation to the safety compliance and the factors that were influencing the safety compliance. The distribution of questions in this section is as per Table 3.3

Table 3.3

Distribution of Questions among the Variables.

Section	Evaluation Items	Number of Questions
A	Personal Details	6
B	Management Commitment	9
	Workers' Participation	5
	Safety Training	6
	Safety Communication and Feedback	5
	Safety Rules and Procedures	5
	Safety Promotional Policies	5
	Safety Compliance	6
	Total	48

A six scale Likert Scale was used for all the questions in this section. The score is from 1, which is "strongly disagree" to 6, which is "strongly agree".

3.5.3 Reversed Scored Items and Back Translation

Reversed scored questions were placed on every variable to ensure that the respondents were paying attention to the questions and not answering the highest or lowest score in the likert scale for any reason. The scores of the reversed items were corrected before keying into the SPSS. The scores were reversed by the following

direct conversion; (1=6, 2=5, 3=4, 4=3, 5=2 and 6=1). In this survey, back-translation and decentering methods were used. Translating from the source of (English) to the target required language (Bahasa Malaysia) was done, and translating back from the target to the source of English (Brislin, 1970) method was used.

3.6 The Pilot Study

Prior to carrying out a full research involving the respondents, a pilot test was carried out. The pilot test was carried out to detect the weakness in the design and instrumentation of the questionnaire. The purpose of the pilot test was to ensure that the respondents were able to understand clearly the meaning of each question. The data collected from the pilot test was transferred into SPSS version 17.0 in order to attain the Cronbach Alpha Coefficient. Sekaran and Bougie (2010) suggests that Cronbach Alpha coefficient of lesser than 0.6 is generally considered to be poor, those in the 0.7 range, to be acceptable and those over 0.8 to be good. As such none of the questions were modified as all the respondents did not indicate any problems and difficulties of understanding and answering the questions.

One of the sections in the production was chosen to represent the sample for the pilot study. The section selected for this pilot study was Technical with the permission from the Factory Manager (Mr. MT Boey). The pilot test was done after the safety meeting conducted in the Technical Meeting Room on the 14th of December 2011. A total of 33 staffs attended this meeting. The staffs consisted of 5 managers, 10 management staffs, 9 middle management staffs and 5 top management staffs. The respondents took about 15- 20 minutes to complete the questionnaire. The purpose of this pilot test was to ensure the respondents were able to understand clearly the

meaning of each question. The data collected from the pilot test was transferred into SPSS version 17.0. The results of reliability test show that the Cronbach Alpha of Management Commitment was 0.886, Workers' Participation was 0.741, Safety Training was 0.821, Safety Communication and Feedback was 0.739, Safety Rules and Procedures was 0.771, Safety Promotional Policies was 0.754 and Safety Compliance was 0.809. These values indicate that the reliability of the questionnaire was good. As such none of the questions were modified, as all the respondents did not indicate any problems and difficulties in understanding and answering the questions.

3.7 The Administration of the Survey Instrument

3.7.1 The Data Collection Procedure

The questionnaire was made into a booklet. The front page was a simple letter to the respondents stating the principle aim of the study and that the information gathered from the study was strictly confidential and purely for research. The questionnaires were distributed to the employees who were working in the production sections. The researcher went from section to section and requested the section managers to gather a group of people under his charge consisting of managers, management staffs, staffs and workers. The researcher explained that the purpose of the research was for academic purpose only and requested the respondents for voluntary participation. The questionnaires were distributed to the respondents and the researcher gave 4 days to complete the questionnaire. After 4 days, the researcher requested all the section managers to collect back the questionnaires from the respondents. The researcher gave an additional 3 days to those who were not able to complete the questionnaire. After one week, the

researcher wrote a memo to all the section managers to give an additional week so that they can collect all the distributed questionnaires. On the last day of this added time, the researcher went to meet all the section managers to collect back the questionnaires. Those uncollected questionnaires were considered as non-respondents.

3.8 Analysis of Data

Data collected from the survey were analysed after doing the data screening.

3.8.1 Data Screening

An **illogical response** is a respond that is an outlier. Outlier is an observation, which is totally different from all the other observations. An outlier may not always an error even though data error (data entry) is a likely source of outlier. Scatter plots were used to check the outlier (Sekaran & Bougie, 2010). Outliers were checked with the questionnaire to ensure that it was not due to entry error.

Inconsistent responses are responses that are different and not in harmony with all the other information (Sekaran & Bougie, 2010). Whenever possible, follow up was made with the respondents with inconsistent responses to attain correct data.

Illegal codes are values that are not mentioned or specified in the coding instruction of the questionnaire (Sekaran & Bougie, 2010). Frequency distribution was used to check the illegal codes.

Some of the respondents did not answer all the questions in the questionaire**.** **Omission** will take place if the respondents did not understand the questions, do not know the answer or were not willing to answer the questions. If there were any questionnaires with 10 or more questions (25% of the questions) not answered by any particular respondent, the questionnaires were discarded. If one or two items

were left unanswered, a logical answer was assigned to the item with mean value of the responses of all those who have responded to the particular item (Hair et al., 1995)

3.8.2 Normality Testing

There are two ways of measuring the normality. One of them is by using graphical method such as Histogram, Stem and Leaf Plot, Boxplot, Normal Probabilty Plot and others. The other method is by using non-graphical method such as Kolmogorov-Smirnov Statistic, Skewness, Kurtosis and others. Data from this survey was analysed by using graphical method. There was a skewness and it was corrected by using transformation (Sekaran & Bougie, 2010).

3.8.3 Hypothesis Testing

All data obtained and collected from the questionnaires were analyzed using Statistical Package for Social Science (SPSS) software version 17.0. Descriptive statistics were used to identify the sample based on the data provided in the respondent information sheet. Correlation test and multiple regressions were conducted to analyze the significant of the correlation coefficient and to test independent variables against the dependent variables. Correlation coefficients (in absolute value) which are less than or equal to 0.35 represent low or weak correlations, 0.36 to 0.67 were considered modest or moderate correlations, 0.68 to 0.9 were considered strong or high correlations and more than 0.90 were considered as very high correlations (Mason, Lind & Marchal, 1983). Regression with the value $p > 0.05$ is considered significant. In general, data scaling in non-parametric statistic were categorized into four types, which are nominal or categorical scale,

ordinal or ranking scale, interval scale and finally ratio scale. In this research, the ordinal or ranking scale measurement was used to collect most of the variables relevant to the study (Sekaran & Bougie, 2010). In measuring the level for most of the variables, the method of Likert Scale was used for the entire questionnaire.

3.9 Summary

The study undertaken should shed light as to whether there is co-relation between the safety compliance in Penfabric Mill 4 and all the independent variables. This chapter had explained the methodological aspect of the study which comprised the research framework and the hypotheses of the study, research design, sampling procedure, population and sample, development of the survey instrument, pilot study, data collection procedure, analysis of data and reliability of research instrument. The next chapter discusses findings of the research.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Introduction

This chapter presents results of the data analysis obtained from the study that had been carried out. Data collected was analyzed using Statistical Package for Social Sciences (SPSS). The data was analyzed using descriptive and inferential analysis (Pearson Correlation and Multiple Regression analysis). The Frequency analysis was used to analyze the respondent's demographic characteristics such as gender, age, education level, occupation and years of service. Reliability test, correlation test and multiple regressions were undertaken.

4.1 Summary of Data Collection

4.1.1 Frequency Distributions

A total of 250 questionnaires were distributed to the respondents and 243 questionnaires were collected. The percentage of respondents was 97.2%. Table 4.1 shows the survey responses of this study.

Table 4.1

Survey responses

Items	Total	Percentage %
Distributed Questionnaires	250	100
Collected Questionnaires	243	97.2

4.2 The Demography of Respondents

4.2.1 Classification of Respondents by Gender

Table 4.2 shows the gender of the respondents of this study. The analysis of the data of this study revealed that the male respondents were the majority. There were 192 male and 51 female respondents out of the 243 respondents. Male respondents constituted to 79.0 % of the 243 respondents. Female respondents constituted to 21.0 % of the respondents. It shows that, the results of the study are mostly derived from the male respondents' opinion.

Table 4.2

Gender of Respondents

Gender	Frequency	Percentage %
Male	192	79.0
Female	51	21.0
Total	243	100.0

The majority of employees in the Penfabric Mill 4 Production Division who are directly involved in the manufacturing processes are male. The female employees are only found in the Quality Assurance Department as Quality Inspectors and Quality Controllers. The result in this study is therefore an accurate representation of the population.

4.2.2 Classification of Respondents by Educational Level

Table 4.3 shows the education level of the respondents of this study. The study on education background revealed that the largest group of respondents is with SPM qualification, which consisted to 58.4% of the respondents. The second largest group is those with SRP and below which consisted of 24.7%. This is followed by respondents with degree (7.8%) and the other groups were respondents with STPM (2.1%), Certificate (2.5%), Diploma (3.7%) and Master's degree (0.8%). This means that majority of the respondents were those with SPM and below. Those employees with higher education background only represented a small percentage of the total employees in the manufacturing area.

