MACRO-ERGONOMICS AND MUSCULOSKELETAL DISORDERS (MSD) IN MULTINATIONAL COMPANY

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ABSTRACT

Macro-ergonomics approach will lead to greater productivity, motivation and employee safety and health which regard to work related musculoskeletal disorder (WRMDs). This study is focusing on two elements of the macro-ergonomic approach which are management support and organizational safety culture towards ergonomics program. Effective ergonomics program at workplace is important in reducing the number of work related musculoskeletal disorders (WRMDs) in an organization. In this research study, the variables that influence the ergonomics program at workplace had been explored and analyzed. There are two (2) independent variables identified which are management support and organizational safety culture and one (1) dependent variable which is ergonomics program at workplace. Total of 207 sample sizes has been taken from various level groups that consist of management, professional (engineers), technicians, trainers and operators. Study survey has been conducted through random sampling. Quantitative survey has been used for this study. From analysis result it shows that five (5) hypotheses have been accepted. The result concludes that management support and organizational safety culture does exist in the sub organization and there was a good correlation in between management support and ergonomics program where $r = 0.893$, $n = 207$, $p < 0.000$. There is also correlation in between organizational safety culture and ergonomics program where $r = 0.731$, $n = 207$, $p < 0.000$. Researcher had also revealed that management support had a positive relation with the organizational safety culture. It is believed that the effectiveness of the ergonomics program at workplace would reduce the number of work related musculoskeletal disorders (WRMDs) and it has been proven with the injury data obtained from the workplace study since last 5 years.

ABSTRAK

Pendekatan makro-ergonomik akan memimpin ke arah pembaikan produktiviti, motivasi, keselamatan dan kesihatan pekerja yang disabitkan dengan kecederaan "muskuloskeletal disorders" (MSD). Dua elemen daripada pendekatan makro-ergonomik dikaji iaitu sokongan daripada pihak majikan dan budaya selamat organisasi terhadap program ergonomik. Keberkesanan program ergonomik di tempat kerja adalah penting bagi mengurangkan kecederaan "muskuloskeletal disorders" (MSD) di sesebuah organisasi. Di dalam penyelidikan ini, pemboleh ubah yang bersangkutan dengan program ergonomik dikaji dan dianalisa. Terdapat dua (2) pemboleh ubah bebas (IV) iaitu sokongan pihak majikan dan budaya selamat organisasi dan satu (1) pemboleh ubah bergantung (DV) iaitu program ergonomik di tempat kerja. Sebanyak 207 sampel daripada pelbagai jawatan termasuk pengurus, jurutera, juruteknik, pelatih dan operator pengeluaran. Sampel secara rawak diguna pakai di dalam penyelidikan ini dan tinjauan melalui soalan kuantitatif digunakan sepanjang penyelidikan dijalankan. Keputusan daripada analisa menunjukkan lima (5) hipotesis diterima. Keputusan merumuskan bahawa sokongan daripada majikan dan budaya selamat organisasi wujud di tempat kerja. Terdapat perhubungan di antara sokongan pihak majikan dengan program ergonomik di mana nilai $r = 0.893$, $n = 207$, $p < 0.000$. Terdapat juga perhubungan di antara budaya selamat organisasi dengan program ergonomik di mana nilai $r = 0.731$, $n = 207$, $p < 0.000$. Terdapat juga perhubungan yang positif di antara sokongan pihak majikan dengan organisasi budaya selamat. Penyelidik berpendapat bahawa keberkesanan program ergonomik di tempat kerja dapat mengurangkan jumlah kecederaan "muskuloskeletal disorders" (MSD) dan ini terbukti melalui data kecederaan yang diperolehi daripada tempat kajian 5 tahun yang lepas.

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CHAPTER 1

INTRODUCTION

1.0 Background of Research

Work-related musculoskeletal disorders (WRMDs) is a collective and descriptive term of symptoms caused or aggravated by work and characterized by discomfort, impairment or persistent pain in joints, muscles, tendons, and other soft tissues, with or without physical manifestations (Kroemer, 1989). Work activities which are frequent and repetitive, or activities with awkward postures cause these disorders which may be painful during work or at rest. Almost all work requires the use of the arms and hands. Therefore, most WRMDs affect the hands, wrists, elbows, neck, and shoulders. Work using the legs can lead to WRMDs of the legs, hips, ankles, and feet. Some back problems also result from repetitive activities.

Work-related musculoskeletal disorders (WRMDs) are increasingly prevalent in the Malaysian workforce. Specific records on work-related musculoskeletal disorders (WRMDs) published by Malaysian Security Social Organization have shown an impressive increase in these disorders. MSDs reported cases are in increasing trend from 26 cases in 2007 to 239 cases in 2010. Work-related musculoskeletal disorders (WRMDs) represent approximately one third of worker's compensation costs in Malaysian private industry (Azman, 2007).

Work-related musculoskeletal disorders (WRMDs) may worsen over time and therefore become more costly when compared to injuries resulting from a sudden event such as a slip and fall. This also means that it can take a long time to get an employee back to work, resulting in higher medical and time loss payments. In addition, there can be higher hidden costs when workers use more sick leaves or slow their work pace during the period before a claim is filled when WRMDs symptoms are beginning to develop. U.S Bureau of labor Statistics reports that the indirect costs are 3 to 5 times higher, reaching approximately $ 150 billion per year and these include absenteeism, staff replacement and retraining, productivity and quality.

Ergonomics problems at the workplace and bad works organization are parts of the contributing risk factors to work related musculoskeletal disorders (WRMDs). A number of situations within the workplace are conjectured to contribute to the increasing magnitude of work related musculoskeletal disorders (WRMDs) suffered by the workers. This can be prevented or reduced if an organization has implemented a macro-ergonomics approach at a workplace. Designing effective and optimal work systems using a macro-ergonomic approach can lead to benefits that are recognized throughout the organization.

Macro-ergonomics can be viewed as a top down socio technical systems approach to the design of work systems and the application of an overall work system design of the human-job, human –machine and human-software interfaces. It is also defined as the optimization of organizational and work systems design through consideration of relevant personnel, technological and environmental variables and their interactions (Hendrick H.W, 1986). Effective macro-ergonomic design drives a number of aspects of the micro-

ergonomic design of the work system thus ensure ergonomic compatibility of the system components with the work system's overall structure. This approach, based on the socio technical terms, enables joint optimization of the technical and personnel subsystems from top to bottom throughout the organization of the work system's elements are with its overall design and external environments. Optimal system functions and effectiveness result leading to greater productivity, quality, and employee safety and health, psychosocial comfort, motivation and perceived quality of work life.

There are five elements in macro-ergonomics approach and all elements are interacting with each other. The elements are organization, human, tools or technology, environment and task. In this research, only two elements are being studied which are organization and human which the main objective of the study is to explore on management support and organizational culture towards ergonomics program and its relationship with work related musculoskeletal disorders (WRMDs)

Management support and organizational safety culture are the two key elements that will influence the effectiveness of the ergonomics program and directly will influence the safety incidents or injuries including work-related musculoskeletal disorders (WRMDs) at the workplace. The fundamental management process is to allocate available resources to a productive end. The limited resources that managers have to work with are those of time, money, and people. One responsibility of most managers is the safety and health of those employees under their direction. From a practical point of view, management needs to identify how to best allocate resources to ensure the lowest possible number and severity of injuries experienced by employees.

More recent data suggest that it is the management system that has the most significant impact on injury rates (Petersen, 2000). Simonds and Shafari-Sahrai (1977) analyzed the relationship between injury frequency rates and factors thought to influence injury rates, such as management involvement in the safety effort, workforce characteristics, and physical conditions. The researchers found that in companies where top management is involved in safety, there were lower injury frequency rates.

Organizational culture has been defined as ‘a complex framework of national, organizational and professional attitudes and values within which groups and individuals function’ (Helmreich and Merritt, 1998). The beliefs and values that refer specifically to health and safety form the subset of organizational culture referred to as safety culture (Clarke, 1999). Safety culture is defined as the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization’s health and safety management" (HSC, 1993a, p. 23). The goal of a safety culture is to develop a norm in which employees are aware of the risks in their workplace and are continually on the lookout for hazards (Ostrom et al., 1993).

A safety culture motivates and recognizes safe behavior by focusing on the attitudes and behaviors of the employees. An organization's safety culture develops over a period of time and cannot be created instantly. It is a process not a program; it takes time to develop and requires a collective effort to implement its many features (Barr, 1998). According to Siehl and Martin (1990), a ‘‘strong’’ organizational culture is one where espoused values are consistent with behavior and where employees share the same view of the firm. While

there are many potential external influences that make it difficult to define a ‘‘strong’’ safety culture across settings, there are many features that safety cultures from successful organizations have in common. In order to cultivate a strong safety culture, several measures can be taken.

Basically, this study was carried out at one of the Multinational Electronic Company in Malaysia with the main objective of the study is to identify the current management support and organizational safety culture towards ergonomics program and its relationship with the work-related musculoskeletal disorders (WRMDs). This Multinational Electronic Company is located at the north region of Malaysia and was established in year 1996. The main business of the Multinational Electronic Company is manufacturing electronic products and has a total workforce of 4000 employees consist of various levels of education and background. Multinational Electronic Company has been operated in Malaysia for more than 30 years with more than 10 buildings or sub organization (manufacturing) being operated.

In this study, one of the sub-organization (manufacturing) had been selected to participate in the survey and research. The Multinational Electronic Company has a good safety management system practice, good management support and has established a comprehensive ergonomics program for the organization. Safety is always the first priority for this company. There are many safety activities which regards to ergonomics program such as safety promotion programs, awareness campaign, safety line walk by management, safety training programs and other activities that were conducted to enhance the safety practicing, awareness and compliance among its employees.

Based on the previous researchers, it has been proven that the management support and organizational safety culture could leads to the success of the safety programs and reduction of safety incident or injuries. This will directly increase the productivity of the company.

1.1 Problem Statement

Safety is remaining an issue that both employees and employers must take seriously in workplace. Previous researchers recognize the important of management support and organizational safety culture in ensuring the organization and employee achieve a high standard of safety in workplace. In a similar study, Cohen (1977) examined critical determinants of a successful industrial safety program. Cohen found that at firms determined to have successful safety programs (i.e., firms that experienced low injury rates), certain common factors were present, including a strong management commitment to safety as reflected by management's knowledge of the problems, their convictions that high safety standards were attainable and their demonstrated work toward those ends. In addition, Cohen identified extensive formal and informal contacts between workers and management on safety issues and a well-established safety training process as factors contributing to low accident rates. In a follow-up study, Smith, Cohen, Cohen, & Cleveland (1978), found that management's commitment to the safety process was an important factor at low injury rate plants. This literature suggests that there is a connection between management's approaches to safety, the employees' perception of management, and accident or injury rates. In addition, it has been suggested that management's commitment and leadership with safety issues is a significant determinant in obtaining necessary

employee commitment to safety. This study is an attempt to expand our understanding of that connection by performing the survey at one of the Multi-national Electronic Company in Malaysia.

