



FACTORS INFLUENCING SAFETY BEHAVIOR IN THE MALAYSIAN ARMY

**A Project Paper Submitted to Othman Yeop Abdullah Graduate School of Business,
Universiti Utara Malaysia, in Fulfillment of the Requirement for the Degree of Master
of Science Occupational Safety and Health Management**

**COLLEGE OF BUSINESS
UNIVERSITI UTARA MALAYSIA (UUM)**

By

**Syed Aziz bin Syed Hashim
Student ID: 808309**

Supervised By

Madam Norizan bt Hj Azizan

© Syed Aziz bin Syed Hashim, 2012. All right reserved.



**KOLEJ PERNIAGAAN
UNIVERSITI UTARA MALAYSIA**

**PERAKUAN KERTAS KERJA PROJEK
(Certification of Project Paper)**

Saya, mengaku bertandatangan, memperakukan bahawa
(*I, the undersigned, certified that*)
SYED AZIZ BIN SYED HASHIM (808309)

Calon untuk Ijazah Sarjana
(*candidate for the degree of* **MASTER OF OCCUPATIONAL SAFETY AND HEALTH
MANAGEMENT**)

telah mengemukakan kertas kerja projek yang bertajuk
(*has presented his/her project paper of the following title*)

FACTORS INFLUENCING SAFETY BEHAVIOR IN THE MALAYSIAN ARMY

Seperti yang tercatat di muka surat tajuk dan kulit kertas projek
(*as it appears in the title page and front cover of the project paper*)

Bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan dan
meliputi bidang ilmu dengan memuaskan
(*that the project paper acceptable in the form and content and that a satisfactory knowledge
of the field is covered by the project paper*)

Nama Penyelia : PUAN NORIZAN BINTI HJ AZIZAN
(Name of Supervisor)

Tandatangan : _____
(Signature)

Tarikh : APRIL 2012
(Date)

PERMISSION TO USE

In presenting this project paper in partial fulfillment of the requirements for a Master Degree from Universiti Utara Malaysia (UUM), I agree that the library of this university may make it freely available for inspection. I further agree that permission for copying this project paper in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor or in their absence, by the Dean of Graduate School of Business, College of Business where I did my project paper. It is understood that any copying or publication or use of this project paper or parts of it for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me or to Universiti Utara Malaysia (UUM), in any scholarly use which may be made of any material in my project paper. Request for permission to copy or to make other use of materials in this project paper in whole or in part should be addressed to:

**Dean of Graduate School of Business
College Of Business
Universiti Utara Malaysia
06010 UUM SINTOK
Kedah Darul Aman**

DISCLAIMER

The author is responsible for the accuracy of all opinion, technical comment, factual report, data, figures, illustrations and photographs in this dissertation. The author bears full responsibility for the checking whether the material submitted is subject to copyright or ownership right. Universiti Utara Malaysia (UUM) does not accept liability for the accuracy of such comment, report, and other technical and factual information and the copyright or ownership right claims. The author declares that the dissertation is original and his own except those literatures, quotations, explanations and summarizations which are duly identified and recognized. The author hereby granted the copyright of this dissertation to College of Business, Universiti Utara Malaysia (UUM) for publishing if necessary.

Date : -----

Student Signature :

ABSTRACT

Much attention has been focused on workers' perception of workplace safety. However, relatively limited studies focus on Malaysian Armed Forces particularly the Malaysia Army. This organization experiences a significant accident rates which are not reported publicly or contributed into the SOCSO statistics. Improving occupational health and safety in the Army organization is not an easy task despite adequate safety legislation and regulative institutions. It is because the Armed Forces are not obliged to the OSHA 1994 (Act 514). This framework is a replication of Shang et.al (2009) which examined the effects of safety climate on container operation terminal employees' perceptions of safety performance. However, the technique used to determine the perception and compliance with safety behavior among army personnel in the Malaysian Army organization is by using the Work Safety Scale (WSS) of Hayes et al.(1988). The purpose of this study is to examine whether the five critical factors of safety culture dimensions related to the safety behavior of the Malaysian Army personnel. The WSS measures five factorially distinct constructs: (a) job safety, (b) coworker safety, (c) supervisor safety, (d) management safety practices, and (e) satisfaction with the safety program. All those independent variables were measured on the perception of workplace safety towards the compliance of safety behavior as the determinants among 217 army personnel in one army unit based in Kem Terendak, Melaka. Based on the analysis there was a positive relationship between these five facets and safety behavior. It was found that satisfaction with safety programs, co-worker safety and management safety practices each made significant contributions to compliance with safety behavior, whilst job safety and supervisor safety made least contributions in the study. Results also suggest that management can enhance and refine the Army units' safety culture by focusing especially on the variables mentioned thereby increasing and strengthening safety culture and soldiers' safety behavior thereby reducing injuries and accidents

ABSTRAK

Banyak pemerhatian telah diberikan kepada persepsi pekerja tentang keselamatan di tempat kerja. Walau bagaimanapun, kajian terhadap keselamatan dalam Angkatan Tentera Malaysia (ATM) terutamanya kepada Tentera Darat Malaysia adalah agak terhad. Organisasi ini mencatatkan kadar kemalangan yang agak tinggi namun ia tidak dilaporkan kepada umum ataupun menyumbang kepada statistik PERKESO. Memperbaiki tahap kesihatan dan keselamatan pekerjaan dalam organisasi tentera bukanlah suatu tugas yang mudah walaupun undang-undang berkaitan keselamatan dan peraturan institusi adalah mencukupi. Ini adalah kerana Angkatan Tentera Malaysia (ATM) tidak tertakluk kepada patuhan Akta Keselamatan dan Kesihatan Pekerjaan atau OSHA 1994 (Akta 514). Justeru, kertas kerja ini adalah replikasi kepada Shang et.al (2009) yang mengkaji kesan iklim keselamatan ke atas persepsi kakitangan terminal operasi terhadap prestasi keselamatan. Walau bagaimanapun, teknik yang digunakan untuk menentukan persepsi dan patuhan dengan kesedaran keselamatan di kalangan anggota tentera dalam organisasi Angkatan Tentera Malaysia adalah dengan menggunakan *Work Safety Scale* (WSS) Hayes et al. (1988). Tujuan kajian ini adalah untuk mengkaji sama ada lima faktor kritikal dimensi budaya keselamatan berkaitan ataupun tidak dengan tingkah laku keselamatan anggota Tentera Darat Malaysia. WSS akan mengukur lima komponen pembolehubah yang berbeza: (a) keselamatan kerja, (b) keselamatan rakan sekerja, (c) keselamatan penyelia, (d) amalan pengurusan keselamatan, dan (e) kepuasan dengan program keselamatan. Semua pembolehubah-pembolehubah bebas telah diukur dengan persepsi keselamatan di tempat kerja ke arah patuhan perilaku keselamatan di kalangan 217 anggota tentera darat dalam sebuah unit tentera yang berpangkalan di Kem Terendak, Melaka. Berdasarkan hasil kajian tersebut, terdapat hubung kait yang positif antara kelima-lima pembolehubah dengan perilaku keselamatan. Hasil kajian juga menunjukkan faktor kepuasan kepada program keselamatan, keselamatan rakan sekerja dan pengurusan keselamatan yang diamalkan menyumbang kepada patuhan perilaku keselamatan, manakala keselamatan pekerjaan dan keselamatan penyelia kurang menyumbang kepada dalam kajian ini. Keputusan juga mencadangkan bahawa pihak pengurusan boleh meningkatkan dan memperkembangkan budaya keselamatan dengan memberi tumpuan terutamanya kepada pembolehubah-pembolehubah yang dinyatakan. Oleh yang demikian, pengukuhan budaya keselamatan di dalam sebuah unit tentera dan perilaku keselamatan di kalangan anggota tentera dapat ditingkatkan dan seterusnya dapat mengurangkan tahap kecederaan dan kemalangan.

ACKNOWLEDGEMENTS

In the Name Of Allah Most Gracious Most Merciful

Alhamdulillah, to the Al Mighty Allah, this assignment has been completed at the right time as requested. These project paper present main findings of selected primary statistical surveys conducted by me which are of direct interest to a cross section of the Malaysian Army personnel. This brief features the main findings of the “Factors Influencing Safety Behavior in The Malaysian Army. This assignment was undertaken to produce an academic level study which would lay the foundation for deeper examination of specific issues relating to the safety performances. It is not intended to provide answers, although some emerge.

The survey for the project paper was conducted from randomly selected respondents and had an impressive response rate of 100%. I would like to commend and convey my appreciation to mostly College of Business, Universiti Utara Malaysia lecturers and supervisors for their great contribution of time and assistance. At this opportunity I would like to also put on record my special, most humble, and indefinite appreciation to Mdm Norizan binti Hj Azizan for without her continuous support and patience, this project paper and research would not be materialized. Not to forget, I would like to also extend my thankfulness to my family, my wife and children for their unconditional support and love. To my colleagues and partners, thanks a lot for all the encouragements and support given to me in my dire straits.

Last but not least, this acknowledgement is again to the respondents particularly from the Rejimen Ke 32 Artileri Diraja , Kem Terendak, Melaka without whom this research would not have been possible in the first place. May Allah s.w.t bless you all. Wassalam.

TABLE OF CONTENT

Item	Page
<i>Certification of Project Paper</i>	ii
<i>Permission to use</i>	iii
<i>Disclaimer</i>	iv
<i>Abstract</i>	v
<i>Abstrak</i>	vi
<i>Acknowledgements</i>	vii
<i>Table of Contents</i>	viii
<i>List of Tables</i>	ix
<i>List of Figures</i>	x
 CHAPTER 1 : INTRODUCTION	
1.1 Introduction	1
1.2 Background of the Study	1
1.3 Problem Statement	5
1.4 Research Questions	9
1.5 Research Objectives	9
1.6 Significance of The Study	10
 CHAPTER 2: LITERATURE REVIEW	
2.1 Introduction	11
2.2 Empirical Studies	17
2.3 The Relation between Workplace Safety Scale (WSS) and Safety Performance	19
2.4 Research Framework	32
2.5 Summary	33
 CHAPTER 3 : METHODOLOGY	
3.1 Introduction	35
3.2 Research Design	35
3.2.1 Population	36
3.2.1.1 Sample Size	37
3.3.2 Data Collection	37
3.3 Data Analysis	38
3.4 Summary	38
 CHAPTER 4: RESEARCH FINDINGS	
4.1 Introduction	40
4.2 Response Rate	40
4.3 Profile of Respondents	40
4.4 Reliability Analysis	43
4.5 Descriptive Statistic of Variables	44
4.5 Correlations	44

4.6	Multi Regression Analysis	46
4.7	Summary	50
CHAPTER 5 : DISCUSSION AND CONCLUSION		
5.1	Introduction	51
5.2	Recapitulation of Results	51
5.3	Discussion	52
5.4	Implication	58
	5.4.1 Theoretical Implication	58
	5.4.2 Practical Implication	59
5.5	Limitation	60
5.6	Recommendations for Future Studies	60
5.7	Conclusion	61
REFERENCES		64
APPENDICES		72
Appendix A: WSS Questionnaires		74
Appendix B: SPSS Data and Output		85

LIST OF TABLES

4.1	Demographic Scale of Respondents	44
4.2	Reliability coefficients of each variables	45
4.3	Frequencies of variables	46
4.4	Pearson correlation coefficient analysis result	47
4.5	Model summary	50
4.6	ANOVA	51
4.7	Estimates of coefficients for the model	52

LIST OF FIGURES

2.4	Research Framework	37
-----	--------------------	----

FACTORS INFLUENCING SAFETY BEHAVIOR IN THE MALAYSIAN ARMY

CHAPTER ONE

INTRODUCTION

“There is only one duty, only one safe course, and that is to try to be right”

~ Winston Churchill ~

1.1 Introduction

This chapter provides an overview of the perceptions of safety behavior in the Malaysian Army. Which includes the background of the study, problem statement, research questions, research objectives and significance of the study.

1.2 Background of the Study

The Malaysian Army is the land component of the Malaysian Armed Forces. The Army contributes to the national defence objectives through the provision of land and special operations capabilities. The Army also provides forces for peace time tasks, including capabilities to enhance the national domestic security response to a wide range of incidents, such as bush fires, floods and major events. They merge material, planning acumen and very robust training systems to create teams specifically equipped and prepared for the tasks set for them by our government. The key to the capabilities that the Army possesses is the soldiers. They are the most valuable resource and it is the realization of this truth which makes safety, or as they would say “the force protection of

their people”, so critical to their operational success. Throughout the world, with few exceptions, armies represent professional, highly structured, hierarchal organizations characterized by high levels of discipline and motivation. By virtue of their function and training, soldiers are trained to operate in life-threatening situations while leading others to achieve common and individual goals. Soldiers learn to operate in a risky environment. They learn as much as possible about the environment, and based on their knowledge they take calculated risks; they minimize risk-taking to ensure safety. When it comes to safety, the safety culture of an organization will heavily influence the level of risk willing to be accepted, the openness of communication and trust. Culture serves to bind together members of groups and provides clues and cues as to how to behave in normal and abnormal situations.

According to Beer (1980), organizations are social structures and processes designed to achieve certain purposes while fulfilling the needs of their members. Safety within the organization will improve when the organization bases its program on the assumption that safety is enhanced when the needs, values, and expectations of the employees are met. Most literature is unanimous in identifying management commitment as a prerequisite for safety, the general reason being that management is responsible for establishing objectives, developing strategies, allocation of resources, development and implementation of systems and by virtue of its role sets an example (Levitt, 1987). This is due to the fact that management creates and controls the environment in which incidents and accidents occur. Culture, which incorporates vision, values, attitudes, mission, purpose and goals, influences the environment as it results in and reflects commitment to occupational safety and health (Smallwood 1996). A strong culture is one that is internally consistent, widely shared and makes it clear what appropriate behavior is. An

organization with a strong culture has a vision that everyone understands. Culture can then act as a hidden mechanism of coordination: everybody works in unison because they understand what the goals are and how the organization is going about getting to them. The great thing about safety is it is relevant in any culture including in the Malaysian Army even though the Armed Forces has been an exception to OSHA 1994 (Act 514). Safety has often been treated as a regulatory requirement rather than a flexible process adapted to a unit's unique needs. Making safety a fundamental value that's part of every culture will require changing the way we think about it, moving from a compliance-based mindset to one focused on creativity and active soldier participation.

Military leaders can start by identifying the strengths, limitations and resources of their individual units. The next step is to take the Army's existing safety programs, messaging and tools and tailoring them to the unit's safety culture. There is no one-size-fits-all for the safety issues we see most often. Instead, the programs must be driven by conditions within the unit itself. Factors such as average soldier age, unit's operational involvement, deployment schedules and various other issues must be taken into account as leaders develop safety programs targeted to their unit's needs. Even the greatest safety program won't be effective if it isn't put into practice every day with buy-in from soldiers at all levels. Change has to come from the top and bottom simultaneously, with both leaders and subordinates participating in the process.