Table 4.3

Education level of Respondents

Education Level	Frequency	Percentage %
Primary School	1	0.4
LCE/SRP/PMR	59	24.3
MEC/SPM	142	58.4
HSC/STPM	5	2.1
Certificate/Sijil	6	2.5
Diploma/Diploma	9	3.7
Degree/Sarjana Muda	19	7.8
Master/Sarjana	2	0.8
Total	243	100.0

4.2.3 Classification of Respondents by Position

Table 4.4 shows the position of the respondents of this study. The study on position revealed that the largest group of respondents is Technicians (36.6%) followed by Workers (35.8%). The third largest group is Officers which consists of 12.3% of the respondents followed by Managers (5.3%), Supervisors (5.3%) and lastly Clerks (4.3%). This means that the majority of respondents were technicians and workers. Both of these groups consisted of 72.4% of the total respondents. Middle and higher management level only represented a small percentage of the total employees in the manufacturing area. This means that the results of the study are mostly derived from the workers' and technicians' opinion that are actually engaged with the operational work rather than Officers and Managers who are more involved in the management work.

Table 4.4

Position of Respondents

Position	Frequency	Percentage %
Manager/Pengurus	13	5.3
Officers/Pegawai	30	12.3
Supervisor/Penyelaras	13	5.3
Clerk/Kerani	11	4.5
Technician	87	35.8
Worker/Pekerja	89	36.6
Total	243	100.0

4.2.4 Classification of Respondents by Age

In terms of age, the respondents who had their age in the interval between 46-55 years old, constituted to 35.8% of the respondents. This is followed by the respondents between the ages of 36-45 (27.2%), 26-35 (20.6%), 18-25 (14.0%) and 2.5% had their age more than 56 years old. Employees with the age between 18-25 are new employees and those employees with the age of above 56 are those whose services are extended after their retirement age of 55 on a contract basis due to their skills in certain work area. Table 4.5 shows the age of the respondents in this study. The survey on age revealed that employees between the ages of 36-55 years old majority consisted of the workforce (63.0%). This is consistent with the average age of the employees that is between 38-42 years old. The employees between the ages of 18 to 35 consisted of only 37% of the total workforce in the manufacturing side.

Table 4.5

Age of Respondents

Age	Frequency	Percentage %
18-25	34	14.0
26-35	50	20.6
36-45	66	27.2
46-55	87	35.8
>56	6	2.5
Total	243	100.0

4.2.5 Classification of Respondents by Years in the Company

Table 4.6 shows the year of service of the respondents of this study. The largest group of respondents is the employees who have been working for more than 20 years, which consisted of 32.9% of the respondents. This is followed by those who worked for less than five years (20.6%), 11-15 years (20.2%), 16-20 years (12.3%), 6-10 years (7.4%) and lastly new employees with less than one year of service (6.6%). The respondents working for more than 10 years consists majority of the respondents totaling 65.4%. This is consistent with the survey on age which revealed that employees between the ages of 36-55 years old consists of majority the workforce (63.0%) indicating that all these employees have been faithfully working for this company for more than 10 years. Employees working for less than 10 years consist of 34.6% of the respondents and these are relatively new employees between the ages of 18-36 years old.

Table 4.6

Years of service of respondents

Service	Frequency	Percentage %
<1year	16	6.6
1-5 Years	50	20.6
6-10 Years	18	7.4
11-15 Years	49	20.2
16-20 Years	30	12.3
>21 Years	80	32.9
Total	243	100.0

4.2.6 Classification of Respondents by Ethnic Group.

Table 4.7 shows the classification of respondents by ethnic group. The majority of the respondents for this research were Malays (75.3%). This is followed by Chinese (14.0%) and then by Indians and others (10.7%).

Table 4.7

Ethnic Group of Respondents

Ethnic	Frequency	Percentage %
Malay/ Melayu	183	75.3
Chinese/ Cina	34	14.0
Indian/ India	25	10.3
Others/ Lain-lain	1	0.4
Total	243	100.0

4.2.7 Classification of Respondents by Age and Years of Service.

Table 4.8 shows the cross tabulation between age and years of service of the respondents. Interestingly, there is a relationship between the age and the year of service. The survey shows that the 35% of employees between the ages of 36-45 have been working for more than 10 years and 68% of employees between the ages of 46-55 have been working for more than 21 years. The employees in the age group between 18-25 and 26-35 are employees who have been working for about 1 to 5 years respectively. Based on this data we can see that there is a succession plan instituted by the top management to continuously bring in new people in place of those retiring at the age of 55. Employees at the age of above 56 are those who have been working for more than 21 years and those who have extended after their retirement age of 55 on a contract basis due to their skills in certain work area.

Table 4.8

Cross Tabulation between Age and Years in service of Respondents

Age	Year of Service						Total
	<1	1-5	6-10	11-15	16-20	>21	
18-25	11	22	1	0	0	0	34
26-35	4	26	10	7	3	0	50
36-45	1	1	7	35	18	4	66
46-55	0	1	0	7	11	68	87
≥56	0	0	0	0	0	6	6
Total	16	50	18	49	32	78	243

4.2.8 Classification of Respondents by Age and Position.

Table 4.9 shows the cross tabulation between age and position held by the respondents. The data from the survey shows that all the Managers are aged between 36-55 years old. There is a good distribution of age between 18-55 years old for the position of Officers. This finding is consistent with the company's current practice. Normally, Managers are appointed after a certain number of years of experience in the workplace and therefore their age is between 36-55 years old. Officers are appointed based on two criterias i.e. qualification and years of service at the workplace as senior technicians. Graduates are employed directly as Officers and we can see this in the officers between the ages of 18-25. Due to the complexity of the manufacturing activities, new employees are also being recruited for the position of Technicians. They will be promoted to Supervisors and Officers based on their performance and therefore we do not see any supervisors and managers in the age group of 18-25.

Table 4.9

Cross Tabulation between Age and Position

Age	Occupation						
	Manager	Officers	Supervisor	Clerk	Technician	Worker	Total
18-25	0	5	0	5	13	11	34
26-35	0	9	2	2	25	12	50
36-45	7	3	2	1	26	27	66
46-55	4	9	9	3	23	39	87
>56	2	4	0	0	0	0	6
Total	13	30	13	11	87	89	243

4.2.9 Classification of Respondents by Education and Position.

Table 4.10 shows the cross tabulation between education and position. It has been revealed that all the Managers are with the minimum qualification of SPM. Officers are mainly with the qualification of Degree and SPM, Technicians are mainly with SPM and Workers are mainly with SRP. This finding is consistent with the company's current employees' profile. Managers consist of those who joined as officers with a degree and promoted to managers and also employees who joined with SPM long ago and worked many years to become managers. Officers are mainly newly employed graduates and also those with SPM who have been promoted with some years of experience. Technicians are employed to do skilled work and SPM is the minimum requirement. Workers are employed with the minimum requirement of their ability to read and write.

Table 4.10

Cross Tabulation between Education and Position

Education	Occupation						
	Manager	Officers	Supervisor	Clerk	Technician	Worker	Total
Primary School	0	0	0	0	0	1	1
LCE/SRP/PMR	0	1	4	0	3	51	59
MECE/SPM	3	12	8	9	74	361	42
HSC/STPM	2	1	1	1	0	0	5
Certificate/Sijil	1	1	0	1	3	0	6
Diploma/Diploma	2	0	0	0	6	1	9
Degree/Sarjana Muda	3	15	0	1	0	1	9
Master/Sarjana	2	0	0	0	0	0	2

4.3 The Validity and Reliability of the Instrument

4.3.1 Exploratory and Factor Analysis

Factor analysis was performed on the factors influencing safety compliance in Penfabric Mill 4. In order to validate whether the respondents perceived the six constructs to be distinct, factor analysis was done to all the items. Pattern matrix method was used in all the items in order to determine any underlying components for each variable. In order to reduce a large number of variables to a smaller set of underlying factors that summarized the essential information contained in the variables, the data reduction technique was used (Coakes & Steed, 2003). The result is shown in Appendix 1. Seven underlying factors were chosen. The results showed eigenvalues greater than 1.0 and the total variance explained was 57.868 % of the total variance.

KMO measure of sampling adequacy was 0.915 indicating sufficient enough inter correlations while the Bartlett's Test of Sphericity was significant (Chi square=5185.008, $p< 0.001$). The criteria used (Igbaria et al., 1995) to identify and interpret factors was that each item should load 0.50 or greater on one factor and 0.35 or lower on the other factor. The results of the factor analysis are shown in Table 4.11. These results confirmed that all items used to measure a particular construct loaded on a single factor and that each of these constructs were uni-dimensional and factorially distinct.

Table 4.11

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.915
Bartlett's Test of Sphericity	Approx. Chi-Square	5185.008
	Df	861
	Sig.	.000

Pattern matric was used to determine the factors influencing the safety compliance in Penfabric Mill 4. Appendix 2 shows the shifting of all the questions into new factors.

Based on the pattern matrix, it was found that many of the survey questions from a factor has shifted to other factors. The factor, survey questions, factor loading and also the cronbach alpha for every factor based on the pattern matrix is shown in detail in Appendix 3. Six out of nine items from Management Commitment have shifted to other factors. Four of these items shifted to Safety Training. Out of these four items, one of them is on whether management gives importance to safety and another item is whether training programmes gives priority to safety issues. As high priority is given on safety during trainings and employees are trained in a manner that safety is more important than production, these two items probably have shifted to Safety Training. The other two items that shifted to Safety Training are on the usage of personal protective equipments and corrective action on unsafe practices which are also closely related to Safety Training.

Two out of six items on Safety Training have shifted to Safety Communication and Feedback. This is because both of these questions are related to the Safety Training provided by the management with relation to hazard assessment and encouragement provided by management for employees to participate in training programmes. These items are closely related to Safety Communication and Feedback. One of the items from Safety Communication and Feedback has shifted to Safety Training and this item is on the management's open door policy on safety issues. This shift can be possibly due to the encouragement provided by the management on safety feedback from all levels of employees through training programmes.

