THE EFFECT OF MODERATED MEDIATION TO THE RELATIONSHIP OF TRANSFORMATIONAL LEADERSHIP ON SAFETY PERFORMANCE IN MALAYSIA HEAVY INDUSTRY COMPANIES

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Dedicated to:

my beloved parent Abdul Wahab Jaafar and Rosminah Abdullah,

my brothers Amiruddin, Shah Bollah, Amirollah, Kamarulzaman, Fadzly

my sisters Rahayu, Zurianti, Norazizah and Norhizan

my nephews Firdaus, Fikri, Hazik and BabyBoy

my nieces Asyikin, Aishah and Nana.

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ABSTRACT

Safety management has received a considerable attention as it affects organization's performance and survival. Technical solution per se is irrelevant as many studies have found that workplace issues are frequently associated with workplace accidents. In this study, workplace issues refer to transformational leadership, safety training practices and safety climate. The main purpose of this study is to identify the impact of moderated mediation to the relationship of transformational leadership on safety performance in Malaysia's heavy industry companies. A total of 696 employees from three automotive manufacturing and assembly plants were selected as the respondents for this study. The measurement tools undertaken in the data collection include Multifactor Leadership Questionnaire, Safety Climate Scale and Safety Performance Scale. The data of the study were analyzed using the descriptive and inferential analysis. It comprised of t-test, one-way analysis of variance (ANOVA), canonical correlation, simple linear regression and multiple regression. The finding of the study indicates that safety climate acts as the moderator to the relationship of transformational leadership on safety training practices. The result also demonstrates that safety training practices play a significant role as the mediator to the relationship of transformational leadership on safety performance. The utmost finding of the study reveals that safety training practices which is moderated by safety climate acts as the mediator to the relationship of transformational leadership on safety performance. Lastly, recommendations were also given for future research.

ABSTRAK

Pengurusan keselamatan telah menerima banyak perhatian kerana ia mempengaruhi prestasi serta kemandirian organisasi. Penyelesaian secara teknikal sahaja dianggap tidak relevan kerana banyak kajian mendapati isu-isu tempat kerja kerapkali dikaitkan dengan kemalangan di tempat kerja. Dalam kajian ini, isu-isu tempat kerja merujuk kepada kepimpinan transformasi, iklim keselamatan dan amalan-amalan latihan keselamatan. Tujuan utama kajian ini dijalankan adalah untuk mengenalpasti impak perantara yang disederhanakan kepada hubungan kepimpinan transformasi ke atas prestasi keselamatan di syarikat-syarikat industri berat di Malaysia. Seramai 696 pekerja daripada tiga loji pembuatan dan pemasangan automotif dipilih sebagai responden kajian ini. Alat-alat pengukuran yang digunakan dalam pengumpulan data merangkumi Soal Selidik Kepimpinan Pelbagai Faktor, Skala Iklim Keselamatan dan Skala Prestasi Keselamatan. Data kajian dianalisis menggunakan analisis deskriptif dan inferensi. Ia merangkumi ujian-t, analisis varians sehala (ANOVA), korelasi berkanun, regresi linear mudah dan regresi berganda. Dapatan kajian menunjukkan bahawa iklim keselamatan berperanan sebagai penyederhana kepada hubungan kepimpinan transformasi ke atas amalan-amalan latihan keselamatan. Keputusan kajian juga menjelaskan bahawa amalan-amalan latihan keselamatan memainkan peranan yang signifikan sebagai perantara kepada hubungan kepimpinan transformasi ke atas prestasi keselamatan. Hasil kajian yang terpenting mendedahkan bahawa amalan-amalan latihan keselamatan yang disederhanakan oleh iklim keselamatan berperanan sebagai perantara kepada hubungan kepimpinan transformasi ke atas prestasi keselamatan. Akhirnya, cadangan-cadangan turut diberikan untuk kajian akan datang.