The end goal is to have a culture where every individual is an active owner of their personal safety and the composite risk management process. This step is perhaps the most difficult, but it also pays the greatest rewards in protecting the vast organization. The transformation to a culture that embraces safety doesn't stop at the unit or soldier level. Soldiers who are continuously exposed to cultures that embrace safety, both at peace time

and at war, will be well equipped to face the challenges unique to Army life. Eventually, culture becomes part of who you are, and that's what important with safety. The soldiers must carry safety with them wherever they are and whatever they're doing, be it on duty in theater or off duty at bases. Ultimately, the key to culture change is engagement across all levels of command, among soldiers and within the hierarchy.

However self-regulation of OSH cannot be materialized without having a safety culture embedded within the organization. This has been highlighted by the chairman of the National Institute of Occupational Safety and Health Datuk Lee Lam Thye, when commenting on Prime Minister Dato' Sri Najib Tun Razak speech on 2nd May 2009 in conjunction with HARI PEKERJA 2009 in Bukit Jalil, addressing the need to inculcate a safety culture at the work place, said that:

All workers are entitled to safe and healthy working conditions, as articulated in international human rights instruments, regardless of whether they be involved in fieldwork, in the office or other workplace settings. It is essential for employers and employees to be fully committed to workplace safety. The government, employers and employees must be committed to achieving a work culture that ensures safety and health. It must be emphasized that there should be no compromise on safety and health at the workplace. Increasingly, the promotion of safer conditions in the workplace is based on promoting a culture of risk and accidents prevention which can improve the health of workers and the productivity of the enterprise. The overall responsibility for providing a safe and healthy working environment rests with the

employers who should demonstrate their commitment to OSH. This can be done by building and maintaining a preventive safety and health culture that address the principles of prevention, hazard identification, risk assessment and control, information and training, while workers have a duty to cooperate with the employer in implementing this OSH programme. (Lee, 2009)

With respect to this, this study focuses on the concept and content of safety culture and the perceptions of safety behaviors in the Malaysian Army.

1.3 Problem Statement

Large organizations like the Malaysian Army bring unique types of safety challenges to the workplaces. They have complex and dispersed operations which can, and often do, mean that the safety aspirations of senior leaders become distant from the reality on the ground. The Army also share exposure to inherently dangerous environments and have a need to keep the personnel constantly engaged as the organization attempt to create a safety culture across the full range of our diverse undertakings. Nevertheless, for the last two decades, Malaysian Army has embraced many systems to minimize workplace accidents and incidents especially in the peace time soldiering environment, yet despite the best intention, there has been increasing in the rate at which soldier are killed or injured at work. According to the statistical data from the Department of Record and Pension (JRP) of Ministry of Defence, there were 289 army personnel killed arise in line of duty since year 2000 until 2011 with the average of 24 personnel killed yearly. Besides that it is also reported there were quite large numbers of injury cases due to occupational diseases or negligence involving army personnel who cause disabilities and later

termination of service under poor health condition or unfit. Most of the cases reported were due to accident at workplace or during performing official duties.

Similar scenario prevails in Malaysia, when statistics from the Social Security Organization (SOCSO) 2010 reports indicated that the number of occupational diseases increased by 28.03% to 1,215 cases compared to 949 cases in 2009. Overall, 4.44% increase in accidents were reported in 2010, a total of 57,639 cases as opposed to 55,186 cases in 2009. Workers especially those in the industrial sector still suffer a high level of occupational accidents almost every year with 35,603 cases reported in 2010. These accidents arise from different causes, which can generally be classified as physical incidents posing hazardous situations, and behavioral incidents caused by unsafe acts. The underlying belief is that careless workers do not cause the majority of accidents but by failures in control, which ultimately is the responsibility of management. Investigations on accidents are paying more attention to the behavior of people at risk; the behavior of organizations seeking to control risk and the behavior of managers directly involved.

The mainstreaming of safety in the Army recognizes that a safe culture can only be achieved when every commander, every leader, every operator and every soldier understands their contribution to the planning and conduct of safe activities. A key first step in this process has been the nurture of the OHS management system (*Garis Panduan Pelaksanaan Pengurusan Keselamatan Dan Kesihatan Pekerjaan Tentera Darat - K&KP*); to comprehensively codify the systems, processes, responsibilities and attitudes required to optimize safety across the Army. K&KP now fully aligns with the Malaysian Standard 1722:2003. The Army K&KP Guidelines, released in 2006, has been

accompanied by a succinct units' safety SOPs. It now defines the mainstream responsibilities of every commander and soldiers are clearly articulated in the OHS Policy Statement. This statement has been communicated widely throughout the organization. In a similar manner, Army is recognizing the complex health and safety dependencies which must exist across the organization if a truly mainstreamed safety outcome is to be achieved. Every procurement agency, maintenance function, logistics directorate and health branch must engage, develop and review safety related objectives if they are to achieve the full safety potential of the organization.

The Army organization has earned the reputation of being a highly hazardous profession because of the job nature especially when soldiers operates deadly weapon system or conducting operations in an unfavorable conditions regardless of terrain, weather and condition. However, safety is a non-negotiable attribute in the Army. It is the cornerstone of any military operation and expected by soldiers, governments, and the public in general. Military commanders primary goal is to safeguard, proactively, the safety of military operations during peacetime or conflicts. Commonly perceived as lack of accidents or incidents, military safety is primarily achieved by an organization through compliance with prescribed standards. Therefore, it is mandatory for the army organization to provide a safe working environment for their military personnel including its civilian staffs'.

In this regard, YAB Dato' Sri Mohd.Najib Bin Tun Haji Abdul Razak, Deputy Prime Minister at the official opening of NIOSH 7th National Conference and Exhibition on Occupational Safety and Health (COSH 2004) on the 20 July 2004 stressed again that: Although accidents can and do happen, there are various measures that we can adopt to

limit their occurrence. Accidents can be reduced if we make prudent and cautious work practices part of our culture.

OSH in the Army is and has always been a command responsibility and this is an appropriate recognition of the requirement for commanders to often operate with extensive freedom of manoeuvre when deployed on operations. This arrangement draws heavily on the unique concept that a military commander has the absolute responsibility for all aspects of the welfare of his or her troops. While no competent commander would willfully endanger the health or safety of personnel under their command, the complexity of the safety management challenges noted in this paper create substantial scope for accidents to occur and for causative factors to develop behind a cloak of perceived capability and readiness-related priorities. While the efforts of the relatively small number of dedicated and trained safety personnel make a positive impact on Army's safety behavior, it is the mainstreaming of Army's safety processes and functions which will ultimately generate incremental improvements in the wellbeing of Army's personnel. The success of these related mainstreaming initiatives will be seen not only through reduced safety failures and lower personnel morbidity, but through a subtle realignment of Army's culture over the next decade. Drawing from the above strong endorsement, the research report will focus on the army personnel perceptions on safety behavior of the Army organization.

1.4 Research Questions

This research will attempt to answer the following broad questions regarding the factors influencing the safety behavior in the Malaysian Army:

- i. Does **job safety** influence safety behavior?
- ii. Does **coworker safety** influence safety behavior?
- iii. Does **supervisor safety** influence safety behavior?
- iv. To what extent **management safety practices** influence safety behavior?
- v. To what extent **satisfaction with the safety program** influence safety behavior?

1.5 Research Objectives

This replication study therefore has the purpose of examining the factors influencing safety behavior in the Malaysian. It will determine whether all the five facets of Work Safety Scale have any influence on safety behavior among the army personnel. According to this research, there are few objectives to be achieved as follows:

- To examine the influence of WSS dimensions on compliance to safety behavior.
- To determine the safety compliance level among the Malaysian Army personnel in relation to safety behavior.

1.6 Significance of The Study

The result of this research to the other military organizations i.e Royal Malaysian Navy and Royal Malaysian Air Force could be used to strategize to their workplace safety policy in order to improve workers safety behavior. It could be also to ascertain workers awareness of the safety culture within their employing organization. The findings of this study should make a major contribution to the practical and research aspects. In practice, this model should expand the knowledge of Army organizations personnel regarding the importance of employees' perceptions as an effective measurement tool to demonstrate improvement in Army organizations. Furthermore, a complete understanding of soldiers' safety behavior in this environment will be essential in preparation for future study to other organization of the Malaysian Armed Forces especially to the development of safety culture and its implications to the military operations.

As workplace safety contributes to the performance of an army organization, the findings of this study on compliance on safety behavior will help to determine all the influencing factors that could lead to accidents, injuries and fatal in the organization. It also provides proactive information regarding safety problems before they develop into incidents that need to be analyzed by the management for their safety programme development. This report will also be useful for the other military organizations in developing their safety manuals and procedures. It will also be an important reference for future researches and studies on safety compliance and behavior. Similar researches can also be conducted in different governmental organization and enforcement agency to enhance the stability and reliability of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter commences with an overview of previously conducted studies with emphasis on safety culture and its importance with regard to the military organization. Within the context of the literature review, this study presents a review of theories, arguments, structure, comparisons and deductive listings on the current and ongoing research of safety culture. This section also includes a description of safety, safety culture, safety climate and safety behavior. Although many formal research works on safety culture have been presented to date, but this study is to bridge the gap in understanding the theory of perceived role of ethics and social responsibility of Malaysian Army in relation to the adoption of OSHA 1994.

Definitions

The term "safe" can be simply defined in terms of level of risk. Something can be "safe" if it complies with statutory requirements or recognized design or performance criteria. For me to say that "I am safe" is to make a judgment about my perceived level of risk. Defining "safety" is not so straightforward. There is no universally accepted definition. Here are a number of examples:

- The potential for the realization of the unwanted consequences of an event (Rowe, 1977)
- The proper handling of a substance or conduct of a task to eliminate its capacity to cause injury or to do harm (Confer & Confer, 1994).

- Relative protection from exposure to hazards: the antonym of danger (Hammer, 1981).
- The opposite of risk (Harms-Ringdahl, 1993).
- The absence of danger from which harm could result (Van Steen, 1996).

(Hudson,1999) describes safety as “something that has to be actively managed to allow profit or advantage to be gained...(management) of risk is the name of the game. Those organizations which manage their risks best are in place to make the most profit. Those that do not manage so well are either perceived as dangerous or are forced to scale down their operations to achieve acceptable levels of safety.”

Safety Culture

Safety culture is an important topic for managers in high-hazard industries because a deficient safety culture has been linked to organizational accidents. Many researchers have argued that trust plays a central role in models of safety culture but trust has rarely been measured in safety culture/climate studies. Burns et al, (2006) investigate the role of trust within safety culture by using explicit (direct) and implicit (indirect) measures to assess trust at a UK gas plant. Explicit measures assessed trust by asking workers to consider and state their attitude to attitude objects. Implicit measures assessed trust in a more subtle way by using a priming task that relies on automatic attitude activation. The results show that workers expressed explicit trust for their workmates, supervisors, and senior managers, but only expressed implicit trust for their workmates. The article proposes a model that conceptualizes explicit trust as part of the surface levels of safety culture and implicit trust as part of the deeper levels of safety culture. An unintended finding was the positive relationship between implicit

measures of trust and distrust, which suggests that trust and distrust are separate constructs. The article concludes by considering the implications for safety culture and trust and distrust in high-hazard industries. The discriminant validity of a safety culture measurement tool refers to its power to differentiate between organizations or groups that actually pose different levels of safety. One of the most obvious criteria for differentiating between organizations is the number of accidents, incidents and near misses experienced by an organization.

Wiegmann et al. (2002) conducted a review on safety culture as to summarize and integrate the numerous reports and studies that have been conducted to define and assess safety culture, as well as the highly related concept of safety climate. Therefore the purpose of the review is to address these problems by synthesizing the existing literature on safety culture in order to develop a better understanding of its nature, dimensions, and impact on operational safety. They revealed several diverse definitions of the concept (Wiegmann, Zhang, & von Thaden, 2001). Most definitions originate from articles that have focused on safety culture in industries other than aviation (e.g., nuclear power, mining and manufacturing). Nonetheless, there does appear to be several commonalities among these various definitions regardless of the particular industry being considered. These commonalities include: 1. Safety culture is a concept defined at the group level or higher, which refers to the shared values among all the group or organization members. 2. Safety culture is concerned with formal safety issues in an organization, and closely related to, but not restricted to, the management and supervisory systems. 3. Safety culture emphasizes the contribution from everyone at every level of an organization. 4. The safety culture of an organization has an impact on its members' behavior at work. 5. Safety culture is

usually reflected in the contingency between reward systems and safety performance.

6. Safety culture is reflected in an organization's willingness to develop and learn from errors, incidents, and accidents.
7. Safety culture is relatively enduring, stable and resistant to change.

Considering these commonalities among various definitions of safety culture, they formulated the definition as: Safety culture is the enduring value and priority placed on worker and public safety by everyone in every group at every level of an organization. It refers to the extent to which individuals and groups will commit to personal responsibility for safety, act to preserve, enhance and communicate safety concerns, strive to actively learn, adapt and modify (both individual and organizational) behavior based on lessons learned from mistakes, and be rewarded in a manner consistent with these values. As such, the definition implies that organizational culture exists on a continuum and that organizations can have either a good or poor safety culture. However, not all definitions in the literature make this assumption. Some suggest that safety culture is either present or absent within an organization. Nevertheless, it is clear from the initial introduction of the term within various operational environments that safety culture is assumed to be a component of an organization that can be improved rather than simply instilled (e.g., IAEA, 1986, as cited in Cox & Flin, 1998). Obviously, such a distinction is important when it comes to both measuring and changing safety cultures within organizations.

Safety Climate

Wiegmann et al.(2001) indicated that, from the time the term was first highlighted by Zohar (1980), the literature has not presented a generally accepted definition of safety climate either. In fact, some definitions of safety climate are almost identical to definitions of safety culture. The distinction between safety culture and safety climate appears to be loosely analogous to the distinction that has long been made in the personality literature between psychological states verses traits (Spielberger, 1966). In other words, a person's behavior can be influenced by both circumstantial factors that elicit psychological reactions (i.e. states), such as anxiety or anger, as well as by their enduring personality characteristics (i.e. traits), such as introversion/extroversion. Therefore, repeated observations or interactions with an individual may often be required in order to decipher his or her enduring personality characteristics (consistent ways of reacting across situations), independent of temporary states elicited by specific contextual factors.