Three out of five items in Workers' Participatioon have shifted to other factors. Two of the factors shifed to Safety Communication and Feedback. One of the two items is on the consultation of management on issues related to health and safety and the other item is on whether management welcomes the opinion from employees for decision making. Both of these items are related to consultation between management and employees and can be closely related to Safety Communication and Feedback. One of the items in Workers' Participation has shifted to Safety Rules and Procedures. This item is a question on whether employees should participate in identifying safety problems in the organization. This item has shifted as it can be also categorised as part of adherence to Safety Rules and Procedures.

Two out of five items in Safety Rules and Procedures have shifted to Workers' Participation. One of this items is a question on whether safety inspections are carried out regularly. As safety inspections are participated by all levels of employees, it can also represent workers' participation. The other item is whether

supervisors and managers enforce safe working procedures and this can also be attributed to participation of employees from various levels in the organization.

Four out of seven items on Safety Compliance have shifted to Workers' Participation. All of these four questions are related to safe working procedures such as I follow correct safety rules, I carry out work in safe manner, I ensure highest safety in doing my job and I use all necessary safety equipment. These four items can be also categorised as the workers' participation in the organization's efforts on safe working procedures in order to prevent accidents.

4.3.2 Internal Reliability Analysis

Sekaran and Bougie (2010) suggest that Cronbach Alpha coefficient of lesser than 0.6 is generally considered to be poor, those in the 0.7 range, to be acceptable and those over 0.8 to be good. If the value was lower than 0.5, one of the items must be deleted to get the value of more than 0.5. Table 4.12 shows the Cronbach Alpha value for all the variables. All the independent variables had Cronbach Alpha value more than 0.6, so it can be considered that all the variables were reliable and acceptable. The values obtained for all the six variables were considered very well. Management Commitment had the highest reliability of 0.823 followed by Safety Training (0.781), Safety Promotional Policies (0.778), Safety Rules and Procedures (0.751) and Workers' Participation (0.745). Safety Communication and Feedback had the lowest reliability of 0.704. Table 4.15 also shows that there are 6 items from Management Commitment, 3 items from Safety Training, 2 items from Safety Communication and Feedback, 3 items from Workers' Participation, 3 items from

Safety Rules and Procedures, 1 item from Safety Promotional Policies and 4 items from Safety Compliance which have shifted to other factors shown in in Table 4.12.

Table 4.12

Variables and Cronbach's Alpha

Variables	Original Items	Shifted Items	Shifted to following Variables						Ommited	Cronbach's
			MR	ST	SCF	SPP	WP	SRP	SC	Items	Alpha
MC	9	6	-	4	0	0	2	0	0	0	0.823
ST	6	3	0	-	2	0	0	0	0	1	0.781
SCF	5	2	0	1	-	0	0	0	0	1	0.704
SPP	5	1	0	0	0	-	0	0	0	1	0.745
WP	5	3	0	0	2	0	-	1	0	0	0.751
SRP	5	3	0	0	1	0	2	-	0	0	0.778
SC	7	4	0	0	0	0	4	0	-	0	0.801

Note: MC= Management Commitment, WP= Workers' Participation, ST= Safety Training, SCF=Safety Communication and Feedback, SRP= Safety Rules and Procedures SPP= Safety Promotional Policies and SC= Safety Compliance

4.4 Descriptive Statistics

The independent and dependent variables were measured in a 6-point Likert scale. The mean and the standard deviation of all the variables are summarized in Table 4.13 below. The mean of all the variables is ranged from 4.626 to 5.075. The mean for Safety Compliance was the highest and the mean of Safety Promotional Policies was the lowest. The standard deviation of all the variables ranged from 0.677 to 1.564. The highest standard deviation was for Safety Promotional Policies and the lowest was for Management Commitment.

Table 4.13

Descriptive Statistic for Major Variable

Variables	Mean	Standard Deviation
Management Commitment	4.878	0.835
Workers' Participation	5.193	0.583
Safety Training	5.130	0.642
Safety Communication and Feedback	4.961	0.667
Safety Rules and Procedures	4.823	0.890
Safety Promotional Policies	4.561	0.982
Safety Compliance	5.075	1.070

4.5 Cross tabulation of Safety Compliance (Descriptive Statistic)

4.5.1 Cross Tabulation of Safety Compliance against Gender

Table 4.14 shows the cross tabulation between safety compliance and gender. Male respondents constituted 79.0 % of the 243 respondents. Female respondents constituted to 21.0 % of the 243 respondents. Based on the survey, 22 out of 192 male employees agree with safety compliance (88.5 %) and 46 out of 51 female employees agree with safety compliance (90.2%). The overall percentage of male and female employees who agree on safety compliance is 78.7 % and 21.3 % respectively. This data on safety compliance is almost similar to the constitution of respondents by gender which is 79% male and 21% female employees. This means that both male and female employees have almost similar perceptions of safety compliance in this organization. The organization has managed to influence both the male and female employees on safety compliance.

Table 4.14

Cross Tabulation of Safety Compliance against Gender

Gender	Compliance		Total
	Disagree	Agree	
Male	22 (81.5%)	170 (78.7%)	192 (79.0%)
Female	5 (18.5%)	46 (21.3%)	51 (21.0%)
Total	27 (100%)	216 (100%)	243 (100.0%)

4.5.2 Cross Tabulation of Safety Compliance against Education

Table 4.15 shows the cross tabulation between safety compliance and education. There were 216 out of 243 (88.9%) employees who agreed with safety compliance. Employees with SPM were 58.4% and constituted to the majority of the total workforce. Employees with SPM constituted to 57.4% of the total employees who agreed with safety compliance. The second biggest group was those with SRP who constituted to 26.4%. The percentage data on those employees with SRP (26.4%) and SPM (57.4%) who agreed on safety compliance was almost similar to the constitution of respondents who have SRP (24.3%) and SPM (58.4%).

Table 4.15

Cross Tabulation of Safety Compliance against Education

Education	Compliance		Total
	Disagree	Agree	
Primary School	0 (0%)	1(0.5%)	1 (0.4%)
SRP	2 (7.4%)	57 (26.4%)	59 (24.3%)
SPM	18 (66.7%)	124 (57.4%)	142 (58.4%)
STPM	1 (3.7%)	8 (3.7%)	5 (2.1%)
Certificate	2 (7.4%)	4 (1.9%)	6 (2.5%)
Diploma	1 (3.7%)	8 (3.7%)	9 (3.7%)
Degree	3 (11.1%)	16 (7.4%)	19 (7.8%)
Master	0 (0%)	2(0.9%)	2 (0.8%)
Total	27 (100%)	216 (100%)	243 (100%)

4.5.3 Cross Tabulation of Safety Compliance against Position

Table 4.16 shows the cross tabulation between safety compliance and position. There were 216 out of 243 (88.9%) employees who agreed with safety compliance. Technicians and workers constituted to 35.8% and 36.6% of the total workforce respectively. Technicians and workers who constitute to those who agreed with safety compliance were 33.3% and 39.8% respectively of the total workforce. All the managers and supervisors agreed on safety compliance but there seemed to be 7 out of 30 officers who disagreed with safety compliance.

Table 4.16

Cross Tabulation of Safety Compliance against Position

Education	Compliance		Total
	Disagree	Agree	
Manager	0 (0%)	13 (6.0%)	192 (5.3%)
Officer	7 (25.9%)	23 (10.6%)	30 (12.3%)
Supervisor	0 (0%)	13 (6.0%)	13 (5.3%)
Clerk	2 (7.4%)	9 (4.2%)	11 (4.5%)
Technician	15 (55.6%)	72 (33.3%)	87 (35.8%)
Workers	3 (11.1%)	86 (39.8%)	89 (36.6%)
Total	27 (100%)	216 (100%)	243 (100.0%)

4.5.4 Cross Tabulation of Safety Compliance against Year of Service

Table 4.17 shows the cross tabulation between safety compliance and year of service. Employees working for more than 21 years constituted to 32.1% of the total workforce. The percentage of employees who agreed with safety compliance from this group was 31.0%. Employees working for 11 to 15 years constituted to 20.2% of the total workforce and the percentage of employees who agreed with safety compliance from this group was 20.4%. Employees working for 1 to 5 years constituted to 20.6% of the total workforce and the percentage of employees who agreed with safety compliance from this group was 21.3%. There was no trend in the safety compliance between various groups with different years of services.

Table 4.17

Cross Tabulation of Safety Compliance against Year of Service

Year of Service	Compliance		
	Disagree	Agree	Total
<1year	3 (11.1%)	13 (6.0%)	16 (6.6%)
1-5 Years	4 (14.8%)	46 (21.3%)	50 (20.6%)
6-10 Years	1 (3.7%)	17 (7.9%)	18 (7.4%)
11-15 Years	5 (18.5%)	44 (20.4%)	49 (20.2%)
16-20 Years	3 (11.1%)	29 (13.4%)	32 (13.2%)
>21 Years	11(40.7%)	67 (31.0%)	78 (32.1%)
Total	27 (100%)	216 (100%)	243 (100.0%)

4.6 Hypothesis Testing

4.6.1 Correlations

In this research, there were 7 hypothesis designed to achieve the purpose of this study. Six hypotheses (Hypothesis H1a to H6) were to study the relationship between the independent variables and the dependent variables. A bivariate Pearson's product-moment correlation coefficient was computed to assess the relationship between he Independent Variables (Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies) and Dependent Variable (Safety Compliance).