1.2 Objectives

Specifically, the objectives of this study are:

i. To identify whether management support and organizational safety culture towards ergonomics program is exists in this sub-organization.

ii. To identify the current management support and organizational safety culture towards ergonomics program.

iii. To identify the relationship between management support and organizational safety culture towards ergonomics program.

iv. To identify the relationship between management support and organizational safety culture in this sub organization.

1.3 Scope of Study

The scope of the study is to perform a research at Multinational Electronic Company located at northern region of Malaysia. Manufacturing and office area from one of the sub organizations will be the specific area of the study. The survey population as specified in the table below.

Table 1.1: Table of questionnaires survey population

No	Sample/Area/Population	Gender	Total Sample Size
1	Managers	Male/Female	20
2	Engineers	Male/Female	27
3	Trainers	Male/Female	8
4	Normal Shift Technician	Male/Female	10
5	Shift Supervisor	Male/Female	10
6	Shift A Operators	Female	25
7	Shift A Technician	Male/Female	8
8	Shift B Operators	Female	25
9	Shift B Technician	Male/Female	8
10	Shift C Operators	Female	25
11	Shift C Technician	Male/Female	8
12	Shift D Operators	Female	25
13	Shift D Technician	Male/Female	8
	Total Sample Size		207

The purpose of the survey is to explore the management support and organizational safety culture towards ergonomics program and its relationship with work-related musculoskeletal disorders (WRMDs). 207 of sample size will represent result for the whole organization at workplace.

1.4 Significant of the Study

Many literatures suggest that there is a connection between management's approaches to safety, the employees' perception of management, and accident or injury rates. In addition, it has been suggested that management's commitment and leadership with safety issues is a significant determinant in obtaining necessary employee commitment to safety. This study is an attempt to expand our understanding of that connection by performing the survey and research at one of the Multinational Electronic Company in Malaysia.

1.5 Organization of the Report

Chapter 1 of this report is the introduction part. In this chapter, it contains a basic background of the research regarding work-related musculoskeletal disorders (WRMDs), management support and organizational safety culture descriptions. It contains also the problem statement, objectives and significant of the study.

Chapter 2 covers the literature review related to the study. All information gathered from the journals, books, articles and other related source of information been cited and included in this chapter.

In Chapter 3, it discussed the methodology used in this study. It contains the study design, study location, sample size, data collection, and research instruments such as

questionnaires used, interviews and through observation. It also contains the information regarding the data analysis used to analyze the result gathered.

Chapter 4 is the result of the study. The result from the analysis using SPSS was presented in table form and graph form. The results are based on the questionnaires distributed to the respondents in manufacturing company.

Chapter 5 is about the discussion regarding the results obtained as represented chapter 4. Finally Chapter 6 will conclude the report of this study.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

On an average day, 17 US workers are killed and 16,000 are injured in work-related accidents, resulting in a cost to industry of more than US$110 billion annually (Barr, 1998). During 1998, more than 9 out of 100 workers in the manufacturing sector experienced an injury at work that required medical attention (National Safety Council [NSC], 1999). According to NSC, accidents and their consequences continue to be a major public health concern. In order to contribute to the overall reduction of workplace accidents, workplace safety has been studied from different points of view (Silva et al., 2004). Whether technical or psychological, these viewpoints lead to the promotion of a positive safety culture – a concept intrinsically linked to organizational culture that has attracted much attention across a broad spectrum of industries.

The American Heritage Dictionary defines ‘‘culture’’ as ‘‘the totality of socially transmitted behavior patterns, arts, beliefs, institutions, and all other products of human work and thought characteristic of a community or population.’’ More specifically then, corporate culture is a pattern of beliefs and assumptions shared by members of the organization that operates unconsciously and that defines in a basic, taken-for-granted fashion an organization’s view of itself and its environment (Schein, 1986).

2.1 Organizational Culture

According to Reason, 1997 and Uttal, 1983 definition of organizational culture most closely captures its essence: "shared values (what is important) and beliefs (how things work) that interact with a company's people, organizational structures and control systems to produce behavioral norms (the way we do things around here)". Cooper (2000) defines corporate culture as 'to reflect shared behaviors, beliefs, attitudes and values regarding organizational goals, functions and procedures'. In short, organizational culture is the interaction between organization and individuals, where employees' behavior can change through mutual interaction.

According to Hofstede (1990), organizational culture is considered the top-management business. Schein (1992) defines organizational culture as 'a pattern of basic assumptions – invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration; that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems'.

According to Schein (1992), organizational culture is understood to be deeply rooted assumptions about human nature, human activities and social relationships shared by members of an organization and their expression in values, behavioral patterns, and artifacts found within the organization. Safety culture is often seen as a subset of organizational culture, where the beliefs and values refer specifically to matters of health and safety (Clarke, 1999).

2.2 Safety culture

Is safety culture an entity or an aspect? Most widely-quoted publications including (IAEA, 1991 and ACSNI, 1993) treat it as an entity. The view taken by Guldenmund (2000) is that instead of safety culture, organizational culture may be considered as the central theme, and researchers should focus on how to measure it. In this case, the research is restricted to (organizational) cultural influences on safety culture (Hale, 2000). Nonetheless, it is difficult to reverse research into safety culture.

Researchers tend to use safety culture, safety climate and perhaps safety management interchangeably, as the terms are not so clear cut. Kennedy and Kirwan (1998) reveal that safety management is regarded as the documented and formalized system (policy, procedures, training, instructions and resources, etc) of controlling against risk or harm. Nevertheless, the standard of an organization's safety management system as it exists on paper does not necessarily reflect the way it is carried out in practice. This is where the concept of safety culture comes into the picture. It is the safety culture of the organization that will influence the deployment and effectiveness of the safety management resources, policies, practices and procedures as they represent the work environment and underlying perceptions, attitudes, and habitual practices of employees at all levels (Kennedy and Kirwan, 1998).

The authors consider a safety culture of an organization to be one in which safety is regarded by everyone as being an issue that concerns everyone. As a result, safety rules

should be understood and adhered to; all incidents must be reported and investigated quickly for actions to be taken, and for increased learning.

2.3 Positive Safety Culture

Developing and maintaining a positive safety culture can be an effective tool for improving safety within any organization (Vecchio-Sudus and Griffiths, 2004). The challenge is how to develop a culture that is favorable to good safety performance. Hale (2000) has listed a number of elements for a good safety culture, these include importance to safety; involvement of workers at all levels; role of safety staff; the caring trust (that all parties to have a watchful eye and helping hand to cope with inevitable slips and blunders); openness in communication; belief in safety improvements; and integration of safety into the organization. To develop and further promote a positive safety culture, a review from Vecchio-Sudus and Griffiths (2004) is given below:

Changing attitudes and behaviors: Safe behaviors can be enhanced by capitalizing on activities such as verbal instructions, training, and warning signs. Nevertheless, if things are communicated in the way that the work is easier, and the task can be finished earlier and thus rewarded with monetary incentive, then certainly employees will be cutting corners, may not be observing safety rules, not wearing personal protective equipment, and ultimately not working safely. Long-term values include employees being able to work without injury so they can continue to provide earning for both the company and for her/his family.

2.4 Management commitment:

Management plays a key role in promoting a positive safety culture. This can be best demonstrated by allocating resources, time, walk the talk, inspections, by participating in risk assessments and consultative committee meetings, and by completing actions. In one of the first investigations of safety climate, Zohar (1980) found that management's commitment to safety is a major factor affecting the success of an organization's safety programs. This commitment can manifest itself through job training programs, management participation in safety committees, consideration of safety in job design, and review of the pace of work. For example, people working for a supervisor that never mentions safety perceives that safety is unimportant; as a result, they will not place a strong emphasis on safety (Hofmann & Stetzer, 1996).

Managers at all levels of the organization need to exemplify a shared vision of safety excellence and demonstrate the leadership styles and practices needed to drive the desired culture change, including fostering a sense of employee ownership of safety (French & Geller, 2008). Without effective communications system in place, many management decisions and actions supporting safety are never know or realized by employees. Managers must be able to lead the safety management actively. Leadership can be improving safety performance by articulating an appealing vision for the future, encouraging members of their team to think themselves and participation in safety activities by employees. Leadership is able to affect the safety attitude and safety culture of member of their team, and therefore, determine safety performance of the team (Yan, Wang, Guo & Huang, 2009).

In the 1992 Veteran's Hospital (VAMC) study, the guiding force behind the initiative to reduce the number of injury cases was management's commitment, which began at the very top management level, with the Medical Center Director. Without sincere support from top hospital administrators, this project would not have achieved its level of success (Garrett & Perry, 1996).

Simonds and Shafari-Sahrai (1977) analyzed the relationship between injury frequency rates and factors thought to influence injury rates, such as management involvement in the safety effort, workforce characteristics, and physical conditions. They gathered data on the management system of companies, some with high injury rates and others with low injury rates. In studying these matched pairs of companies, the researchers found that in companies where top management is involved in safety, there were lower injury frequency rates.

In a similar study, Cohen (1977) examined critical determinants of a successful industrial safety program. Cohen found that at firms determined to have successful safety programs (i.e., firms that experienced low injury rates), certain common factors were present, including a strong management commitment to safety as reflected by management's knowledge of the problems, their convictions that high safety standards were attainable and their demonstrated work toward those ends. In addition, Cohen identified extensive formal and informal contacts between workers and management on safety issues and a well-established safety training process as factors contributing to low accident rates.

In a follow-up study, Smith, Cohen, Cohen, & Cleveland (1978), found that management's commitment to the safety process was an important factor at low injury rate plants.

2.5 Employee Involvement/Participation:

For a positive safety culture, employees' involvement, ownership and commitment is necessary; in particular empowerment promotes feelings of self-worth, belonging and value. Employee participation (or employee involvement) is a behavioral-oriented technique that involves individuals or groups in the upward communication flow and decision-making process within the organization. The amount of participation can range from no participation, where the supervisor makes all decisions, to full participation, where everyone connected with, or affected by, the decision is involved. Employees close to the work are recognized as often being the best qualified to make suggestions about improvements. Participative managers will solicit opinions from other individuals or groups before making final decisions, especially for those that affect the employees. The empowerment of employees is both a management style and attitude.