Given the numerous definitions of safety culture that have been proposed in the literature, it is not surprising that there is little consensus as to the exact number of indicators that reflect an organization's safety culture. Indeed, numerous organizational indicators have been proposed, with some estimates ranging from as few as two to as many as nineteen (Flin et al., 2000). Again, the numerous inconsistencies and often idiosyncratic labeling of these indicators creates difficulty in reconciling the variety of organizational indicators identified in previous reports. Nonetheless, a closer inspection of these various reports suggests that there are at least five global components or indicators of safety culture. They include organizational

commitment, management involvement, employee empowerment, reward systems, and reporting systems.

Safety Behavior

The behavioral factor of safety refers to employee motivation and performance improvement through behavior constraints. Behavior factors base on safety provide more focus on effort of behavior rather than results such as accidents recorded. The behavior base safety refers to the behaviors which lead to reduction of risk behaviors and as a result reduce accidents and injuries. As discussed by Krause and Russell (1994), reported that the workers who have riskier behavior are commonly present in most injury situations where people are case accidents and injuries. When the accident or injury is recorded which is related to behavior occurs, it is highly likely that the similar attitude has not caused injury when previously experienced. Behavior based safety involvement are workers more emphasis on group observation of workers performing regular work. If safety oriented programs are encouraged works can change their behavior and mold their attitude to act safely.

Williams et al. (1989) take issue with the notion that organizational culture reflects shared behaviors, beliefs, attitudes and values. They argue that not all organizational members respond in the same way in any given situation, although there may be a tendency for them to adopt similar styles of dress, modes of conduct, and perceptions of how the organization does, or should, function. Beliefs, attitudes and values about the organization, its function or purpose can vary from division to division, department to department, workgroup to workgroup, and from individual to

individual. Thus, although an organization may possess a dominating 'cultural theme', there are likely to be a number of variations in the way in which the theme is expressed throughout the organization (Williams et al., 1989; Hamden-Turner, 1990; Furnham and Gunter, 1993).

2.2 Empirical Studies on Safety Behavior

Previous studies have assumed that workers' attitudes and perceptions affect their behaviors so this will increase or decrease the propensity for 'accidents' to occur (Heinrich, 1931; Suchman, 1961; Wigglesworth, 1978; Coyle et al., 1995; Gillen et al., 2002). Several studies have examined key factors influencing the safety climate in a particular industry, for example, construction (Dedobbeleer and Beland, 1991; Siu et al., 2004), manufacturing (Brown and Holmes, 1986), energy (Ostrom et al., 1993; Lee, 1996), airports (Cabrera et al., 1997; Diaz and Cabrera, 1997), road administration (Niskanen, 1994) and health care services (Coyle et al., 1995). Previous research suggests that the viewpoints and perceptions of workers have a significant impact on safety performance (Heinrich, 1931; Suchman, 1961; Wigglesworth, 1978; Coyle et al., 1995; Gillen et al., 2002). Lu and Shang (2005) used exploratory factor analysis (EFA) to investigate the safety climate in container terminal operators. However, there is a lack of empirical studies dedicated to studying factors affecting safety behavior in the military organization such as Army operation context, although it is important to understand workers' perspectives of safety in the environment.

A study that revealed similar direction of relationship was conducted by, (Hayes et al, 1998) examined the role of perceptions of workplace safety in understanding the industrial accident process. The results of these studies have shown that perceptions of workplace safety issues are related to accident-related variables, such as accident rates, anxiety, and employees compliance with safety behaviors. The purpose of the present research is to develop and validate a scale of perceptions of workplace. A 50-item instrument that assesses employees' perceptions of work safety, the Work Safety Scale (WSS), was constructed and validated using three independent samples. The results showed that the WSS measures five factorially distinct constructs: (a) job safety, (b) coworker safety, (c) supervisor safety, (d) management safety practices, and (e) satisfaction with the safety program. Each of these scales has a high degree of internal consistency across the three samples. Supervisor safety and management safety practices were the best predictors of job satisfaction. In addition, supporting previous research, supervisor safety and management safety practices were significantly correlated with reported accident rates. Coworker safety and supervisor safety were strongly linked to employee's compliance with safety behaviors. WSS subscales were logically related to job stress, psychological complaints, physical complaints, and sleep complaints. Although the exploratory factor analysis of the WSS revealed five factors, there was considerable overlap between the *supervisor safety* and *management safety practices* items in the factor pattern matrix. The results of the exploratory factor analysis suggest that employees' perceptions of work safety, as measured by the WSS, are multidimensional.

2.3 The Relationship between Workplace Safety Scale (WSS) and Safety Performance

The following review will briefly explore each predictor of WSS on safety performance.

2.3.1 Job Safety and Safety performance

Studies demonstrate that between 5 per cent and 15 per cent of accidents are caused by inherent job hazard and 85 per cent to 95 per cent are caused due to what employers do or fail to do (Encarta, 1999; Darby et al., 2005). Also, it was reported that there exists immense correlation between safety and productivity; and cost and suffering (Williams, 1984; Duignan, 2003; Fayad et al., 2003; Inegbenebor and Olalekan, 2002). The case for an improvement in safety performance can, for most organizations, be argued on financial, legal and moral grounds. The important issue, however, is not the argument for the improvement but the process by which the corporate aims are translated into a programme that will achieve the desired safety performance. The basis for acceptable safety performance is generally recognized to be an established and robust safety management system (Health and Safety Executive, 1997; Smith et al., 1998) which provides the means for controlling and monitoring performance. In 1997, over 80 percent of companies, reporting safety performance through the Chemical Industries Association's Responsible Care programme, indicated that they had either a certified or a formal safety management system in place (Chemical Industries Association, 1998).

Therefore, if this were the sole criterion for achieving acceptable safety performance, these and many other companies should already have reached their desired performance targets. With any management function, however, performance depends not just on management policies and procedures but on the development of effective operational practices, which are appropriate to the working environment and which are also perceived to be appropriate by the workforce implementing them. Continuing high performance requires employers to audit and review their management system and operational practices in order to identify current strengths and weaknesses. Only then can initiatives be developed to address and remedy source of significant residual risk within the workplace.

Learning from health and safety incidents in the workplace is critical for organizations, because such incidents receive a great deal of media attention and are damaging to both people and the organizations in which they work. Learning from incidents provides potential solution to preventing future safety crises by looking back at what has happened and deriving lessons learned and predicting probable future challenges. Incidents are usually a result of a combination of failures, rather than a single event (Sepeda, 2006). They tend to be preceded by precursors, such as near misses and small-scale event. Failure to recognize and learn from these early signals often result in larger incident (Sanne, 2008; Heinrich, 1931). Paradoxically, with the increased awareness on safety issues and implementation of action to improve safety, this is a narrowing down of opportunities for direct experiential learning

within organizations (Rose, 2004; Kolb, 1984). Further to this, learning from incidents should also include preparation for dissimilar and unexpected incident, Therefore, there is an urgent need to adopt wider approaches to learning that ensure relevant knowledge is shared within organizations and across the industry (Rose, 2004; Kolb, 1984).

Significantly however, what most organization are all seeking is continuous improvement towards an incident free workplace, yet when measuring lagging indicators – they are only monitoring our performance at the last stage (how many fatalities, injuries, illnesses and what rate do they experience these in their operation) Rather, they need to examine the processes that lead to these failures and monitor how effective their control mechanism are in preventing these negative outcomes. Consequently getting a better picture or the proactive measures in place to reduce these outcomes and risk, thus the use of leading or positive performance measures (PPMs) has to be recommended.

Essentially PPMs are tracking the drivers of effective safety and risk management. Organizations need to recognize that there is no single reliable measure of health and safety performance, what is required is a ‘basket’ of measures or ‘balanced scorecard’ providing information on a range of health & safety activities. Measurement of PPM’s provides information on how the system operates in practice, indentifies area where remedial; action is required, provides a basis for continuous improvement and provides a mechanism for feedback and consequential motivation. It is also important to distinguish between two the types of process indicator: those, which focus on the behavior

of employees and those, which measure management activity. Examples of indicators of employee behavior include; percentage (%) of employees wearing PPE (safety glasses, harness etc.), percentage (%) hoses rolled-up percentage (%) pre-start checks complete. One of the features of such indicators is that merely publicizing the data within the workplace focuses attention on the problem and is likely to lead to safety improvement without the need for more direct or punitive management intervention usually within weeks not months, they are positive and focus on how good rather than how poor safety performance is involving all workers in improving safety, creating a safety culture and achieve “ownership”.

The case for an improvement in safety performance can, for most organizations, be argued on financial, legal and moral grounds. The important issue, however, is not the argument for the improvement but the process by which the corporate aims are translated into a programme that will achieve the desired safety performance. The basis for acceptable safety performance is generally recognized to be an established and robust safety management system (Health and Safety Executive, 1997; Smith et al., 1998) which provides the means for controlling and monitoring performance. Continuing high performance requires employers to audit and review their management system and operational practice in order to indentify current strengths and weaknesses. Only then can initiatives be developed to address and remedy sources of significant residual risk within the workplace.

2.3.2 Co-worker and Safety Performance

During the turbulent times facing contemporary organization, the ability to be both receptive and responsive to change has become paramount. A number of factors can facilitate an organization capacity for change including the work context in which change behavior occurs (Porras & Robertson, 1992). Organization climate is an important contextual component for shaping employee actions (Litwin, Stringer, 1968) including employee change-related behavior. A conceptual change process framework (Porras & Robertson, 1992), citing that employee cognitions mediate in work context factor and change behavior, suggests that employee climate perception, or psychological climate (Jones et al., 1974), should play an integral role in the change process. Thus, an issue of vital importance is how perceptions of organization change climate are shaped among employees. The knowledge of worker's risk perception and its attitude concerning safety is needed for the development and understanding of safety culture (Williamson et al., 1997). On the other hand, the safety culture seems to have a significant effect in risk behavior (Rundmo et al., 1997). In this respect, Pedro & Miguel (2003), in a study carried out in occupational environments, concludes that workers with more evident risk behavior are the ones who have a lesser benefits perception, who have found lesser social support and mainly the one who have had bigger barriers to compliance behaviors. These barriers are generally, related to how organizations face and deal with occupational safety, or in other words, by their own safety culture.

2.3.3 Supervisor safety and Safety Performance

Schneider and Bowen (1985) found a direct link between management practices and employee climate perceptions. It also appears that leaders may influence organizational change by developing relationships with employee (Weisbord, 1976) and engaging in behavioral practices that determine climate (Burke & Litwin, 1992). Both the nature of the relationship, and the supervisor climate views, influence the employee change climate perceptions. Supervisor-employee relationship quality and employee change climate perceptions. Because it focuses specifically on the quality of the supervisor employee dyadic relationship, and represents a transformational type of leadership (Graen & Uhl- Bien, 1995) the Leader-Member Exchange (LMX) approach provides a potentially useful framework for this line of inquiry. The LMX theory posits that supervisor engage in differentiated relationship among employee that emerge over time and behavioral exchange (Graen & Scandura, 1987). As a result, supervisor develop dyadic relationship characterized by varying quality levels ranging from a highly interactive, interpersonally supportive association, termed a high LMX dyad, to a less interactive, very formal association, termed a low LMX dyad. Based on the five change condition reviewed earlier, the description of a change-conducive climate provides support for a tie between LMX and employee experiences of a change climate.

Previous studies (Tierney, 1999) suggest that social cues from the immediate supervisor play a role in shaping employee task-related perceptions. Kozlowski and Doherty (1989) suggest that the supervisor-employee relationship may influence employee climate perceptions via shared interpretations, and Burke and Litwin (1992) cite a study (Bernstein, 1978) in which managers' perceptions of team climate influenced individual employee perceptions. Within an organizational context, there is likely to be variation among supervisor in terms of climate perceptions. The degree of intra-group cohesiveness, cooperation, collaboration, interpersonal support, or teamwork present among group peers all tap the quality of team relations. Similar to the logic presented for the LMX influence, the nature of the relationship employees share among their team members should also shape their day-to-day work experiences. In fact, because inter member relational quality should demonstrate a number of the same attributes as the LMX relationship (Seers,1989), it should also be tied to the five conditions noted earlier by Porras and colleagues as change conducive.

A recent model by Jones and George (1998) indicates that when involved in quality relationship with team peers, individuals are more inclined to expend their role boundaries, enhance their level of behavioral involvement, and subjugate their needs for those of the group. Thus, these members may be more apt to engage in behaviors entailing a certain amount of calculated risk and deviation, if it were for the welfare of the team. Another hallmark of cooperative team member relation is enhanced level of mutual trust and interpersonal support (Jones & George, 1998). It is likely that the strong

supportive nature of such teams will provide a safety net for employees allowing them to engage in change behaviors within their jobs.

Although operational freedom is often dictated by members at higher levels of the organizational hierarchy, previous research sets some precedent for the team quality operational autonomy association. For example, studies report that within cohesive or high relational quality work teams, employees report that their immediate environment includes a sense of independence (Littlepage et al., 1989), job flexibility and discretion (Dunegan et al., 1992). Because in a situation of high relational quality they feel less vulnerable among their peers, team members will also be more inclined to communicate freely and share pertinent information the team (Jones & George, 1998). Support for this proposition is provided by a study (Seers, 1998) in which free exchange of information was a basis for the quality of interaction reported among team members.

Finally, employee development and learning are partially predicated on the receipt of relevant feedback, resources, and task guidance. In addition to the degree of support and information flow characterizing strong interpersonal groups noted above, within such groups, there is also evidence of higher level of reciprocal helping behavior among these peers (Jones & George, 1998; Seers, 1989). The combination of these factors should provide a foundation for personal learning and skill enhancement of team members.

2.3.4 Management Safety and Safety Performance

In managing the interaction between system and people the importance is placed on effective safety management. Herbert W. Heinrich an early pioneer of accident prevention and industrial safety noted that 88 percent of industrial accidents originate from human factors (Goetsch,2002). Since human factors play a significant role in the safety performance (Donald and Young, 1996), greater attention is now being directed on examining the behavioral causes to technological failures, which is now widely called “human error” Many researchers now recognize the importance of a strong safety culture in ensuring both the organization and employee achieve a high standard of safety in the workplace (Beeknerhagen et al., 2003).

With any management function, however, performance depend not just on management policies and procedures but on the development of effective operational practices, which are appropriate to the working environment and which are also perceived to be appropriate by the workforce implementing them. Continuing high performance requires employers to audit and review their management system and operational practices in order to identify current strengths and weaknesses. Only then can initiatives be developed to address and remedy sources of significant residual risk within the workplace. Employee co-operation and management commitment are promoted as key factors for achieving effective safety management (Health and Safety Executive, 1997). In addition, consultation between employers and employee on health and safety issues is a legal requirement under the Health and Safety

(Consultation with Employees) Regulations 1996 and the Safety Representatives and Safety Committees Regulation 1977 (Health and Safety Executive, 1996a). Many organizations construe this legal requirement for consultation with employees to be the same as employee co-operation, whereas the activities are two quite separate issues. The legal requirement, regarding employee consultation, relate solely to employees having the opportunity to discuss and comment on management activities and initiatives. Employee cooperation includes employee being actively involved with management in decision making.