Hypothesis H1:

There is a significant relationship between Management Commitment and Safety Compliance in this organization.

Hypothesis H2:

There is a significant relationship between Workers' Participation and Safety Compliance in this organization.

Hypothesis H3:

There is a significant relationship between Safety Training and Safety Compliance in this organization.

Hypothesis H4:

There is a significant relationship between Safety Communication and Feedback and Safety Compliance in this organization.

Hypothesis H5:

There is a significant relationship between Safety Rules and Procedures and Safety Compliance in this organization.

Hypothesis H6:

There is a significant relationship between Safety Promotional Policies and Safety Compliance in this organization.

The results of the inter-correlations among the variables are shown in Table 4.18

Hypothesis H1:

From Table 4.18, it shows that there was a positive correlation between Management Commitment and Safety Compliance, where $r = 0.445$, $n = 243$, $p < 0.01$. Thus, alternate hypothesis was accepted. This means that Management Commitment has significant correlations with Safety Compliance.

Hypothesis H2:

From Table 4.18, it shows that there was a positive correlation between Workers' Participation and Safety Compliance, where $r = 0.405$, $n = 243$, $p < 0.01$. Thus, alternate hypothesis was accepted. This means that Workers' Participation has significant correlations with Safety Compliance.

Hypothesis H3:

From Table 4.18, it shows that there was a positive correlation between Safety Training and Safety Compliance, where $r = 0.376$, $n = 243$, $p < 0.01$. Thus, alternate hypothesis was accepted. This means Safety Training has significant correlations with Safety Compliance.

Hypothesis H4:

From Table 4.18, it shows that there was a positive correlation between Safety Communication and Feedback and Safety Compliance, where $r = 0.456$, $n = 243$, $p < 0.01$. Thus, alternate hypothesis was accepted. This means that Safety Communication and Feedback have significant correlations with Safety Compliance

Hypothesis H5:

From Table 4.18, it shows that there was a positive correlation between Safety Rules and Procedures and Safety Compliance, where $r = 0.481$, $n = 243$, $p < 0.01$. Thus, alternate hypothesis was accepted. This means that Safety Rules and Regulations have significant correlations with Safety Compliance.

Hypothesis H6:

From Table 4.18, it shows that there was a positive correlation between Safety Promotional Policies and Safety Compliance, where $r = 0.479$, $n = 243$, $p < 0.01$. Thus, alternate hypothesis was accepted. This means that Safety Promotional Policies have significant correlations with Safety Compliance.

Independent variables Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies have significant correlations with Safety Compliance.

Table 4.18

Inter-correlations among the variables

		ST	SPP	WP	SCF	MC	SRP	SC
ST	Pearson Correlation	1						
	Sig. (2-tailed)							
	N	243						
SPP	Pearson Correlation	.457**	1					
	Sig. (2-tailed)	.000						
	N	243	243					
WP	Pearson Correlation	.742**	.385**	1				
	Sig. (2-tailed)	.000	.000					
	N	243	243	243				
SCF	Pearson Correlation	.697**	.552**	.626**	1			
	Sig. (2-tailed)	.000	.000	.000				
	N	243	243	243	243			
MC	Pearson Correlation	.476**	.434**	.475**	.504**	1		
	Sig. (2-tailed)	.000	.000	.000	.000			
	N	243	243	243	243	243		
SRP	Pearson Correlation	.482**	.582**	.444**	.575**	.466**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000		
	N	243	243	243	243	243	243	
SC	Pearson Correlation	.376**	.479**	.405**	.456**	.445**	.481**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	243	243	243	243	243	243	243

Note: MC= Management Commitment, WP= Workers' Participation, ST= Safety Training, SCF=Safety Communication and Feedback, SRP= Safety Rules and Procedures, SPP= Safety Promotional Policies and SC= Safety Compliance

** Correlation is significant at the 0.01 level (2-tailed).

4.6.2 Regression Analysis

Hypothesis 7 was to study the influence between the independent variables and the dependent variable. Regression analysis was performed to find which of the Independent variables have positive influence towards the Dependent Variable, which is Safety Compliance.

Hypothesis 7

Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies influence Safety Compliance in this organization.

Table 4.19 shows the R square values and Table 4.20 shows the F value and Significant Value. Table 4.21 shows the regression analysis of the variables.

The p value for Management Commitment is 0.006 < 0.05, we shall accept the alternative hypothesis. At α=0.05 level of confidence, Management Commitment has influence in Safety Compliance in this organization.

The p value for Safety Rules and Procedures is 0.010 < 0.05, we shall accept the alternative hypothesis. At α=0.05 level of confidence, Safety Rules and Procedures has influence in Safety Compliance in this organization.

The p value for Safety Promotional Policies is 0.002 < 0.05, we shall accept the alternative hypothesis. At α=0.05 level of confidence, Safety Promotional Policies has influence in Safety Compliance in this organization.

The p value for Safety Training is 0.369 > 0.05, we shall reject the alternative hypothesis. At α=0.05 level of confidence, Safety Training has no influence in Safety Compliance in this organization.

The p value for Safety Communication and Feedback is 0.068 > 0.05, we shall reject the alternative hypothesis. At α=0.05 level of confidence, Safety Communication and Feedback has no influence in Safety Compliance in this organization.

The p value for Workers' Participation is 0.229 > 0.05, we shall reject the alternative hypothesis. At α=0.05 level of confidence, Workers' Participation has no influence in Safety Compliance in this organization.

In this study, hypothesis testing shows that Management Commitment, Safety Rules and Procedures and Safety Promotional Policies have positive influence towards Safety compliance. On the other hand, Safety Training, Safety Communication and Feedback and Workers' Participation have no positive influence towards Safety Compliance in this organization.

Table 4.19

Model Summary

Model	R	Square	Adjusted R Square	Std. Error of Estimate
1	0.5919	0.349	0.333	0.87396

a. Predictors: (Constant), MC, WP, ST, SCF, SRP and SPP

Note: MC= Management Commitment, WP= Workers' Participation, ST= Safety Training, SCF=Safety Communication and Feedback, SRP= Safety Rules and Procedures and SPP= Safety Promotional Policies and SC= Safety Compliance

Table 4.20

Anova

Model	Sum of Squares	df	Mean Squar	F	Sig.
1 Regression	96.815	6	16.136	21.126	.000a
Residual	180.256	236	.764		
Total	277.071	242			

a. Predictors: (Constant), MC, WP, ST, SCF, SRP and SPP

b. Dependent Variable: Safety Compliance

Note: MC= Management Commitment, WP= Workers' Participation, ST= Safety Training, SCF=Safety Communication and Feedback, SRP= Safety Rules and Procedures and SPP= Safety Promotional Policies and SC= Safety Compliance

Table 4.21

Regression Analysis Output of SPSS

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.028	.529		-.053	.958
	ST	.132	.147	-.079	-.901	.369
	SPP	.235	.075	.216	3.117	.002
	SCF	.274	.150	.149	1.833	.068
	WP	.161	.134	.101	1.206	.229
	MC	.233	.083	.182	2.802	.006
	SP	.222	.085	.185	2.596	.010

a. Dependent Variable: Safety Compliance

Note: MC= Management Commitment, WP= Workers' Participation, ST= Safety Training, SCF=Safety Communication and Feedback, SRP= Safety Rules and Procedures, SPP= Safety Promotional Policies and SC= Safety Compliance

Table 4.22 shows the results of the hypothesis testing (regression analysis output of SPSS). Management Commitment, Safety Rules and Procedures Safety and Promotional Policies have influence towards safety compliance in this organization. Safety Training, Safety Communication and Feedback and Workers' Participation have no influence towards safety compliance in this organization. Table 4.22 shows the summary of all the hypothesis testing.

Table 4.22

Summary of Hypothesis Testing

Hypothesis	Description	Results
1	There is a relationship between Management Commitment and Safety Compliance in this Organization	**Supported**
2	There is a relationship between Workers' Participation and Safety Compliance in this organization	**Supported**
3	There is a relationship between Safety Training and Safety Compliance in this Organization	**Supported**
4	There is a relationship between Safety Communication and Feedback Management and Safety Compliance in this organization	**Supported**
5	There is a relationship between Safety Rules and Procedures and Safety Compliance in this Organization	**Supported**
6	There is a relationship between Safety Promotional Policies and Safety Compliance in this Organization	**Supported**
7	Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures, Safety Promotional Policies influence Safety Compliance in this organization	**Supported** Management Commitment Safety Rules and Procedures Safety Promotional Policies **Not Supported** Safety Training Workers' Participation Safety Communication and Feedback

4.6.3 Discussion on Hypothesis Testing Results

4.6.3.1 Management Commitment and Safety Compliance

The Management Commitment has significant correlation and influence safety compliance in this research. Zohar (1980) in his investigation found that the commitment of top management to safety and health management is a major factor that will affect the organization's safety programs. This study revealed that Management Commitment has positive influence on Safety Compliance. Previous studies also revealed that the top management's commitment to the safety and health management is vital for a good safety performance of that organization (Fernández-Muniz et al., 2009; Parker et al., 2001; Vredenburgh, 2002; Zohar, 1982). In the study conducted in 1992 at the Veteran's Hospital (VAMC) the leadership given by the top management was the main reason behind the reduction in the number of accidents. The Medical Center Director who represents the top management was very committed and this project would have failed without the support from top management (Garrett & Perry, 1996). In this organization, the Factory Manager is the Chairman of the Safety and Health Management System. All the safety programs and activities are directly under his charge. This shows the commitment from the top management that Safety is the upmost priority in this organization.