Empowering employees provides them with authority, responsibility, and accountability for required decisions and ensures that both employees and management are involved in setting goals and objectives. It induces employees to do their best work as individuals and as a team, while relieving the manager to plan, monitor, lead, and mentor (Cohen & Cleveland, 1983). In the United States, employee involvement has tended to focus on greater personal influence on the shop floor and on a greater role in the decision-making involving the employees' daily work experience (Cohen & Cleveland, 1983).

A.G. Vredenburgh / Journal of Safety Research 33 (2002) 259–276 261 Safety committees have become a standard feature of workplace safety programs; however, committees themselves do not necessarily mean effective employee involvement. Committees must be given real power to implement change. The members must be in positions where they can have a positive impact on the committee's work (such as production and engineering supervisors), and must be well trained. Participation has been found to be a key component in successful hospital injury prevention programs. In a 1992 study done by the Department of Veterans Affairs Medical Center (VAMC) in New Jersey, a program was implemented to reduce lost-time injury cases. The intervention included the involvement of all levels of employees in every phase of the safety program. This program dramatically reduced the lost-time injury cases within 1 year of implementation (Garrett & Perry, 1996).

2.6 Training and Seminars:

In order for employees to be active participants in a safety program, they must receive occupational safety training. A well-designed and administered training program should emphasize safe work practices and be derived from a true assessment of need. Training should be followed with a program based on goal-setting and performance feedback (Cohen & Jensen, 1984). Training program assessment should verify that the safe work practices could be demonstrated to be effective and to endure beyond cessation of performance feedback. According to Cohen and Jensen, there should be a redefinition of group norms sustained through informal influences such as peer modeling of desired

behaviors, continued management support of the program, and a behavior sampling procedure specifying performance-based criteria.

Safety training provides the means for making accidents more predictable. The basic difference between safe employees and those who frequently get hurt is that safe employees can recognize hazards and hazardous actions and understand the consequences. To improve the quality of safety and health for all employees, organizations should institute a systematic, comprehensive safety and health training program for new employees, provide a mentor for these employees, and use a buddy system to help orient new employees in the safety and health and quality systems. They should also institute a system of continual reeducation and retraining of employees in current safety and health issues (Roughton, 1993).

Several issues affect the perception of risk levels and should be understood when training employees in occupational safety. People tend not to use the likelihood of injury in their judgments of product safety; rather, the severity of injury plays the foremost role in decisions to read warnings and act cautiously (Young, Brelsford, & Wogalter, 1990). Vredenburgh and Cohen (1995) found that the level of perceived danger increased compliance to warnings and instructions; therefore, it is critical that all employees are trained to identify the hazards associated with their workplace.

2.7 Reward System

Culture is learned through a connection that is made between behaviors and consequences. Thompson and Luthans (1990) state that since organizational culture occurs in an environment where there are multiple reinforcements and reinforcing agents, changing an organization involves identifying the various reinforcing agents in order to determine their effects on the change process. A correctly designed safety-incentive program reinforces the reporting of a hazard or an unsafe act that leads to an injury while giving bonuses for fewer lost-time accidents.

A safety incentive program must be part of a campaign that runs parallel to safety education and training. It must be directed at the prevention of accidents, not punishment after an accident occurs (Peavey, 1995). Informational (feedback, self-recording), social (praise, recognition), and tangible reinforcers (trading stamps, cash bonuses) have been used as well as nonmonetary privileges (Komaki, Barwick, & Scott, 1978). As with any policy, the effort to develop a strong safety culture is unlikely to be effective if the organization is not reinforcing the desired behaviors (or is rewarding inconsistent behaviors such as speed or production rates).

A well-designed incentive program offers recognition, which can help modify behavior. A key characteristic of a successful incentive program is that it receives a high level of visibility within the organization. Participants must be able to comprehend what the incentive program is designed to accomplish and how their performance will be measured (Halloran, 1996). Simply distributing prizes and money without pairing them with a clear,

consistent set of contingencies reduces the potential to achieve the desired outcome. It may even increase the undesired behavior, more accidents (Swearington, 1996). The Cohen et al.(1975) study showed that the low accident rate plants were to use a variety of monetary incentives to promote safe work behavior.

2.8 Measuring Safety Culture

Traditionally, organizational culture is measured through the application of qualitative methods, such as observations and interviews. Nevertheless, the three main dimensions (psychological, situational and behavioral) can be measured through a combination of qualitative and quantitative methods (Cooper, 2000).

One way to make the safety culture more visible is through the use of employee perception surveys, which have been valuable tools for detecting differences in employee attitudes concerning several management practices. These tools have also been applied to the safety field for measuring safety program effectiveness. In an early study, Zohar (1980) used an employee questionnaire to identify the relative importance of specific safety in 20 industrial organizations in Israel.

In another study, Bailey (1989) used the Minnesota Safety Perception Survey to identify factors that positively contributed to injury reduction within the railroad industry. Both the original study and its ongoing follow-up, which include other industries (Bailey, 1997), showed that in plants that had low injury rates, the employees' perception of management commitment to safety was highly positive. On the other hand, in plants where

injury rates were high, the employees' perception of management commitment to safety was low and the major focus of management's safety efforts was on OSHA compliance with limited employee involvement practices. Employees' perceptions of management's commitment to safety, of fellow employees' participation in safety, and of the effectiveness of education and training efforts on the part of management have demonstrated a positive impact on safety outcomes.

Thompson et al. (1998) found that while managers influence safe behaviors through communication of what is brought to their attention, supervisors do so through how fairly they interact with workers. Cox and Cheyne (2000) incorporated behavioral indicators in their "Safety Assessment Toolkit" along with climate questionnaire and semi-structured interview schedule. Cox et al. (2004) conclude that behavioral safety is effective in increasing employees' confidence to challenge unsafe practices, as well as highlighting examples of best practice. Behavioral safety process (BSP) supports cultural realignment towards a "safety first" culture. They indicate that the BSP is an effective motivational tool that assists in both individual behavior and attitude change.

Although measurement of safety culture depends on how it is defined (which in turn reflects the adopted perspective), ethnographic approaches are often costly and time consuming. Additionally, they tend to produce discovery data rather than hard data that can be incorporated into a management action plan. Glendon and Stanton (2000) demonstrate that a triangulated methodology would be appropriate for use with safety culture measurements. A triangulated method allows for a multi-level analysis of safety culture by conducting interviews, surveys, audits and document analysis, etc.

2.9 Summary

Promoting management commitment and employees participation in safety can enhance the organization's safety culture. When employees become more aware of their responsibilities for incident and injury prevention, they will exhibit more interest in maintaining a safe and healthy work site. M. O'Toole (2002) suggests that there is a connection between management's approach to safety, the employees' perception of management, and accident/injury rates. In addition, it has been suggested that management's commitment and leadership with safety issues is a significant determinant in obtaining necessary employee commitment to safety. This study is an attempt to expand our understanding of that connection.

CHAPTER 3

METHODOLOGY

3.0 Introduction

In research, there are several research method can be use depending on the type of research to conduct. Three types of research which is Quantitative research, Qualitative research and mixed research. Quantitative research was dominant during 20th century and Qualitative was use during 1980's as an alternative to quantitative research. Mixed research is a combination of qualitative and quantitative research.

This study was conducted with various sources of data and information collection such as through data collection which includes data type and data analysis. This section also explains the data collection techniques such as observation, interviews and questionnaires. Information is also gathered from questionnaire to know the perception of workers on their management support and organizational safety culture towards Ergonomic Program and its relationship with work related musculoskeletal disorders (WRMDs). Figure 3.1 shows the overall flowchart of this study

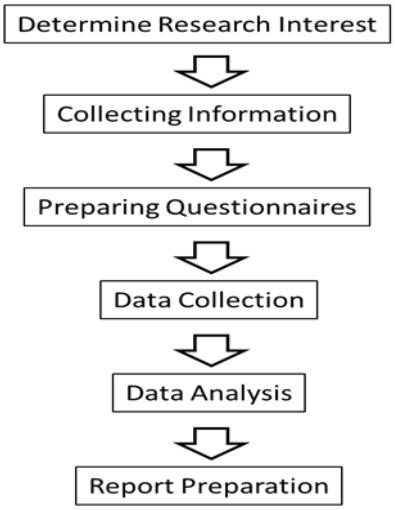


Figure 3.1: Flowchart of study

3.1 Study Design

This study is based on survey, observation, questionnaires and some of data collections during the visit to the company. In this study the quantitative research aimed to determine the relationship between independent variables and dependent variable. The study conducted is a survey in the form of itemized questionnaire which was designed to evaluate and gather the information about the management support and organizational safety culture towards ergonomics program and its relationship with work related musculoskeletal disorders (WRMDs) at a Multi- national Electronic Company. The survey conducted allowed information to be collected from a huge amount from a sample of respondents relatively fast, inexpensive and relatively anonymous.

In this study there are total of two independence variables and one dependent variable to be study and explore. They are:

3.1.1 Independent Variables

1) Management Support

Management commitment to safety is necessary and such engagement in safety benefits the employees as well as the organization. Managers at all levels of the organization need to exemplify a shared vision of safety excellence and demonstrate the leadership styles and practices needed to drive the desired culture change, including fostering a sense of employee ownership of safety (French & Geller, 2008).

2) Organizational Safety Culture

Safety culture is an organization's norms, beliefs, roles, attitudes, and practices concerned with minimizing exposure of employees to workplace hazards (Turner, 1991). The goal of a safety culture is to develop a norm in which employees are aware of the risks in their workplace and are continually on the lookout for hazards (Ostrom et al.,1993). Studies recognize that by focusing organizational effort to cultivate a culture of involvement and participation, zero injuries is achievable (French & Geller, 2008)

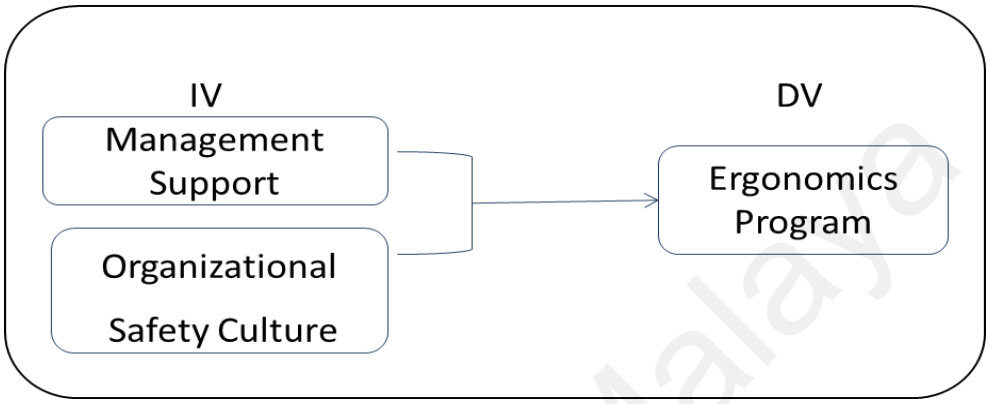
3.1.2 Dependent Variables

1) Ergonomics Program

A well-established ergonomics program at a company is always a factor that will contribute to low injury rate of work related musculoskeletal disorders (WRMDs). Work related musculoskeletal disorders (WRMDs) data is obtained from the company

injury reporting tool since 5 years back (2008-2012). Information on the current ergonomics practices at the workplace is also collected for the study.

