THE INFLUENCE OF SAFETY CLIMATE ON SAFETY PERFORMANCE AMONG WORKERS OF A FOOD EMULSIFIERS COMPANY IN MALAYSIA

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ABSTRAK

Tesis ini adalah bertujuan untuk mengkaji hubungan antara iklim keselamatan dan prestasi keselamatan di Danisco Malaysia Sdn. Bhd. Secara umum, enam dimensi iklim keselamatan dikaji dalam kajian ini iaitu amalan keselamatan pengurusan, pendirian keselamatan, latihan keselamatan, amalan keselamatan penyeliaan, penglibatan rakan sekerja, dan keselamatan pekerjaan. Untuk menentukan kesahihan objektif kajian, 146 set soal selidik telah diedarkan kepada kakitangan di bahagian operasi Danisco Malaysia. Data-data kuantitatif yang diperolehi dianalisis menggunakan perisian SPSS. Ujian korelasi Pearson mendapati bahawa wujud hubungan positif yang signifikan untuk lima daripada enam dimensi iklim keselamatan terhadap prestasi keselamatan. Di antaranya ialah amalan keselamatan pengurusan, latihan keselamatan, amalan keselamatan penyeliaan, penglibatan rakan sekerja, dan keselamatan pekerjaan. Walau bagaimanapun, pendirian keselamatan didapati mempunyai hubungan yang tidak signifikan terhadap prestasi keselamatan. Ujian regresi berganda menunjukkan bahawa dimensi iklim keselamatan mempengaruhi prestasi keselamatan secara signifikan. Akhirnya, implikasi kajian dibincangkan untuk memberi cadangan dan garis panduan untuk penyelidikan masa depan.

Kata kunci: Iklim Keselamatan, Prestasi Keselamatan, DANISCO Malaysia Sdn. Bhd.

ABSTRACT

This study aimed to determine the relationship between safety climate and safety performance in Danisco Malaysia Sdn. Bhd. Six dimensions of safety climate were studied in this research namely management safety practices, safety attitude, safety training, supervisory safety practices, the involvement of co-workers, and job safety. In order to achieve the objectives of the study, 146 sets of questionnaires were distributed to the staff in the operation department of Danisco Malaysia. Quantitative data were analyzed using SPSS software. Pearson correlation test found a significant positive relationship for five out of six dimensions of safety climate against with safety performance. The five significant dimensions are management safety practices, safety training, supervisory safety practices, the involvement of co-workers, and job safety. However, safety attitude was found to have an insignificant relationship with safety performance. Multiple regression tests revealed that safety climate dimensions significantly influence safety performance. Finally, the implications of the study are discussed to provide recommendations and guidelines for future researches.

Key words: Safety Climate, Safety Performance, and Danisco Malaysia Sdn Bhd.

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CHAPTER 1 INTRODUCTION

1.1 Background of Study

In various organizations and industries, safety is a major concern as it is the substantial source of direct and indirect cost. Organizational safety is simply defined as freedom from any form of accidents due occupational activities (Katz-Navon, Naveh, & Stern, 2007). Safety performance of such organizations usually accessed by the conventional factors such as accidents and injury rates monthly and in some cases annual manner. These measurements are unreliable, hence causing hoax at the operations of the organization (Ritchie, Coats, Disatell, & Cook, 2004). Despite the fact that the lower rate of accidents at the workplace than that of road accidents, this issue should not be taken for granted. The manpower in an organization is the resource and driving engine in ensuring the country's capital growth.

Usually, accidents at workplace are due to several factors like lack of knowledge and skills on the assigned tasks, lack of training, poor occupational safety policy implementation and poor management commitment. These factors contribute towards the increase of accidents rate, thus reducing the organizational safety performances (Tharaldsen, Mearns, & Knudsen, 2010).Therefore, some organizations took initiative in adding several performance indicators to access the safety performances without the need for accident analysis. The stakes are high, and it is critical that safety performance measurements reflect the probability of accidents in the near future (Yule, Flin, & Murdy,

2007). In other words, workers who are well versed in their job scope are less likely to be involved in accidents, even though they're performing high risks job.

Organizational climate is defined as a multidimensional construct that is comprised of a range of individual evaluation of the work environment that refers to general dimensions such as leadership, safety perceptions, participation in safety matters, attitude towards safety and commitment level of both employers plus employees. On the retrospect, a safety climate is a specific form of organizational climate the refers to individual perceptions of safety value in the workplace (Neal, Griffin, & Hart 2000). Similarly, safety climate is a subsystem of organizational performance, hence gives an impact on it. Zohar (1980) reported the correlation of safety climate and safety records in an organization. In that study, it was highlighted that analysis of a perceived safety climate could actually further improve on the identified dimensions of safety climate (Wu, Chen, & Li, 2008).

Safety climates are widely used in evaluating the safety performance of various organizations as it reflects the real safety situation of an organization. However, some studies have not distinguished safety climate with safety performances, with the accident rate as the key to safety performance in an organization. Thus, the context of safety performance becomes narrow. However, in 2001, Wu had developed a safety climate scale and safety performance scale and applied product-moment correlation and canonical correlation to analyze the relationship between these two. The results showed a significant positive correlation (Wu, 2001).

As of 2002, no studies have been carried out to investigate the links between general organizational climates. Other factors include the minimal insights or contributions of organizational factors to safety climate and safety behavior (Neal & Griffin, 2002).

Just like any other organizations, the food emulsifiers companies in Malaysia are not an exception for safety hazards. The food emulsifiers companies in Malaysia are very limited compared to other industries such as electronics, constructions, metal works or automotive. Danisco (M) Sdn Bhd, is a food emulsifiers company that has been operating in Malaysia since 1982 in Penang Perai Industrial area. It's originated from Copenhagen, Denmark since 1932. As of today, they have 7500 employees worldwide with similar industry mainly in the USA, China, Brazil, and India apart from Denmark. It has about 148 permanent employees and 20 contract employees who are foreigners from Bangladesh, India, and Myanmar. The operations consist of production, maintenance, QC Lab, effluent treatments, and facilities department which represent 65% of total employees. Emulsifiers industries typically will have physical hazards, electrical hazards, and some chemical hazards as well. Their processes are mainly about reactions of materials, spray cooling, blending, distillations, high-pressure steam and robotics packing.

Hence, a study on the influence of safety climate on the safety performance among operations staffs in food emulsifiers industry in Malaysia is rather suitable, with a goal to study safety performance and safety climate at Danisco (M) Sdn. The influence of safety climate on the safety performance indicates the perceptions, commitments, attitude, participation that employees perceive in their organization. Therefore, this study may help in identifying the major factors that influence the safety performance among the operations

staffs, thus reducing the risks of accidents at the workplace and improving workplace safety environment for betterment.

1.2. Problem Statement

The technological advancement parallel to the intense global competition in various fields had brought tremendous changes in organizational safety. The changes, however, could imprint a negative mark towards the productivity of the organization. Even though in many countries, safety performance at workplace had received big attention; the fact is that maintaining safety at the workplace could be costly. Nevertheless, the rate of accidents at the workplace is still at an alarming level (Wahab, Shah, & Idrus, 2010). This is because the sole dependence on hardware approaches such as redesigning machines is insufficient to overcome accidents at workplace, especially when accidents are caused by human errors (Wu, Chen, & Li, 2008).

Besides that, a proper study on the safety performance would give a better understanding of the safety hazards at the workplace and also help to generate ideas that are fruitful in overcoming such issue, for long-term sustainability in an organization. In that note, Clark in 2006 mentioned the need to study the dimensions of safety climate is important as it is one of the most efficient tools to analyze the safety performance and the safety management in an organization (Clarke & Ward, 2006).

Analyzing the safety climates that influence the safety performance among emulsifier's industry operators in Malaysia is rather suitable as they are exposed to various

forms of hazards on a daily basis. According to Evtushenko and Olga (2013) in Ukraine, food industry statistics show that 11.6% accidents have cause death when workers deals with machines that move, rotate and spinning. Analysis of injury reasons allows us to make the conclusion that the main reasons of injury among Food Industry workers are a breach of labor and production discipline. Although the statistics in Malaysia's food industry is not so alarming, it is still the duty of any employer to maintain and increase the safety performance continuously.

Another study by Griffin and Neal (2000) indicates that behavior of an individual can be influenced by the work environment commonly inherited by the organizations. Many researchers have tried to study the problems inherited by the organizations realize that safety climate is the factor which can picture the scenario to address the problem in detail.

Safety climate has been used widely to predict the safety performance in the manufacturing industries (Brown & Holmes, 1986), chemical processes (Vinodkumar & Bhasi, 2010) and construction industries (Siu, Philips, & Leung, 2004). However, safety climate study for the food industry is something new as the industry is known as less hazardous comparing to above-mentioned industries. Thus, it's vital to conduct a research to further understand the relationship between the influences of safety climate on the safety performance of the emulsifiers industry.