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LIST OF ABBREVIATIONS

ANOVA	-	Analysis of Variance
CCA	-	Canonical Correlation Analysis
CEO	-	Chief Executive Officer
DOSHM	-	Department of Occupational Safety and Health Malaysia
ILO	-	International Labor Organization
KSA	-	Knowledge, Skill and Attitude
MLQ	-	Multifactor Leadership Questionnaire
NIOSH	-	National Institute of Safety and Health Malaysia
OSHA	-	Occupational Safety and Health Act
SCS	-	Safety Climate Scale
SET	-	Social Exchange Theory
SPS	-	Safety Performance Scale
UK	-	United Kingdom
US	-	United State of America
WHO	-	World Health Organizations

LIST OF SYMBOLS

%	-	Percentage
ρ	-	Canonical Correlation Coefficient
α	-	Alpha Cronbach
f	-	Frequency

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Transformational leadership has been given the credit of bringing success to safety agenda in an organization. However, not much empirical discussion could be found on safety management research. Therefore, this thesis aims to explore the role of transformational leadership on safety performance especially within the context of Malaysia's heavy industry companies. Furthermore, it is assumed that the efficient role of transformational leadership depends on safety climate interaction to safety training practices. This chapter discusses the background of this study. It explores several important sections comprised in background of the research and problem statement. It also focuses on research objectives, research questions, theoretical foundation as well as the conceptual framework of the study. At the end of this chapter, the conceptual and operational definitions are explained, covering safety management, transformational leadership, safety climate, safety training practices and safety performance.

1.2 Background of the Research

Today, technology pressure and intense global competition not only bring tremendous changes in organizational safety but also threaten it. In many countries, workplace accidents have received big attention as early as 100 years before due to the fact that it is enormously costly (Watson *et al*., 2005; Pitt, 2007). The question is

how serious is the accidents in the organizations? The data from International Labor Organization (ILO) shows that every minute twenty-one person are involved in workplace accidents and over 270 million of those accidents lead to the employees' being absent for at least the next three days (Hamalainen, 2008). In the United States (US), the cost of workplace accidents and injuries is reported to be reaching up to USD512.4 billion annually (Kath *et al.,* 2010). Recent evidence have proven that unsafe workplace brings implicit adverse impacts to the organizations such as bringing harm to the organization's reputation besides demotivating the employees (Siu *et al*., 2003; Berke, 2008). There is an idiom that claims the smaller accidents happen in a workplace the safer the workplace is (Shapiro, 2008). However the claim holds very little truth. The idiom failed to emphasize that minor injuries may also threaten employees' safety and bring cost to the organizations (Ayers and Kleiner, 2000). Stromgren and Andersson (2010) claim that safety is a hazard free working environment which is necessary for organizational competitiveness. In other words, making good business could be proven through the increase of productivity and profit in an accident-free working environment. It is due to the fact that accidents will result with massive cost to the organizations (Fuller, 1999; Fernandez-Muniz *et al*., 2007). Therefore, management is the one who is responsible in promoting employees' safety awareness regardless of differences of the employees' post and geographical distances or locations (Mustazar *et al*., 2003; Eddie *et al.*, 2004; Makin and Winder, 2008; Wu, 2009).

Inconsistent understanding of safety responsibility between employees and management has also contributed to unsafe working environment (William, 2008; Durrishah *et al*., 2009). This is closely related to the issue of master-servant relationship (Andersen, 2008; Butler, 2008; Hom *et al.*, 2009). In countries such as United Kingdom (UK), this relationship has turned out to be one of basic foundation in the employment contract which stipulates that the responsibilities placed upon employers and employees are equal. Alongside the duty of paying wages, the basic obligations placed upon an employer towards an employee includes the duty to "take reasonable care of the employee's safety" and the duty "not to expose the employee to grave danger of health or person" (Farnham, 1992:253). To be specific the main responsibility of managing safety falls on the shoulder of the management because

the employees' lives are in the management's hands (Burke, 2008; Kath, 2010). However, the important role of management commitment in small scale organization seems to be lacking because the smaller an organization is the lesser emphasize is given by the management towards the employees' safety (Hasle *et al.*, 2009).