2.3.5 Satisfaction of Safety programs and Safety Performance

Nahmens & Ikuma, (2009) done a study on the potential impacts of a specific concept used in Lean, continuous improvement (CI), on safety outcomes and shows results of an empirical analysis from an industry-wide survey of industrialized homebuilder on safety outcomes and CI programs. The study analysis focused on 67 of 141 responses from builders in the U.S that provided information on the use of CI programs. Nearly half of the survey respondents (62 homebuilders) use CI programs. The analysis showed that the presence of CI programs is associated with significantly lower injury incidence rates as compared to builders without CI programs. However, the presence or absence of CI programs did not result in significant differences in total OSHA-recordable cases, cases with restricted or transferred employees, total days lost, and days with restriction or transfer. Findings from this research will contribute to a better understanding of the applicability and potential benefits

of Lean in the housing industry in terms of employee safety outcomes. Specific Lean strategies (CI programs) do appear to have some positive effects on OSHA incidence rates, which suggest that Lean may be beneficial not only for process improvement and waste reduction, but also for improving safety in the construction industry. Great strides towards a safe workplace environment have been made in the construction industry. The majority of large construction companies have comprehensive safety plans, but the quality of the plan does not necessarily correlate to a company's safety performance. Written safety plan have the potential to be very effective, but companies must go beyond the safety plan and create a true 'safety' culture" Hinze 1997. It is the premise of the research that individual corporate safety culture has as much, or more, to do with the safety performance than the safety plan.

This research identifies corporate safety culture characteristics that correlate to safety performance. It is hypothesized that corporate safety culture by their very nature cultivates successful safety programs. While this hypothesis seems intuitive, little research has been conducted to specifically identify and measure critical culture characteristics that influence safety. This research attempts to quantify the relationship between corporate culture and safety performance. Using 196 questionnaire responses from three construction companies with above average safety record, statistical relationship between corporate were collected from a fourth company but not included in the analysis as explained in the data collection section of this paper. (Keith R. Molenaar, 2009). Training plays an important role in safety. Harvey et al. (2000) conducted a study on effectiveness of training programme might result

in the changing the safety attitudes and culture for all workers. The purpose of this study was conducted to measure the usefulness of training to transform safety culture and attitudes within a highly regulated environment and its objective was to investigate on safety culture change following the post-training intervention for all workers in a highly regulated work ambience. The dependant variables of the study were changing attitudes and culture among workers.

In a related study (Azimah et al, 2008) examined the perception of employees regarding the management of Occupational Health and Safety (OHS) in public hospital in Malaysia. 418 employees from three state hospitals in the northern region of Malaysia participated in this study and that gave a response rate of 43.15%. Data was collected using a set of questionnaires which consists of variables including safety satisfaction and feedback, safety communication, role of supervisor, work pressure, training and competence, management commitment, safety involvement, safety objectives, safety reporting, and leadership style. Data analysis was done using descriptive statistics, t-test, one-way ANOVA, Pearson correlation and multiple regressions. Findings showed that employees perceived safety reporting as the most important dimension and work pressure as the least important component in the OHS practices in their workplaces. Findings suggested that there was a significant positive correlation between safety satisfaction and feedback and safety communication, safety involvement, training and competence, safety reporting, work pressure, safety objectives, management commitment, role of supervisors, and leadership style. Regression analysis revealed approximately 54.5% ($R^2 = 0.545$) of variance in safety satisfaction and feedback, that was simultaneously explained by five independent

variables including safety involvement, safety reporting, work pressure, management commitment, and safety objectives.

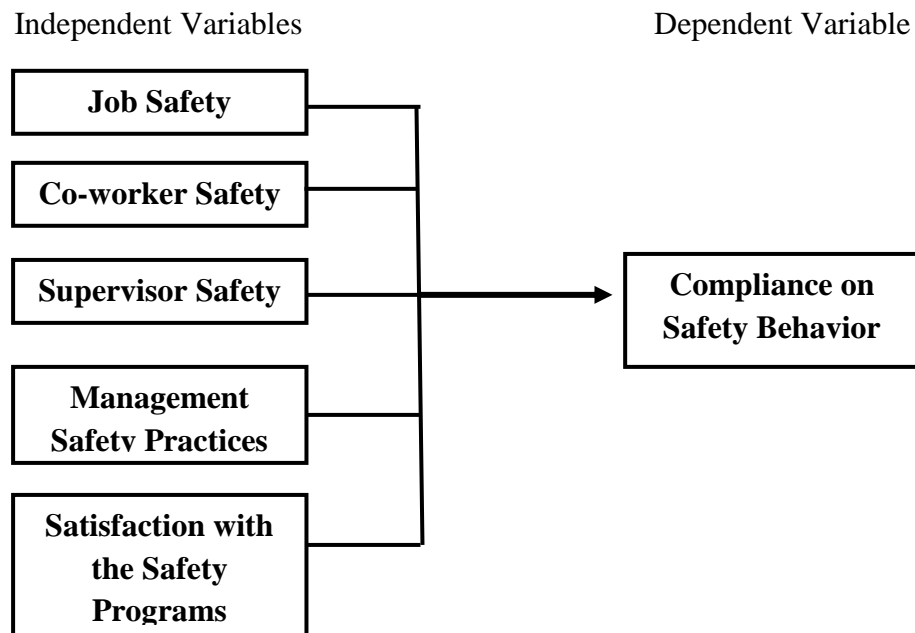
Cooper, (2004) has established an empirical link between a limited set of safety climate perceptions and actual safety behavior. It has also demonstrated how complex the overall relationship is: changes in climate perceptions do not necessarily reflect changes in levels of behavioral safety performance. Equally, changes in safety behavior are not necessarily reflected in safety climate perceptions. Such results challenge many of the assumptions that have typified previous research. The finding that safety climate perceptions will not necessarily match actual levels of safety performance strongly suggests that industry should focus its primary safety improvement effort on changing unsafe situations and conditions as well as people's safety behavior at all organizational levels, rather than concentrating on improving people's attitudes, beliefs, and perceptions about safety. It is reductions in the frequency of unsafe behaviors and their antecedents (i.e., unsafe conditions or situations) that reduce the opportunity for accidents to occur, not perceptions about how safety is operationalized. Support for this viewpoint comes from empirical evidence that shows that hypothesized paths from attitudes and beliefs (i.e., climate perceptions) to behavior to accidents and injuries are weak (Lund & Aaro, 2004). This is not to downplay the importance of perceptions about safety climate for improving safety performance. In accordance with Carroll (1998) the role of such perceptions is very important in highlighting where system and physical changes are required within an organization, as well as safety related behaviors at all hierarchical levels. As such, all organizations should regularly survey their prevailing safety climate to identify potential issues.

According to Cheng et al. (2009), the path analysis results show that leadership behavior affects safety culture and safety performance in the health care industry. Safety performance was affected and improved with contingency leadership and a positive patient safety organization culture. The study suggests improving safety performance by providing a well-managed system that includes: consideration of leadership, hospital worker training courses, and a solid safety reporting system.

2.4 Research Framework

From the review of the main existing and emerging safety behavior frameworks in the Malaysian Army, we know that Safety Behavior is a multi-dimensional construct. This study was conducted to investigate the influence of Work Safety Scale (WSS) on safety behavior. The frame work of this study has proposed job safety, coworker safety, supervisor safety, management safety practices and satisfaction with the safety program as independent variables and safety behavior as dependent variable. All those independent variables will be later measured on the perception of workplace safety towards the compliance of safety behavior being the determinants (dependant variable). The reason for integrating management practices with safety behavior, is as it supports human factors in control of human error, and achieve to maximum standard of safety, it appears the role of management practices that are also an important factor in achieving the safety behavior (R.M. Tavares, 2009). In addition these safety behaviors can influence the behavior of workers to prevent accidents (S.Cox et al, 2004). Figure 2.1 will provide on the relationship of the dependent and independent variables measured in the study.

Figure 2.1 Schematic Diagram of Research Framework



2.5 Summary

Safety may be regarded as an attribute of only engineering set up, but, certainly entails more. The current trend in modern technological societies emphasis is safety conscious attitude on the part of employee of labour, individual employee, self employed, designers, importers, exporters, suppliers and landlords to mention a few. Employees, therefore, need to be encouraged to become involved in the safety management continuous improvement process and a key factor here is that every employee should want to achieve overall improvement in safety culture of the organization (Cooper, 1998). This desire to improve is a key principle *kaizen* (Masaaki, 1986), the Japanese approach to continuous improvement. In recent years, there has been a growth in the extent of employee involvement in various aspects of the business and in the format it takes (Ramsay, 1991). Participation in safety programmers has also led to improvement in communications and industrial relations (Cooper, 1998).

Likewise, in the quest for continuous improvement in health and safety, organizations are using a range of activities and programmes focused on involving employees at all level. Employee willingness to become involved, however, will depend on the organization's prevailing culture. Employee who said they worked in a safer environment reported experiencing fewer accident and reported fewer health complaints than employees.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter is the discussion on the methodology used to collect data and information on the previous study. The dependent and independent variables will be defined and explained operationally and conceptually. Further information will also be given on the instruments scale, population, units of analysis and data analysis of the study.

3.2 Research Design

A questionnaire survey was adopted as the main data collection method since this research instrument has been used in many safety climate research studies (Flin *et al.*, 2000). Respondents were asked to rate them using a five-point Likert scale where '1' corresponded to 'strongly disagree' and '5' represented 'strongly agree'. In the process of determining items for inclusion in the questionnaire, it is crucial to ensure their content validity, which, in turn, is an important measure of the accuracy of the survey instrument. Content validity refers to the extent to which an instrument measures what it is meant to measure (Cooper and Emory, 1995). An assessment of content validity typically involves an organized review of the survey's contents to ensure that it includes everything it should and does not include anything it should not. Such an assessment provides a good foundation on which to build a methodologically rigorous assessment of the survey instrument's validity. The questionnaire design stages followed those outlined by Hayes *et al* (1998) and were prepared in dual language (English and Bahasa Melayu) to provide better understanding to the respondents.

The questionnaire's items were judged to be relevant, and minor modifications were subsequently made to the wording and examples provided in some measurement items, which were finally accepted as possessing content validity. The refined measurement items were included in the questionnaire survey.

3.2.1 Population

The population refers to the entire group of people, events or things of interest that the researcher wishes to investigate. It is the group of people, events or things of interest for which the researcher wants to make inferences based on sample statistics. A survey methodology was selected to collect data regarding organization safety behavior because it offered the best opportunity to capture a cross section of the beliefs, values, and behaviors in multiple trades and appointments in a timely and efficient manner. It is done by carrying out a questionnaire survey to collect data for testing the safety behavior model and determining the effects of safety culture on safety behavior in the Army. Presently, there is approximately 110,000 army personnel serving in the Malaysian Army. The Malaysian Army currently has 17 Corps or Regiments in the organization. These are grouped into 3 main components, the Combat Element, The Combat Support Element and the Support Elements.

In doing so, the population of this study focused on army personnel from different Corps i.e combat unit, combat support and service support respectively. In order to cover such organizations and components, the research was centralized at Terendak Camp, Melaka. It was chosen because the camp represents the biggest Army's camp in Malaysia and the only camp which consist of all corps and regiments. Rejimen ke

32 Artileri Diraja (32 RAD) based in Terendak Camp has been chosen to provide the respondents required. The population of 32 RAD is approximately 500 personnel of consists of multi – traits. Sample was chosen using stratified proportional random sampling according to occupational group categories such as ranks, traits and corps category. i.e Rank Category:-Commissioned Officers, Senior Non-Commissioned Officers (SNCOs), Non-Commissioned Officers (NCOs) and Privates; Traits – General (Operation and Training), Administration and Logistics; Corps- Combat, Combat Support and Service Support.

3.2.1.1 Sample Size

In order to ensure accuracy, a total of 217 regular army personnel participated in this survey (Krejcie et al, 1970). This research focused on eight working traits, typically in the Army's combat support unit. In doing so, Rejimen ke 32 Artileri Diraja (32 RAD) at Terendak Camp, Melaka is chosen to provide the respondents because 32 RAD is not only an operational unit but it is also a combat support unit which consists of multi trades and organizational hierarchy required.

3.2.2 Data Collection

This research uses the questionnaire survey research method to collect or gather data by asking respondents to answer the questions provided. In doing so, an official letter to the commanding officer of 32 RAD requesting permission to conduct a survey was sent prior to the survey. Subsequently, the survey is conducted by gathering all the respondents required on a specific

agreed date. The questionnaires then distributed and answered by all respondents' *insitu* on the same day. Questions were administered personally where it was confined to a local area where respondents were to respond to the questionnaires within a limited period. The questionnaire is intended to identify perceptions on the implications of OHS management elements towards their OSH behavior. In addition secondary data has been collected through the Internet and also from library that provides the information needed.

3.3. Data Analysis

Analysis of data will be using statistical analysis from the SPSS version 16.0 to gain the required output. Descriptive methods were used to simplify and characterize the data. The regression analysis is used to determine the compliance of safety behavior by referring measures from 50 items of WSS and 11 item of Compliance Safety Behavior. Further analysis includes standard deviations, reliability test; correlation testing among the variables was also measured in determining the respondent's reaction against safe work environment.

3.4 Summary

This study empirically examines safety culture and its effects on safety behavior from Army personnel perceptions in the military organization context. This study is looking into the influence of Work Safety Scale (WSS) on safety behavior of employees in an army unit. The variables were measured using the reliability analysis. The reliability measurement was done through Cronbach's alpha approach to check on the internal consistency for each factor. Cronbach alpha is a reliability coefficient that reflects how well the items in a set are

positively correlated to one another. This study explains job safety as the work nature or environment that protects every worker from any unwanted accident or incidents during work. Co-worker safety is the safety concern showed among workers towards each other in performing a job. Supervisor safety can be explained by having a proper and well monitory system at work whereby management safety is an understanding of all the efforts and action taken by the management to ensure that safety measures are given priority at work. The satisfaction of safety programs are actually the judgment of workers towards the safety programs or policies carried out by the management in an organization. Therefore as a conclusion, compliance safety behavior is the outcome from the safety practices or safety performance of all the above mentioned five safety variables. The results shall reveal an association between safety culture and army safety behavior. The conduct of research on Army organization represents an opportunity to improve safety and operational effectiveness, particularly in light of the risky profession composition of the soldiers in performing their tasks. In addition to this operationally based justification for conducting such research, the study of human behavior and behavior in this environment will increase our understanding of the psychological limitations for humans under conditions of risk as well as under the unique conditions of military operations.