As per report raised by *Occupational Structure for Food Processing Industry 2009* (Department of Skills Development Ministry of Human Resources), the number of the food

industry will increase by 2020 at the phase of 4.8% annually. Production of food ingredients covers spice products, specialty sauces, seasonings, flavors and food additives. Spices and herbs are significant ingredients in the production of sauces and seasonings. Production is undertaken by SMEs, local companies, and MNCs. The food industry is generally less vulnerable to economic changes in the world. It has been estimated that the present global retail sales in food product worth US$3.5 trillion and expected to grow at an annual rate of 4.8 % to US$6.4 trillion in 2020.

Base on the above factors, performing a study on the safety compliances and participations which are important factors in safety performance in Emulsifiers industry is vital. It is also to further understand the influences of other influential aspects which could impact the safety performance. All the outcomes will help the organizations to reduce the number of occupational accidents and illness plus the cost such as medical, insurance and regulatory summons.

1.3 Research Questions

The research questions are:

1) What is the relationship between management safety practices and safety performance
2) What is the relationship between supervisors safety practices and safety performance
3) What is the relationship between safety attitude and safety performance
4) What is the relationship between safety training and safety performance

5) What is the relationship between job safety and safety performance
6) What is the relationship between co-workers safety and safety performance
7) Do safety climate factors influence the safety performance

1.4 Research Objectives

The objectives of this research are to determine the influence of safety climate components which are management safety practices, supervisory safety practices, safety attitude, safety training, job safety and colleague's safety against the safety performance.

1) The relationship between management safety practices and safety performance
2) The relationship between supervisors safety practices and safety performance
3) The relationship between safety attitude and safety performance
4) The relationship between safety training and safety performance
5) The relationship between job safety and safety performance
6) The relationship between co-workers safety and safety performance
7) The influence of safety climate factors on safety performance

1.5 Significance of the Study

This research focuses on identifying and evaluating factors influencing the performance level in Danisco (M) Sdn Bhd in executing the steps of preventing the safety risks while carrying out the manufacturing process. On top of this, this research also will

help to impart the best practices and safety culture at the workplace and indirectly will help to increase the awareness among the employees on the importance of safety and health.

Besides that, the research also will help to raise suggestions and practical methods to the management of the organization to further strengthen their measures in handling the safety related to process, packaging, cleanings, and maintenance at workplace

1.6 Limitation of the Study

This research is conducted on all the employees working with Danisco (M) Sdn Bhd who is responsible for the operations of the product manufacturing. However, they can be further categorized into 4 group's base on their expertise and involvement. The total respondents involved in this research will be around 146 employees who are working in Danisco (M) Sdn Bhd. Figure 1.1 will show a better picture on the breakdown of the employees in terms of their roles and responsibilities.

Table 1.1
Breakdowns of the Operational Employees

Level of Employment	Total Employees (People)	Percentages (%)
Operators (Internal)	68	46.6%
Operators (External)	40	27.4%
Technicians	20	13.7%
Supervisors/Engineers	13	8.9%
Managers	5	3.4%
TOTAL	146	100%

The reason for operational department chosen for this research is they are directly performing the job related to safety risks. Thus, they should have a better view on the risky jobs such as preparing chemicals, mixing operations, cleaning, packing, dismantling, installing and lubricating. Most of this operations will be taking place while the plant in operation which is known as online maintenance, working at height, entering confined spaces and dealing with rotating or moving machinery. Another reason for operations was selected for the research is they are the majority of the employees and it's operating on 330 days and 24 hours. Operations departments contribution is the highest in Danisco (M) Sdn Bhd compare to other departments who act as supporting departments for operations.

Base on the above group of people, the major limitations will be on the research respondents understand the questionnaire as most of them are operators who represent the 60% of the respondents are not well educated. Thus, they still need assistance from their superiors or peer group to answer the questionnaire and this might cause some deviations in the study.

1.7 Arrangement of Research Paper

1.7.1 Chapter 1

This chapter gives a generalized view on the research study based on the components: research background, problem statements, scope of study, research objectives the significance and limitations of the study

1.7.2 Chapter 2

This chapter gives a more detailed picture of the study by discussing the dependent variable; safety performance and the independent variable; safety climates as per influenced in other work organizations. This chapter also includes the past studies and citations of related issues studied in this research, which acts as the backbone for this research study.

1.7.3 Chapter 3

Chapter 3 focuses on the research methodology and framework that will be utilized in obtaining the proposed research data for analysis. A detailed explanation of all the processes or steps involved in data accumulation and analysis is included in this chapter.

1.7.4 Chapter 4

The results and the accumulated data are presented and analyzed in chapter 4, whereby utilization SPSS as an analysis tool for the obtained data and presentation of data in the form of ANOVA statistics. Tables and charts are also used to for better understanding of the obtained data.

1.7.5 Chapter 5

This chapter summarizes the data interpretation that obtained via the research methodology, the results are compared with the previous studies as per in Chapter 2. Also, further recommendation on the ways to improve the safety performance among the operations employees are listed, at the same time for the researchers in the future for further studies on this research

1.8 Summary

Various efforts had been implemented by the organization in an effort to maintain the safety performance at workplace, by preventing the occurrence of accidents. By identifying the dimensions of safety climate at the workplace, the risks, and the probability of accidents a workplace can be reduced, in compliance with OSHA 1994. The study focuses on the operations employees of the Food Emulsifiers Industry as a target group, with the analysis of several safety climate dimensions as independent variables which benchmarked against the safety performance and its components.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature of various authors and researchers on safety performance, the dimensions of safety performance, the level of safety performance in an organization, the safety climate and its dimensions, measurements, and influence on safety performance. The review is based on the studies done in various organizations on the safety performance. Main components of this chapter are the dependent variable, safety performance and the independent variables, the dimensions of safety climate influencing the safety performance.

2.2 Safety Performance

In any organization, the strength and success of the organization are largely affected by the management of productivity, quality, safety, health, environment and not forgetting marketing and finance effectively. Safety, health and environment concerns demonstrate the organization's safety performance at the same time the commitment of the employers. According to Wu and colleagues, safety performance can be simply defined as the subset of the total performance of an organization (Wu et al., 2008). In an earlier research, the concept of safety performance was triggered by Reason in 1997, whereby extreme

vulnerability and extreme resistance towards any form of hazards are two opposing sides of safety performance. An organization's safety depends on how well the organization manages its hazards (Reason, 1997). A study by Wu in 2008 also highlights that the domestic and foreign shows that safety and health performance is more related to safety climate of organizational behavior which combined with a specific approach and significantly improves the safety performance (Wu et al., 2008). Safety performance improvements in an organization can increase its resistance or robustness and lower the risk of accidents.

In contrast, poor safety performance could increase an organization's vulnerability hence, increasing the risk of accidents to occur. Safety performance of an organization can be evaluated via safety organization and management, safety equipment, gears and measures, accident statistics, safety training and evaluation, accidents investigations and safety training practices (Wu et al., 2008). Simply, safety performance can be said the quality of safety-related works, i.e. the efforts taken to achieve safety in an organization.

This definition of safety performance highlights the role of the management of an organization in sustaining a safe work culture an environment for the employees. Nevertheless, the willingness and the participation of employees to engage in any form of safety activities would determine the safety performance of an organization. In this same light, safety performance, as suggested by Siu et al. in 2004, can also be defined as an indicator of safety at the workplace that is used to control accidents at workplace. The rate of accidents within an organization reflects how good or bad the safety performance of the organization (Siu, Philips, & Leung, 2004).

Safety performance can be further defined as a subset of safety compliances and participation (Neal & Griffin, 2000) of employees in a workplace. It's naturally influence received from the management, co-workers, supervisors plus employees personal belief which inherited from the family plus previous work experience. Therefore, it's essential to tune the workers from the beginning to the correct path by exposing them to proper safety induction, skills and motivation. In an another study (Vinodkumar and Bhasi, 2010) of safety performance, the researcher has emphasized that safety performance is merely not about gathering the statistics of the accident but it's an effort that studies the relationship between the worker's compliance and participation the safety culture. Safety compliance represents the behavior of the employees in ways that increase their personal safety and health. Safety participation rep- resents the behavior of employees in ways that increase the safety and health of co-workers and that support an organization's stated goals and objectives.

2.2.1 Dimensions of Safety Performance

Safety dimensions are important for organizations to effectively deal with safety performance challenges. The development of safety dimensions originated from the concept of work performance. In other words, safety performance is one of the major areas that determine the work performance and efficiency (Neal & Griffin, 2002). It is important to identify the dimensions of safety performance in order to manage risks and prevent accidents. Major organizational accidents like Chernobyl and Bhopal tragedy have shown

what the effects of poor safety performance are causing to the organizations at a later stage. Safety performance had gradually become the specific domain in determining an organization performance (Hee & Ping, 2014). When defining safety performance, Griffin and Neal (2000) said in their research study, that it consists of two components, safety compliance as task performance and safety participation as contextual performance (Neal et al., 2000).

2.2.1.1 Safety Compliance

Safety compliance refers to all efforts and policies undertaken by the employers in promoting a safe space in an organization to maintain the safety performance. This includes activities such as wearing personal protective equipment and performing safety instructions (Hee & Ping, 2014). In Malaysia, the safety regulations and policies by the management of an organization are in compliance with the Occupational Safety and Health Act, 1994 (OSHA).