Figure 3.2: Framework of the Study



3.1.3 Relationship in between variables

Ergonomics program had been identified as a dependent variable with the assumption that the injury rate of work related musculoskeletal disorders (WRMDs) will be reduced with a good ergonomics program in place which includes management support and a good organizational safety culture. However further research needed to understand whether there will be a positive relation or negative relation towards ergonomics injury rate at the workplace.

Management support has been identified as the independent variable in this study with assumption that the management support is one of the biggest roles in ensuring good ergonomics program did exist at the workplace. In this study researcher assume that management support will have positive relation towards good ergonomics program and is

believed that it will reduce ergonomics injury rate (Work related musculoskeletal disorder, WRMDs) at workplace. This study also explored whether management did provide enough activities and safety program towards safety ergonomics program at workplace.

Organizational safety culture at workplace is being identified as the independent variables as well with an assumption that positive organizational/safety culture will influence management resources, practices and procedures towards a good ergonomics program at a workplace. With a good ergonomics program in place, it is believed that the injury rate (Work related musculoskeletal disorders, WRMDs) will be reduced.

In conclusion, this study had explored on relation in between management support and organizational safety culture towards ergonomics program and its relationship with work related musculoskeletal disorders (WRMDs).

3.2 Study Location

The study had been carried out at Multinational Electronic Company located at northern region of Malaysia. This company was established in 1996 with the main business is manufacturing electronics products. The Multinational Electronic Company has a total workforce of 4000 employees with more than 10 buildings or sub organization (manufacturing) being operated. This study is focused on one of the sub organization (manufacturing) which consists of more than 400 employees.

3.3 Sample Size

The sample size identified had been collected among manufacturing workers through the various level of working groups inclusive of managers, supervisors, engineer, normal shift employees and shift employees. Gender for the sample size is not a contributed factor for this study as the purpose of this study is general study to understand the management support and organizational safety culture towards ergonomics program and its relationship with Work Related Musculoskeletal Disorder (WRMDs). Total of 207 which is had been randomly chosen as sample size of the population to represent the whole organization employees. The sample size is about 50% from the total number of employees in the sub organization.

Table 3.1: Sample sizes of respondents.

No	Sample/Area/Population	Gender	Total Sample Size
1	Managers	Male/Female	20
2	Engineers	Male/Female	27
3	Trainers	Male/Female	8
4	Normal Shift Technician	Male/Female	10
5	Shift Supervisor	Male/Female	10
6	Shift A Operators	Female	25
7	Shift A Technician	Male/Female	8
8	Shift B Operators	Female	25
9	Shift B Technician	Male/Female	8
10	Shift C Operators	Female	25
11	Shift C Technician	Male/Female	8
12	Shift D Operators	Female	25

13	Shift D Technician	Male/Female	8
	Total Sample Size		207

3.4 Data Collection

There are two types of data that had been collected throughout the study. The first one is the primary data. Primary data is the data obtain from the interview of the respondent or workers using a set of questionnaires. A questionnaires survey involves the gathering of information from individual using a formally designed schedule of questionnaires or interview schedule. A self-administered questionnaires was prepared which all respondents consented to the study were required to answer 4 sets of questionnaires comprising of socio-demographics factors, management support survey, organizational safety culture and ergonomics program survey at workplace which would take between 10 to 20 minutes. The questionnaires were distributed to the workers.

Second type of data is secondary data. This data and information been gathered through observation, literature review, articles, report, books and also journal. Other valid information will also be included to add sophistication and viability.

3.4.1 Primary Data Collection Method

a) Data collection method that used for this study is the quantitative questionnaires surveys with a scale range from strongly disagree to strongly agree which are consists

of scale 1 – 6. To minimize the variance for the survey result, there is no neutral scale and the survey does not depend or limited to the age or gender.

b) Total of 20 normal shift managers were selected to answer the questionnaires. Distribute the questionnaires and collect the questionnaires survey in two weeks' time frame.

c) Randomly select 27 engineers working at manufacturing floor as the sample to answer the research questionnaires. All 27 selected engineers were from normal shift employees. Distribute the questionnaires and collect the questionnaires survey in two weeks' time frame.

d) Randomly select normal shift technicians working at manufacturing floor as the sample to answer the research questionnaires. All 10 selected normal shift technicians were from various operations. Distribute the questionnaires and collect the questionnaires survey in two weeks' time frame.

e) Randomly select trainers working at manufacturing floor as the sample to answer the research questionnaires. All 8 selected trainers were from various operations. Distribute the questionnaires and collect the questionnaires survey in two weeks' time frame.

f) Randomly select shift supervisors working at manufacturing floor as the sample to answer the research questionnaires. All 10 shift supervisors selected were from across

four shifts. Distribute the questionnaires and collect the questionnaires survey in two weeks' time frame.

g) Randomly select shift technician working at manufacturing floor as the sample to answer the research questionnaires. All 32 technician selected were from across four shifts. Distribute the questionnaires and collect the questionnaires survey in two weeks' time frame.

h) Randomly select shift operators working at manufacturing floor as the sample to answer the research questionnaires. All 100 shifts operators selected were from across four shifts. Distribute the questionnaires and collect the questionnaires survey in two weeks' time frame.

3.4.2 Secondary Data Collection Method

Data collection method that used for this study is the through the interviews and information on the current safety practices which is ergonomics program at the workplace. Interviews session will help to explore on the current management practices and organizational safety culture towards ergonomics program at workplace. Data is also being obtained from the company yearly report on ergonomics program that is being practices and the number of work related musculoskeletal disorders at workplace is obtained from the company injury reporting system since 5 years back (2008-2012).

3.5 Questionnaires Design

In this study, the quantitative questionnaires survey questions was drafted to understand the relationship between management support and organizational safety culture towards ergonomics program and work-related musculoskeletal disorders (WRMDs)

There are total of 40 questions that specifically asked about socio-demographics factors, management support, and organizational safety culture and ergonomics program at workplace. Quantitative questionnaires survey questions with scale range from strongly disagree to strongly agree that consists of scale 1 – 6 were used. There is no neutral scale been used for quantitative survey in order to minimize the variance for the survey result. In design questionnaires, researcher should gather as much of information possible from the previous research. It should start with an examination of the management, planning, policy or theoretical question to be addressed. All questions should only be included in the questionnaires if they are related to the elements of research question that researcher seek for explanations.

3.5.1 Research Questionnaire

The questionnaires had been drafted and categorized into four sections, consists of socio-demographic questionnaires, management support, organizational safety culture and ergonomics program in workplace. Likert-scale type format being used for the quantitative survey questionnaires:

a) Demographic Questionnaires

In demographic questionnaires, there are 3 types of questions that being ask to the responded that consist of length of service, educational level and their job level position at the workplace.

b) Management Support Questionnaires

In management support questionnaires, total of 16 questions being drafted for the survey for participants to answer. These questions will explore on the management support that is being provided by the company to the employees towards ergonomics program. The question will also explore on the support that is being given by the management to the employees for any safety related issues. The questionnaires will also determine whether the management support did exist in the study at workplace and also to explore on the relationship of the management support towards ergonomics program at workplace.

c) Organizational Safety Culture

Organizational safety culture questionnaires consist of 11 questions. The purpose of these questions is to explore whether organizational safety culture towards ergonomics program exist at the study workplace. It is also to determine whether employees practice the safe work procedure because of their understanding on safety or because of the enforcement by the management. The questionnaires will also explore on the relationship of the organizational safety culture towards ergonomics program at workplace.

d) Ergonomics Program

Ergonomics program questionnaires consist of 10 questions. The purpose of these questions is to explore whether ergonomics program is existing at the workplace and to explore the effectiveness of the ergonomics program in relationship with work related musculoskeletal disorders (WRMDs) at workplace.

All the samples that being selected to practice in the survey were given a brief explanations on what they should do, time frame they need to submit the survey, to whom they will need to submit and how to answer the questionnaires survey. The most important is to ensure that they need to answer the survey question sincerely so that researcher can have a valid data for the research data validation process.

3.6 Pilot Survey

Pilot survey testing before the actual questionnaires survey is important to ensure that the wording, sequencing and layout of the survey question are reliable and valid. It is also need to check on the response rate from the respondent. Once pilot survey completed with the response from respondent, it will be tested using the reliability test in Statistic Package for Social Science (SPSS), Version 21. The updated questionnaires will be distributed for the actual survey.

3.7 Data Analysis Technique

Statistic Package for Social Science (SPSS) programme had been used for the data statistical analysis purpose. SPSS version 21 had been used based on the time of the research been conducted. P value below 0.05 was considered as statistically significant.

3.7.1 Data Screening

A verification procedure using descriptive statistics and graphic representations of the variables need to be done to ensure the accuracy of the data being coded and entered into the data file (Tabachnick & Fidell, 2007). For the data cleaning, it can be achieved by frequency tables, histograms, bar stem-and-leaf displays and box plots (Meyers, Gamst & Guarino, 2006).The values of each variable must be "within range" after the researcher had produced frequencies of responses to each item and looked for out-of-range values for responses as this survey required a response between 1 and 6 only.

3.7.2 The Reliability of the Instruments

Consistency of the instrument was shown by the Cronbach Alpha. As quoted from Sekaran (2003), reliability less than 0.60 are considered poor, those in the range of 0.70 are acceptable and those over 0.80 are good and more than 0.90 are excellent. Table 3.2 shows the reliability scale according to Hair et al (2003).

Table 3.2: Reliability Scale

Alpha Coefficient Range	Strength of Association
< .6	Poor

.6 to < .7	Moderate
.7 to < .8	Good
.8 to < .9	Very Good
.9 >	Excellent

(Source: Hair et al (2003), Essential of Business Research Methods)

3.7.3 Descriptive Statistics

Statistical Package software for Social Science (SPSS) Version 21 was used to analyse the collected data. Frequency distribution and percentage method were used to analyse respondent demographic information.