4.6.3.2 Safety Rules and Procedures and Safety Compliance

This research also revealed that Safety Rules and Procedures have significant correlation and influence on safety compliance. The respondents feel that if adequate Safety Rules and Procedures are in place then it will give a better chance or possibility to achieve good safety compliance. The finding of this research is also similar to that of Dilda et al. (2009), that achieving compliance through documented

safety rules and procedures are important to achieve good safety and health performance. Other studies have also revealed that safety rules and procedures are important for the safety compliance (Cox & Cheyne 2000; Glendon & Litherland 2001; Guldelmund 2007; Mearns et al., 2003).

4.6.3.3 Safety Promotional Policies and Safety Compliance

The findings of this research show that Safety Promotional Policies have significant correlation and influence safety compliance in this research. Previous studies found that safety Promotional Policies (Dejoy et al., 2010; Forrester et al., 1996; Geldart et al., 2010) are an important factor for safety compliance. Good safety and health programs can help the organizations to create a safer way of operations and therefore results in a safe working environment for the employees. This can substantially reduce the number of accidents (Abdelhamid & Everett, 2000; Anton, 1989; Rowlinson, 2003). Organizing safety promotional policies is one of the most effective ways to improve safety performance at workplace (Hislop, 1991; Tam et al., 2004). An effective safety program can embed and cultivate a good safety culture in organizations. This is because a good safety program can enhance the co-operation between the top management and employees and also the decisions that may effect their safety and health at workplace. This company conducts a lot of safety promotional programs such as monthly safety meetings, monthly safety audit, traffic safety campaign, safety slogan and drawing competition, health promotion, safe work campaigns and others.

4.6.3.4 Safety Communication and Feedback and Safety Compliance

Based on this study, Safety Communication and Feedback have correlation with Safety Compliance. These findings are in agreement with previous studies. Kletz, (1993) found that the feedback of employees' performance on safety and health is important because the behavior that resulted in industrial accidents is not new occurrences. Other studies conducted by Cohen (1977), Cox and Cheyne (2000), Mearns et al. (2003) Vredenburgh (2002) also showed that the performance with regards in an organization is affected by the effectiveness of the communication and feedback. This research also found that Safety Communication and Feedback has no influence on Safety Compliance in this organization. In this organization, the main Safety Meeting is held on a monthly basis and safety informations are channeled down to the employees through their respective section managers and supervisors. However, other safety communications are not carried out on a regular basis. Vinodkumar and Bhasi (2010) reported that a good way to improve the safety performance at workplace is through regular communication between management and employees. Safety performance can be communicated to the workers through regular meetings, notice boards, newsletters, poster, phamplets and discussion on behavior at safety meetings (Roughton, 1993). The organization needs to further improve on Safety Communication and Feedback.

4.6.3.5 Safety Training and Safety Compliance

Safety Training has correlation with Safety Compliance in this study. Previous review of literatures revealed that Safety Training is an important factor for safety compliance (Fernandez-Muniz et al., 2007; Griffin & Neal, 2000; Vredenburgh, 2002; Zohar 1980). This study revealed that Safety Training has no influence on Safety Compliance in this organization. Safety trainings provided by

this organization were developed based on past experiences and advice from the parent company. Perhaps the employees feel that they should be involved in the creation and establishment of the Safety Training programs. Griffin and Neal (2000) commented that each employee treats training differently. Their response will depend on how involved the employee is in the organization. The employees will be supportive only when they take ownership of the training program. When the employees are positive, it is more likely that they will be supportive about the changes introduced by the program. Employees may not be interested in the safety programs if the management does not involve them at the development stage of safety programs. This will not be an encouraging factor in the implementation of learning and thus building a safe culture will be more difficult. The management should involve the employees in the development of the training programs. There are regular trainings conducted by the safety department but there is no emphasis on training at a workgroup level. There is a gap between the training programs and safety discussions at workgroup level. Edwards et al. (2009) conducted a study on a multinational, high technology firm that produces various computer parts and also accessories called Westec. He found that there were a lot of discussions in workgroup meetings on weekly basis about safety. The employees regard safety is highly valued in their organization when their top management provides extensive safety training. The responsibility of building a safety culture is being shared between employer and employees at Westec. Efforts should be made to enhance safety training with meetings and discussions at workgroup level.

4.6.3.6 Workers' Participation and Safety Compliance

This study found that Workers' Participation has correlation with Safety Compliance. Previous studies show that employees participation is an important factor for safety compliance (Biggs et al., 2005; Gevers, 1983; O'Toole, 1999; Khairiah, 2008; Vredenburgh, 2002). However, based on this research Workers' Participation has no influence on Safety Compliance in this organization. The respondents feel that workers participation will not enhance the safety compliance. In this organization, the commitment from the top management on safety issues is very strong. This is an old organization, which has existed for over 35 years. All the safety policies and the rules and regulations were formulated by the top management. Employees were not involved in the decision making process. This practice is very close to the observation made by Blair and Geller (2000) that traditionally, the employer is responsible for accident prevention at workplace and it is the duty of the employer to establish the rules and procedures and also make changes and decisions. Perhaps at this point we can conclude that employees are not involved in the decision making process. However, now we can accept that the decisions on the aspect of safety and health should not be undertaken by experts or the top management alone (Johnstone et al., 2005). In theory, the most qualified person who can make safety improvement at work is the employee himself as he is the one who is closest to the work (Vredenburgh, 1998). Wharton (2003) also commented that the safety performance is higher and increases when the employees are allowed to be a part of the decision-making process. Safety performance is increased because the first-hand knowledge of the workplace and it's operations make it possible for the employee to identify hazards and also offer proposals and

recommendations for improvement. This involvement will also enhance the commitment of both employer and employee to address the hazards at workplace.

It can be summarized that Management Commitment, Safety Rules and Procedures and Safety Promotional Policies are important in order to achieve safety compliance. Safety Training is an important factor for safety compliance but the development of the Safety Training programs should involve the employees so that they will be keen and interested in the implementation of their development. Workers' participation is an important factor for safety compliance and employees must be allowed to participate in the decision making process. Safety Communication and Feedback is an important factor for Safety Compliance but it must be carried out on a regular basis.

CHAPTER FIVE

CONCLUSION AND RECOMENDATION

5.0 Introduction

The purpose of this chapter is to discuss the findings from the analysis performed in chapter 4. It contains conclusions and recommendations on the study that had been done based on the analyzed data.

5.1 Summary of Research Findings

Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies have correlations with Safety Compliance. Management Commitment, Safety Rules and Procedures and Safety Promotional Policies have positive influence towards Safety compliance. On the other hand, Safety Training, Safety Communication and Feedback and Workers' Participation have no positive influence towards Safety Compliance in this organization. This research has achieved its general objectives to determine the predictors of Safety Compliance in Penfabric Mill 4. Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies have correlation with Safety Compliance in this organization. Management Commitment, Safety Rules and Procedures and Safety Promotional Policies influence the Safety Compliance in this organization. Safety Training, Safety Communication and Feedback and Workers' Participation do not have significant influence on Safety Compliance in this study.

5.2 Research Contribution

5.2.1 Theoretical Contribution

This study was designed to identify the predictors of safety compliance in Penfabric Mill 4. Among the other contributions of this study to the academic and Occupational Safety and Health practitioners are providing evidences that:

i) Independent variable Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies have correlations with Safety Compliance in this organization.

ii) Management Commitment, Safety Rules and Procedures and Safety Promotion Policies have positive influence towards safety compliance in this organization.

iii) Safety Training, Safety Communication and Feedback and Workers' Participation have no positive influence towards Safety Compliance in this organization even though there is correlation.

iv) Workers' involvement is necessary for the development of training programme and work group discussions are necessary for effective training programme. The workers must be involved in the decision-making and regular feedback on safety performance is needed for good safety compliance. Safety Communication and Feedback must be carried out on regular basis.

The findings reaffirm that Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies have correlation with Safety Compliance.

5.2.2 Managerial Implications

Based on the findings of this research, the management is strong in terms of its commitment to provide a good safety management system. The benefit from this study is an understanding that the organization should maintain this commitment shown on safety management as this is an important factor for safety compliance. The management should also maintain the existing safety rules and procedures and also the promotion of policies which have resulted in good safety compliance.

This study also found that training does not have significant influence on safety compliance. The management should look into ways to improve the safety training by involving the employees in the development of training programs rather than depending on the training delivered down from its parent company. The safety communication and feedback does not have significant influence on safety compliance. The management should also find ways to conduct meetings and discussions at workgroup level and involve employees in the process of decision making and communicate safety performance to employees.

This study has also found that Workers' Participation has no influence towards Safety Compliance. All the safety policies and the rules and regulations were formulated by the top management long ago. Workers were not involved in the decision making process. The management must recognize that employees are those who are close to the work and must allow them to make decisions about safety and also job improvement at their respective workplace.