CHAPTER FOUR

RESEARCH FINDINGS

4.1 Introduction

This chapter will report the data findings of the study. All data were analyzed using Statistical Package for the Social Sciences (SPSS) version 16.0 for Windows to perform the statistical analysis. The data were examined with reliability analysis, correlation analysis and linear regression analysis. Frequency analysis was utilized for analyzing the respondents' demographic characteristics.

4.2 Response Rate

There were a total of 217 respondents participated. It can be observed that from the total of 217 set of questionnaires issued to the respondents and the percentage rate of returned samples was 100 %.

4.3 Profile of Respondents

The respondents were chosen randomly from 32 RAD based in Kem Terendak, Melaka. The respondents were a mixture of multi traits personnel from several departments in the unit respectively. From the total of 217 respondents, 215 or 90.1 percent are males and 2 or 0.9 percent are females. There are also other demographic factors such as age, race, age, level of education, traits, length of service, rank

positions and job satisfaction which are looked in the analysis. The demographic data in the Table 4.1 indicates that the majority respondents are Malay (84.8 %) from the total respondents. Whereby only 3 or 1.4 percent are Indian and 30 or 13.8 percent are others i.e Iban, Bidayuh, Dusun and Kadazan. As for the level of education, most of the respondents are secondary certificate (Sijil Pelajaran Malaysia) or at least (Sijil Am Pelajaran) holder which contribute to almost 123 or 56.3 percent followed by 67 or 30.9 percent are Sijil Rendah Pelajaran (SPM)/ Peperiksaan Menengah Rendah (PMR) holder and others of 4 or 1.8 percent from the total. In addition, 22 respondents or 10.1 percent are graduates with a degree or diploma's holders.

When we look in terms of service scheme, the length of service of each respondent varies. It starts from 1 year till 26 years of service. Majority of the respondents have served more than 4 years and less than 15 years that brings to a total of 177 or 78.8 percent. As for the age group, it ranges from 22 years of age until 44 years old whereby majority of the respondents are from the Non- Commissioned Officers i.e Other Ranks category of a total 201 personnel or 92.6 percent. Besides that majority of the respondents were also at the age of 22 until 36 years old with a total of 197 respondents or 90.8 percent.

Finally, the respondents were from various traits or expertise. The highest percentage comes from the radar and gun crew with a total of 79 or 36.4 percent. Subsequently is the technician (38 or 17.5 %), drivers (26 or 12 %), general duty (23 or 10.6 %), store man (21 9.7 %), clerks (20 or 9.2 %) and supervisor/ Commander (10 or 4.6 %) which consists of the commissioned officers.

Table 4.1**Demographic Scale of respondents**

	Frequency	Percentage
Gender		
Male	215	99.1
Female	2	0.9
Race		
Malay	184	84.8
Indian	3	1.4
Others	30	13.8
Education Level		
LCE/SRP/PMR	67	30.9
MCE/SPM	123	56.7
HSC/STPM	1	0.5
Diploma/Degree	22	10.1
Others	4	1.8
Terms of Service		
1-10 years	125	57.6
11-15 years	64	29.5
16 years and above	28	12.9
Age		
22-29 years	114	52.5
30-39 years	95	43.8
40 years and above	8	3.7
Traits		
Gun/Radar Crew	79	36.4
General Duty	23	10.6
Clerk	20	9.2
Driver	26	12.0
Storemen	21	9.7
Technician	38	17.5
Supervisor/ Administrator	7	3.2
Commander	3	1.4

4.4 Reliability Analysis

In this study, the reliability measurement was done through Cronbach's Alpha approach to check on the internal consistency for each factor. It was suggested that the reliability of a basic research must be at least 0.7 or above (Cronbach, 1990). The measurement and the corresponding alphas of the current study were job safety ($\alpha = 0.839$), co-worker safety ($\alpha = 0.842$), supervisor safety ($\alpha = 0.886$), management safety ($\alpha = 0.886$), safety programme ($\alpha = 0.781$) and finally, compliance safety behavior ($\alpha = 0.708$). The data reflects that the items in a set are independent measures of the same concept and positively correlated to one another, thus they are all reliable items. The presentation of Cronbach's alpha for each variable is presented in Table 4.2 below.

Table 4.2

Reliability Coefficient for Each Variable

Measurement	Cronbach's Alpha
Job Safety	0.839
Co-worker Safety	0.842
Supervisor Safety	0.886
Management Safety	0.886
Safety Programme	0.781
Compliance Safety Behavior	0.708

4.5 Descriptive Statistic of Variables

As shown figure in Table 4.3, the descriptive of frequencies in this study shows that the co-worker safety scored the highest mean with 3.87 while job safety scored the lowest of 3.35 compared to the other variables. However, as for standard deviation, the job safety indicated a score of 0.70 whilst the safety programme scored only 0.50. Besides that, the minimum measure indicated most variable from 1.0 up to the highest of 2.2 and all the variable indicated 5.0 for the maximum.

Table 4.3

Frequencies of variables (N= 217)

Descriptive Statistics				
Variables	Minimum	Maximum	Mean	Std. Deviation
Job Safety	1.00	5.00	3.3585	.70444
Co-Worker Safety	2.10	5.00	3.8728	.54087
Supervisor Safety	1.70	5.00	3.8415	.54648
Management Safety	1.40	5.00	3.7968	.60884
Safety Programs	1.70	5.00	3.7636	.50864
Compliance Safety Behavior	2.20	5.00	3.6774	.55935

4.6 Correlations

The table 4.4 below depicted the relationship between compliance with safety behavior with the five facets of WSS variables shows a matrix of correlation and sample statistics of all variables. This is to determine how one variable is related to another i.e the nature, strength, direction and significance of the bivariate relationships. A Pearson correlation matrix is used to provide this information. In the table Correlations (Appendix B) there were 217 cases that

scores on both of the scales used in this analysis. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. As for the direction of the relationship between the variables, indicated that there is a positive correlation between all the independent variables to the compliance safety behavior. Based on the size of the value, has indicated that there were relationship between variables and the strength of correlation of each variables are as follows; safety programmes ($r = .45$) (medium strength), co-worker safety ($r = .43$) (medium strength), management safety ($r = .39$) (medium strength) and supervisor safety ($p = .31$) (medium strength) is significant at 0.05 confidence level. This strongly indicated that there is a positive medium correlation between the four variables to the compliance safety behavior. Finally, findings of the study has indicated that job safety ($r = .03$) correlation is less related to compliance safety behavior of the Army.

Table 4.4

Pearson Correlation Coefficients Analysis Results

	Job Safety (1)	Co-Worker Safety (2)	Supervisor Safety (3)	Management Safety (4)	Safety Programme (5)	Compliance Safety Behavior (6)
Job Safety (1)	1.000					
Co-Worker Safety (2)	.161 ⁺	1.000				
Supervisor Safety (3)	.045	.549 ^{**}	1.000			
Mgmt Safety (4)	.087	.517 ^{**}	.629 ^{**}	1.000		
Safety Pgrm (5)	.086	.527 ^{**}	.502 ^{**}	.547 ^{**}	1.000	
Compliance Safety Behavior (6)	.030	.432 ^{**}	.311 ^{**}	.395 ^{**}	.454 ^{**}	1.000

*** Correlation is significant at the 0.05 level (2 –tailed)*

4.7 Multiple Regression Analysis

Multiple regression analysis is to determine how much of the variance in the dependent variable is explained by a set of predictors. It shall determine how well a set of variables is able to predict a particular outcome and which variable in a set of variables is the best predictor of an outcome.

4.7.1 Checking Assumptions

4.7.1.1 Correlations

The correlations between the variables in the study shown that there was some relationship between the independent variables as mentioned in the Table 4.4 above. The correlations were less than .7; therefore all variables will be retained.

4.7.1.2 Collinearity Diagnostics

The results are presented in the table labeled Coefficients (Appendix B). Two values of Tolerance and Variance Inflation Factor (VIF) were provided respectively. The Tolerance is an indicator of how much of the variability of the specified independent is not explained by the other independent variables. Since all the values of independent variables given were small (less than .10), it indicates that the multiple correlation with other variables is high. The other value given is VIF, which is just the inverse of the Tolerance value. The

values given were well all below the cut-off of 10. Therefore the values still allow for quite high correlations between independent variables.

4.7.1.3 Normality and Residuals

The results are presented in the table labeled Normal P-P Plot and Scatter plot (Appendix B) respectively. The normal P-P Plot produced indicated all the points lie in a reasonable straight diagonal line from the bottom left to top right. This would suggest no major deviations from normality. As for the Scatterplot of the standard residuals, indicated that the residuals were rectangularly distributed with most of the scores concentrated in the centre (along the 0 point).

4.7.1.4 Casewise Diagnostics

The results are presented in the table labeled Casewise Diagnostics (Appendix B). In this study there were two cases found to have standardized residual value above 3.0 or below -3.0, that is Case Number 75 with a residual value of -3.48 and Case Number 142 with a value of 3.207. Besides, this strange case is also appeared in the Residuals Statistic under the value for Cook's Distance. The maximum value shown .131 which was larger than 1. It indicated that there is a potential problem. However, in a normally distributed sample, it is expected only 1 percent of cases to fall outside this range and no need to consider removing the offending case.

4.7.2 Evaluating the model

The results are presented in the table labeled Model Summary (Table 4.5) under the heading R Square and ANOVA^b (Table 4.6). These will tell how much of the variance in the dependent variable is explained by the model. The analysis revealed that 53.6 percent or (R^2 - .287) of the variance in Compliance of safety behavior. This is quite a respectable result. Since the sample tends to be small, the Adjusted R Square value of (R^2 - .270) in the output is to be used to provide a better estimate of the true population. In this case, the five independent variables are reasonably strongly correlated ($r = .53$). In addition the statistical findings summarized in Table 4.6 shows that the F value of 17.01 is significant at all the predictors/independent variables with (Sig.= .000).

Table 4.5

Model Summary

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.536 ^a	.287	.270	5.26126

a. Predictors: (Constant), Safety Pgrm Gp, Job Safety Gp, Supervisor Safety Gp, Co-Work Safety Gp, Mgmt Safety Practice.

b. Dependent Variable: Comp Safety Behavior

Table 4.6

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2353.036	5	470.607	17.001	.000 ^a
	Residual	5840.669	211	27.681		
	Total	8193.705	216			

a. Predictors: (Constant), Safety Program, Job Safety , Supv Safety, Co-Worker Safety, Mgmt Safety Practice

b. Dependent Variable: Compliance Safety Behavior

4.7.3 Evaluating Each of Independent Variables

In order to evaluate which of the variables included in this study contributed to the prediction of the dependant variable, the output box labeled Coefficients to be applied in the column Beta under Standardised Coefficients. (Table 4.7) The R^2 of 0.287 implies that the 5 facets of WS predictor variables explained about 29 % of the variance in the compliance with safety behavior, as depicted in the table 4.5 on the previous page. The Beta values indicated the largest beta coefficient is .273 (Sig.000), which is for safety Programme, followed by the second highest beta .252 (Sig.000) of Co-worker Safety and third highest beta .169 (Sig. 038) of Management Safety Practices. This carry the meaning of satisfaction with safety programme variable makes the strongest contribution to explaining the dependant variable. These three variables make the strongest unique contribution to explaining the dependent variable. The two lowest beta values of .059 (Sig .466) for Supervisor Safety and -.045 (Sig.449) for Job safety indicated that they made least contributions to the prediction of the dependent variable. Moreover, the R adjusted value

when minus by R^2 value resulting in 0.017; when converted into percentage, the output score 1.7 %. Since the value is less than 5%, there it shows that this study could be generalized to other population and be tested in other sector.(Zikmund, 2003)

Table 4.7

Estimates of coefficients for the model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig. value
		B	Std. Error	Beta		
1	(Constant)	14.431	3.425		4.214	.000
	Job Safety	-.039	.052	-.045	-.759	.449
	Co-Work Safety	.287	.086	.252	3.314	.001
	Supervisor Safety	-.066	.091	-.059	-.730	.466
	Mgmt Safety Practices	.171	.082	.169	2.088	.038
	Safety Pgrm	.331	.090	.273	3.662	.000

Notes : $R = .536$; $R^2 .287$; Adjusted $R^2 = .270$

4.8 Summary

The result indicates that WSS has explained the compliance of safety behavior of the army personnel. The study was conducted among 217 respondents and yielded 100 percent response rate. The major findings of the study indicated that three independent variables i.e co-worker safety, management safety practices, and safety programmes influence significantly the compliance safety behavior. On the other hand, job safety and supervisor safety were least significantly related to compliance safety behavior of the personnel in the Army. Thus discussion of the obtained results will be further discussed in the following chapter.

.CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.1 Introduction

This chapter will discuss the key finding and conclude the present study examination the relationship between perception of WSS and compliance of safety behavior among the Malaysian Army personnel. In addition so that implication to both theory and practice would follow onwards by suggesting the best solutions and more practical approaches to enhance compliance safety behavior among the soldiers serving the military organization.

5.2 Recapitulation of Result

As mentioned in chapter 4, 29 % of the variance in the compliance with safety behavior was explained by all the WSS predictor variables which was job safety, co-workers safety, supervisor safety, management safety and satisfaction of safety programme. The R square regression analysis which was feature in table 4.6 portrays that the F score of the regression analysis had given the value on 17.001 with the significance of 0.000 and the mean square of the analysis was 470.607. Satisfaction with safety programme has the highest beta coefficient (0.273), which is the strongest contribution in predicting the relationship to comply with safety behavior followed by co-worker safety (0.252) which is the second highest and management safety practices (0.169) as the third highest beta coefficient. All these three WSS predictor variables are significant because their values are lower than alpha value of 0.05. However, job safety and supervisor safety were least significant in explaining compliance to safety behavior.

5.3 Discussion

The relationship between the dependent variable and independent variables was investigated using Pearson's correlation coefficients. With reference to correlation table in chapter 4, it had explained the relationship between compliance with safety behavior and the five facets of WSS predictor variables. The relationship between compliance safety behavior and safety programmes was the highest linear score where $r = .45$. The second highest score is found in co-worker safety where $r = .43$. Subsequently was the management safety where $r = .39$. followed by supervisor safety where $r = .31$. Finally the relationship between compliance of safety behavior and job safety was the lowest correlation where $r = .03$.