Furthermore, sole dependence on hardware approach such as redesigning machines is insufficient to reduce workplace accidents especially when accidents happen due to human errors (Wu *et al.*, 2008). The management has to take into consideration people based approach that is also known as safety management to rectify unsafe situations. The approach includes the integration of management concepts with safety, for example, establishing safety policy and providing safety training to all employees. Good safety management coupled with competent staffs is able to reduce the frequency of accidents at workplace. However, many organization fail to appreciate the vital role of safety management because it is always seen as a costly method in resolving the safety issue (Gilling and Kleiner, 1993). It is because they are unaware of how high the actual cost of unsafe working environment until the accidents happened in the organizations (Abdul Rahim and Muhd Zaimi, 2005). In many unsafe situations, the precursors of hazardous events are actually predictable but the organizations fail to realize. Akson and Hadikusumo (2007) assert that having good safety activities is a challenge as problems can be encountered at almost every stage of the working activities.

Recent development in the area of safety management has heightened the need of effective leadership in many of today's organizations (Wu *et al.*, 2009). Leadership has become a competitive advantage in promoting responsive culture towards change which includes changes in workplace safety (Day, 2001; Parry and Proctor-Thomson, 2003; Abu Daud and Zaharah, 2009). One question prevails from this finding: does classical leadership style has any significance to contemporary practice? Roberts (1985) argues that today's organizations need a new form of leadership to enhance its performance. In the late 1970s, transactional and transformational leadership have received a considerable attention in organizational development (Leithwood *et al.,* 1992). However, the transformational leadership is assumed as being more significant to organizational setting which includes safety

compared to transactional leadership (Lu and Yang, 2010; Humphreys, 2010). Jones (2006) confirms that the leaders with transformational characters usually have employees that enjoy better safety outcomes. The employees are willing to take risk as the leaders' support has changed their focus into completing their task rather than wasting their focus on safety fear (Liu *et al*., 2010). Even though it has been widely discussed conceptually, there is still inadequate empirical data to confirm the significance of transformational leadership impact on safety (Rundmo and Hale, 2003; Johnson, 2007).

Many safety theories for instance Domino Theory and Incident-Accident Theory have proven that human errors particularly lack of safety knowledge, skill and attitude (KSA) are significant in contributing towards accidents at workplace (Fuller and Vassie, 2004). In respect to this, safety training is regarded as the most influential strategy to promote employees' safe behaviour and improve safety performance (Lu, 2002; Miozza and Wyld, 2002; Sinchlair *et al.*, 2003; Burke *et al.*, 2008). Moreover, competent personnels play a significant role to the effectiveness of safety management including safety training efforts. For example, Mori *et al.* (2006) claims that most of Japanese organizations fail to manage safety due to inadequate safety experts in their working environment. Besides, previous studies have also highlighted that supportive working environment is optimistically associated to employees' motivation to work (Lloyd, 1996; Ford *et al*., 2004). As confirmed through Maslow Hierarchy Theory, the need of safety is necessary to motivate employees to perform their work better (Wilson and Madsen, 2008). In relation to this, management is demanded to allocate sufficient safety efforts such as enhancing safety climate to promote supportive working environment (Johari, 2002; Champoux and Brun, 2003; Watson *et al.*, 2005; Manolopoulus, 2007; Mearns and Reader, 2008; Hasle *et al*., 2009). Teo *et al.* (2005), Clarke (2006) and Krause (2007) highlight that working in a pleasant safety climate may stimulate the employees' potential to think creatively and challenge their safety status quo when performing their jobs.