3.7.4 Hypothesis Testing

These analyses answer the hypotheses of this study. Descriptive analysis and correlation were applied to test the hypothesis.

Hypothesis 1:

Ho: Management support does not exist in this sub organization

H_1: Management support does exist in this sub organization

Hypothesis 2:

Ho: Organizational safety culture does not exist in this sub organization

H_1 : Organizational safety culture does exist in this sub organization

Hypothesis 3:

Ho: There is no relation in between management support and ergonomics program in this sub organization

H_1: There is a relation in between management support and ergonomics program in this sub organization

Hypothesis 4:

Ho: There is no relation in between organizational safety culture and ergonomics program in this sub organization

H_1: There is a relation in between organizational safety culture and ergonomics program in this sub organization

Hypothesis 5:

Ho: There is no relation in between management support and organizational safety culture in this sub organization

H_1: There is a relation in between management support and organizational safety culture in this sub organization

3.8 Summary

Quantitative research is the method to be used for the case study. Random sampling method had been applied for this questionnaires survey. Total of two hundred and seven employees were identified as a sample size for this study to represent the whole organization that consist more than four hundred employees. The sample of the population was randomly selected among various working group level. The questionnaires were design with total of forty questions that consist of demographic survey, management support survey, organizational survey and ergonomics programme surveys. Likert-scale type had been used for the questionnaires survey with the scaling of 1 (strongly disagree) until 6 (strongly agree). Pilot survey or pilot test had been conducted prior to the actual survey among the employees at the company. Statistic package for Social Science, SPSS version 21 is the programme that been used for the statistical data analysis method.

CHAPTER 4

RESULTS AND ANALYSIS

4.0 Introduction

This chapter was conducted based on the methods explained in the previous chapter. The methods were chosen in order to satisfy the objectives and questions of this study. This chapter presents the quantitative survey and observation analysis. Statistic package for Social Science (SPSS), Version 21 is the software that being used to input data for quantitative survey questionnaires. Five main analyses, which are Demographic Analysis, Frequency Analysis, Descriptive Analysis, Correlation Analysis and Mean Analysis, are the main analysis test for this study to understand the significant of the hypothesis and result from the survey.

4.1 Primary Data: Survey Results

The sample size identified had been collected among manufacturing workers through the various level of working groups inclusive of managers, supervisors, engineer, normal shift employees and shift employees. The data was obtained from 207 respondents through questionnaire and they were given 10 to 20 minutes to complete the questionnaires.

4.2 Pilot Survey

Pilot study was carried out on a group of 30 employees from all various levels at manufacturing floor. The employees were briefed on the objective of the survey and were informed that the details of the survey will be kept confidential. The questions were completed within 20 minutes and were returned back to the researcher.

4.3 Reliability Test

Analysis was done using the Statistical Package for Social Science (SPSS) software Version 21. From the reliability analysis conducted, the Cronbach Alpha value for each of the questionnaire sections is indicated in table 4.1. The cut-off limit for Cronbach Alpha (CA); less than 0.60 are considered poor, those in the range of 0.70 are acceptable and those over 0.80 are good and more than 0.90 are excellent (Sekaran, 2003).

Table 4.1: Cronbach Alpha for the Pilot Study

Variables	Cronbach Alpha
Management Support	0.881
Organizational Safety Culture	0.846
Ergonomics Program	0.922

4.4 Descriptive Statistic for All Variables

Descriptive analysis being used to further explore on minimum score and standard deviation of data had been collected. The minimum score and standard deviation will be analyzed to identify the scoring trend. In this study the Likert-scale used are from the scale 1 (Strongly disagree) until scale 6 (Strongly agree).

Table 4.2 shows the descriptive analysis for all variables which are management support, organizational safety culture and ergonomics program. For management support, the analyzed data showed that the minimum score is 80 out of 96. This shown that the minimum score is 83.33% and the scoring trend is towards the positive side which is towards 'agree' on the management support at workplace. Based on the analyzed data for organizational safety culture, the minimum score is 54 out of 66 which is 81.81%. This shown that the scoring trend is towards the positive side which is towards 'agree' on the organizational safety culture at the workplace. As for the ergonomics program, the minimum score is 50 out of 60. This means the minimum score is 83.33% and again the scoring trend is towards the positive side which is towards 'agree' on the ergonomics program at the workplace.

Table 4.2: Descriptive Statistics for all variables

	N	Score (Min, Max)	Min Score Percentage (%)
Management Support	207	80, 96 (Min, Max)	83.33%
Organizational Safety Culture	207	54, 66 (Min, Max)	81.81%
Ergonomics Program	207	50, 60 (Min, Max)	81.81%

4.5 Demographic Analysis

Demographic analysis has been used for the statistical analysis on the size of population at workplace in this study. In this analysis the length of service, educational level, job position, the response to the management support questionnaires, organizational safety culture questionnaires and ergonomics program questionnaires were analyzed. Total of 207 respondents from manufacturing floor had been participated in this survey and the data had been plotted into SPSS version 21 application for the survey analysis. Frequency method had been used to analyze the demographic for the workplace population.

4.5.1 Length of Service

The following table shown that there were total of 207 respondents participated in the survey. 31.9% respondents work between 0-5 years, 23.2% respondents work in between 6-10 years and 11-15 years, 9.7% respondents works in between 16-20 years while 12.1% of the respondents work more than 20years. From this table, it shows that majority of the respondents at this workplace have been working in this company in between 6-15 years with 46.4% out of 100% respondent.

Table 4.3: Respondents length of service at workplace

Length of service	Frequency	Percentage
0 to 5 years	66	31.9
6 to 10 years	48	23.2
11 to 15 years	48	23.2
16 to 20 years	20	9.7

> 20 years	25	12.1
Total	207	100

4.5.2 Educational Level

Table 4.4 and figure 4.1 shows that there were total of 207 respondents had been participated in the survey with 47.3% of the respondents are at SPM level. 6.8% of the respondents are at STPM level, 20.8% are at Diploma level, 15% graduated with first-degree level, 8.2% with Master Level and 1.9% with PHD level. This data is valid since majority of the respondents were collected among the technician or operators.

Table 4.4: Respondents Educational Level at workplace

Educational Level	Frequency	Percentage %
SPM	98	47.3
STPM	14	6.8
DIPLOMA	43	20.8
DEGREE	31	15.0
MASTER	17	8.2
PHD	4	1.9
Total	207	100

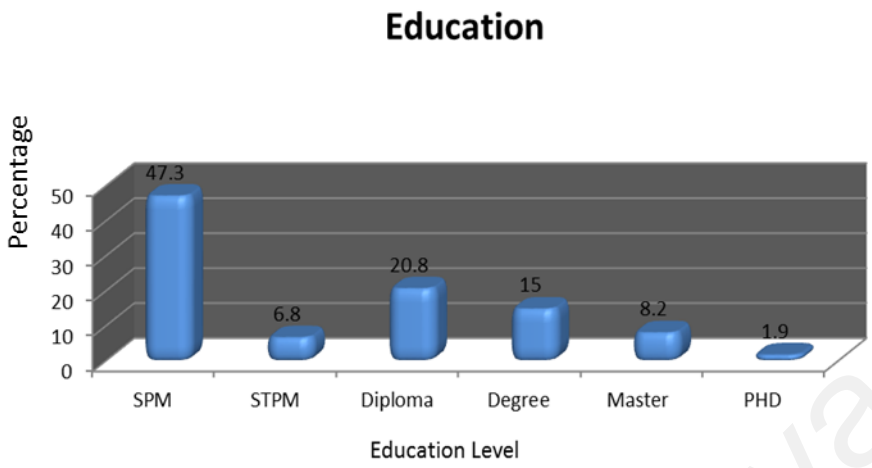


Figure 4.1: Education Level

4.5.3 Job Position for the respondents

The following table and figure 4.2 shows the job position at the workplace study. From the table, it shows that there were various levels of employees had been participated in survey questionnaires, which were from manager's level until operator's level. The highest respondents were operator's level with 48.3% then follow by technician level at 20.3%.

Table 4.5: Respondents Job Level at workplace

Job Level	Frequency	Percentage %
MANAGER	20	9.7
ENGINEER	27	13.0
SUPERVISOR	10	4.8
TRAINER	8	3.9
TECHNICIAN	42	20.3
OPERATOR	100	48.3
Total	207	100

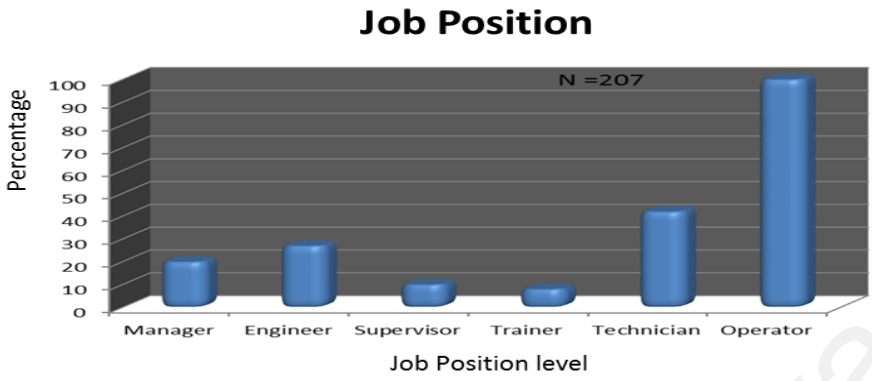


Figure 4.2: Job Position level

4.6 Descriptive Analysis

A bivariate Pearson's product-moment correlation coefficient was computed to assess the relationship between the independent variables which are management support and organizational safety culture while the dependent variable consists of ergonomics program at manufacturing workplace.

Table 4.6: Correlations

Correlations				
		Total score of management support	Total score of organizational safety culture	Total score of ergonomics program
Total score of management support	Pearson Correlation	1	.716**	.893**
	Sig. (2-tailed)		.000	.000
	N	207	207	207
Total score of	Pearson Correlation	.716**	1	.731**

organizational safety culture	Sig. (2-tailed)	.000		.000
	N	207	207	207
Total score of ergonomics program	Pearson Correlation	.893**	.731**	1
	Sig. (2-tailed)	.000	.000	
	N	207	207	207

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

A bivariate Pearson's product-moment correlation coefficient was computed to assess the relationship between the IVs (management support and organizational safety culture) and DVs (ergonomics program). From Table 4.6, it shows that there was a positive correlation between ergonomics program and management support, where r = 0.893, n = 207, p < 0.000. Thus, alternate hypothesis was accepted. Overall, there was a higher positive relationship between management support and ergonomics program. It means that increases management supports were correlated with increases effectiveness of ergonomics program at workplace.