5.3 Limitations and Future Research Direction.

The present study is designed to examine the relationship and influence of the independent variables and safety compliance in Penfabric Mill 4. This result can benefit the Penfabric Mill 4 on the program planning and implementation as a way to further improve the Occupational Safety and Health Management System in the organization to ensure a safer and healthier work place. However the results of the study have several limitations, which are listed below:

i) The present study concentrated only on respondents who are working in Penfabric Mill 4. The sample is very small to represent the factors influencing the dependent variable in other organizations.

ii) The feedback depends on the understanding and the kind and voluntary cooperation of the respondents. Furthermore, the responses that have been received may not have been consistent on an accurate measure. The accuracy as well as honest answering of the questions might affect the study as well.

iii) The respondents were requested to complete the questionnaires during their working hours. Their work commitment, schedule and tensions at the time of answering the questionnaires may have inconsistencies and inaccuracies of the answers.

As with most research, the results and findings of this study have led to additional knowledge and the need for further research. The areas that need further understanding are as follows. This study only focused on respondents in one manufacturing mill. Therefore further research should be carried out to a wide population of manufacturing organizations. As this study is focused on a Japanese

Multinational company, future research should include other multinational companies. The reason being certain organizations might experience different challenges in managing their occupational safety and health management system, culture or have different levels of achievements as well as working environment. The feedback depends on the understanding and the voluntary co-operation of the respondents. Future research should be conducted as a company program so that all employees will participate as part of their responsibility rather than a voluntary co-operation. It would be good if the employees are given some time off to complete the questionnaire during their working hours rather than leaving the questionnaire with them for four days. In this way the employees can focus and complete the questionnaire more diligently. It is also recommended that future research should involve personal interviewing of employees besides the questionnaires survey. This is based on the fact that interviewing can lead to complete analysis of the questions as well as clarification and reduce biasness.

5.4 Recommendation for the Organization

The recommendations are basically in line with the achievements based on the objectives of the research as presented in chapter 1:

- To examine the relationship between Management Commitment, Workers' Participation, Safety Training, Safety Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies and Safety Compliance.
- To investigate whether Independent Variables (Management Commitment, Workers' Participation, Safety Training, Safety

Communication and Feedback, Safety Rules and Procedures and Safety Promotional Policies) influence Safety Compliance.

- To recommend courses of action to the organization and other companies with regards to safety compliance.

Improvement is needed in a few areas in order to bring up the safety compliance. The management should focus on Safety Training, Workers' Participation and Safety Communication and Feedback while maintaining the current practice on the Management Commitment, Safety Promotional Policies and its Safety Rules and Procedures. Safety Training needs to be reviewed by involving the employees who are doing the work and must be well communicated to all employees at their work group level. Efforts should be made to enhance safety training with meetings and discussions at workgroup level. In this way, the responsibility to create a safety culture will be shared with employees. Workers' Participation should be improved by allowing them in the process of decision-making. The organization can increase the participation among all workers through creating a sense of belonging and responsibility to ensure all safety programs and safety initiatives are implemented effectively. Workers who participated in safety activities must be rewarded accordingly on a monthly or yearly basis. This can be achieved by putting the safety ownership into their annual appraisal checklist. Table 5.1 shows the action plan formulated in order to improve the safety compliance based on the findings of this research.

Table 5.1

Action Plan for further improvement on Safety Compliance

No	Independent Variable	Action to be taken	Responsibility
1	Management Commitment	Maintain existing practices	Department Manager
2	Safety Rules and Procedures	Maintain existing practices	Department Manager
3	Safety Promotional Policies	Maintain existing practices	Department Manager
4	Safety Training	i) Involve employees in the development of the Safety Training programs ii) Conduct meetings and discussions at workgroup level.	Department Manager & Section Managers
5	Workers' Participation	i) Involve workers to participate in decision-making meetings.	Department Manager
6	Safety Communication and Feedback	i) Do regular feedback on safety performance through posted charts	Department Manager

5.5 Conclusions.

In conclusion, this research has achieved its general objectives to determine the predictors of Safety Compliance in Penfabric Mill 4. Management Commitment, Safety Rules and Procedures and Safety Promotional Policies are the most important factors that have significant influence towards the Safety Compliance in this organization. Safety Training, Safety Communication and Feedback and Workers' Participation have direct correlation with safety compliance but do not have significant influence on Safety Compliance in this organization. This research has also revealed the relationship and differential demographic variables or independent variables collectively with dependent variables. In conclusion, it can be said that this study has successfully attained the research objectives in identifying the important predictors influencing the safety compliance in Penfabric Mill 4.

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APPENDIX 1

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.926	33.158	33.158	13.437	31.994	31.994
2	3.201	7.621	40.779	2.732	6.505	38.499
3	1.952	4.648	45.427	1.492	3.553	42.052
4	1.444	3.439	48.866	.985	2.344	44.397
5	1.340	3.190	52.056	.879	2.093	46.490
6	1.311	3.123	55.179	.803	1.911	48.401
7	1.129	2.689	57.868	.611	1.455	49.856
8	1.004	2.390	60.258			
9	.964	2.296	62.554			
10	.902	2.147	64.701			
11	.857	2.041	66.742			
12	.816	1.943	68.685			
13	.798	1.901	70.586			
14	.773	1.840	72.42			
15	.764	1.819	74.245			

Table Continues

Total Variance Explained (Continuation)

Factor	Initial Eigenvalues	Extraction Sums of Squared Loadings	Factor	Initial Eigenvalues	Extraction Sums of Squared Loadings	Factor
	Total	% of Variance		Total	% of Variance	
16	.710	1.691	75.936			
17	.688	1.639	77.575			
18	.639	1.521	79.096			
19	.615	1.464	80.560			
20	.600	1.429	81.989			
21	.533	1.270	83.259			
22	.519	1.237	84.495			
23	.503	1.197	85.693			
24	.496	1.181	86.874			
25	.484	1.152	88.026			
26	.448	1.067	89.093			
27	.413	.983	90.076			
28	.398	.947	91.023			
29	.374	.892	91.915			
30	.350	.834	92.749			

Table Continues

Total Variance Explained (Continuation)

Factor	Initial Eigenvalues	Extraction Sums of Squared Loadings	Factor	Initial Eigenvalues	Extraction Sums of Squared Loadings	Factor
	Total	% of Variance		Total	% of Variance	
31	.346	.825	93.573			
32	.340	.810	94.383			
33	.327	.779	95.163			
34	.311	.740	95.903			
35	.290	.691	96.594			
36	.261	.622	97.216			
37	.231	.550	97.766			
38	.223	.532	98.298			
39	.212	.504	98.802			
40	.198	.471	99.273			
41	.157	.373	99.646			
42	.149	.354	100.000			

Extraction Method: Principal Axis Factoring

APPENDIX 2

Pattern Matrix [a]

Item Code	Factor 1	2	3	4	5	6	7
MR5	.585						
MR2	.582						
ST3	.519						
MR3	.495						
ST2	.448						
MR9	.382						
SCF2	.373	.302					
ST1	.327						
SPP4		.731					
SPP3		.648					
SPP2		.537					
SPP1		.430					.321
SC6			.855				
SC5			.739				
SC7			.536				

Table Continues

Pattern Matrix (Continuation)

Item Code	Factor 1	2	3	4	5	6	7
SCF4							
SC3				-.796			
SC2				-.755			
SC4				-.753			
SC1				-.622			
WP2				-.517			
SRP3				-.411			
MR1	.373			-.393			
WP3				-.386	-.365	.346	
MR8	.301			-.346			
SRP4				-.309			
SPP5							
SCF5					-.554		
SCF3					-.474		
SRP5					-.448		
WP1		.336			-.448		
ST6					-.448		

Table Continues

Pattern Matrix (Continuation)

Item Code	Factor 1	2	3	4	5	6	7
SCF1					-.398		
ST5					-.391		
MR6						.495	
MR7						.464	
MR4	.307					.421	
SRP2						.321	.451
SRP1							.396
WP5							.300
ST4							

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.
[a] *Rotation converged in 29 iterations.*

APPENDIX 3

Factor and the factor loading

Item Code	Factor	Factor Loading
	Factor 1: Safety Training	
MC5	Management considers safety to be equally important as production.	.585
MC2	Safety rules and procedures are strictly followed by the management.	.582
ST3	Safety issues are given high priority in training programmes.	.519
MC3	Corrective action is always taken when the management is told about unsafe practices.	.495
ST2	Newly recruits are trained adequately to learn safety rules and procedures.	.448
MC9	My company provides sufficient personal protective equipments for the workers.	.382
SCF2	Management operates an open door policy on safety issues.	.373
ST1	My company gives comprehensive training to the employees in work place on health and safety issues.	.327
Percentage of variance explained		31.994
Cronbach's Alpha (8 items)		0.781
	Factor 2: Safety Promotion Policies	
SPP4	There exists very healthy competition among the employees to find out and report on unsafe condition and acts.	.731
SPP3	In my company safety week celebration and other safety promotional activities arranged by the management are very effective in creating safety awareness among the workers.	.648
SPP2	In my company employees are rewarded for reporting safety hazards (thanked, cash or other rewards, recognition in newsletter etc).	.537

Table Continues

Factor and Factor Loading (Continuation)

Item Code	Factor	Factor Loading
SPP1	In my company safe conduct is considered as a positive factor for job promotions.	.430
Percentage of variance explained		6.505
Cronbach's Alpha (4 items)		0.778
	Factor 3: Workers Participation	
SC3	I follow correct safety rules and procedures while carrying out my job.	-.796
SC2	I carry out my work in a safe manner.	-.755
SC4	I ensure the highest levels of safety when I carry out my job.	-.753
SC1	I use all necessary safety equipment to do my job.	-.622
WP2	My company has safety committees consisting of representatives of management and employees.	-.517
SRP3	My supervisors and managers always try to enforce safe working procedures.	-.411
MC1	Safety is given high priority by the management.	-.393
WP3	Management promotes employees involvement in safety related matters.	-.386
MC8	When near-miss accidents are reported, my management acts quickly to solve the problems.	-.346
SRP4	Safety inspections are carried out regularly.	-.309
Percentage of variance explained		3.353
Cronbach's Alpha (10 items)		0.745
	Factor 4: Safety Communication and feedback	
SCF5	There is open communication about safety issues in this work place.	-.554