According to researchers (Neal & Griffin, 2000) safety compliance involves adhering to safety procedures and carrying out work in a safe manner. Other researchers have given a slightly a different explanation for safety compliance such as safety compliance represents (Vinodkumar and Bhasi, 2010) the behavior of the employees in ways that increase their personal safety and health. In common, both researchers have mentioned that compliance is referring to workers adherence to safety procedures by understanding the impact of their own personal safety and health matters.

Task performance is a part of tasks that the employees need to follow before the work begins as an effort to deal with risks of work. The compliance to the personal protective equipment before starting work and throughout the duration of work is considered as major compliance. Employees are responsible for following this safety practices in order to reduce the risks of occupational accidents. Careless behavior at work often contributes to safety behavior, hence giving effect on the safety performance. For example, in order to finish a specified job in short time, workers tend to skip the safety instructions. The situation had gone from bad to worse with the employment of foreign workers in almost all industries. Language becomes a barrier, and thus miscommunication and misunderstandings occur in the effort to ensure safety procedures are adhered (Zohar & Luria, 2003).

OSHA 1994 have emphasized to all industries on self-regulation because people in an organization are the main factors to maintain safety compliance which comprises of other factors like psychological factors, behavioral factors and contextual factors (Auni Fatin Nadia et al., 2013; Lee & Harrison, 2000).

2.2.1.2 Safety Participation

The willingness of the employees in an organization to engage in safety activities are known as the safety participation. Safety participation does not directly contribute towards personal safety, but it does supports in the organizational safety performance. Safety participation involves helping co-workers, promoting the safety program within the workplace, demonstrating initiative, and putting effort into improving safety in the

workplace (Neal et al., 2000). Another perspective about safety participation (Vinodkumar and Bhasi, 2010) is it represents the behavior of employees in ways that increase the safety and health of co-workers and that support an organization's stated goals and objectives.

In a manufacturing industry, the role of promoting safety participation depends on the accountability of managers and supervisors. With the non-stop operations on the production floor, workers find some hardship in attending these safety activities. Hence, the organizational culture is important to further enhance the safety values and cultivate proper norms to encourage safety participation (Vinodkumar & Bhasi, 2009).

2.2.2 Measurement of Safety Performance

Generally, safety performance is measured using the number of accidents in an organization (Vinodkumar & Bhasi, 2010). Accidents in the workplace can be closely related to safety compliance and safety participation by the workers. In fact, these two components are related to behavior or mentality of workers in demonstrating their personal compliance and participation towards safety rules and regulations developed by the organization. In another word, accidents are the lagging safety indicators and safety participation or compliance are leading indicators which will show a pattern of accidents which going to take place. Thus, it's really necessary to measure the safety performance using the abovementioned components to strategically handle the accidents in a workplace including Danisco Malaysia Sdn Bhd.

Ironically, safety participation and compliance will be used in most of the questionnaires which are being used to measure safety performance. In this research, Danisco Malaysia Sdn Bhd safety performance will be measured using questionnaire adapted from another researcher (Lu & Tsai, 2007) who have conducted many types of research in the safety and health field. The reason for choosing this two components for measuring the safety performance is to analyze the behavioral pattern of workers (Neil & Griffin, 2000) which eventually end up with accidents in workplaces.

2.3 Safety Climate

The importance of safety climate and its relationship with occupational safety has been established across a range of industries. Safety climate can be simply defined as the individual perceptions of the value of safety in work environment or as a snapshot of workforce perceptions on safety (Lu & Tsai, 2007). Generally, these safety climates defer from one industry and another (Neal et al., 2000). The central debate ongoing among researchers is whether safety climate should be restricted to a workforce perception on the management or how the management reconciles safety with productivity (Yule et al., 2007).

Safety climate is associated with safety practices, the compliance with OSHA, the rate of accident occurrences and can be used to predict safety behavior. Thus, safety climate is an important variable for better understanding safety performance and is used as a leading indicator for unsafe work conditions (Bosak et al., 2013). In an earlier research, Cheyne et al. used a structured equation model to test the foundation and relationship of the

organizational safety climate components. It was reported that the employee's attitude is the most important indices of safety climate, as attitude often framed as result of all contributory features in a working environment (Siu et al., 2004).

In a separate research, Weigmann stated that safety climate is a set of measurement for safety that is created by identifying the similarity of the individuals working in the same organization. This point refers to the safety condition at a given time and place, that is always changing and unstable, and dependent on the changes occurring in the environment, policies or conditions (Weigmann et al., 1997). On the same note, there is also confusion concerning the relationship and the differences between safety culture and safety climate. Consequently, the term safety climate is sometimes used interchangeably with the term safety culture. Perhaps one of the simplest explanations of safety climate is that it is not safety culture. The perceived image of risk, danger, and safety of an organization from safety climate (Cooper, 1995).

2.3.1 Dimensions of Safety Climate

Safety climate consists of a number of factors, which are also known as safety climate dimensions. Different authors had suggested different dimensions in their research. Table 2.1 summarizes some of the safety dimensions by the past researchers.

Table 2.1
Safety climate dimensions of different industrial study by researchers

Study	Industry and sample	Dimensions
Lu & Tsai (2007)	Container Shipping	• Supervisors safety practices,

		Management safety practices, safety attitude, safety training, job safety
Neil & Griffin (2000)	Australian Hospital Industry	• Safety Performance, safety climate, safety participations, safety knowledge & motivation
Zohar (1980)	Israel 20 factories (n=400)	• Safety training, management attitudes, promotion, risk, work pace, safety officer status, social status, safety committee
Glennon (1982)	Australia Mining; saw milling; petroleum; engineering, manufacturing (n=198 line managers)	• Safety and health legislation, corporate attitudes to safety and health, status of safety officer, importance of training, management encouragement, promotion, risk level, safety vs. production targets
Donald & Canter (1994)	UK 10 chemical sites (n=701, mean response rate= 53.8%)	• People (self, workmates, supervisor, manager, safety rep.); attitude-behavior (knows about, is satisfied with, carries out); activity (passive, active)
Rundmo (1994)	Norway 8 offshore oil platforms from 5 oil companies (n=915)	• Safety and contingency factors, commitment and involvement in safety work, social support, attitudes to accident prevention
Coyle et al. (1995)	Australia Clerical and service organizations (total n=880), Organization 1:	• Maintenance and management, company policy, accountability, training and management attitudes, work environment, policy/ procedures,

	(n=340, 56%), Organization 2: (n=540, 63%)	personal authority
Thompson et al. (1998)	US 2 aviation manufacturing samples: 1992 (n= 350, 69%), 1995 (n= 329, 50%)	• Organizational politics, management support for safety, supervisor support, supervisor fairness, workplace safety perceptions, goal congruence (1992 only)
Brown et al. (2000)	US Steel industry (n= 551 workforce, 69%)	• Safety climate, pressure, cavalier attitude, safety efficacy, safe work behavior
Vinodkumar & Bhasi (2010)	Chemical Industries in Kerala, India	• Management commitment, safety training, workers' involvement in safety, safety communication and feedback, safety rules and procedures, and safety promotion policies

Regardless of the dimensions that may exist in the workplace, the assessments of these factors are vital in establishing the organizational safety performance, at the same time improving the current safety performance. As for employees working with Danisco (M) Sdn Bhd, several identified dimensions of safety climate are management safety practices, safety attitude, safety trainings, co-workers safety and job safety.

2.3.1.1 Management Safety Practices

Management safety practices are referring to the key elements of an organization such as policies, strategies, procedures, and activities implemented or followed by the management of an organization targeting safety of their employees (Vinodkumar & Bhasi, 2010). It is the core for the safety climate pattern which is formed among the employees from the time it's disseminated and the following improvements made. Management safety practices have a very significant influence on safety climate (Lu & Tsai 2008) because of its ability to decrease the fatality rate in workplaces with high risk such as fire, explosion, collisions and so on.

In 2002, a researcher has included worker participation, safety training, hiring practices, reward systems, management commitment and communication and feedback as the Management Safety Practices in the study of hospital environment (Vrendenburgh, 2002) to evaluate the relevance of the management safety practices and safety climate. Thus, it's vital to include management safety practices as a first dimension to explore the influence toward the safety performance in a manufacturing environment as it has a wide range of influence towards the safety climate.

2.3.1.2 Safety Attitude

Safety attitude is one of the important attributes in safety climate studies. It has a strong influence on safety climate because there are eight probing questions (Lu & Tsai, 2007) which revolve on how workers perceive the workplace safety. Psychosocial safety climate is defined as shared perceptions of organizational policies, practices, and procedures for the protection of worker psychological health and safety, that stem largely

from management practices. The conceptual theory of psychosocial safety climate draws upon perspectives from the work stress, psychosocial risk, and organizational climate literature (Law et al., 2011). Another related construct, psychological safety, relates to team psychological climate, 'a shared belief held by a work team that the team is safe for interpersonal risk taking (Dollard & Bakker, 2010).