The results show that safety programmes is the most important variables which contributed to the variance in compliance with safety behavior. Army personnel realized that they can achieve increased motivation, improved morale and better efficiency through an effective safety and loss control program, thus achieving the ultimate goal of increased proficiency. They also appreciated the programs, believed that such programs could reduce injury rates and accidents. Consequently, they are more concern on safety and acted in accordance with the safety practices. The military personnel started to realize the important of safety and necessity to have a sound and comprehensive safety programs and, it is the moral obligation for the unit management to provide a safe and healthful work place. Therefore it is crucial that organization such as the army focus on developing safety programs which strive to decrease or ultimately eliminate workplace accidents or during active duties.

The second highest linear correlation explained was co-worker safety. If the workers' perceptions towards their co-worker safety are good they will obey to safety rules and regulations better than if their perceptions are poor. Besides that co-worker perceptions towards safety has a direct implications and inspirations to the others well being. The third

highest correlation indicates that when the management safety is strong where management put high commitment towards safety concern, promote health and safety programs, emphasize safety culture, investigate safety problems promptly, the employees' safety behavior will also increase hence their level of compliance with safety rules and regulations will also increased.

Similarly, this perception describes the other positive correlation. It is indicated that the employees who perceived that the supervisor is more concern on safety, providing good safety training, always updating safety information to the workers, and care upon their safety are more valued by the workers. For these reasons, they were more committed to follow safety rules and procedures.

The job safety correlation seemed to have the weakest relationship in compliance with safety behavior, indicating that the soldiers perceived that they compounding occupational risks are the everyday hazards soldiers face off the job. Doing military job, they are exposed to various hazards and dangerous circumstances. Even though their workplaces were dangerous, risky or hazardous, they will only comply with safety rules and regulations which are related to their personal safety and health rather than workplace or working conditions. In addition, being the army personnel who are trained to perform operational duties and mission-oriented mind setting, they consider safety aspects can be compromised.

5.3.1 Job Safety with Compliance Safety Behavior

The result indicated that job safety made least contribution to the variance in compliance with safety behavior. This is probably due to the nature of the unique profession of military personnel. These unique features characterizing the military profession suggest that its serving members, especially the combat and combat support corps must accept an element of danger as well as the considerable personal

inconveniences. The military is a profession that even today is not very well understood by civilians. Apart from that, the result of the survey may also be affected due to the feedback from junior army personnel respondent which are more or less inexperience and insufficient knowledge of procedures. According to Vinodkumar and Bhasi (2009) employees with higher qualifications could understand to safety rules and regulations better because of their apprehend knowledge. Gyekye (2009) study too had a positive significant result from better educated employees where they were more committed to safety work behavior. This finding is in fact had revealed that this correlation is actually excellent to this type of respondents.

5.3.2 Co- worker safety with Compliance Safety Behavior

The results indicated that co-worker safety variable is strongly significant and contributed to the variance in compliance with safety behavior. This would probably due to the *Esprit De Corp* or teamwork concept embedded by the army personnel in their daily routine or during performing operational duties. When the soldiers gain the bonding relationship in their work or a sense of brotherhood, they would tend to take care of each other's welfare and safety in order to prevent any accident or fatal in the work station. Every individual will be responsible to each other to ensure one is fit and competent to perform the particular task with excellent outputs. Co- workers are fully responsible in keeping the work station in a safe and conducive manner. Indeed, they also play a crucial role in influencing the team to practice healthy and safe working habits. Thus, the socialization process will later on provide informal education on safety behavior and practices for the newcomer or junior staff to follow. Through repeated administration of safety practices and awareness, it would be later

implanted as a culture in the organization where safety would be given the priority in daily operation.

5.3.3 Supervisor Safety with Compliance Safety Behavior

Supervisors play an important role in removing barriers to safe performance and facilitating the smooth operation of the process. However, the results indicated that supervisor safety had least contribution to the variance in compliance safety behavior. Tomas et al. (1999) found that supervisors played an important role in the accident prevention process by transferring the elements of safety climate to members of workforce. Even though supervisor has great influence towards the behavior of their subordinates and could dramatically improve safety performance use by merely emphasizing safety in interaction, however, it didn't reflect accurately in the military context. This is because the current practice and status of military establishments towards complying with OSH regulations and act would definitely complicate the implementation and enforcement of a comprehensive safety program. While we have regulations that establish guidelines and standards every leader and soldier must follow, it is up to commanders at all levels to expand these policies into safety programs that meet their soldiers' needs and to the workplace is always in a safe condition. It is an indication for an army organization to further study on to what extent the supervisor holds themselves accountable for safety and for the safety of their subordinates because the motivation for safety management of the soldier is considered low which describe the unsatisfactorily implemented safety management systems. Mullen (2004) had argued that early socialization had to be taken into consideration where new workers could be influenced by the earliest input from

coworkers, supervisors or anybody from the organization. Positive input could mold them to be positive and vice versa. This factor is necessary to avoid negative behaviors of workers; hence management should provide proper safety trainings from correct skilled safety agents (e.g., supervisor and competent person) as early as when they enter the organization to mold their safety attitudes. In addition to re-training and motivational classes, supervisors and managers need to show more concern in the safety of their workers.

5.3.4 Management Safety Practices with Compliance Safety Behavior

In the study, the result of regression analysis depicted that management safety practices are correlated to compliance safety behavior. This might be due to the authority held by the management in imposing rules and regulation on safety. Once there are strong emphasize on safety procedures and regulation by the management, the employees would have no choice but to follow them. Specifically, management participation and involvement in work and safety activities, as well as frequent, informal communications between workers and management, are recognized as critical behaviors. In addition, the study was done in an army organization where the safety measures are given priority and taken into consideration by the management and soldiers as well. Success factors of a very well functioning safety management system which entail the personnel have a sense of ownership of the safety management system and are empowered to safety. Therefore, leadership and commitment from the top management is functioning well and safety policies are well documented ensure that safety rules and procedures are being obeyed at all time. Management controls training resources, develops and implements policies and procedures, regulates

spending for equipment, and selects and places personnel. When management understands its responsibility for employee safety and directs improvement efforts on the safety system it created, then management also understands that blaming the employee will not result in safety improvements.

5.3.5 Satisfaction of Safety Programmes with Compliance Safety Behavior

The study indicated that satisfaction of safety programmes contributed greatly to the variance compliance of safety behavior. This is probably due to the high level of satisfaction held by the employees from the safety programmes provided by the management or employer. To enhance good safety environment management could develop safety programs such as safety training, safety awareness induction course and so forth. This finding is supporting the study by Zohar (1980) where safety program effectiveness scored the highest safety climate measure and Hayes et al. (1998) where WSS subscales confirmed significant relation to the frequency of safety awareness training. This was also supported by Gyekye (2005, 2006b) where workers were satisfied with safety programs provided by their organization were more comply with safety regulation. This can be aligned with the excellence safety practice implemented in the organization. In fact, employees who received their safety programme in their pre - phase of current job are having a safer work environment as compared to those who have not received any safety orientation (Hayes et al, 1998). Job enrichment programs and skill training could also be used. Employees are more concern on much promising career path when they could expect higher post with higher skills owned by them. As for job enrichment programs employees will be multi skilled workers and thus could also motivate them. Induction training has also been

proven to set new employees mind on what they could expect from the organization they are working for and could understand better how things work especially in safe work environment.

5.4 Implication

In this section, the implication resulting from the outcome of the study will be discussed. It will be focused to both theory and practice.

5.4.1 Theoretical Implication

This study was done to investigate the influence of WSS on safety behavior among the soldier in the Malaysian Army. Even though there were many similar studies on safety compliance done in various industries such as telecommunication industry, hospitality industry, and construction industry and even in government agencies, study done to a military organization is considered something new in our society. It is because the military profession is unique by comparison with other professional pursuits. The military career has an inherent degree of risk, personal sacrifice and dedication not found in many other civilian professions. On the other hand, there is also concern that too much separateness by the military could result in it becoming totally isolated from society.

Nevertheless, the more research done to prove on compliance safety behavior, the better or valid the result will be. Therefore, this study was extended to an army organization to measure the reliability of the five facts which will increase the stability on the study academically. Besides that, this study was conducted in the

Malaysian Army organization where it creates new paradigm shift and opportunity for other researcher in conducting research to prove on the compliance safety behavior of the services of the Malaysian Armed Forces. Apart from that, this study would be worthy and contributes value to the academic world because it was done in a highly risk profession and to a non-complying organization of the OSHA 1994. i.e. The Armed Forces.

5.4.2 Practical Implication

The result of the study show positive significant contributions towards compliance with safety behavior from satisfaction with safety programs, management safety practices and coworkers safety. It is suggested to the management of this army organization to put more effort on these three predictor variables to maintain safety and enhance the best safety practices as it has been proven they could influence the soldiers to be more adhering to the safety rules and regulation. This in turn could probably reduce near misses, injury and accident involvement rates (Hayes et. Al. 1998; Zohar 1980, Gadd and Collins 2002; Guldenmund, 2000; OTooole, 2002). It is mandatory for every military establishment to implement safety practices of the unit or formation regardless of their corps and nature. By conducting more study on safety compliance, the management could see the lacking in enforcement to improve the quality of the working and provide a safe working environment to the soldiers. The emphasis is on getting Malaysian Armed Forces leadership to shift its focus from lagging indicators such as injury statistics to leading indicators such as near-miss data, process measures and safety climate surveys. Indeed, there should be more campaigns on cultivating safety culture at workplace to provide awareness and training on safety

should be held more to ensure that safety practices are implementing fully at workplace. This area has been our Army's most urgent safety issue, and although some efforts towards focusing off the – job safety are showing some improvement, it still have a long way to go.

5.5 Limitation

This study was conducted within a small sample size of 217 compared to the overall population of the Malaysian Army organization which consists of 110,000 active personnel. It should involve larger sample group in order to gain result more precisely. The finding would be helpful providing stability on the study. Besides that, the data obtained for this study were only focusing to the land component of the Malaysian Armed Forces that is the Army. It can only be applied to measure the perception of soldiers towards safety behavior in the Malaysian Army and may not be used for the other sister services i.e The Malaysian Navy and the Royal Malaysian Air Force.

5.6 Recommendation for Future Studies

This study is done to particularly investigate the influence of Work Safety Scale (WSS) on safety behavior among the Malaysian Army personnel. Therefore, more studies can be carried out in investigating the perceptions of safety behavior among the other Malaysian Armed Forces personnel as well as to measure the effectiveness of safety practices and implementation of the organization. This may give higher reliability to the application of WSS.

Apart from that, accident rates or injury severity caused during performing military active duties can be measured as the dependent variable replacing compliance to safety behavior in future studies on safety. This may provide data and evidence on actual accident rates incurring in various services in the Malaysian Armed Forces organization. In addition to the five independent variables discussed, the study should also examine how leadership aspect would influence the safety behavior of one because on and off the job, leaders can have a great impact on their soldiers by correcting unsafe behavior and taking a personal interest in each soldier's life. Therefore, it would have been more comprehensive to study leadership as another independent variable in the study.

5.7 Conclusion

Safety of employees is primarily important at any workplace irrespective of the fact whether it is utility, manufacturing, construction or military organization. The importance of safety at work can't be over exemplified. It is mostly felt in the army where soldiers are exposed sustained risk in their daily operations. Adaption of safety measures not only ensures safety of life of the soldiers but also their family dependent. Therefore, a study was conducted in determining the influence of Work Safety Scale (WSS) on safety behavior among soldiers of an army organization. The finding of the study had proven that safety behaviors of the army personnel were influenced greatly by job safety, safety programmes, co-worker safety, supervisor safety, management safety practices and held in the organization. One of the key aspects of defining a safety culture is in understanding the role national, professional and organizational cultures play in safety decisions. The key to shaping the safety and risk culture of an organization is in how an organization creates the environment for risk to be managed and how safety decisions are to be made and safety actions to be taken. When an organization

adopts a formal approach to safety oversight through the implementation of a safety management system, an environment is created that influences behavior which then eventually shapes the beliefs and attitudes of those in the organization.

Therefore, various stakeholders, including the occupational safety community, Ministry of Defence leadership and others, to observe and suggest to further improvement in the safety culture of military establishment. Previous studies undertaken in a different industrial sector and national culture (see e.g., Varonen and Mattila, 2000), implying that top managers can enhance and refine the firms' safety climate by focusing especially on safety behavior management, safety training programmes and co-workers' behavior. Based on study objectives highlighted, the WSS was used to examine the impact of safety culture on the safety behavior based on the perceptions of army personnel resulted in the labeling of five facets, namely job safety, co-worker safety, management safety, supervisor safety, safety programme and the compliance of safety behavior. The study provided good evidence of convergent and discriminant reliability for safety behavior dimensions, similar to previous studies (Hayes *et al.*, 1998; Flin *et al.*, 2000). A positive significant relationship was found between safety programmes, safety management practices and co-worker safety and on safety behavior implying that such as providing safety programs, emphasize safe working conditions, encouraging safety among workers will improves soldiers' safety behavior. Nevertheless, the least significant variables such as the job safety and supervisor safety indicated those variables make fewer contributions to a better safety behavior. In sum, findings infer that army personnel's' safety behavior, such as keeping the work area safe, caring about subordinates' safety, and following safety rules can increase safety in the work environment and reduce accidents in performing military duties especially in peace time soldiering environment.

Accidents and incidents in the military environment can be costly in terms of equipment and personnel losses. The only way to keep these costs to a minimum is to reduce the risk of accidents. The recognition of the prevalent role of human error in accident causation has led the Malaysian Army to expend considerable effort in ensuring that adequate human factors integration guidelines are available to support the procurement of complex military equipment. In addition to the implementation of such guidelines, a well-developed safety case and an appropriate safety management system for the equipment are fundamental to safe operation. Thus, while it could be said that the organizational safety culture in the military organization is not strong, the most acute problem may lie less with the commitment of individual soldiers or management, and more with the failure of the system for regulating and managing safety to provide effective channels to translate safety aspirations and initiatives into effective outcomes. Strengthening the safety culture requires a systems approach, which should include the following elements namely, strengthening the safety management process, defining more clearly the measurable outputs of safety management, developing competence standards for training and ensuring that performance criteria and targets are auditable. With all the complexities of military life, safety simply has to be a core value in the Malaysian Army. We could not complete our missions and protect our nation without it. Keeping our soldiers safe in all they do must be part of our culture to be successful. Our bottom line is ensuring every soldier within our organization or formations is there every day, safe, strong and ready to execute the mission.