Table 4.6, it shows that there was a positive correlation between ergonomics program and organizational safety culture, where r = 0.731, n = 207, p <0.000. Thus, alternate hypothesis was accepted. Overall, there was a moderate positive relationship between organizational safety culture and ergonomics program. It means that increases the safety culture of an organization were correlated with increases effectiveness of ergonomics program.

Table 4.6, it shows that there was a positive correlation between management support and organizational safety culture, where r = 0.716, n = 207, p < 0.000. Thus, alternate hypothesis was accepted. Overall, there was a moderate positive relationship between management support and organizational safety culture at workplace. It means that increases in management support were correlated with increases in organizational safety culture at workplace.

4.7 Priority of Variables

Among all independent and dependent variables, the variable that showed the highest mean in Table 4.8 is ergonomics program (5.98) followed by management support (5.97) and organizational safety culture (5.96)

Table 4.7: Priority of Variables

Variable	N Total Sample size	Mean
Management support	207	5.97
Organizational Safety Culture	207	5.98
Ergonomics Program	207	5.96
Valid N (list wise)	207	

4.8 Secondary Data: Observation, Interviews and Company Report

Site visits were conducted and the time was spent interviewing the workers and management representatives. Other than interviews, the observations are done through the manufacturing plant walk around and below are the results:

1) The company had a written safety policies and work rules that included ergonomics program. The written safety policy was not only stated but implemented as well throughout all level of the organization. Written general safety rules, which were usually given to each employee upon hiring and which were displayed on workplace bulletin boards.

2) Safety matters were regularly included on the agenda of the plant meetings, typically the first item on the agenda.

3) The company reported that less than 1% of their total operational budget was specifically marked for ergonomics program.

4) Hazard analysis or ergonomics risk assessment is developed for each of work area for the employees.

5) The company does have an active safety committee with the function involved some combination of the following elements; hazard review, injury review, physical inspection, training and education. Ergonomics issue is one of the safety programs that have been prioritized in the meeting.

6) Safety training which including ergonomics training is done by the training specialist and refresher safety training was available on continuing basis.

7) Inspection is done routinely and it was called Safety by Management Walking around (SMBWA).

8) Personal protective equipment is provided to the employees based on the job hazard analysis that has been completed. As for ergonomics, there was one of the areas where the management was providing the employees with the knee pad while performing the oven cleaning to reduce the contact stress.

9) The company has a safety incentives program where recognition was given when an employee performed work safely or practices good safety behavior. The employee was immediately recognized for his good work by his supervisor or manager.

Researcher also obtained company injury report which regards to work related musculoskeletal disorders(WRMDs) and the data was taken from 2008-2012 which was 5 years record.

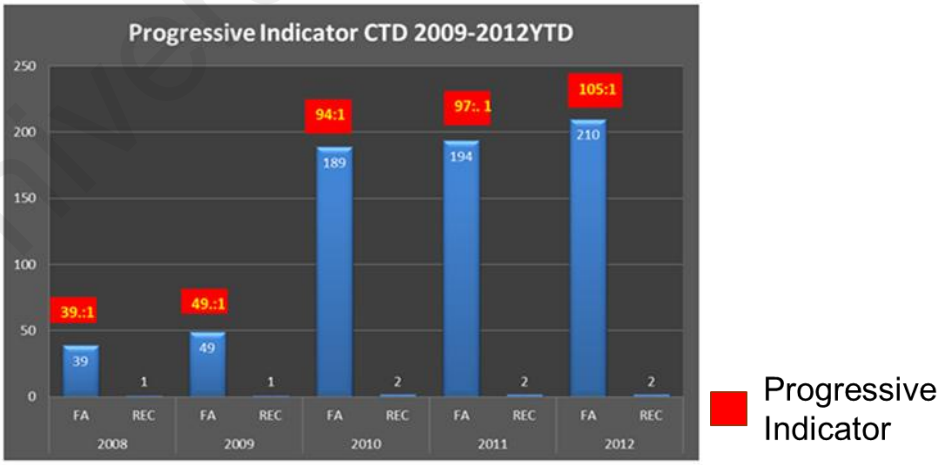


Figure 4.3: Multinational Company Safety Indicators (CTD)

a) Elaboration of the indicator

Based on the Multi National Company safety indicator showing above, the five (5) years indicators showed that the company safety indicators are healthy. Multi National Company used the CTD ratio method to identify the health of the safety indicators at workplace environment. There are there (3) stages for safety indicators:

- Ratio of > 9:1 showing that the company safety indicators in the healthy mode.
- Ratio of <9:1 and >4.5:1, it is at intermediate
- Ratio of<4.5:1, company safety indicator is in the unhealthy mode.

Note: Ratio is FA: REC (FA- First AID; REC – Recordable)

For year 2008, the indicator for Multinational Company showed 39:1 which means that the company safety indicator is healthy and the indicator is improved in 2009 with 49:1 with only 1 recordable case was reported for these 2 years. From the graph, it shown that the number of FA had increased from 2010 onwards and the numbers of recordable were maintained with only 2 cases. The safety indicator was increased from 94:1 in 2010 to 105:1 in 2012. This shows that employee awareness has increased and early reporting is done by the employees for early intervention.

4.9 Summary of Hypothesis

Table 4.9 present the results of the hypothesis testing conducted in this study. A bivariate Pearson's product-moment correlation coefficient analysis indicated that there is a

relationship between management support, organizational safety culture and ergonomics program at workplace. Management support and organizational safety culture will influence the effectiveness of the ergonomics program at workplace.

Table 4.8: Summary of Hypothesis

Hypothesis	Supported (Significant difference)
Hypothesis 1 : Management support does exist in this sub organization	Supported (Alternate hypotheses accepted)
Hypothesis 2 : Organizational safety culture does exist in this sub organization	Supported (Alternate hypotheses accepted)
Hypothesis 3 : There is a relation in between management support and ergonomics program in this sub organization	Supported (Alternate hypotheses accepted)
Hypothesis 4 : There is a relation in between organizational safety culture and ergonomics program	Supported (Alternate hypotheses accepted)
Hypothesis 5 : There is a relation in between management support and organizational safety culture	Supported (Alternate hypotheses accepted)

4.10 Summary

In this chapter 4, the entire submitted questionnaires were analyzed that inclusive of demographic analysis, frequency analysis, descriptive analysis, and also correlation analysis. Total of 207 respondents had responded to the questionnaire that was distributed at the workplace. Descriptive analysis for the management support, organizational safety culture and ergonomics program indicates that employees did agree with the statement in the survey. There were total of 5 hypotheses being used for the research purpose. It was found that the management support and organizational safety culture towards ergonomics program does exist at the workplace. There was a positive correlation in between management support and ergonomics program thus it concludes that the management support will increase the effectiveness of the ergonomics program at the workplace. Organizational safety culture also has a positive correlation towards ergonomics program. This concludes that the organizational safety culture will also increase the effectiveness of the ergonomics program at the workplace. It was also revealed that the management support had a positive relation with the organizational safety culture. In summary, all the five hypotheses being accepted and no hypothesis were rejected.

CHAPTER 5

DISCUSSION, RECOMMENDATION AND CONCLUSION

5.0 Introduction

In this chapter, researcher will go through the discussion on the findings from the analysis that was conducted and explained in Chapter 4. The relation of the hypotheses findings and results to be discussed which regards to the objective of the study. Followed by the summary of the findings and also the summary of the whole study that includes the limitation of the study that was faced during research was done. This chapter will also list the recommendation of the study for improvement of the organization that has been studied. At the end of this chapter, a conclusion for the whole project paper is drafted.

5.1. Recapitulation of Results

Descriptive analysis being used to explore on the minimum score that was given by the respondent using the Likert-scale and the data is analyzed to understand the scoring trend. The minimum scoring for all the three variables are towards the positive side which is towards 'agree' on the management support, organizational safety culture and ergonomics program at workplace. The minimum score for the management support is 83.33%, the minimum score for the organizational safety culture is 81.81% and ergonomics program is 83.33%. Thus the alternate hypothesis 1 and 2 were accepted. Management support and organizational safety culture does exist at the workplace and this was also proven during

the interviews and researchers' observation through the line walk. A bivariate Pearson's correlation test is done to identify the correlation between the variables which are management support, organizational safety culture and ergonomics program.

5.1.1 Management Support

The results of the finding (Table 4.6) indicated that management support had a positive correlation with ergonomics program at workplace, where $r = 0.893$, $n = 207$, $p < 0.000$. Thus, alternate hypothesis was accepted. The increases of management support were correlated with increases of the effectiveness of ergonomics program. This is because of the responsibility and integrity given to the management to ensure the workplace is always in safe condition. Management also is leaders of a team where they play important roles in monitoring and ensuring safety procedures are implemented and well take care. It was found that the result in this research paper had the same finding with the previous research that was written by Zohar. In one of the first investigations of safety climate, Zohar (1980) found that management's commitment to safety is a major factor affecting the success of an organization's safety programs. This commitment can manifest itself through job training programs, management participation in safety committees, consideration of safety in job design, and review of the pace of work. In a follow-up study, Smith, Cohen, Cohen, & Cleveland (1978), found that management's commitment to the safety process was an important factor at low injury rate plants.

5.1.2 Organizational Safety Culture

The results of the finding (Table 4.6) indicated that organizational safety culture had a positive correlation with ergonomics program at workplace, where $r = 0.731$, $n = 207$, $p < 0.000$. Thus, alternate hypothesis was accepted. The increases of organizational safety culture at workplace were correlated with increases of the effectiveness of ergonomics program. People were more highly motivated and work more safely when they have immediate feedback on their work and to feel important, needed and wanted. They perform more safely on the job when they are secure. Hale (2000) has listed a number of elements for a good safety culture, these include importance to safety; involvement of workers at all levels; role of safety staff; the caring trust (that all parties to have a watchful eye and helping hand to cope with inevitable slips and blunders); openness in communication; belief in safety improvements; and integration of safety into the organization. In this study, researchers' found that management plays a key role in promoting a positive safety or organizational culture at the workplace. Management allocated resources, time, inspections, and participated in risk assessments and consultative committee meetings. The results is in this study is aligned with the previous research that was wrote by Kenndy and Kirwan "It is the safety culture of the organization that will influence the deployment and effectiveness of the safety management resources, policies, practices and procedures as they represent the work environment and underlying perceptions, attitudes, and habitual practices of employees at all levels" (Kennedy and Kirwan, 1998).