Workers who experience a team environment that is psychologically safe are free to engage in risk-taking behavior that is necessary for learning. Psychological safety delivers the meaning of liberty from psychological harm which appears specifically to psychological health and safety (Nor Hidayah & Siti Fatimah, 2013). Regarding the definition of PSC, it has been discussed that low PSC was a pre-prominent construct of a psychosocial risk factor at work and able to generate psychological and social harm in return. Besides experiencing psychology safety, employees also related to psychological climate which a shared beliefs from teammates upon safety in interpersonal risk taking (Dollard & Bakker, 2010)

2.3.1.3 Safety Training

Studies have been carried out in the past to understand the influence of safety training on the safety performance. Safety training is the main focus (Lu & Tsai, 2007) of much contemporary safety climate as it associated with a low accident rate companies in container shipping industry. Burke et al. (2011) mentioned that for mining industry on how workers can preserve their health by adhering to the safety training which explains how to use the respiratory devices effectively. However, the effectiveness of training is also

matters because the outcomes might not really address the issues such as participant's level of understanding, engagement of participants during the training etc.

As mentioned by YH Huang et al. (2006), employees believe their company provides the necessary training to perform their jobs in safe ways. This includes training for safety as well as training for specific work skills. For example, it is possible for workers to perceive their safety training as excellent without fully determining whether the management is committed to safety because other safety-related efforts might be insufficient elsewhere in the company. Such complexities offer the interesting prospect that safety training has to be benchmarked against the safety as of in its components or dimensions.

Another research by Tam & Fung (1998), most of the time new workers are involved in the workplace accidents as they are a lack of safety awareness. The only platform to raise awareness is through safety induction training which will give them an introduction to the hazards involved with their workplace. Hence, there is a need to orientate new workers on the company safety policy, layout and operations of their work sections.

Lu and Shang (2005) empirically evaluated the crucial dimensions of safety climate from an operator's perspective. Results indicated that safety training has a significant impact on the safety performance of an organization. According to their research, prior studies have demonstrated that safety climate is positively associated with safety performance at the individual, group and organizational levels. For example, Smith *et al.*

(1978) found safety training is well associated with companies which have low accident rate. Thus, it's vital to study the safety training as a component of the safety climate. According to provisos researchers, safety training dimension has a positive effect on safety performance in operations of companies.

2.3.1.4 Co-Workers Safety Practices

Workers perception on safety performance in not only influenced by safety rules, procedures and organizational policies, it's also influenced by co-workers safety practices (Clarke & Ward, 2006) who work in the same department or location. On top of that, Clarke & Ward also mentioned in their research that co-workers behavior in handling safety issues also have significant impact compare to their supervisors. According to another researcher (Lu &Tsai, 2007), co-workers influence can be least bothered in safety climate assessment because it's again subject to safety attitude. As long the safety attitude is well nurtured, the co-worker's safety can be very much under control and contribute less impact on workplace safety.

According to another study (Hofmann & Stetzer, 1996), safety climate is not only formed by management's actions towards the workers. It has a close relationship with co-workers safety pattern. Even though they are given safety training when they newly joint, the co-worker's peer pressure will lead the new workers to follow their footsteps because they need to engage with them every day. It strongly suggested by Clarke and Ward 2006

to measure the influence of co-workers in determining the safety performances of an organization.

The influence of co-workers as mentioned by Hale et al. 2000, it is interrelated to the efficiency of incident reporting in a workplace. Many other researchers (Mullen, 2004) has the same opinion that incidents will be hidden from management if co-workers influence are not control well at a workplace with proper control measures. Therefore, this research will be conducted to understand whether the co-worker's safety practices influencing the safety performance of Food Emulsifiers Industry in Malaysia.

2.3.1.5 Supervisors Safety Practices

Base on the research questionnaire developed by researchers Lu & Tsai 2007, supervisor safety practices is the first and foremost element in safety climate studies because supervisors are the key worker who gives direction to others in their team. If the characters of the supervisor incline to autocratic leadership, the workforce will be very much under their control and has to follow the direction even they understand they could be exposed to accidents. There are 9 questions were asked to respondents to understand the influence of safety climate on safety performance. Research by Yule et al. (2007) also indicates that supervisors have an important role to play in safety climate. For example, a

model that integrates the safety influences of managers and supervisors is offered by Thompson et al. (1998), who tested a model based on two central pathways

- From ‘organizational politics’ to ‘manager support for safety’ to ‘safety conditions’
- From ‘supervisor fairness’ to ‘supervisor support for safety’ to ‘safety compliance’.

Management support for safety was also found to positively influence supervisor support for safety. They concluded that management has an influence on safety conditions but workforce compliance with safety rules and regulations under those conditions is influenced by the perceived fairness of the supervisor. O’Dea (2002) also found that supervisor commitment to safety was predictive of worker propensity to take safety initiatives, and comply with rules.

Supervisors have been shown to have other important influences regarding safety climate. From three Spanish samples of ‘high-risk organizations’, Tomas et al. (1999) found that supervisors played an important role in the accident prevention process by transferring the elements of safety climate to members of the workforce. Evidence for this came from support for a tested model in which the causal chain ran from ‘safety climate’ to ‘supervisor response’ to ‘co-worker response’ to ‘worker attitude’, and then to ‘safety behavior’, ‘risk’ and finally ‘accidents’. Brown et al. (2000) report the corollary that supervisors can have a negative impact on safety climate by applying too much pressure on workers, a conclusion based on a study in the US steel industry. Zohar (2002) studied some of these concepts experimentally at an Israeli maintenance plant. He measured the number of safety-related interactions (episodes) between supervisors and workers and gave weekly

feedback to supervisors on their performance. As a result, the frequency of safety-related interactions increased rapidly from 9 to 58% of all interactions. In experimental groups, there was an associated significant decrease in accidents, an increase in personal protective equipment (PPE) use (earplugs), and a significant improvement in safety climate perceptions compared with no change in control groups. This study showed that supervisors could dramatically improve safety performance and PPE use by merely emphasizing safety in interactions that take place on the shop floor as a matter of course, and is an example of a micro-level change in culture.

2.3.1.6 Job Safety

Job safety is mainly referring to the job itself and what kind of risk it's exposed to the workers involved in carrying out the task on daily basis and job safety can positively related to a fatality at workplaces as it directly related to machinery failure (Lu & Tsai, 2007). According to Cheng, Ryan, and Kelly (2012), a good example of explaining the job safety is construction industry. In this industry, mitigation of risk involved is not easy as the job mainly related to heavy machinery and working at height.

As for manufacturing industries, it’s relatively less risky compared to construction. However, according to researchers from India, Basha & Maiti (2012), the risk in

manufacturing also depends on the country that industries operating. It depends on the cost of mitigation. The problems of unsafe conditions have been tackled by engineering controls and those of unsafe acts by behavioural-based approach leading to considerable improvement in safety performance. Engineering controls are basically expensive compared to other types of control such as PPE or signage, thus poor countries choose to have minimal controls at their workplaces to meet the regulatory requirements.

Safety climate was measured using Neal et al.'s (2000), perceptions of physical work environment which can be related to job safety. In some cases, the environment sounds unhealthy, unsafe or dangerous to the workers. This is the main purpose of checking the job safety in food emulsifiers industry and its contribution to safety climate which eventually influences the safety performance.

2.3.2 Measurement of Safety Climate

According to many researchers, the measurement of safety climate is tested by using questionnaire survey. In this research, a set of questionnaire which adopted from (Lu & Tsai, 2008) a study to identify critical safety climate dimensions and their relationship with vessel accidents will be used to measure the safety climate in food emulsifiers industry. The assessment of safety climate is important in order to achieve further improvements in safety performance in an organization. Hence, the proper measurement should be done. Measurement of safety climate is something very common in high-risk industries (Cooper, 1995). The assessment or measurement of safety climate usually requires the workforce or target group of the selected industry to complete a self-report

questionnaire anonymously on a periodic basis. The score aggregate of the respondents should provide an overall picture of the safety performance and the dimensions of safety climates that are influencing it. Some of the factors are teamwork, leadership, work ethics, environment or even communication systems (Bosak et al., 2013).

Nevertheless, it is important to achieve a successful measurement of safety climate. Some of the requirement for a successful measurement is gaining support from all members of the targeted group, utilization of appropriate questionnaire, anonymous data collection, results should be disseminated to all participants and used to plan and implement improvement initiatives Besides that, the selected questionnaire should meet the following criteria (National Healthcare System, 2010).:

- The questionnaire should measure the core safety climate factors that are relevant to the target group
- The questionnaire should be developed for the target groups that will be completing it
- Feasible
- Specific to that type of organization and for a specific geographical setting
- Reliable and valid questionnaire

2.4 Influence of Safety climate on safety performance

It has been proved by research done by Lu & Tsai (2008), that safety climate component has a significant influence on safety performance in vessel accident in container shipping industry. The findings imply seafarers perceive work on vessels as less safe,

riskier, unhealthier, more dangerous, and scarier, the higher the frequency of vessel accidents. Findings also suggest improvements in management safety practices and increased safety training provision could increase the safety performance. As also mentioned by Zohar in his study 30 years ago, safety climate is a subset of safety performance. Although there is no evidence on the dimensions of safety climate, yet there are widely accepted predictors of safety outcomes like accidents and in-house injuries (Shaheen et al., 2014). However, the widely accepted truth is that safety climate plays a vital role in forming safety performance in an organization (Hee & Ping, 2014).