At the global level, safety management demands serious attention because it affects other countries due to the economic interdependency reason. However, in

many countries, priority is not given to safety management as it is looked upon as unimportant (LaDou, 2003; Yu and Hunt, 2004). Therefore, no serious attempt is taken to strengthen safety management there. It happens because of the limited understanding of the managers' side on both safety legal and corporate responsibilities (Fuller, 1999). Zhangtao (2010) emphasizes that the occurrence of accidents are closely related to the management ignorance in complying with basic safety procedures and violation of safety regulations. International Labour Organization (ILO) added that majority of employees are not aware of safety guidelines drawn by world safety agencies (Hamalainen *et al.*, 2006). How could this situation happen? Cultural backgroud and differences are assumed to restrict the safety agencies effort in sharing the best practices of safety management (Bust *et al*., 2008). Most poor countries are reported as having no exposure or undeveloped in safety management. Evidence on accident frequency indicates that developing countries denote 10 to 20 times higher accident rate compared to the developed countries (Johari, 2002). Hamalainen (2008) claims that while many companies in developed countries are taking zero accident policy, the developing countries lead to new safety problems. Among Southeast Asian countries, Malaysia is ranked as the third of having the least accidents (14000 cases) and fatality rate (18.3) (Hamalainen *et al.*, 2006). It is followed by Brunei with 7658 cases of accidents and 10.0 of fatality rate. Singapore is considered as having the most efficient workplace safety management with the fatality rate of 9.8 and 7452 cases of accidents (Goh, 2009). Therefore the accident statistic shows that workplace accident is giving serious effect to each country and all parties should work hand in hand to overcome this issue.

When one touches on the current safety performance scenario in Malaysia one must refer to the following facts disclosed by Department of Occupational Safety and Health Malaysia (DOSHM). The department highlighted that manufacturing industry contibutes to the highest number of employees' disability in Malaysia (see Table 1.1).

Table 1.1: Number of Accident Cases Settled from 2008 to 2010

Industry	*Permanent Disabilities Cases Settled*			*Non Permanent Disabilities Case Settled*		
	2008	*2009*	*2010*	*2008*	*2009*	*2010*
Manufacturing	109	90	113	1286	1419	929
Mining and Quarry	0	1	0	4	2	1
Construction	2	6	1	40	38	33
Agriculture, Forestry and Fishery	6	8	12	513	440	271
Infrastructure	9	3	3	69	116	32
Transportation	1	0	1	18	21	8
Trading	0	0	0	2	8	0
Hotels and Restaurants	1	0	0	13	18	8
Financial Institution and Insurance	0	0	1	2	0	10
Public Services	1	0	0	3	0	23

Source: DOSHM (2010a), DOSHM (2010b), DOSHM (2010c), DOSHM (2010d), DOSHM (2010e) and DOSHM (2010f)

When an industry reports the increase number of 100 times higher for workplace accidents and injuries; it demonstrates that the industry is at risk. Linking to that fact the Malaysia heavy industry that is a subsector of manufacturing industry had reported an increasing number of workplace accidents from 2007 to 2009. In 2007, there were thirteen accidents that happened daily and that amounted to an estimation of one accident for every two hours in the organization (Social Security Organization, 2007). This incident had worsen in 2009 when 16 cases happened daily with at least one case reported each hour (Social Security Organization, 2009). Ismail *et al.* (2005) critique that most workplace accidents in Malaysia are due to inconsistent management support and employees' unsafe behaviour when performing their tasks. For example, death incident in Malaysia's heavy industry, specifically automotive plant of Perusahaan Otomobil Nasional Berhad (PROTON) in 2002 clearly revealed that employees' improper safety response and low safety commitment on the management's side have led to the incident occurrence (Malay Mail, 2002).