5.2 Limitation of the Study

In this study there are several limitations that being faced throughout the preparation of the study. Following are some of the limitation faced during the preparation of this research paper.

1) Name of the company that being used for this study is not the actual name of the company. As this is one of the agreement and the company policy that do not allowed to publish the actual company name due to confidential and also will affect the company reputation. Thus is this research paper, Multinational Company being used.

2) The study is conducted at a company which the expectation of management support and organizational culture is already exist at the workplace and it is proven based on the data analysis that has been conducted. To have a better study, researcher should find another workplace of study and make a comparison.

5.3 Recommendation

Based on analysis, researcher found that management support and organizational safety culture does influence the effectiveness of ergonomics program at workplace. Management support and organizational safety culture have a significance value towards ergonomics program at workplace and with the effectiveness of the ergonomics program; it will give a direct impact to the work related musculoskeletal disorder (WRMDs) at workplace.

There are some recommendations for the organization to improve the effectiveness of the ergonomics program at workplace:

a) Management need to consistently remind the employees in regards to safe work practices and keep on encouraging the employees without fail. Frequent reminder through briefing during shift meeting will enhance the safe work practices at the workplace.

b) Safety committees are a platform for the safety issue to be discussed or implemented. It is important for the management to invite lower level employees (operators and technician) to the EHS committee meeting to let them understand on what are the management activities which regards to the safety including ergonomics program. This can be done by randomly selected the employees to the meeting and get their inputs so that employees and management can work together in the planning and execution of safety activities which include ergonomics program. It is believed that employee will work more safely when they are involved in decision making process. Safety committee is the right channel to communicate their thoughts to management and receive positive feedback from management.

5.4 Conclusion

In this study, analysis had been done which regards to the management support and organizational safety culture towards ergonomics program and its relationship with work related musculoskeletal disorders (WRMDs) at workplace. The study was conducted at the

manufacturing environment at one of Multinational Electronic Company located at northern region of Malaysia. Total of 207 employees has been participated in the qualitative survey questionnaires. The respondents were from various level of job working that includes Manager, Engineer, Supervisor, Trainer, Technician and operator.

The findings of the study had proven that the management support and organizational safety culture towards ergonomics program at workplace is exist. It is also proven that the effectiveness of the ergonomics program is influenced by management support and also organizational safety culture. Based on the analysis that had been conducted, it showed a good correlation in between management support and organizational safety culture towards ergonomics program. It is believed that with the effectiveness of the ergonomics program in place, it will reduce the number of work related musculoskeletal disorder (WRMDs) at workplace. This had been proven with the injury data that was obtained from the workplace study. The data showed that the safety progressive indicators for CTD cases in improving each year. The number of first aid cases was also increased from year to year and that showed the awareness level and safety culture of the organization in the study workplace has increased. Employees practices early reporting to prevent from the aggravation that may worsen the ergonomics injury. As a summary, all hypotheses in this study were accepted.

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Appendix A: Research Questionnaires

Saudara/Saudari,

Assalamualaikum wbt. dan Salam Sejahtera.

Terlebih dahulu saya ingin mengucapkan tahniah kepada Saudara/Saudari kerana telah dipilih untuk menjadi sebahagian daripada responden kajian ini iaitu **"MAKRO ERGONOMIK DAN MUSKULOSKELETAL DISORDER (MSD) DI TEMPAT KERJA/ MACRO ERGONOMICS AND MUSCULOSKELETAL DISORDER (MSD) AT WORKPLACE"** Borang soal selidik ini disediakan untuk mendapatkan maklum balas yang khusus tentang pengalaman dan pengetahuan pekerja mengenai "**SOKONGAN PIHAK MAJIKAN DAN BUDAYA SELAMAT ORGANISASI TERHADAP PROGRAM ERGONOMIK DAN PERHUBUNGANNYA DENGAN MUSKULOSKELETAL DISORDER BERSANGKUTAN TEMPAT KERJA/ MANAGEMENT SUPPORT AND ORGANIZATIONAL SAFETY CULTURE TOWARDS ERGONOMICS PROGRAME AND ITS RELATIONSHIP WITH WORK RELATED MUSCULOSKELETAL DISORDERS"** di organisasi anda. Pandangan anda amat penting bagi membantu saya sebagai penyelidik untuk memahami bagaimana sokongan dari pihak majikan dan juga budaya organisasi di tempat kerja anda terhadap ergonomik program akan memberi kesan kepada musculoskeletal disorder bersangkutan tempat kerja.

Untuk makluman pihak Saudara/Saudari, penglibatan Saudara/Saudari di dalam kajian ini adalah secara sukarela. Di samping itu juga, saya memberi jaminan kepada pihak Saudara/Saudari bahawa segala maklumat dan maklum balas dari pihak Saudara/Saudari adalah rahsia dan tidak akan di dedahkan kepada mana-mana pihak yang tidak bersangkutan di dalam tujuan penyelidikan ini. Semua maklumat yang diberikan hanya akan digunakan bagi tujuan penyelidikan semata-mata. Segala kerjasama dan keperihatinan Saudara/Saudari didahului dengan ucapan terima kasih.

Sekian.

Yang benar,

NUR YUSRINA BINTI ABDULLAH

Penyelidik

Pls tick (/) your answer in the box provides.

Tolong tandakan (/) jawapan yang anda pilih dikotak yang disediakan.

PART A: YOUR PERSONAL DATA / *BAHAGIAN A: DATA PERIBADI ANDA*

1 How many year of service have you served in this company?

Berapa tahunkah anda telah berkhidmat disyarikat ini?

- ☐ 0 ~ 5 Years / Tahun
- ☐ 6 ~ 10 Years / Tahun
- ☐ 11 ~ 15 Years / Tahun
- ☐ 16 ~ 20 Years / Tahun
- ☐ > 20 Years / Tahun

2 Highest education Level / *Tahap pendidikan*

- ☐ SPM
- ☐ STPM
- ☐ Diploma or Certificate / *Diploma atau Sijil*
- ☐ Degree / *Ijazah Sarjana Muda*
- ☐ Master / *Sarjana*
- ☐ PhD / *Doktor falsafah*

3 Job Position / *Jawatan Kerja*

- ☐ Manager / *Pengurus*
- ☐ Supervisor / *Penyelia*
- ☐ Technician/Juruteknik
- ☐ Operator
- ☐ Engineer / *Jurutera*
- ☐ Trainer / *Pengajar*

PART B: MANAGEMENT SUPPORT/*SOKONGAN PIHAK MAJIKAN*

In this section, the questionnaires are to seek your opinion in regards to management support towards safety and health at workplace specifically on ergonomics program. You are require to circle of the statements below using the following scale / *Bahagian ini menyoal pendapat anda mengenai sokongan pihak majikan mengenai keselamatan dan kesihatan di tempat kerja anda khususnya kepada program ergonomik. Anda diminta membulatkan penyataan di bawah dengan menggunakan skala seperti berikut:*

Strongly disagree	Disagree	Slightly disagree	Slightly Agree	Agree	Strongly agree
Sangat tidak bersetuju	*Tidak bersetuju*	*Sedikit tidak bersetuju*	*Sedikit setuju*	*Bersetuju*	*Sangat Bersetuju*
1	2	3	4	5	6

No	**Management Support / *Sokongan Pihak Majikan***	
B1	Managers give high priority to safety. *Majikan memberi perhatian yang tinggi terhadap keselamatan.*	1 2 3 4 5 6
B2	Managers and supervisors always talk about importance of safety with workers. *Pengurus dan penyelia selalu bercakap mengenai kepentingan keselamatan dengan pekerja.*	1 2 3 4 5 6
B3	Management provides sufficient resources for safety at workplace. *Majikan menyediakan kelengkapan yang cukup bagi tujuan keselamatan di tempat kerja.*	1 2 3 4 5 6
B4	My management provides safe equipment for my work. *Majikan saya menyediakan peralatan selamat untuk kerja-kerja saya.*	1 2 3 4 5 6
B5	Safety is the top priority for my supervisor and manager. *Keselamatan adalah keutamaan yang utama bagi penyelia dan pengurus.*	1 2 3 4 5 6
B6	My supervisors and managers always encourage in early reporting for any near misses or accident and provide an	1 2 3 4 5 6

	injury reporting tool at workplace	
	Penyelia dan pengurus saya selalu mengggalakkan pekerja untuk melaporkan sebarang kemalangan atau pekara-pekara yang boleh menyebabkan kemalangan dan juga menyediakan sistem laporan kecederaan di tempat kerja	
B7	My supervisors and managers appreciate for any early reporting in regards to safety	1 2 3 4 5 6
	Penyelia dan pengurus saya amat menghargai perkerja terhadap sebarang laporan awal yang bersangkutan dengan keselamatan di tempat kerja.	
B8	My direct supervisor promotes completion of safety trainings and other resources to ensure employee use good safety practices in the workplace	1 2 3 4 5 6
	Penyelia menggalakkan pekerja untuk melengkapkan latihan keselamatan dan menggunakan kemudahan yang lain untuk memastikan pekerja mengamalkan kerja yang selamat	
B9	My management always provides solution for any safety related issue.	1 2 3 4 5 6
	Pihak majikan selalu melakukan penyelesaian terhadap sebarang isu yang bersangkutan dengan keselamatan.	
B10	Supervisor and managers constantly remind employees to do job safely during meeting.	1 2 3 4 5 6
	Penyelia dan pengurus selalu memperingati pekerja agar melakukan kerja dengan selamat sewaktu mensyuarat bersama pekerja.	
B11	My management provides sufficient PPE for me to perform my job safely	1 2 3 4 5 6
	Pihak majikan menyediakan peralatan keselamatan individu yang mengcukupi bagi membolehkan saya melakukan kerja dengan selamat.	
B12	My management provides sufficient Safety Training to perform my job safely.	1 2 3 4 5 6
	Pihak majikan telah menyediakan pelajaran atau latihan keselamatan yang mencukupi untuk saya melakukan kerja dengan selamat.	