REFERENCES

- Adrian L. Sepeda , *A Risk Based Maintenance Approach (For Facilities Complying With The US OSHA PSM Regulation)*. Journal of Loss Prevention in the Process Industries (v.22, #6) pp. 680-684.
- Arezes, P. M. and Miguel, A. S, (2003). *The Role Of Safety Definitions and Abbreviations*. Lewis, FL.
- Barbara Levitt and James G. March, (1988). *Organizational Learning*. Annual Review of Sociology Vol. 14, pp. 319-340.
- Bob E. Hayes, Jill Perander, Tara Smecko, and Jennifer Trask, (1998). *Measuring Perceptions of Workplace Safety: Development and Validation of the Work Safety Scale*. Journal of Safety Research, Vol. 29, No., 3, pp. 145–16.
- Burke,W. & Litwin, G.H.,(1992) *Transformational Change and Transactional Change : explanation of the Causal Model of Organizational Performance and Change*. Journal of Management.
- Calvin Burns, Kathryn Mearns, Peter McGeorge, (2006). *Explicit and Implicit Trust Within Safety Culture*, Risk Analysis Volume 26, Issue 5, pp. 1139–1150.
- Carroll, J. S. (1998). *Safety Culture As An Ongoing Process: Culture Surveys As Opportunities For Enquiry And Change*. Work & Stress, 12, pp.272–284.
- Cheng-Chia Yang, Yi-Shun Wang, Sue-Ting Chang, Suh-Er Guo, Mei-Fen Huang , (2009). *A Study on the Leadership Behavior, Safety Culture, and Safety Performance of the Healthcare Industry*. World Academy of Science, Engineering and Technology 53.
- Chow, G., Heaver, T. D. and Henriksson, L. E, (1994). *Logistics Performance: Definition And Measurement*, International Journal of Physical Distribution and Logistics Management, 24, pp. 17–28.
- Confer, R., Confer, T,(1994). *Occupational Health and Safety: Terms*.

Cooper M.D, R.A Phillips (2004). *Exploratory Analysis Of The Safety Climate And Safety Behavior Relationship*. Journal of Safety Research 35 (2004) pp. 497– 512.

Cooper, M.D.(1998) *Improving Safety Culture: A Practical Guide*. J. Wiley & Sons, Chichester.

Cooper, M.D, D. R. and Emory, C. W. (1995). *Business Research Methods*, 5th edn ,Chicago, IL: Irwin.Dalton, D. R., Todor, W. D., Spendolini, M. J., Fielding G. J. and Porter, L. W. (1980). *Organization Structure And Performance: A Critical Review*, Academy of Management Review, 5, pp. 49–64.

Cooper, D. R. & Emory, C. W. (1995). *Research Methods*. Homewood, IL: Richard D. Irwin, Inc

Cronbach, L.J. (1990). *Essentials of Psychological Testing* (5th ed).New York: Harper and Row.

Douglas A. Wiegmann, Hui Zhang, Terry von Thaden, Gunjan Sharma, and Alyssa Mitchell,(2002). *Safety Culture: A Review* Technical Report ARL-02-3/FAA-02-2 - May 2002.

Furnham, A., & Gunter, B. (1993). *Corporate Culture: Definition, Diagnosis And Change*. In Cooper, C.L., Robertson, I.T. (Eds), *International Review of Organizational Psychology*, John Wiley, Chichester, 8, 233-61.

Flin, R., Mearns, K., O'conner, P. & Bryden, (2000). *Measuring Safety Climate: Identifying The Common Features* Safety Science 34, pp. 177 - 192.

Garis Panduan Pelaksanaan Pengurusan Keselamatan Dan Kesihatan Pekerjaan Tentera Darat (K&KP), (2006), Bahagian Inspektorat Tentera Darat, Kementerian Pertahanan Malaysia.

Gadd, S.& Collins, A.M.(2002). *Safety and Culture: A Review of the Literature* Health and Safety Laboratory HSL/2002/25, Health and Safety Laboratory.

Glendon, A. I. and McKenna, E. F. (1995). *Human Safety and Risk Management* (London: Chapman and Hall). *Culture in Safety Performance Measurement, Measuring Business Excellence*, 7(4), pp. 20–28.

Graen, George B. & Uhl-Bien. M., (1995). *Relationship-Based Approach to Leadership: Development of Leader-Member Exchange (LMX) Theory of Leadership over 25 Years: Applying a Multi-Level Multi-Domain Perspective*. Management Department Faculty Publications. Paper 57. University of Nebraska-Lincoln.

Goetsch, D. L. (2002). *Effective Supervision: A Guidebook for Supervisors, Team Leaders, and Work Coaches*. University of West Florida and Oskaloosa-Walton. Prentice Hall.

Guldenmund, F. (2000). *The Nature Of Safety Culture: A Review Of Theory And Research*. *Safety Science*, 34, Pp. 215-257.

Gyeke, A.S., Salminen, S. (2009). *Educational Status and Organizational Safety Climate: Does educational Attainment Influence Workers' Perceptions of Workplace Safety?*, *Science Direct*, 40, pp.20-28.

Hampden-Turner, C. (1990). *Charting Corporate Culture*. New York: Addison Wesley.

Hammer, W, (1981). *Occupational Safety Management and Engineering*, Prentice-Hall, New Jersey.

Harms-Ringdahl, L, (1993). *Safety Analysis: Principles and Practice in Occupational Safety*, Elsevier, London.

Harvey, J. (2000). *Reinforcing Ethical Decision Making Through Organizational Structure*. *Journal Of Business Ethics*, 28, pp.43-58.

Hayes, B.E, Perander, J, Smecko, T. & Trask, J. (1998), *Measuring Perceptions of Workplace Safety: Development and Validation of the Work Safety Scale*, *Journal of Safety Research*, Vol.29

Hudson, P. (1999). *Safety Culture – Theory and Practice*. In: *The Human Factor in System Reliability – Is Human Performance Predictable?*, 1-2 December, Siena, Italy. pp.1-11.

Jones, Butler, Mark C.; Allan P., (1979). *Perceived Leader Behavior, Individual Characteristics, And Injury Occurrence In Hazardous Work Environments*. Journal of Applied Psychology, Vol 64(3), Jun 1979, 299-304.

Jones, G. R., & George, J. M. (1998). *The Experience And Evolution Of Trust: Implications For Cooperation And Teamwork*. Academy of Management Review, 23(3), 531-546.

Krejcie, R V., Morgan, D.W. (1970). *Determining Sample Size for Research Activities*. Educational and Psychological Measurement, 30. pp.607-610.

Keith R. Molenaar, (2009). *Framework for Measuring Corporate Safety Culture and Its Impact on Construction Safety Performance*. Journal of Construction Engineering and Management, Vol. 135, No. 6, June 2009, pp. 488-496.

Kozlowski, Steve W. J.& Doherty, Mary L.(1987), *Integration of Climate and Leadership: Examination Of A Neglected Issue*. Journal of Applied Psychology, 74, pp.546-553.

Lee Lam Thye, (2009). World OSH Day in Conjunction with Labour Day 2009. Retrieved February 12, 2012, from <http://lamthyelee.blogspot.com/>

Lee, T.R. (1998). *Assessment Of Safety Culture At A Nuclear Reprocessing Plant*, Work and Stress, pp.12, 217-237.

Litwin, G. & Stringer,R, (1968). *Motivation And Organizational Climate*. Boston HU

Lund, J., & Aaro, L. E. (2004). *Accident Prevention. Presentation Of A Model Placing Emphasis On Human, Structural And Cultural Factors*. Safety Science; 42: pp.271-324.

Maltz, A. and Maltz, E, (1998). *Customer Service In The Distributor Channel Empirical Findings*, Journal of Business Logistics, 19, pp. 103–130.

Masaaki, Imai, (1986). *Kaizen: The Key to Japan's Competitive Success*. New York, NY, US: Random House.

Michael Beer, (1980). *Organization Change And Development: A Systems View*. Goodyear Publication.

Michael Frese, (2000). *Success And Failure Of Micro business Owners In Africa: A Psychological Approach*. Greenwood Publishing Group.

Mullen, J, (2004). *Investigating Factors That Influence Individual Safety Behavior At Work*. Journal of Safety Research, Vol.35, pp. 275-285.

Nahmens, I. and Ikuma, L. H. (2009). *An Empirical Examination of the Relationship between Lean Construction and Safety in the Industrialized Housing Industry*. Lean Construction Journal, pp. 1-12.

Nor Azimah Chew Abdullah, Jeffery T. Spickett, Krassi B. Rumchevb, and Satvinder S. Dhaliwal, (2008). *Assessing Employees Perception On Health And Safety Management In Public Hospitals*.

O'Toole, M. (2002). *The Relationship Between Employees' Perceptions Of Safety And Organizational Culture*. Journal of safety Research, 33,pp 231-243.

Pedro M. Arezes, A. Sérgio Miguel, (2003). *The Role Of Safety Culture In Safety Performance Measurement*, Measuring Business Excellence, Vol. 7 Iss: 4, pp.20 - 28

Perrow, C. (1984). *Normal Accidents*. New York, Basic Books.

Porras ,J. I. and Robertson,P. J., (1993). *Dynamics of Planned Organizational Change: Assessing Empirical Support for a Theoretical Model*. The Academy of Management Journal, Vol. 36, No. 3, pp. 619-634.

R. Krause, K. Seymour, and C. Sloat, (1999). *Long Term Evaluation Of A Behavior-Based Method For Improving Safety Performance*, Safety Science, vol. 32,pp. 1–18.

R. Krause and R. Russell, (1994). *The Behavior-Based Approach To Proactive Accident Investigation*, Professional Safety, vol.39.

Ramsay, H. (1991). *Reinventing the Wheel? A Review of the Development and Performance of Employee Involvement*. Human Resource Management Journal 1(4): pp. 1-22.

Rauch, A., & Frese, M, (2000). Psychological approaches to entrepreneurial success. *A General Model And An Overview Of Findings*. In C.L. Cooper & I.T. Robertson (Eds.), *International Review of Industrial and Organizational Psychology* ,pp. 101-142. Chichester: Wiley.

Reason, J. (1990). *Human Error*. Cambridge: CUP.

Robert V. Krejcie & Daryle W. Morgan, (1970).*Determining Sample Size For Research Activities*. Educational And Psychological Measurement., 30, pp. 607-610.

Rousseau, D. M. (1990). *Assessing Organizational Culture: The Case For Multiple Methods*. In B. Schneider (Ed.), *Organizational Climate And Culture* .pp.153 - 192. San Francisco: Jossey-Bass.

Rowe, W., (1977). *An Anatomy of Hazard*, John Wiley & Sons, New York.

Rundmo, T., (1996). Associations Between Risk Perception And Safety. *Safety Science* 24, pp. 197–209

Samuel E. Finer, (1988). *The Man on Horseback: The Role of the Military in Politics*. Boulder, Colorado: Westview Press.

Seers, A. (1989). *Team-Member Exchange Quality: A New Construct For Role-Making Research**1 .Journal: *Organizational Behavior and Human Decision Processes*, vol. 43, no. 1, pp. 118-135.

Schneider, B. & Bowen, D.E., (1989). *A Framework for Analyzing Customer Service Orientations in Manufacturing*. The Academy of Management Review Vol. 14, No. 1, pp. 75-95.

S. Cox, B. Jones, and H. Rycroft, (2004). *Behavioral Approaches To Safety Management Within UK Reactor Plants*, Safety Science, vol,42, pp. 825-839.

Spielberger, Charles D. (1966). *Anxiety and Behavior*, Academic Press (New York).

Smallwood, J.J. (1996). *The Role Of Project Managers In Occupational Health And Safety*. Proceedings First International Conference of CIB Working Commission W99 Implementation of Safety and Health on Construction Sites, Lisbon, Portugal. Rotterdam: A.A. Balkema, pp. 227-236.

Smith, M. J., Cohen, H. H., Cohen, A. and Cleveland, R. J, (1978). *Characteristics of Successful Safety Programs*, Journal of Safety Research, 10, pp. 5–15.

Tavares, R.M. (2009). *An Analysis Of The Fire Safety Codes In Brazil: Is the performance-based approach the best practice*, Fire Safety Journal, vol. 44, pp.749–755, 2009.

Tierney Pamela, (1999). *Work Relations As A Precursor To A Psychological Climate For Change: The Role Of Work Group Supervisors and Peers"*, Journal of Organizational Change Management, Vol. 12 Iss: 2, pp.120 – 134

Turner, B. A. (1978). *Man-Made Disasters*. London: Wykeham.

Van Steen, J., (1996). *Safety Performance Measurement*, Institute of Chemical Engineers, Warwickshire.

Varonen, U. and Mattila, M. (2000). *The Safety Climate And Its Relationship To Safety Practices, Safety Of The Work Environment And Occupational Accidents In Eight Wood-Processing Companies*, Accident Analysis and Prevention, 32, pp. 761–769.

Vinodkumar, M.N., Bhasi, M. (2009). *Safety Climate Factors and its Relationship with Accidents and Personal Attributes in the Chemical Industry*. Safety Science, 47, pp. 659-667.

Webster Dictionary, (1989). Published by C.& G. Merriam Co., Springfield MA.

Weisbord, Marvin R., (1976). *Organizational Diagnosis: Six Places to Look for Trouble with or without a Theory,* Group & Organization Studies 1, 4: pp.430-447.

William S. Dester, David I. Blockley, (1995). *Safety Behavior and Culture in Construction Engineering*, Construction and Architectural Management, Vol. 2 Iss: 1, pp.17 – 26

Wreathall, J. (1995). *Organizational Culture, Behavior Norms, and Safety*. Proceedings of the International Topical Meeting on Safety Culture in Nuclear Installations. pp. 24–28. Vienna, Austria.

Zikmund, W.G (2003). *Business Research Methods* 7th Edition: South-Western. Ohio.

Zohar, D. (1980). *Safety Climate in Industrial Organizations: Theoretical and Applied Implications*. Journal of Applied Psychology, 65(1), pp.96-102.

APPENDICES

APPENDIX A

--	--	--	--	--	--



UNIVERSITI UTARA MALAYSIA

Tarikh: Apr 2012

Tuan/Puan:

Kajian Kepatuhan Perilaku Keselamatan

Tujuan surat ini adalah untuk mendapatkan keizinan tuan/puan untuk melibatkan diri dalam kajian yang berkaitan dengan kepatuhan perilaku keselamatan di tempat kerja. Kajian adalah untuk mengenal pasti faktor-faktor yang mempengaruhi perilaku tersebut. Maklumat ini berguna kepada penyelidik, Bahagian Inspektorat Tentera Darat (BITD) dan Kementerian Pertahanan untuk menjalankan usaha-usaha mengurangkan kecederaan dan kemalangan di tempat kerja.

Kami ingin mendapatkan kerjasama tuan/puan untuk mengisi borang soal selidik yang dikepilkan. Soal selidik ini hanya akan mengambil masa 15 minit untuk diisi. Walaupun kerjasama dan penglibatan tuan/puan amat bermakna buat penyelidikan ini, namun penglibatan tuan/puan dalam kajian ini adalah suka rela. Tuan/puan boleh menarik diri daripada kajian ini pada bila-bila masa.