Table Continues

Factor and Factor Loading (Continuation)

Item Code	Factor	Factor Loading
WP4	Management consults with employees regularly about workplace health and safety issues.	-.544
SRP5	The safety procedures and practices in this organization are useful and effective.	-.448
WP1	Management always welcomes opinions from employees before making final decisions on safety related matters.	-.448
ST6	Safety training given to me is adequate to enable me to access hazards in workplace.	-.448
SCF1	My company doesn't have a hazard reporting system where employees can communicate hazard information before incidents occur.	-.398
ST5	Management encourages the workers to attend safety training programmes.	-.391
Percentage of variance explained		2.344
Cronbach's Alpha (10 items)		0.704
	Factor 5: Management Commitment	
MC6	Members of the management do not attend safety meetings.	.495
MC7	I feel that management is willing to compromise on safety for increasing production.	.464
MC4	In my workplace managers/supervisors do not show interest in the safety of workers.	.421
Percentage of variance explained		2.093
Cronbach's Alpha (3 items)		0.823
	Factor 6: Safety Rules and Procedures	
SRP2	The facilities in the safety department are not adequate to meet the needs of my organization.	.495

Table Continues

Factor and Factor Loading (Continuation)

Item Code	Factor	Factor Loading
SRP1	The safety rules and procedures followed in my company are sufficient to prevent incidents occurring.	.464
WP5	Employees do not sincerely participate in identifying safety problems.	.421
Percentage of variance explained		1.911
Cronbach's Alpha (3 items)		0.751
	Factor 7: Safety Compliance	
SC6	Occasionally due to over familiarity with the job, I deviate from correct and safe work procedures.	.451
SC5	Occasionally due to lack of time, I deviate from correct and safe work procedures.	.396
SC7	It is not always practical to follow all safety rules and procedures while doing a job.	.300
Percentage of variance explained		1.455
Cronbach's Alpha (3 items)		0.801

Note: MC= Management Commitment, ST= Safety Training, SCF=Safety Communication and Feedback, SPP= Safety Promotion Policies, WP= Workers Participation, SRP= Safety Rules and Procedures and SC= Safety Compliance.

APPENDIX 4

UNIVERSITI UTARA MALAYSIA

Dear Valued Respondants,

I am a researcher from University Utara Malaysia engaged in a study titled "Predictors of Safety Compliance among the Manufacturing Employees in Penfabric Mill 4". The principle aim of this research is to determine the extent to which factors like management commitment, workers participation, safety procedures, communication and feedback, training and promotion policies influence the safety compliance.

The information obtained from this study will be used purely for research purposes only and could provide valuable information that may be useful to all workplaces in Malaysia in determining steps that can be taken to reduce accidents at workplaces. All information provided in this questionnaire will be treated strictly confidential.

Should you have any queries regarding this research, please do not hesitate to contact Jaya Paul Dhas (Tel: 04-2820311, jayapauldhas@ gmail.com).

Thank you very much for your cooperation in answering the questionnaire. Please be acknowledged that your views and opinions on the matter would be highly appreciated.

Title: Predictors of Safety Compliance among the Manufacturing Employees in Penfabric Mill 4

Tajuk: Peramal Pematuhan Keselamatan di kalangan Pekerja-Pekerja Pembuatan di Penfabric Mill 4

Part A: Respondants Background

Bahagian A: Latar Belakang Demografi Responden

Mark √√ where applicable.

Sila tandakan √ *pada ruang yang disediakan.*

1. Gender/ *Jantina*

☐ Male / *Lelaki* ☐ Female / *Wanita*

2.Age/*Umur*

☐ 18 to 25 years old / *18-25 tahun*

☐ 26 to 35 years old / *26 tahun hingga 35 tahun*

☐ 36 to - 45 years old / *36 tahun hingga 45 tahun*

☐ 46 to 55 years old / *46 tahun hingga 55 tahun*

☐ Above 56 / *lebih 56 tahun*

3. Education / *Taraf pendidikan tertinggi*

☐ Primary School / *Sekolah Rendah*

☐ LCE / *PMR / SRP*

☐ MCE / *SPM*

☐ HSC / *STPM*

☐ Certificate / *Sijil*

☐ Diploma / *Diploma*

☐ Degree / *Sarjana Muda*

☐ Master / *Sarjana*

4. Ethnicity/Kaum:

☐ Malay / *Melayu* ☐ Chinese / *Cina* ☐ Indian / *India*

Others / *Lain-Lain*: _____ (Please specify)

5. Occupation/Pekerjaan:

Manager / Pengurus ☐ Supervisor / Penyelaras ☐

Officer / Pegawai ☐ Clerk / Kerani ☐

Technicians ☐ Worker ☐

Others : ☐ (please state): _____

6. How many years have you been working? Berapa lamakah anda telah berkerja?

☐ Less than 1 year / Kurang dari 1 tahun

☐ 1 – 5 years / 1-5 tahun

☐ 6 – 10 years / 6-10 tahun

☐ 11-15 years / 11-15 tahun

☐ 16-20 years / 16-20 tahun

☐ More than 21 years / Lebih 21 tahun

Part B / *Bahagian B*

For each of the following statements, please circle according to your knowledge as an employee of this company based on the following scale.

Bagi setiap pernyataan, sila bulatkan pilihan terbaik yang dapat menggambarkan pengetahuan anda sebagai pekerja di syarikat ini mengikut skala berikut.

Strongly disagree (SD) *Sangat tidak Bersetuju (STS)*	Disagree Moderately (DM) *Tidak Bersetuju-Sederhana (TBS)*	Disagree Slightly (DS) *Tidak Bersetuju-Sedikit (TBSt)*	Agree *Slightly (AS)* *Bersetuju-Sedikit (BSt))*	*Agree Moderately (AM)* *Bersetuju-Sederhana (BS)*	Strongly Agree (SA) *Sangat Bersetuju (SS)*
1	2	3	4	5	6

Managemant Commitment ***Komitmen Majikan***	SD *STS*	DM *TBS*	DS TBSt	AS BSt	*AM* *BS*	SA *SS*
1. Safety is given high priority by the management. *Pihak pengurusan memberi keutamaan kepada keselamatan.*	1	2	3	4	5	6
2. Safety rules and procedures are strictly followed by the management. *Peraturan dan prosedur keselamatan dipatuhi dengan tegas oleh pihak pengurusan.*	1	2	3	4	5	6
3. Corrective action is always taken when the management is told about unsafe practices. *Tindakan pembetulan sentiasa diambil oleh pihak pengurusan apabila tingkahlaku tidak selamat dilapurkan.*	1	2	3	4	5	6
4. In my workplace managers/supervisors do not show interest in the safety of workers. *Di tempat kerja saya, pegurus dan supervisor tidak menunjukan minat terhadap keselamatan pekerja.*	1	2	3	4	5	6
5. Management considers safety to be equally important as production. *Pengurusan mengambilkira keselamatan seperti sama penting dengan production (pengeluaran).*						

Strongly disagree (SD) *Sangat tidak Bersetuju (STS)*	Disagree Moderately (DM) *Tidak Bersetuju-Sederhana (TBS)*	Disagree Slightly (DS) *Tidak Bersetuju-Sedikit (TBSt)*	Agree *Slightly (AS)* *Bersetuju-Sedikit (BSt))*	*Agree Moderately (AM)* *Bersetuju-Sederhana (BS)*	Strongly Agree (SA) *Sangat Bersetuju (SS)*
1	2	3	4	5	6

Managemant Commitment ***Komitmen Majikan***		SD *STS*	DM *TBS*	DS TBSt	AS BSt	*AM* *BS*	SA *SS*
6	Members of the management do not attend safety meetings. *Wakil Pengurusan tidak menghadiri mesuarat keselamatan.*	1	2	3	4	5	6
7	I feel that management is willing to compromise on safety for increasing production. *Saya berpendapat bahawa pengurusan sanggup mengkompromasi isu keselamatan demi pengeluaran*.	1	2	3	4	5	6
8	When near-miss accidents are reported, my management acts quickly to solve the problems. *Apabila terjadi keadaan hampir kemalangan, pihak majikan mengambil tindakan penyelesaian dengan segera.*	1	2	3	4	5	6
9	My company provides sufficient personal protective equipments for the workers. *Majikan menyediakan alat alat dan pakaian keselamatan yang mencukupi kepada perkerja*	1	2	3	4	5	6

Strongly disagree (SD) *Sangat tidak Bersetuju (STS)*	Disagree Moderately (DM) *Tidak Bersetuju-Sederhana (TBS)*	Disagree Slightly (DS) *Tidak Bersetuju-Sedikit (TBSt)*	Agree *Slightly (AS)* *Bersetuju-Sedikit (BSt))*	*Agree Moderately (AM)* *Bersetuju-Sederhana (BS)*	Strongly Agree (SA) *Sangat Bersetuju (SS)*
1	2	3	4	5	6