Previously, there was a large interest in the study of safety climate and its outcomes, but over the years, researchers gave emergent attention in the study of the relationship between safety climate and safety performances. However, there are various diverging thoughts on the safety climates when focusing on its influence on safety performances (Glazer & Laurel, 2002). For example, in construction, .the most significant factor for accidents to occur is "unsafe behavior" of the workers, with 90% of the accidents leading to death (Sawacha et al., 1999). From this scenario, the worker's attitude being one of the dimensions of safety climate influences the safety performance.

The food emulsifiers industries are also facing some percentage of risks in their daily works as they have hazardous processes. Burke et al. (2011) elaborated that effectiveness of training is important to create the correct awareness to health and safety. These consist of using protective equipment, engaging in work practices to reduce risk, communicating health and safety information, and exercising employee rights and responsibilities (Snyder et al., 2011). Hence, safety performance and safety climate are

correlated, and the dimensions exist as safety climate antecedent gives an impact on the organizational safety performance.

2.5 Conclusion

Overall, there are many types of research done and proven that safety performances have something to do with accidents at workplaces. On top of that, safety performances have a strong influence to the betterment of an organization. In conclusion, it’s proven that there is a strong connection exist between the safety climate and it's attributed to safety performances

CHAPTER 3 RESEARCH METHODOLOGY

3.1 Introduction

This chapter will be discussing the method and framework used to achieve the research objective. Apart from that, this chapter also will discuss all the processes involved in this research such as initial planning, data collections, and data analysis which involves the framework and research model plus sampling.

3.2 Research Framework

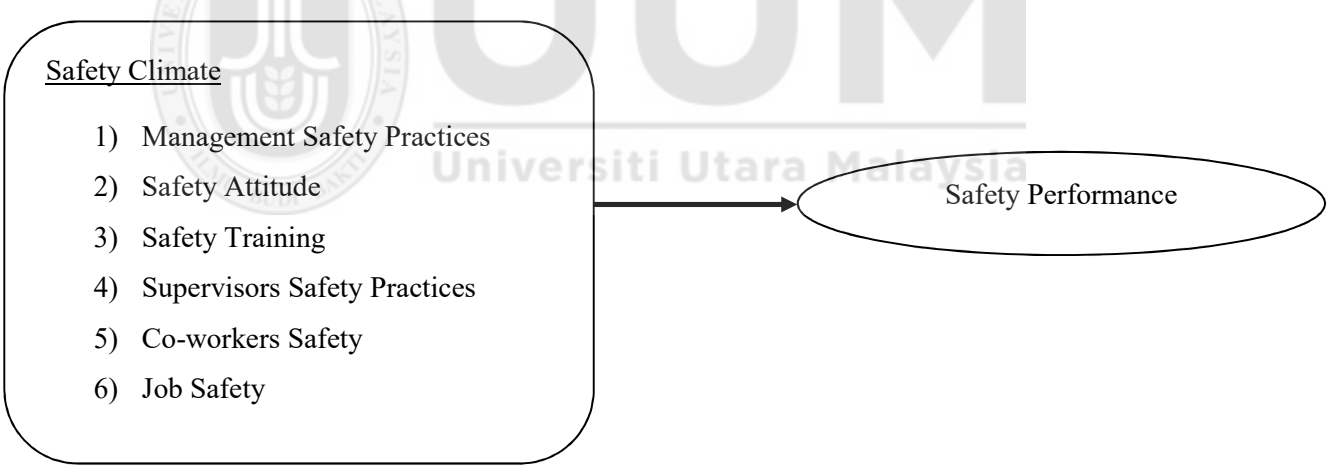

Figure 3.1
Conceptual Research Framework

The above-shown figure 3.1 is showing the conceptual research framework modeled based on the previous researcher's data which developed in the literature review of Chapter 2. Basically, it shows the relation between the six independent variables which is the component of safety climate and the safety performances are showing as the dependent variable.

3.3 Research Hypothesis

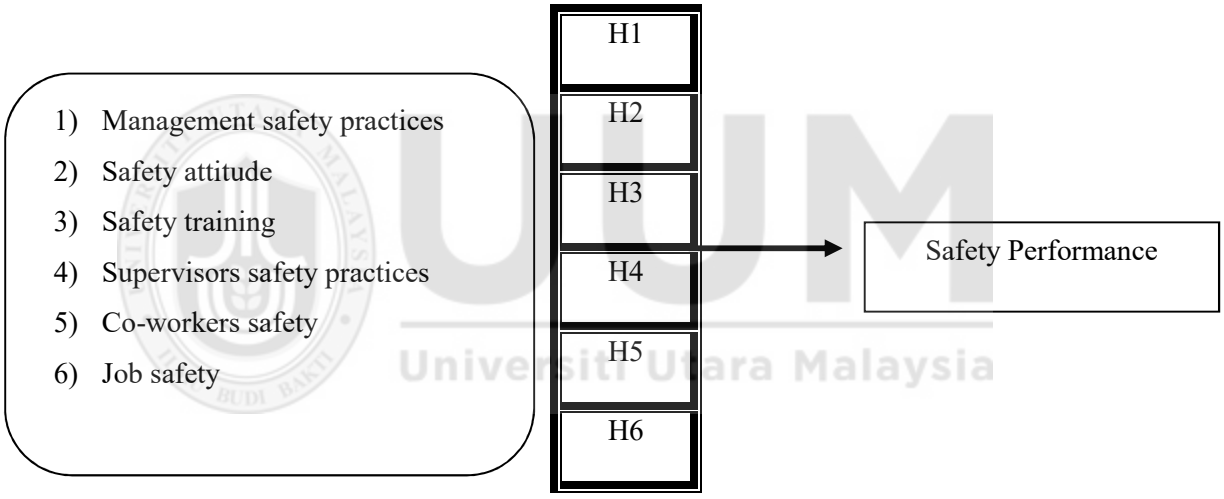

Figure 3.2
Research Hypothesis Frameworks

3.3.1 Relationship between management safety practices and safety performance

Relationship between management safety practices and safety performance has been researched in few industries, namely in container shipping industries (Lu & Tsai, 2008) and

safety performance in offshore environments (Mearns, Sean, & Flin, 2003). Their findings showed that a management safety practice is associated with lower accident rates.

H1: There is a relationship between management safety practices and safety performance.

3.3.2 Relationship between safety attitude and safety performance

The second aspect in this study deals with safety attitudes. Diaz & Cabrera (1997) defines these as "a readiness to respond effectively and safely, particularly in tension-producing situations". The study of attitudes has progressed considerably since the 1960s when attitudes were unimportant influences on, and weak predictors of behaviours. From that time a range of devices have been documented demonstrating that safety attitudes can influence safety performance

H2: There is a relationship between safety attitude and safety performance.

3.3.3 Relationship between safety training and safety performance

The third aspect in this study is about the influence of safety training on safety performance. A study in construction industry by O'Connor, Loomis, Runyan, Santo, & Schulman (2005) revealed that explanations for higher rates of injury among foreign construction workers than in the general population is the language barrier which means effective of safety training and communication is a reason for workplace accidents. Thus it proves that safety training is basically related to safety performance.

H3: There is a relationship between safety training and safety performance.

3.3.4 Relationship between supervisor's safety practices and safety performance

According to Kapp (2012), safety performance is based upon the relative value or importance the supervisor places on safety as perceived by the workers in that group. Through daily observations and interactions with the supervisor work group members come to understand the supervisor's expectations for safety. In general, the statement proves that there is a relation between supervisor's safety practices and safety performance

H4: There is a relationship between safety training and safety performance.

3.3.5 Relationship between co-workers safety and safety performance

According to Brondino, Silva & Pasini (2012), co-workers safety is a safety climate agent side by side with management safety practices and supervisor's safety practices. It analyses the safety climate at the organizational and the group level. This approach allows us to not only study the importance of co-workers in creating a safe climate in an organization but also to explore the mediating role of co-workers' safety climate in the relationship between safety performance.

H5: There is a relationship between co-workers safety and safety performance.

3.3.6 Relationship between job safety and safety performance

In a study performed by Lu & Tsai 2008 on vessel accident in container shipping industry, their results suggest the job safety dimension has the most important effect on vessel accidents, followed by management safety practices and safety training dimensions in determining the actual safety performance. Thus, its shows that job safety has a significant relationship with safety performance.

H6: There is a relationship between job safety and safety performance.

3.3.7 Influence of safety climate on safety performance

In two different studies performed by Neal & Griffin 2000, across a range of manufacturing and mining organizations. The overall goal of the research was to assess the applicability of the safety climates on safety performance in their workplace. Study 1, found knowledge was the only mediator between safety climate and safety performance. Study 2 was conducted in three manufacturing organizations and was based on a revised version of the instrument used in the first study. The revision allowed measurement of a greater number of safety climate dimensions and included knowledge and motivation as mediators of the link between safety climate and safety performance. Therefore, it's clearly understood that there is a close relationship between the safety climate and safety performance.