On the onset, The Heavy Industries Corporation of Malaysia Berhad (HICOM) is responsible in leading and driving Malaysian heavy industrilization policy to success (Malaysia National Institue of Public Administration, 1980). Back

in 1996, Diversified Resource Berhad (DRB) has merged with HICOM and form the biggest conglomerate in Malaysia. It is proven that automotive sector is necessary in the DRB HICOM operation because the sector contributes more than half of DRB HICOM annual profit (DRB HICOM, 2009). The sector has also become the key industry to Malaysia and ASEAN economy. In 2008, Malaysia was the largest country to produce passenger cars in ASEAN accounting to 35.5 percent of total ASEAN production (ASEAN Automotive Federation, 2008). Meanwhile in 2009, Malaysia was ranked as the third largest country to produce both passenger cars and commercial vehicles which accumulating to twenty percent of the total ASEAN production (ASEAN Automotive Federation, 2009). Due to the worrying numbers of workplace accidents and the importance of automotive sector to the Malaysia economy development of the sector, to be specific, automotive manufacturing and assembly plants sectors are specifically chosen to represent the heavy industry companies of this study. Moreover, the world class automotive manufacturing and assembly plants in Malaysia have successfully attracted international automobile manufacturers to produce their vehicles for the ASEAN market here (Malaysian Industrial Development Authority, 2009; Malaysian Automotive Association, 2010). The researcher selected automotive manufacturing and assembly plant compared to other sector under automotive industry because the automotive manufacturing and assembly plants are known as one of the best in Asia due to the fact that many international manufacturers opened their plant here. Therefore the selection of this automotive manufacturing and assembly plants serves as a significant benchmark to the safety standard in a heavy industry. The plants is also selected due to the fact that it is looked upon as having the best safety quality compared to other sector in automotive industry. On the other hand, one could not deny the fact if the best quality still suffers setbacks like workplace accidents, the safety standard of other automotive industry sectors is very low.

The concern on safety management in Malaysia stems from the enforcement of Factory and Machinery Act (1967), but the Act only protects employees in factory, mining quarry and construction sectors. At that time, sole dependent on hardware approach is irrelevant to curb safety problems that have worsened (Junaidy, 2006). This scenario continues until the 1991 Bright Sparklers blast incident which

causes huge workplace accidents and losses (Ibrahim *et al*., 2002). The incident led to the development and enactment of a more comprehensive safety legislation namely Occupational Safety and Health Act (OSHA) 1994 and giving strong emphasis on safety management. However the Act is assumed as new compared to other countries such as the US (Occupational Safety and Health Act -OSHA 1970) and the UK (Health and Safety at Work Act - HASAWA 1974). Until recently, far too little attention has been paid to empirically investigate the leadership effect on safety management even though it is important to attain organizational safety efforts (Somasundram, 2006; Zainuddin, 2006). Dato' Ir Dr. Johari Basri who is the Director General Department of Occupational Safety and Health Malaysia urges management including its leaders to locate workplace safety as the top priority of organizations (Johari, 2009).

To sum up this section, the changes brought into an organization have threatened its safety level. The staggering number of workplace accidents in heavy industry highlights that its safety level is volatile. Even though safety management is practiced in today's organizations, weak considerations on several important factors may limit its efficiency to manage safety issues. The inconclusive findings on transformational leadership to safety management have therefore driven the researcher to investigate the safety issue phenomena in Malaysia setting. Besides, investigating the direct relationship in safety management per se is insufficient in a complex workplace. The situation calls for other potential factors like safety climate and safety training practices which may affect the role of transformational leadership on safety performance.

1.3 Problem Statement

There are at least four major problems that interest the researcher to investigate safety phenomena in Malaysia's heavy industry companies. Firstly, organizations safety level or safety performance in Malaysia is at a critical level. Mohammed Azman (2009) and Social Security Organization (2009) highlight more than fifty thousands workplace accidents occur in Malaysia every year (2005= 61182

cases, 2006= 58321 cases, 2007= 56339 cases, 2007= 54134 cases, 2008= 54134 cases, 2009= 55188 cases). The data higlight a very surprising fact that 154 accident cases occured daily and each day 6 cases happened on an hourly basis. The manufacturing industry is identified as the major contributor to the overall number of accidents at work (Year 2005: f= 23350, %= 38.2; Year 2006: f= 21609, %= 37.1; Year 2007: f= 19607, %= 34.8, Year 2008: f= 18280, %= 33.8; Year 2009: f= 17206, %= 31) (Mohammed Azman, 2009; Social Security Organization, 2009). The detailed accident data on manufaturing industry reveals that the heavy industry sector contribute more than a quarter of the accidents for the year 2005 (f= 6448, %=27.6), 2006 (f= 5427; %= 25.1), 2007 (f= 5032; %= 25.7) and 2009 (f= 5918; %= 34.4) (Social Security Organization, 2005; Social Security Organization, 2006; Social Security Organization, 2007, Social Security Organization, 2009). Those workplace accidents would not only demonstrate an unpleasant working environment, but they were also costly to an organization.