Kami juga memberi jaminan bahawa identiti dan jawapan yang tuan/puan beri akan dirahsiakan. Semua jawapan yang kami kutip akan kami jumlahkan. Dengan itu, tuan/puan tidak perlu berasa gusar bahawa jawapan dan identiti tuan/puan akan terdedah. Sekiranya tuan/puan sanggup untuk melibatkan diri secara suka rela dengan kajian ini, kami memohon kerjasama tuan/puan untuk mengisi borang persetujuan penglibatan di bawah ini. Selepas borang ini ditandatangani, tuan/puan boleh terus mengisi soal selidik yang dilampirkan ini.

Kami mengucapkan berbanyak-banyak terima kasih atas kerjasama dan kesudian tuan/puan melibatkan diri dengan kajian ini. Sekian, terima kasih.

Yang benar

Mejar Syed Aziz Bin Syed Hashim (3005408)
Nombor Matriks Pelajar: 808309

Bahagian A: Maklumat Demografi

Section A: Demographic Information

Sila tandai (✓) pada ruangan yang sesuai atau isi pada tempat kosong, yang mana sesuai.

Please check (✓) in the appropriate box or fill in the blank, where appropriate.

1. Jantina anda:
☐ Lelaki (*Male*)
☐ Perempuan (*Female*)
2. Taraf perkahwinan anda (*Your marital status*):
☐ Bujang (*Single*)
☐ Berkahwin (*Married*)
☐ Janda/duda/bercerai (*Divorced/widowed*)
3. Tahap pendidikan tertinggi anda (*Your highest educational level*):
☐ LCE/SRP/PMR
☐ MCE/SPM/SPMV
☐ HSC/STPM
☐ Diploma/ Ijazah
☐ Lain-lain, sila nyatakan (*Others, please specify*):

4. Bangsa (*Race*):
☐ Melayu (*Malay*)
☐ Cina (*Chinese*)
☐ India (*Indian*)
☐ Lain-lain, sila nyatakan (*Others, please specify*):

5. Umur anda (*Your age*): _____ tahun (*years*)
6. Sudah berapa lama anda berkhidmat dengan Tentera Darat Malaysia? (*How long have you been working with the Malaysian Army?*)
_____ tahun (*years*)
7. Apakah jawatan dan kategori pangkat anda sekarang?
☐ LLP /Anggota Biasa) (*Other Ranks*)
☐ PTT Rendah (LKpl-Kpl)
☐ PTT Kanan (Sjn- PW 1)

- ☐ Sabaltan (Lt Muda- Kapt)
 - ☐ Pegawai Kanan (Mej- Lt Kol)
8. Apakah ketukangan (tred) dalam pasukan yang anda sedang berkhidmat?
- ☐ Jurumisil/Jururadar. (*Gun /Radar Crew*)
 - ☐ Tugas Am (*General Duty*)
 - ☐ Kerani (*Clerk*)
 - ☐ Pemandu (*Driver*)
 - ☐ Penjaga Stor (*Storeman*)
 - ☐ Juruteknik(*Technician*)
 - ☐ Penyelia/Pentadbir(*Supervisor/Administrator*)
 - ☐ Pemerintah (*Commander*)
9. Dalam tempoh lima tahun akan datang, adakah anda fikir anda akan terus bekerja dengan Tentera Darat Malaysia? (*In five years from now, do you think you will continue working with the Malaysian Army?*)
- ☐ Ya (*Yes*)
 - ☐ Tidak (*No*)
10. Adakah anda berpuas hati dengan pekerjaan anda sekarang?
- ☐ Sangat berpuas hati (*Very satisfied*)
 - ☐ Berpuas hati (*Satisfied*)
 - ☐ Tidak berpuas hati (*Dissatisfied*)
 - ☐ Sangat tidak berpuas hati (*Very dissatisfied*)

SOAL SELIDIK KESELAMATAN DI TEMPAT KERJA
(SURVEY OF WORKPLACE SAFETY)

Bahagian B: Keselamatan Kerja

Section B: Job Safety

Fikirkan tentang pekerjaan anda. Sejauh mana anda bersetuju atau tidak bersetuju sama ada setiap kenyataan di bawah menggambarkan kerja yang anda lakukan sekarang?

Bulatkan jawapan anda berpandukan skala di atas.

(Think about your job. To what extent you agree or disagree whether each statement below describes your job? **Circle** your answer using the scale below).

Sangat tidak setuju (Strongly disagree)	Tidak setuju (Disagree)	Berkecuali (Neither agree nor disagree)	Setuju (Agree)	Sangat setuju (Strongly agree)
1	2	3	4	5

Kerja saya berbahaya (My job is dangerous)	1	2	3	4	5
Kerja saya selamat (My job is safe)	1	2	3	4	5
Kerja saya mengundang ancaman (My job is hazardous)	1	2	3	4	5
Kerja saya berisiko (My job is risky)	1	2	3	4	5
Kerja saya tidak menyihatkan (My work is unhealthy)	1	2	3	4	5
Dalam kerja saya, saya mudah tercedera (I could get hurt easily in my job)	1	2	3	4	5
Kerja saya tidak selamat (My job is unsafe)	1	2	3	4	5
Semasa melakukan kerja saya, saya bimbang kesihatan saya akan terjejas (I fear for my health in my job)	1	2	3	4	5
Saya terdedah pada kematian dalam kerja saya (There is a chance of death in my job)	1	2	3	4	5
Kerja saya menakutkan (My job is scary)	1	2	3	4	5

Bahagian C: Keselamatan Rakan Sekerja

Section C: Co-worker Safety

Fikirkan tentang rakan sekerja anda. Sejauh mana anda bersetuju atau tidak bersetuju sama ada setiap kenyataan di bawah menggambarkan rakan sekerja anda? **Bulatkan** jawapan anda berpandukan skala di atas.

(Think about the people you work with. To what extent you agree or disagree whether each statement below describes these people? **Circle** your answer using the scale below).

Sangat tidak setuju (Strongly disagree)	Tidak setuju (Disagree)	Berkecuali (Neither agree nor disagree)	Setuju (Agree)	Sangat setuju (Strongly agree)
1	2	3	4	5

Rakan sekerja saya ... (My co-workers ...)						
1	Mengabaikan peraturan keselamatan (Ignore safety rules).	1	2	3	4	5
2	Tidak mempedulikan keselamatan orang lain (Don't care about others' safety)	1	2	3	4	5
3	Memberi perhatian pada peraturan keselamatan (Pay attention to safety rules)	1	2	3	4	5
4	Mematuhi peraturan keselamatan (My co-workers follow safety rules)	1	2	3	4	5
5	Mengambil berat keselamatan orang lain (My co-workers look out for others' safety)	1	2	3	4	5
6	Menggalakkan orang lain bekerja dengan selamat (Encourage others to be safe)	1	2	3	4	5
7	Tidak menitikberatkan soal keselamatan (Take chances with safety)	1	2	3	4	5
8	Memastikan tempat kerja bersih (Keep work area clean)	1	2	3	4	5
9	Berorientasikan keselamatan (Safety-oriented)	1	2	3	4	5
10	Tidak menumpukan perhatian semasa bekerja (Don't pay attention at work)	1	2	3	4	5

Bahagian D: Keselamatan Penyelia
Section D: Supervisor Safety

Fikirkan tentang penyelia terdekat anda. Sejauh mana anda bersetuju atau tidak bersetuju sama ada setiap kenyataan di bawah menggambarkan penyelia terdekat anda? **Bulatkan** jawapan anda berpandukan skala di atas.

(Think about your immediate supervisor. To what extent you agree or disagree whether each statement below describes your immediate supervisor? **Circle** your answer using the scale below).

Sangat tidak setuju (Strongly disagree)	Tidak setuju (Disagree)	Berkecuali (Neither agree nor disagree)	Setuju (Agree)	Sangat setuju (Strongly agree)
1	2	3	4	5

Penyelia terdekat saya ... (My immediate supervisor ...)						
1	Memuji peri laku kerja yang selamat (Praises safe work behaviours)	1	2	3	4	5
2	Menggalakkan peri laku selamat (Encourage safe behaviours)	1	2	3	4	5
3	Sentiasa memaklumkan peraturan keselamatan kepada pekerja (Keep workers informed of safety rules)	1	2	3	4	5
4	Memberi ganjaran terhadap peri laku selamat (Rewards safe behaviours)	1	2	3	4	5
5	Melibatkan pekerja dalam menetapkan matlamat keselamatan (Involves workers in setting safety goals)	1	2	3	4	5
6	Berbincang isu keselamatan dengan orang lain (Discusses safety issues with others)	1	2	3	4	5
7	Mengemas kini peraturan keselamatan (Updates safety rules)	1	2	3	4	5
8	Memberi latihan keselamatan kepada pekerja (Trains workers to be safe)	1	2	3	4	5
9	Menguat kuasa peraturan keselamatan (Enforces safety rules)	1	2	3	4	5
10	Mengambil tindakan cadangan keselamatan (Acts on safety suggestions)	1	2	3	4	5

Bahagian E: Amalan Keselamatan oleh Pengurusan**Section E: Management Safety Practices**

Fikirkan tentang pihak pengurusan anda. Sejauh mana anda bersetuju atau tidak bersetuju sama ada setiap kenyataan di bawah menggambarkan pengurusan anda? **Bulatkan** jawapan anda berpandukan skala di atas.

(Think about your management. To what extent you agree or disagree whether each statement below describes your management? **Circle** your answer using the scale below).

Sangat tidak setuju (Strongly disagree)	Tidak setuju (Disagree)	Berkecuali (Neither agree nor disagree)	Setuju (Agree)	Sangat setuju (Strongly agree)
1	2	3	4	5

Pihak pengurusan ... (Management ...)						
1	Menyediakan program-program keselamatan yang mencukupi (Provide enough safety programs)	1	2	3	4	5
2	Sering membuat pemeriksaan keselamatan (Conduct frequent safety inspections)	1	2	3	4	5
3	Segera menyiasat masalah keselamatan (Investigates safety problems quickly)	1	2	3	4	5
4	Memberikan ganjaran kepada pekerja yang bekerja secara selamat (Rewards safe workers)	1	2	3	4	5
5	Menyediakan alat keselamatan (Provides safe equipment)	1	2	3	4	5
6	Menyediakan tempat kerja yang selamat (Provide safe working conditions)	1	2	3	4	5
7	Cepat bertindak balas terhadap perkara-pekerja yang berkait dengan keselamatan (Respond quickly to safety concerns)	1	2	3	4	5
8	Sentiasa membantu mengekalkan kebersihan tempat kerja (Helps maintain clean work area)	1	2	3	4	5
9	Menyediakan maklumat berkaitan keselamatan (Provides safety information)	1	2	3	4	5
10	Sentiasa mewar-warkan keadaan berbahaya kepada pekerja (Keeps workers informed of hazards)	1	2	3	4	5

Bahagian F: Program dan Polisi Keselamatan

Section F: Safety Program and Policies

Fikirkan tentang pelaksanaan program keselamatan di tempat kerja anda. Sejauh mana anda bersetuju atau tidak bersetuju sama ada setiap kenyataan di bawah menggambarkan program tersebut? **Bulatkan** jawapan anda berpandukan skala di atas.

(Think about safety programs at your workplace. To what extent you agree or disagree whether each statement below describes these safety programs? **Circle** your answer using the scale above).

Sangat tidak setuju (Strongly disagree)	Tidak setuju (Disagree)	Berkecuali (Neither agree nor disagree)	Setuju (Agree)	Sangat setuju (Strongly agree)
1	2	3	4	5

Program keselamatan di tempat kerja saya ... (Safety programs at my workplace is ...)						
1	Bermanfaat (Worthwhile)	1	2	3	4	5
2	Membantu mencegah kemalangan (Helps prevent accident)	1	2	3	4	5
3	Berfaedah (Useful)	1	2	3	4	5
4	Bagus (Good)	1	2	3	4	5
5	Terbaik (First-rate)	1	2	3	4	5
6	Tidak jelas (Unclear)	1	2	3	4	5
7	Penting (Important)	1	2	3	4	5
8	Berkesan mengurangkan kecederaan (Effective in reducing injuries)	1	2	3	4	5
9	Tidak boleh dilaksanakan di tempat kerja saya (Doesn't apply to my workplace)	1	2	3	4	5
10	Tidak berfaedah (Does not work)	1	2	3	4	5

Bahagian G : Kepatuhan Perilaku Selamat
Section G: Compliance Safety Behaviour

Fikirkan tentang pekerjaan semasa anda. Dengan menggunakan skala di bawah, sila **bulatkan** kenyataan yang paling memerihalkan anda.

(Think about your current job. Using the scale below, please **circle** the statement that best described you).

Tidak pernah (Never)	Jarang-jarang (Seldom)	Kadang kala (Sometimes)	Kerap kali (Often)	Selalu (Always)
1	2	3	4	5

1	Saya terlepas pandang prosedur keselamatan agar tugas dapat diselesaikan dengan lebih cepat. (I overlook safety procedures in order to get job done more quickly).	1	2	3	4	5
2	Saya mematuhi segala prosedur keselamatan tanpa mengendahkan situasi yang sedang dihadapi. (I follow all safety procedures regardless of the situation I am in).	1	2	3	4	5
3	Saya menangani semua situasi dengan andaian kemalangan akan berlaku. (I handle all situations as if there is a possibility of having an accident).	1	2	3	4	5
4	Saya menggunakan semua alat keselamatan seperti yang ditetapkan. (I wear safety equipment required by practice).	1	2	3	4	5
5	Saya memastikan kawasan tempat kerja bersih. (I keep my work area clean).	1	2	3	4	5
6	Saya menggalakkan rakan-rakan sekerja agar bekerja dengan selamat. (I encourage co-workers to be safe).	1	2	3	4	5
7	Saya memastikan semua peralatan kerja berada dalam keadaan selamat. (I keep my work equipment in safe working condition).	1	2	3	4	5
8	Saya tidak begitu mengendahkan perilaku selamat agar kerja dapat diselesaikan dengan segera. (I take shortcuts to safe working behaviours in order to get the job done faster).	1	2	3	4	5
9	Saya tidak mematuhi peraturan keselamatan yang saya rasa tidak perlu. (I do not follow safety rules that I think are unnecessary).	1	2	3	4	5
10	Saya melapor kepada penyelia masalah keselamatan apabila saya	1	2	3	4	5

	menemuinya. <i>(I report safety problems to my supervisor when I see safety problem).</i>					
11	Saya membetulkan masalah keselamatan bagi memastikan kemalangan tidak berlaku. <i>(I correct safety problems to ensure accidents will not occur).</i>	1	2	3	4	5

KAJI SELIDIK TAMAT (END OF QUESTIONNAIRE)
TERIMA KASIH (THANK YOU)

APPENDIX B