H7: There is a relationship between safety climate and safety performance.

3.4 Research Design

The research design is the execution plan for the framework where it explains the implementation of the procedure requires obtaining the data for detailed research. The research pictures the relations between the individuals, organization and other perspectives demonstrated by previous researchers (Sekaran, 2000). It involves the instruments, data collections via questionnaires and aspects of knowledge, understanding, and acceptance plus respondents perception towards the research components.

The research mode used is quantitative, which will describe the relationship and influence between the dependent variable and independent variables. According to Creswell (2012), quantitative research is used to review the problems related to research which requires trend analysis or to explain influence and relationship between all the variables. This research is done in a cross-sectional way whereby the data is collected only for a certain period of time.

3.5 Operational Definition

Safety Performance:

Refers to the typical practices of workers on how they perform their work in order to execute the tasks assigned to them with motive of increase and encourage safety and health of colleagues, customers, public plus the environment around them (Burke et al, 2002)

Safety Climate

Safety climate is type of climate that can be experienced by individuals in organizations (Neal & Griffin, 2000).

Safety Attitude

Safety attitude refers to workers commitment towards the safety policy, procedures and best practices (Neal & Griffin, 2004). It includes their personal commitment and responsibilities to other who working with them on safety matters (Henning et al. 2009)

Safety Training

Safety training is defined as knowledge of safety given to employees in order for them to work safely and with no danger to their well-being. Earlier studies discovered the link between safety training and increased safety performance. Consequently, effective training facilitates workers to have a sense of belonging and thus, is more accountable for safety in their workplace (Nor Azimah, Jeffery, Krassi, & Dhaliwald, 2009)

Supervisors Safety Practices

Supervision illustrates an attempt showed by supervisors in coaching and supervising workers' safety (Hsu et al., 2007). Empirical studies revealed that supervisors play a vital role in ensuring safety in the workplace (Yule, Flin & Murdy, 2007).

Co-workers Safety

Co-workers offer information, show behavioral support for desired practices while discouraging others and might shape their co-workers' roles through offering lateral mentoring (Brondino, Silvia, & Pasini, 2012)

Job Safety

Job safety is physical work environment which can be related risky, unhealthy, unsafe or dangerous to the workers (Lu & Tsai, 2008)

Management Safety Practices

Management safety practices refers to the key elements of an organization such as policies, strategies, procedures, and activities implemented or followed by the management of an organization targeting safety of their employees (Vinodkumar & Bhasi, 2010).

3.6 Research Instrument

A set of the questionnaire has been used to get the feedback from respondents. The questionnaire was adapted from two different researchers. The first section, on safety climate, is from Lu & Tsai (2008) who performed research on the effects of safety climate on vessel accidents in the container shipping context. The second session on safety

performance is from Neal & Griffin (2006) who performed a study of the lagged relationship among safety climate against accident at individual or group levels.

It was divided into eight nine consists of 57 closed questions. The questionnaire has 2 parts in general, part A uses nominal scale to understand respondent's background and part B is Likert scale (5 -strongly disagree, 4 –Disagree, 3 – Unsure, 2 – Agree, 1 - Strongly agree) for other variables as shown in Table 3.1.

Table 3.1
Summary of Survey Instrument

Part	**No of Questions**	**Research Aspects**	**Scale**	**References**
A	5	Demography	Nominal Scale	Adapted from Lu & Tsai 2008
B	12	Management Safety Practices	Likert	Adapted from Lu & Tsai 2008
C	9	Supervisory Safety Practices	Likert	Adapted from Lu & Tsai 2008
D	8	Safety Attitude	Likert	Adapted from Lu & Tsai 2008
E	7	Safety Training	Likert	Adapted from Lu & Tsai 2008
F	6	Job Safety	Likert	Adapted from Lu & Tsai 2008
G	5	Co- Workers Safety Practice	Likert	Adapted from Lu & Tsai 2008

H	5	Safety Performance (Safety Compliance)	Likert	Adapted from Neal & Griffin, 2006
I	5	Safety Performance (Safety Participation)	Likert	Adapted from Neal & Griffin, 2006

3.7 Data Collection

This research is based on primary data collections. Primary data means the initial information obtained regarding the selected research variables (Sekaran, 2000). In order to get the relevant information's, the questionnaire has been distributed to the section supervisors of each department in Danisco (M) Sdn Bhd and their subordinates. The instructions for filling up the questionnaire has been clearly explained in the form distributed in dual language. Each respondent involved in this survey was given sufficient time to answer the questionnaire without external influences or forced to answer. Once completed, the questionnaires were collected via suggestion boxes located in each department.

3.8 Population

Populations are described as the elements involved in the research such as people, historical events or records which able to provide the information's related to research subject (Cooper & Schindler, 2008). In the current research, the population is referred to all the employees working in Danisco (M) Sdn Bhd which consists of the management team

and employee's team who involves in the business operations. According to the record obtained from human resource department, there are total 146 employees working with Danisco (M) Sdn Bhd at this moment.

3.9 Sampling

Sampling process means the selection of a number of the subset of the population selected for the research purpose. The selected sample will enable the researcher to understand the characteristics of the target subset or group involved in the research. According to Sekaran, 2003, it's vital to select an appropriate subset of the research in order to economize the cost, time, energy and resources involved in the research especially when comes to a large group of respondents. Apart from these, the correct sampling also will minimize the errors or outliers which sometimes mislead the results of the survey. Therefore, as mentioned by Krejice & Morgan (1970), the sampling subset or group should represent at least 60% and above of the total employees in Danisco (M) Sdn Bhd to have a better picture of the research outcome. In this research, total 146 questionnaires were distributed to all employees via their department coordinators.

3.10 Conclusion

Generally, Chapter 3 is explaining on the methods used to perform the research in order to comply with the research objective. Apart from this, it also explains about the instruments used to conduct the research to obtain the actual scenario on safety performance in Danisco Malaysia Sdn Bhd.

CHAPTER 4 RESULT AND DISCUSSION

4.1 Introduction

This chapter consists of result and discussion of analysing the collected data by using SPSS. All data were analyzed by using reliability analysis, Pearson Correlation test to determine the relationship between variables, Multiple Regression analysis to test the level of independent variables domination toward the dependent variable and descriptive analysis to explain the respondents' socio-demographic background in term of frequency and percentage.

4.2 Descriptive Analysis

4.2.1 Socio-demographic Background

Table 4.1 shows the respondents' distribution of age, gender, nationality, position, and company. From the result, most of the respondents are in their 30s and 40s years of age with 31-40 years old (33.3%) followed by 41-50 years old (26.7%). Besides that, the majority of the respondents are male (67.5%) and female only consist of 32.5%. All respondents are Danisco staff which consist 81.7% Malaysian and only 18.3% foreigner workers. As for position in the company, most of the respondents are general workers (75.0%) followed by the executive (19.2%) and the rest are safety officer/supervisor and contractor with 4.2% and 1.7% respectively.

Table 4.1
Distribution of respondents' socio-demographic data

Variables	Classification	Frequency (person)	Percentage (%)
Age	20-30 years old	30	25.0
	31-40 years old	40	33.3
	41-50 years old	32	26.7
	> 50 years old	18	15.0
Gender	Male	81	67.5
	Female	39	32.5
Nationality	Malaysian	98	81.7
	Non-Malaysian	22	18.3
Position	General Worker	90	75.0
	Safety Contractor	2	1.7
	Officer/Supervisor	5	4.2
	Executive	23	19.2
Company	Danisco	120	100.0

N=120

4.2.2 Research Variables

Table 4.2 summarizes the mean and standard deviation value for all variables. Overall, the mean value for all variables, range in between 1.49 (safety attitude) and 4.17 (management safety practices). Three variables (management safety practices, job safety, and co-workers safety) have mean value for more than four and the rest are less than 3.99 (safety performance, supervisory safety practices, safety attitude, and safety training).

Management safety practices variable has the highest mean value (4.172 ± 0.349) whereas safety attitude variable has the lowest mean value (1.496 ± 0.362).

The standard deviation for all variables is less than one and it shows the opinion given by the respondents from the questionnaire has small variation and can be deemed as valid. Relatively, standard deviation value for supervisory safety practices variable is the highest (0.878) whereas management safety practices variable has the lowest (0.349).

Table 4.2
Mean and Standard Deviation of Variables

Variables	Mean	Std. Deviation
Safety Performance	3.9958	.35418
Management Safety Practices	4.1715	.34862
Supervisory Safety Practices	3.7313	.87788
Safety Attitude	1.4958	.36233
Safety Training	3.9833	.34558
Job Safety	4.0389	.40059
Co-workers Safety	4.0694	.55994

N=120

4.3 Reliability Test

According to Nunally (1978), variables with higher reliability should have α value for more than 0.7. Table 4.3 shows only three variables have α value more than 0.7 which are; safety performance (0.732), management safety practices (0.829) and safety training (0.753). The α value for the rest of variables ranges in between 0.501 (supervisory safety

practices) and 0.686 (job safety) even after some deletion of items. This value is acceptable since the α value for pilot study is more than 0.7 but only weak inconsistency.