Safety Training ***Latihan Keselamatan***	SD *STS*	DM *TBS*	DS TBSt	AS BSt	*AM* *BS*	SA *SS*
1. My company gives comprehensive training to the employees in work place health and safety issues. *Syarikat saya memberi latihan komprehensif kepada pekerja tentang keselamatan di tempat kerja.*	1	2	3	4	5	6
2. Newly recruits are trained adequately to learn safety rules and procedures. *Pekerja baru dilatih dengan secukupnya tentang peraturan dan prosedur keselamatan.*	1	2	3	4	5	6
3. Safety issues are given high priority in training programmes. *Isu isu keselamatan diberi keutamaan dalam program keselamatan.*	1	2	3	4	5	6
4. I am not adequately trained to respond to emergency situations in my work place. *Saya tidak dilatih dengan secukupnya untuk bertindak dalam keadaan kecemasan di tempat kerja saya.*	1	2	3	4	5	6
5. Management encourages the workers to attend safety training programmes. *Pihak pengurusan mengalak pekerja menghadiri program latihan*.	1	2	3	4	5	6
6. Safety training given to me is adequate to enable me to access hazards in workplace. *Latihan keselamatan yang diberikan adalah mencukupi untuk menaksir hazad di tempat kerja.*	1	2	3	4	5	6

Strongly disagree (SD) *Sangat tidak Bersetuju (STS)*	Disagree Moderately (DM) *Tidak Bersetuju-Sederhana (TBS)*	Disagree Slightly (DS) *Tidak Bersetuju-Sedikit (TBSt)*	Agree *Slightly (AS)* *Bersetuju-Sedikit (BSt))*	*Agree Moderately (AM)* *Bersetuju-Sederhana (BS)*	Strongly Agree (SA) *Sangat Bersetuju (SS)*
1	2	3	4	5	6

Safety Communication and Feedback ***Komunikasi Keselamatan dan Maklumbalas***	SD *STS*	DM *TBS*	DS TBSt	AS BSt	*AM* *BS*	SA *SS*
1. My company doesn't have a hazard reporting system where employees can communicate hazard information before incidents occur. *Syarikat saya tidak mempunyai sistem untuk melapurkan hazard keselamatan dimana pekerja boleh berkomunikasi tentang hazard keselamatan sebelum sebarang insiden berlaku.*	1	2	3	4	5	6
2. Management operates an open door policy on safety issues. *Pengurusan melaksanakan polisi pintu terbuka dalam hal hal yang berkaitan dengan keselamatan.*	1	2	3	4	5	6
3. There is sufficient opportunity to discuss and deal with safety issues in meetings. *Terdapat peluang yang mencukupi untuk membincang dan menyelesaikan perkara-perkara keselamatan dalam mesyuarat.*	1	2	3	4	5	6
4. The target and goals for safety performance in my organization are not clear to the workers. *Sasaran dan matlamat untuk pencapaian keselamatan di dalam syarikat saya tidak jelas kepada pekerja*.	1	2	3	4	5	6
5. There is open communications about safety issues in this work place. *Terdapat komunikasi terbuka tentang isu isu keselamatan di syarikat ini.*	1	2	3	4	5	6

Strongly disagree (SD) *Sangat tidak Bersetuju (STS)*	Disagree Moderately (DM) *Tidak Bersetuju-Sederhana (TBS)*	Disagree Slightly (DS) *Tidak Bersetuju-Sedikit (TBSt)*	Agree *Slightly (AS)* *Bersetuju-Sedikit (BSt))*	*Agree Moderately (AM)* *Bersetuju-Sederhana (BS)*	Strongly Agree (SA) *Sangat Bersetuju (SS)*
1	2	3	4	5	6

Workers Participation ***Penglibatan Pekerja***	SD *STS*	DM *TBS*	DS TBSt	AS BSt	*AM* *BS*	SA *SS*
1. Management always welcomes opinion from employees before making final decisions on safety related matters. *Pengurusan sentiasa mendengar pendapat pekerja sebelum membuat keputusan terakhir dalam perkara yang melibatkan keselamatan.*	1	2	3	4	5	6
2. My company has safety committees consisting of representatives of management and employees. *Syarikat saya mempunyai jawatan kuasa keselamatan yang diwakili oleh pihak pengurusan dan pekerja.*	1	2	3	4	5	6
3. Management promotes employees involvement in safety related matters. *Pihak pengurusan mengalak penyertaan pekerja dalam pekara yang melibatkan keselamatan.*	1	2	3	4	5	6
4. Management consults with employees regularly about work place health and safety issues. *Pihak pengurusan sentiasa medapatkan nasihat dari pekerja dalam hal hal keselamatan ditempat kerja.*	1	2	3	4	5	6
5. Employees do not sincerely participate in identifying safety problems. *Pekerja tidak jujur dalam penyertaan untuk mengenalpasti masalah keselamatan.*	1	2	3	4	5	6

Strongly disagree (SD) *Sangat tidak Bersetuju (STS)*	Disagree Moderately (DM) *Tidak Bersetuju-Sederhana (TBS)*	Disagree Slightly (DS) *Tidak Bersetuju-Sedikit (TBSt)*	Agree *Slightly (AS)* *Bersetuju-Sedikit (BSt))*	*Agree Moderately (AM)* *Bersetuju-Sederhana (BS)*	Strongly Agree (SA) *Sangat Bersetuju (SS)*
1	2	3	4	5	6

Safety Rules and Procedures ***Peraturan dan Prosedur Keselamatan***	SD *STS*	DM *TBS*	DS TBSt	AS BSt	*AM* *BS*	SA *SS*
1. The safety rules and procedures followed in my company are sufficient to prevent incidents occurring. *Peraturan dan prosedur keselamatan yang diikuti di syarikat saya adalah mencukupi untuk mencegah kemalangan.*	1	2	3	4	5	6
2. The facilities in the safety department are not adequate to meet the needs of my organization. *Kelengkapan didalam jabatan keselamatan tidak mencukupi untuk memenuhi keperluan syarikat.*	1	2	3	4	5	6
3. My supervisors and managers always try to enforce safe working procedures. *Penyelia dan pengurus saya sentiasa cuba untuk melaksanakan prosedur kerja yang selamat.*	1	2	3	4	5	6
4. Safety inspections are carried out regularly. *Pemerisaan keselamatan kerap dilakukan.*	1	2	3	4	5	6
5. The safety procedures and practices in this organization are useful and effective. *Prosedur dan amalan keselamatan di organisasi ini sangat berguna dan berkesan.*	1	2	3	4	5	6

Safety Promotion Policy ***Polisi Promosi Keselamatan***	SD *STS*	DM *TBS*	DS TBSt	AS BSt	*AM* *BS*	SA *SS*
1. In my company safe conduct is considered as a positive factor for job promotions. *Didalam syarikat saya, kerja selamat dianggap sebagai faktor yang positif untuk kenaikan pangkat.*	1	2	3	4	5	6
2. In my company employees are rewarded for reporting safety hazards (thanked, cash or other rewards, recognition in news letter etc). *Didalam syarikat saya, pekerja diberi ganjaran apabila melapurkan hazard keselamatan (diberi tahniah, wang tunai, atau ganjaran lain, penghargaan dalam terbitan berita syarikat).*	1	2	3	4	5	6
3. In my company safety week celebration and other safety promotional activities arranged by the management are very effective in creating safety awareness among the workers. *Didalam syarikat saya, minggu keselamatan dan aktiviti promosi keselamatan yang dianjurkan oleh pihak majikan sangat berkesan dalam membentuk kesedaran keselamatan dikalangan pekerja.*	1	2	3	4	5	6
4. There exists very healthy competition among the employees to find out and report unsafe condition and acts. *Terdapat persaingan yang sihat dikalangan pekerja untuk mencari dan melapurkan keadaan dan tindakan kurang selamat.*	1	2	3	4	5	6
5. Our supervisor becomes very unhappy and angry when employees find out and report unsafe conditions and acts in our section. *Penyelia kami menjadi marah dan tidak seronok apabila pekerja dapat mencari dan melaporkan tindakan dan keadaan tidak selamat di seksyen kami.*	1	2	3	4	5	6

Safety Compliance **Kepatuhan Keselamatan**	SD *STS*	DM *TBS*	DS TB St	AS BSt	*AM* *BS*	SA *SS*
1. I use all necessary safety equipments to do my job. *Saya mengunakan semua alat alat keselamatan untuk membuat kerja.*	1	2	3	4	5	6
2. I carry out my work in a safe manner. *Saya melaksanakan tugas dengan selamat.*	1	2	3	4	5	6
3. I follow correct safety rules and procedures while carrying out my job. *Saya mengikut peraturan dan prosedur keselamatan semasa menjalankan kerja saya.*	1	2	3	4	5	6
4. I ensure the highest levels of safety when I carry out my job. *Saya pastikan tahap keselamatan yang paling tinggi semasa menjalankan kerja saya.*	1	2	3	4	5	6
5. Occasionally due to lack of time, I deviate form correct and safe work procedures. *Kadangkala saya sisih dari prosedur kerja selamat oleh kerana kesuntukan masa.*	1	2	3	4	5	6
6. Occasionally due to over familiarity with the job, I deviate from correct and safe work procedures. *Kadangkala saya sisih dari prosedur kerja selamat oleh kerana sangat biasa dengan kerja.*	1	2	3	4	5	6
7. It is not always practical to follow all safety rules and procedures while doing a job. *Mengikut peraturan keselamatan dan prosedur kerja adalah tidak practikal untuk setiap masa.*	1	2	3	4	5	6