B13	Fast action will be taken by management for any safety issues reported. *Pihak majikan akan mengambil tindakkan yang pantas bagi menyelesaikan sebarang laporan isu yang berkaitan dengan keselamatan.*	1 2 3 4 5 6
B14	Safety is one of my management considerations for any decision making. *Keselamatan adalah salah satu pertimbangan yang akan diambil oleh pihak majikan didalam membuat sebarang keputusan.*	1 2 3 4 5 6
B15	My management always role model in safety. *Pihak majikan menjadi contoh bagi pekerja di dalam bidang keselamatan.*	1 2 3 4 5 6
B16	Support from management is important to prevent safety incident or ergonomics injury *Sokongan dari pihak majikan adalah penting bagi mengelakkan sebarang kejadian keselamatan atau kecederaan ergonomik*	1 2 3 4 5 6

PART C: ORGANIZATIONAL CULTURE/ BUDAYA ORGANISASI

In this section, the questionnaires are to seek your opinion in regards to organizational culture towards safety and health at workplace specifically on ergonomics program. You are require to circle of the statements below using the following scale / *Bahagian ini menyoal pendapat anda mengenai budaya organisasi terhadap keselamatan dan kesihatan di tempat kerja anda khususnya kepada program ergonomik. Anda diminta membulatkan penyataan di bawah dengan menggunakan skala seperti berikut:*

Strongly disagree	Disagree	Slightly disagree	Slightly Agree	Agree	Strongly agree
Sangat tidak bersetuju	*Tidak bersetuju*	*Sedikit tidak bersetuju*	*Sedikit setuju*	*Bersetuju*	*Sangat Bersetuju*
1	2	3	4	5	6

	Organizational Culture / Budaya Organisasi	
C1	I feel safe working with my company.	1 2 3 4 5 6

	Saya berasa selamat bekerja di syarikat ini.	
C2	I will not perform any job or work that is not safe. *Saya tidak akan melakukan sebarang kerja yang tidak selamat.*	1 2 3 4 5 6
C3	I follow safety procedures while performing my daily routine job even though my supervisor not around. *Saya akan mematuhi prosedur keselamatan semasa melakukan tugas harian walaupun tidak ada penyelia pada waktu itu.*	1 2 3 4 5 6
C4	Perform job safely is my culture. *Melakukan kerja dengan selamat adalah budaya saya.*	1 2 3 4 5 6
C5	I will report to management if the work at workplace is not safe or will impact my health. *Saya akan melaporkan sebarang pekara kepada pihak majikan sekiranya kerja yang dilakukan adalah tidak selamat atau akan memberi kesan kepada kesihatan saya.*	1 2 3 4 5 6
C6	I always give attention for safe work practices. *Saya selalu memberi perhatian sepenuhnya untuk melakukan kerja dengan selamat.*	1 2 3 4 5 6
C7	I have been providing with enough tools or resources in performing job safely. *Saya telah diberikan peralatan yang mencukupi untuk melakukan kerja-kerja dengan selamat.*	1 2 3 4 5 6
C8	I do not understand on what is "safety", I follow safety procedure because afraid of warning latter. *Saya tidak faham maksud "keselamatan", Saya menuruti prosedur keselamatan kerana takut akan surat amaran yang akan dikeluarkan oleh pihak majikan.*	1 2 3 4 5 6
C9	I always adhere to safety regulations at work. *Saya sentiasa mematuhi peraturan keselamatan ketika bekerja.*	1 2 3 4 5 6
C10	My management provide a rewarding system to recognize employees who practice good safety at workplace.	1 2 3 4 5 6

	Pihak majikan menyediakan sistem penghargaan bagi menghargai pekerja yang mengamalkan kerja yang selamat.	
C11	Management empowering employees to actively make improvements/provide suggestion or participate on any decision making pertaining to safety at workplace	1 2 3 4 5 6
	Pihak majikan memberi kuasa kepada pekerja untuk secara aktif membuat pembaikan/ memberi cadangan atau ikut serta dalam membuat keputusan yang berkaitan dengan keselamatan	

PART D: ERGONOMICS PROGRAMME/*PROGRAM ERGONOMIK*

In this section, the questionnaires are to seek your opinion in regards to ergonomics programme at workplace and how effective it is towards MSD injuries. You are require to circle of the statements below using the following scale / *Bahagian ini menyoal pendapat anda mengenai program ergonomik di tempat kerja anda dan bagaimana ianya memberikesan kepada kecederaan MSD. Anda diminta membulatkan penyataan di bawah dengan menggunakan skala seperti berikut:*

Strongly disagree *Sangat tidak bersetuju*	Disagree *Tidak bersetuju*	Slightly disagree *Sedikit tidak bersetuju*	Slightly Agree *Sedikit setuju*	Agree *Bersetuju*	Strongly agree *Sangat Bersetuju*
1	2	3	4	5	6

	Ergonomics Programme/*Program Ergonomik*	
D1	Manager and supervisor support ergonomics programme or training for the employees. *Pengurus dan penyelia memberi sokongan kepada program ergonomik atau latihan keselamatan untuk pekerja.*	1 2 3 4 5 6

D2	The training I had attended cover all the safety and health risks associated with ergonomics hazard at the workplace for which I am responsible. *Latihan yang telah diberikan kepada saya meliputi semua risiko keselamatan dan kesihatan yang berkaitan dengan hazad ergonomic di tempat saya bekerja.*	1 2 3 4 5 6
D3	Ergonomics training provided to the employees will help to increase employee's knowledge and safety awareness towards ergonomics hazard at workplace. *Latihan ergonomik yang di berikan kepada semua perkerja akan membantu pekerja untuk menambahkan pengetahuan dan kesedaran keselamatan terhadap hazad ergonomik di tempat kerja*	1 2 3 4 5 6
D4	When employees are well trained and aware on the ergonomics hazards, Musculoskeletal disorders (MSD) injuries at workplace can be prevented *Sekiranya pekerja diberi latihan yang secukupnya dan sedar mengenai hazad ergonomik, kecederaan MSD di tempat kerja dapat dielakkan*	1 2 3 4 5 6
D5	Management support through ergonomics resources, system and ergonomics tools/ equipments will help employee to work safely and will reduce the risk of ergonomics injury at workplace *Sokongan daripada pihak majikan melalui sumber ergonomik, sistem ergonomik dan peralatan yang ergonomik akan membantu pekerja untuk bekerja denagn cara yang selamat dan akan mengurangkan risiko kecederaan ergonomik di tempat kerja*	1 2 3 4 5 6
D6	Employee behaviour is not a factor that can contribute to ergonomics MSD injury at workplace *Tingkahlaku pekerja bukan faktor yang menyumbang kepada kecederaan ergonomik (MSD) di tempat kerja*	1 2 3 4 5 6
D7	Management support is not a factor that can contribute to ergonomics MSDS injury *Sokongan daripada pihak majikan bukanlah faktor yang*	1 2 3 4 5 6

	menyumbang kepada kecederaan ergonomik (MSD) di tempat kerja	
D8	Injury reporting tool that is provided by management will help to identify ergonomics injury at early stage and it will help to prevent from injury aggravation which may lead to lost time injury. *Sistem laporan kecederaan yang disediakan oleh pihak majikan akan membantu untuk mengenalpasti kecederaan ergonomik pada peringkat awal dan juga membantu untuk mengelakkan kecederaan menjadi lebih teruk yang mungkin menyebabkan "lost time injury"*	1 2 3 4 5 6
D9	Campaigns or ergonomics safety awareness program that is done continuously for the employees will help to raise employee's awareness on ergonomics *Kempen atau program keselamatan ergonomik yang dilakukan secara berterusan untuk pekerja akan membantu untuk menaikkan tahap kesedaran pekerja terhadap program ergonomik*	1 2 3 4 5 6
D10	Management support and organizational culture towards ergonomics program will help to prevent form ergonomics injury at workplace *Sokongan daripada pihak majikan dan budaya organisasi akan membantu untuk mengelakkan kecederaan ergonomik di tempat kerja.*	1 2 3 4 5 6

SEGALA KERJASAMA DAN MASA YANG DILUANGKAN OLEH ANDA ADALAH SANGAT DIHARGAI DAN DIDAHULUKAN DENGAN UCAPAN RIBUAN TERIMA KASIH BAGI MENJAWAB SOALAN KAJI SELIDIK INI.

SEGALA MAKLUMBALAS ANDA DAPAT MEMBANTU DALAM MENANGANI ISU BERKAITAN KESELAMATAN DI TEMPAT KERJA ANDA.

Appendix B: SPSS Analysis

Total score of ergonomics program * Total score of management support

Total score of ergonomics program

Total score of management support	Mean	N	Std. Deviation
80	50.00	1	.
83	53.00	1	.
85	55.00	1	.
93	60.00	3	.000
94	60.00	9	.000
95	59.98	42	.154
96	59.95	150	.225
Total	59.85	207	.930

Total score of ergonomics program * Total score of organizational culture

Total score of ergonomics program

Total score of organizational culture	Mean	N	Std. Deviation
54	60.00	1	.
55	50.00	1	.
57	53.00	1	.
59	55.00	1	.
64	60.00	3	.000
65	59.94	35	.236
66	59.96	165	.202
Total	59.85	207	.930

Total score of ergonomics program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	50	1	.5	.5	.5
	53	1	.5	.5	1.0
	55	1	.5	.5	1.4
	59	9	4.3	4.3	5.8
	60	195	94.2	94.2	100.0
	Total	207	100.0	100.0	

years of service in the company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5 years	66	31.9	31.9	31.9
	6-10 years	48	23.2	23.2	55.1
	11-15 years	48	23.2	23.2	78.3
	16-20 years	20	9.7	9.7	87.9
	>20 years	25	12.1	12.1	100.0
	Total	207	100.0	100.0	

Highest education level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SPM	98	47.3	47.3	47.3
	STPM	14	6.8	6.8	54.1
	Diploma	43	20.8	20.8	74.9
	Degree	31	15.0	15.0	89.9
	Master	17	8.2	8.2	98.1
	PHD	4	1.9	1.9	100.0
	Total	207	100.0	100.0	

Job Position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Manager	20	9.7	9.7	9.7
	Engineer	27	13.0	13.0	22.7
	Supervisor	10	4.8	4.8	27.5
	Trainer	8	3.9	3.9	31.4
	Technician	42	20.3	20.3	51.7
	Operator	100	48.3	48.3	100.0
	Total	207	100.0	100.0	

Correlations

		Total score of management support	Total score of organizational culture	Total score of ergonomics program
Total score of management support	Pearson Correlation	1	.716**	.893**
	Sig. (2-tailed)		.000	.000
	Sum of Squares and Cross-products	593.604	353.874	290.676
	Covariance	2.882	1.718	1.411
	N	207	207	207
Total score of organizational culture	Pearson Correlation	.716**	1	.731**
	Sig. (2-tailed)	.000		.000
	Sum of Squares and Cross-products	353.874	411.082	198.019
	Covariance	1.718	1.996	.961
	N	207	207	207
Total score of ergonomics program	Pearson Correlation	.893**	.731**	1
	Sig. (2-tailed)	.000	.000	
	Sum of Squares and Cross-products	290.676	198.019	178.357
	Covariance	1.411	.961	.866
	N	207	207	207

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