Table 4.3
Reliability Test

Variables	N of Items	α value	Eliminated item
Safety Performance	10	0.732	-
Management Safety Practices	12	0.829	-
Supervisory Safety Practices	8	0.501	1
Safety Attitude	8	0.656	3
Safety Training	7	0.753	-
Job Safety	6	0.686	-
Co-workers Safety	3	0.612	2

N=120

4.4 Correlation Test

In this part, the relationship between dependent and independent variables were identified through Pearson's Correlation test, r.

Table 4.4
Correlation between Dependent and Independent Variables

	MSP	SSP	SA	ST	JS	CWSP	SP
MSP	1						
SSP	0.607*	1					
SA	0.039	0.106	1				
ST	0.724*	0.557*	0.076	1			
JS	0.721*	0.542*	0.114	0.729*	1		

CWSP	0.581*	0.417	-0.050	0.538*	0.573*	1	
SP	0.676*	0.506*	-0.013	0.699*	0.661*	0.539*	1

N=120, *correlation is significant at 0.01 level.

Table 4.4 summarize the correlation between dependent variable (safety performance = SP) and independent variables (management safety practices = MSP, safety attitude = SA, safety training = ST, supervisor safety practices = SSP, co-workers safety = CWSP, job safety = JS and safety climate = SC). It shows that all correlations were significant at 0.01 level ($p<0.01$) except for safety attitude. Based on Veloo (2012) correlation coefficient value, 78.6% have moderate correlation and only 21.4% have low correlation. The highest *r* value for correlation between all independent variables was 0.729 ($p<0.01$) which in between safety training and job safety. On the other hand, the highest *r* value for correlation between the dependent variable and all independent variables was 0.699 ($p<0.01$) which in between safety performance and safety training.

4.5 Multiple Regression Analysis Test

Multiple regression analysis tests were used to study and understand the relationship between dependent and independent variables.

Table 4.5
Multiple Regression (Safety performance with all independent variables)

Independent Variables	***β* Coefficient**	***F***	***Sig F***	***R***	R^2	$AdjR^2$
Management safety practices	0.247*					
Safety attitude	-0.080					
Safety training	0.340*	31.072		0.759	0.577	0.558
			0.000[b]			
Supervisors safety practices	0.059					

Co-workers Safety	0.065
Job safety	0.212*

N=120, *p<0.01

From the result in Table 4.5, it shows that the regression model with all independent variables was significant (R = 0.759, R^2 = 0.577, $adjR^2$ = 0.558, F = 31.072 and *Sig of F= 0.000*[b]). Meaning that multiple regression coefficients between safety performance and all independent variables are 0.759, 57.7% variance in safety performance can be explained by all the independent variables (management safety practices, safety attitude, safety training, supervisor safety practices, co-workers safety and job safety). F value (31.072, p<0.001) shows that there was a significant and linear relationship between dependent variable (safety performance) with independent variables in predicting the dependent variable.

From the all six independent variables, five variables (management safety practices, safety training, supervisors safety practices, co-workers safety and job safety) have a significant relationship (p<0.01) with safety performance. From the five variables, safety training has the highest value of β coefficient (β = 0.340). Meaning that safety training is the most important variable in predicting the safety performance followed by management safety practices (β = 0.247), job safety (β = 0.212), co-workers safety (β = 0.065) and supervisors safety practices (β = 0.059). Therefore, hypothesis H1, H3, H4, H5 and H6 were not rejected and only hypothesis H2 were rejected.

4.6 Result Summarization

Table 4.6
Summarization of Research Hypothesis

H	Hypothesis	Result
H1	There is a significant relationship between management safety practices with safety performance in the workplace.	Not rejected
H2	There is a significant relationship between safety attitudes with safety performance in the workplace.	Rejected
H3	There is a significant relationship between safety training with safety performance in the workplace.	Not rejected
H4	There is a significant relationship between supervisor safety practices with safety performance in the workplace.	Not Rejected
H5	There is a significant relationship between co-workers safety with safety performance in the workplace.	Not Rejected
H6	There is a significant relationship between job safety with safety performance in the workplace.	Not rejected
H7	There is a significant influence of safety climate on safety performance in the workplace	Not rejected

4.7 Conclusion

Chapter 4 explains the results of the analysis obtained for the entire research. All the analysis have been carried out using the SPSS software, by choosing the most relevant analytical methods in verifying the reliability test, statistical analysis, Pearson correlation

test and multiple regression test. All the findings will be further explained in the next chapter which is the final chapter for the research.

CHAPTER 5 CONCLUSION AND SUGGESTION

5.1 Introduction

This chapter will discuss the findings, research implications, suggestions and conclusion from this study. The discussion will include all the study variables which are management safety practices, safety attitude, safety training, supervisor's safety practices, co-workers safety, job safety and safety performance in the workplace.

5.2 Research summary

This research aims to study the relationship between six safety climate variables with safety performance in a workplace. In analysis process, SPSS software was used to analyze all the collected data with a statistical and mathematical approach such as descriptive analysis, Pearson's Correlation test, and multiple regression analysis. However, the only suitable test was used in this study for the main result in order to achieve the research objectives and also in making a good practical conclusion. 120 respondents from DANISCO staffs were involved and recruited in this study.

From Pearson's Correlation test, five from six independent variables which are; management safety practices, safety training, supervisor safety practices, co-workers safety and job safety have a significant relationship with safety performance ($p<0.01$). From that, multiple regression analysis was conducted and it shows that only safety training,

management safety practices and job safety were the most dominant variables to give significant effect to the dependent variable (safety performance).

As overall, in order to increase the safety performance in DANISCO, this study proves that prioritize should be given to safety training, management safety practices and job safety. This action will indirectly decrease the rate of incidents, near miss incidents and injury in the workplace (Zohar, 1980).

5.3 Discussions

5.3.1 Relationship between management safety practices with safety performance

From the Pearson's Correlation test, management safety practices variable has a significant correlation with all other independent variables except for safety attitude. Is shows that management safety practice is one of the important safety climate variables that can affect other independent variables. For example, extensive safety management practices from the employer will ensure consistency of safety training and can elevate safety awareness among staffs from different level including the manager, officer, supervisor, and co-worker.

That is why, from the multiple regression analysis, management safety practices variable was the one from three variables that have a significant relationship (β = 0.247) with the dependent variable (safety performance). Mearns et al., (2003) stated that

proficiency in some safety management practices was associated with lower official accident rates and fewer respondents reporting accidents.

5.3.2 Relationship between safety attitudes with safety performance

From this study, there is no significant relationship between safety attitudes with safety performance. Even in the Pearson's Correlation test, safety attitudes was the only independent variable which does not has a significant relationship with the dependent variable (safety performance). This situation happens might be because of the respondents' perception of their job which they believe not dangerous and risky as they already get familiarized with their everyday routine job scope.

However, it does not mean that DANISCO staff does not have positive safety attitude as they also follow standard operating procedure (SOP) and work instruction set by the company. According to Siu et al., (2003), safety attitude scales were related to age with older workers exhibiting more positive attitudes to safety. This might be explained on why the significant relationship cannot be seen between safety attitudes and safety performance as the percentage of every age group among the respondents was almost the same.

5.3.3 Relationship between safety training with safety performance

Same with management safety practices variable, from the Pearson's Correlation test, safety training variable also has a significant correlation with all other independent variables except for safety attitude. In line with that, safety training variable as well shows

the highest value of β coefficient (0.340) which describes this variable as the most important factor in influencing the safety performance in Danisco. In another word, to improve the safety performance in the workplace, safety training should be maintained and conducted on a regular basis.

Providing safety training in a workplace making the workers competent with their job and also will develop a positive health and safety culture, where safe and healthy working becomes second nature to everyone. Moreover, effective training really beneficial to the employee as well as the employer because it can help a business to avoid the distress that accidents and ill health can cause (SHE, 2012).

5.3.4 Relationship between supervisors safety practices with safety performance

From the result, there is significant relationship between supervisory safety practices with safety performance in Danisco. This finding was opposite with Huang et al., (2004) stated that quality of the execution of corporate safety policies, supervisor safety support, and employee safety control play critical roles in predicting both injury incidence and satisfaction with the company. This situation might be because of lack safety encouragement was given by the supervisors towards 75% of the respondents who work as general workers in this company.

According to Griffiths (1985), a positive relationship exists between top management support and improved workplace safety and health outcomes. Griffiths found that top management commitment to safety and health was associated with reduced lost-

time injuries in the industrial gas industry. On the other hand, similar study suggests that top managements' attitudes toward safety bring a significant role in a workplace safety performance (Sawacha et al., 1999). Despite all these studies, research to assess the safety priorities and safety concerns among the top-level managers, executive and supervisor has still been limited.

5.3.5 Relationship between co-workers safety with safety performance

Based on the multiple correlation, there was significant relationship between co-workers safety with safety performance in the workplace. This finding was supported by Casey and Krauss (2013) stated that; co-worker safety support did show a significant path to safety performance, but was found to exert an effect on upward safety communication. This study suggests a possible mechanism for co-worker support for safety to influence safety outcomes may be through within-team safety communication.