As highlighted by the former Malaysia's Minister of Human Resource, Datuk Seri Dr. Fong Chan Onn, total compensation payment due to workplace accidents made by Malaysia's government is always high and it shows that the safety issue is absolutely critical (Ministry of Human Resource, 2007). Social Security Organization (SOCSO) reveals that Malaysia's government spends almost RM1 billion annually to manage the workplace injuries and accidents claims (Year 2006= RM0.9 billion; Year 2007= RM1.1 billion; Year 2008= RM1.2 billion) (Social Security Organization, 2009). The safety scenario becomes worse when many organizations failed to look at the indirect costs of workpalce accidents such as employees' demotivation which is one of the most difficult implicit causes to measure (Hamalainen *et al.*, 2006). In other words accidents are not easy to investigate and overcome. In addition, Huszrul Nizam *et al.* (2005) argues that safety legislation in Malaysia has shown some progress however there are still thousands of employees injured and killed annually at their workplaces. The occurrence implies that the management in some way is less efficient to regulate their operation for the benefit of their employees at work. Several court cases reported with regard to employers' disobediences when it comes to OSHA 1994 which in fact shows that managements fail to provide a safe working environment to their employees. In

2007, a total of 4,873 notices were issued to employers asking them to improve their workplace from dangers. For that reason, 215 employers were given compound and 108 were charged under the Act (Sujata, 2008). The situation definitely opens a ground for debate when it comes to implementation issue especially the role of leadership in workplace safety (Tengku Mahaleel, 2009).

Secondly, many arguments have been made pertaining to the crucial role of management involvement (Dutta and Kleiner, 2000; Koradecka and Dryzek, 2001) especially leadership (Ng *et al.*, 2005; Bell and Grushecky, 2006; Broadbent, 2006; Fernandez-Muniz *et al.*, 2007; Mearns and Yule, 2008; Zohar, 2009, Khanzode *et al*., 2010) to build a sound safety management. It worsens when most organizations tend to rely on hardware approach (Stave and Toner, 2007) without considering its efficiency to solve safety issue that prevail (Vredenburgh, 2002). Furthermore, ongoing debates on safety demands a more proactive style of leadership namely transformational leadership in managing unsafe working environment (Pillai and Wiliams, 2004; Krishnan, 2004; Sivanathan *et al.*, 2005; Colbert *et al.*, 2008; Yang and Mossholder, 2010). However, to date there have been little attempt made to empirically discuss the influence of transformational leadership to safety performance (Rundmo and Hale, 2003; Johnson, 2007; Wu *et al.,* 2007; Akson and Hadikusumo, 2007; Liu *et al.*, 2010). The scenario is critical in Malaysia because most organization tend to rely on a strong and commanding style of leadership (Abu Daud and Zaharah, 2009). The practice of this leadership style indicates that the management do not believe that their employers' significant role could reduce the injuries and accidents at their working environment. It worsens when the management fails to appreciate the importance of leadership to safety management even though it is clearly mandated in OSHA 1994 (Faridah *et al*., 2006; Zainuddin, 2006).

Another problem that triggers the researcher interest to explore the phenomena is issues related to safety training practices. Ongoing discussions about the source of workplace accidents highlight that employees' KSA is one of the significant reason that affect safety performance (Ahasan, 2002; Subramaniam, 2004; Williamsen, 2005; Kraft, 2008, Lok, 2009; Shulruf and Balemi, 2010, Cheng *et al*.,

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