5.3.6 Relationship between job safety with safety performance

Finding revealed that job safety variable also has a significant relationship with safety performance. This variable has the third and the lowest value for β coefficient (0.212, $p<0.01$). In another word, even with the lowest β coefficient value, job safety was also an important factor that needs to be prioritized besides safety training and management safety practices in DANISCO in order to achieve the targeted safety performance.

Job safety is all about workers' perception towards their job task. As an emulsifier based company, DANISCO's staff exposed to physical hazards, electrical hazards, and some chemical hazards as well. Therefore, their perception is really an important component for the staff to assess the risk that they deal with and how well they can manage the risk before the competent person takes over. A study conducted by Rundmo (1995) on offshore installations found that oil workers assigned to offshore installations with high incident records reporting feeling less safe perceived the risks as higher and were more concerned about safety. Even though DANISCO does not involved with such heavy duties, it is still important for the staff to get aware and sensitive to their surroundings.

5.3.7 Influence of safety climate on safety performance

As discussed earlier in chapter 2, the importance of safety climate and its influence towards safety performance has been finally proven. The mediation of safety climate through management safety practices, safety training, supervisor's safety practices, co-workers safety and job safety within the framework provides an individual process that links safety climate to specific performance outcomes. The results support the proposal that management safety practices, safety training, supervisor's safety practices, co-workers safety and job safety mediate the influence of safety climate on safety performance. This distinction is important because it identifies mechanisms through which safety climate is very likely to influence safety performance (Neal & Griffin, 2000). In another word, safety climate is an important factor that needs to be prioritized in Danisco (M) Sdn Bhd in order to achieve the targeted safety performance.

Safety climate is all about workers' perception towards their job task. As an emulsifier based company, Danisco's staff exposed to physical hazards, electrical hazards, and some chemical hazards as well. Therefore, their perception is really an important component for the staff to assess the risk that they deal with and how well they can manage the risk before the competent person takes over. A study conducted by Rundmo (1995) on offshore installations found that oil & gas industry workers assigned to offshore installations with high incident records reporting feeling less safe perceived the risks as higher and were more concerned about safety. Even though Danisco does not involved with such heavy duties, it is still important for the staff to get aware and sensitive to their safety climate which has significant impact of safety outcomes.

5.4 Recommendation

Based on the findings, discussion and conclusion of this study, several relevant recommendations that can be applied in the organization and future research were outlined below:

5.4.1 Recommendations to the Organization

i. DANISCO should be more proactive by providing more training for staff to increase safety awareness among them. Furthermore, OSHA 1994, section 15 (2) (c) states that the need to supply the information, instruction, training as necessary to ensure as far as practicable, the safety and health of the workers at work. According to Goldsmith

(1987) and Hinze (1997), when the staff takes part in safety training, a good quality job can be achieved and safety awareness can be shaped.

ii. DANISCO must conduct a continuous safety program with the collaboration of DOSH. This program can increase safety awareness among the staffs. In addition, through this program, DOSH can also implement a research on the occupational safety related issue among the workers and come out with a solution to solve them.

iii. DANISCO needs to vary their safety program as if the same program done with the same content will result in the staff to feel bored and not interested in participating. Safety department has to be creative to make occupational safety programs to be more enjoyable and meaningful to attract the staffs' participation and attention.

iv. DANISCO should intensify their work safety awareness campaign because, through this campaign, it can provide input and information to staff about the importance of work safety. Furthermore, work safety awareness among staffs can be built if the organization is always explaining and reminding the safety policies and regulations to staff.

v. DANISCO needs to be strict in enforcing the safety regulations and policies to create a more harmonious work environment and gain a better job safety performance.

5.4.2 Recommendation for Future Research

i. It is recommended for future study to determine the relationship between safety climate and safety performance with an increased sample size and take into account of varied age range and races in order for the findings to be more generalizes to the Malaysian workers.

ii. Expand the scope of the study to other companies as well as involving all staff.

iii. Construction companies and industries should also be included in future research as work incidents also happen a lot in this area.

5.5 Conclusion

To sum up, this research proves that safety training is the most important variable in predicting the safety performance followed by management safety practices, supervisor's safety practices, co-workers safety and job safety. However, safety attitude have been identified as not significant to the improvement of safety performance. Hopefully, this study and findings can contribute information to safety management field and as a reference to the various parties in implementing programs related to occupational safety and health.

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RESEARCH ON THE INFLUENCE OF SAFETY CLIMATE ON SAFETY PERFORMANCE IN FOOD EMULSIFIERS IN PENANG

Part A: Demography of the Respondent
Instructions: Please tick (X) on the related column.

1)	Age	☐	20-30 years old	☐	41-50 years old
		☐	31-40 years old	☐	> 50 years old
2)	Gender	☐	Male	☐	Female
3)	Nationality	☐	Malaysian	☐	Non-Malaysian
4)	Position	☐	General Worker	☐	Safety Officer/ Supervisor
		☐	Contractor	☐	Executive
5)	Company	☐			

Part B: Management Safety Practices
Instructions: Please rate how much you personally agree or disagree with these statements. Please circle the correct answer.

1	2	3	4	5
Strongly disagree	**Disagree**	**Unsure**	**Agree**	**Strongly agree**

1. My company responds quickly to safety concerns	1	2	3	4	5
2. My company provides safety information	1	2	3	4	5
3. My company has a regular job safety meeting	1	2	3	4	5
4. My company investigates safety problems quickly	1	2	3	4	5
5. My company conducts frequent safety inspections	1	2	3	4	5
6. My company provides enough safety equipment's	1	2	3	4	5
7. My company keeps workers informed of the hazards	1	2	3	4	5
8. My company emphasizes safe working conditions	1	2	3	4	5
9. My company provides enough safety training programs	1	2	3	4	5

10. My company provides good safety equipment's	1	2	3	4	5
11. My company label warning signs for hazardous substances	1	2	3	4	5
12. My company rewards safe workers	1	2	3	4	5

Part C: Supervisory Safety Practices

13. My supervisors act on safety suggestions by the workers	1	2	3	4	5
14. My supervisors encourage safe behaviours	1	2	3	4	5
15. My supervisors care about the worker safety	1	2	3	4	5
16. My supervisors praise safe work behaviour	1	2	3	4	5
17. My supervisors discuss safety issues with others	1	2	3	4	5
18. My supervisors keep the workers informed of safety rules	1	2	3	4	5
19. My supervisors involve the workers in setting safety goals	1	2	3	4	5
20. My supervisors enforce safety rules	1	2	3	4	5
21. My supervisors frequently mention safety is as important as efficiency	1	2	3	4	5

Part D: Safety Attitude

22. The use of safety equipment cannot reduce injuries and accidents	1	2	3	4	5
23. Safe operating procedures cannot reduce accidents	1	2	3	4	5
24. I break safety rules when under job pressure	1	2	3	4	5
25. I ignore safety regulations to get the job done	1	2	3	4	5
26. Accidents cannot be avoided nor workers protected in advance	1	2	3	4	5
27. I will ignore safe working procedures for convenience	1	2	3	4	5
28. I put accidents down to bad luck	1	2	3	4	5
29. I don't like to accept safety suggestions from others	1	2	3	4	5

Part E: Safety Training

30. The safety training programs in my company help prevent accidents	1	2	3	4	5
31. The safety training programs in my company are useful	1	2	3	4	5
32. The safety training programs in my company are worthwhile	1	2	3	4	5
33. The safety training programs in my company apply to my job	1	2	3	4	5
34. The safety training programs in my company are clear	1	2	3	4	5
35. The safety training programs in my company are good	1	2	3	4	5
36. The safety training programs in my company do the work	1	2	3	4	5

Part F: Job Safety

37. Work on site is unsafe	1	2	3	4	5
38. Work on site is risky	1	2	3	4	5
39. Working on site one can easily get hurt	1	2	3	4	5
40. Work on site is unhealthy	1	2	3	4	5
41. Work on site is dangerous	1	2	3	4	5
42. Work on site is scary	1	2	3	4	5

Part G: Co- Workers Safety Practice

43. My co-workers encourage others to be safe	1	2	3	4	5
44. My co-workers care about work safety	1	2	3	4	5
45. My co-workers care about others' safety	1	2	3	4	5
46. My co-workers follow safety rules	1	2	3	4	5
47. My co-workers keep the work area safe	1	2	3	4	5

Part H: Safety Compliance

48. I maintain safety awareness at work	1	2	3	4	5
49. I comply with safety rules and standard operational procedure	1	2	3	4	5

50. I do not neglect safety, even when in a rush.	1	2	3	4	5
51. I wear personal protective equipment at work	1	2	3	4	5
52. I am confident in my ability to work safely	1	2	3	4	5

Part I: Safety Participation

53. I actively participate in setting safety goals	1	2	3	4	5
54. I actively promote safety improvement suggestions	1	2	3	4	5
55. I actively participate in safety meeting	1	2	3	4	5
56. I actively participate or helping coworkers with safety related issues during safety briefing	1	2	3	4	5
57. I actively participate in safety decision making with my supervisor.	1	2	3	4	5

Thank you for your time.