THE IMPACT OF ORGANIZATIONAL AND INDIVIDUAL FACTORS ON SAFETY CLIMATE: A STUDY IN AVIATION INDUSTRY

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DECLARATION

I hereby declared that the materials in this dissertation are original except for quotations, excerpts, summaries and references, which have been appropriately acknowledged.

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'A dream is just a dream. A goal is a dream with a PLAN and a DEADLINE.'
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ABSTRACT

The main aim for this research is to investigate the impact of organizational and individual factors on safety climate in aviation industry with 240 respondents. Organizational factors involved in the research were organization ownership, the existence or absence of safety manager and safety committee. Whereas, the individual factors that involved in the research were age, gender, educational level, safety training and accident experience. These factors were tested toward safety climate by adapting the safety climate scale which consisted of five fundamental dimensions such as *Chief Executive Officer's Safety Commitment and Action, Manager's Safety Commitment and Action, Employee's Safety Commitment and Action, Perceived Risk and Emergency Response.* The relationships of these independent and dependent variables were tested using the Multiple Regression Analysis. Precisely, the level of significance was set to 0.05 for every statistical analysis. The result revealed that the Total Safety Climate (TSC) was 3.7632 which were considered as a positive safety climate. Moreover, the result also revealed that there is a positive relationship between private ownership and safety climate. In addition, there is a positive relationship between the existence of safety manager and safety climate. There is also a significant relationship between safety committee and safety climate. But the relationship between safety committee and safety climate is negatively related. Moreover, there is a positive relationship between accident experience and safety climate. Finally, there is a positive relationship between safety training and safety climate. However, the other factors such as gender, age, accident experiences and educational level have not reached statistical significance towards safety climate.

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INTRODUCTION

1.1 Overview

The safety matters have become an important issue in managing an organization as it is one of the sub-systems. Safety matters also play an important role in establishing the organization strategy in to achieve its goals, vision and mission. This is especially among the organizations that involved in critical industries like aviation, manufacturing, chemical, production, engineering, nuclear and lots more. For certain organization, safety becomes one of the indicators to achieve organization productivity and corporate image like Bintulu Port Sdn. Bhd. This company become famous among its rivals because of the competitive advantage that it poses as it won prestigious "***Gold Award in Occupational Safety & Healthy***" in 1995, 1996, 1998, 1999 and 2001 as well as the "***Occupational Safety and Health Award 2000***" for Transportation, Storage and Communication as well as the ISO 9001 certification by Lloyd's Register Quality Assurance, UK in 2003 (Bintulu Port Sdn. Bhd., 2005).

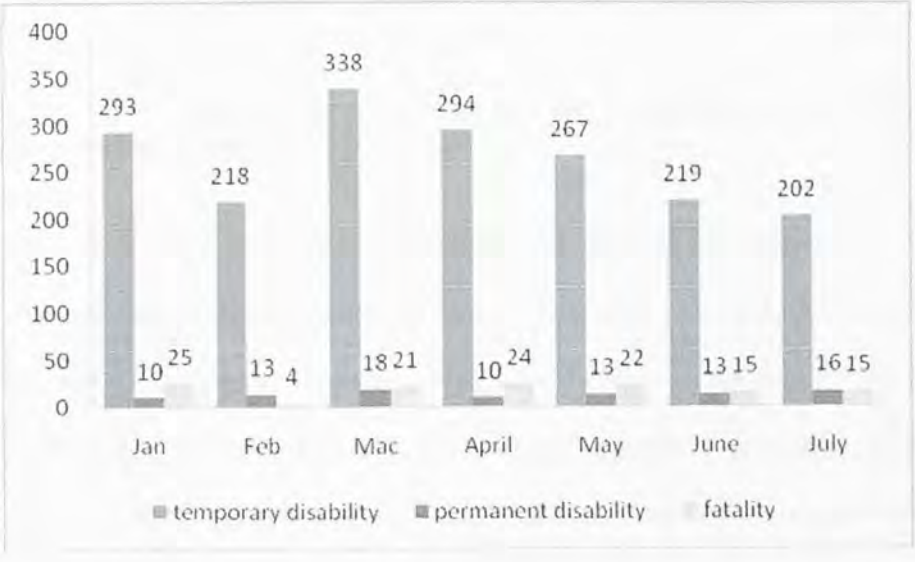
Besides that, the industrial accident rate is alarming where, it was reported that the industrial accidents at workplaces in Malaysia is about 100,000 cases annually which is quite high (Borneo Post Online, 2008). Thus, Safety Care

Management Centre (SCMC) organized a one-day seminar for the 100 employees from private and government sectors. SCMC urged the organization to manage and enforce the laws in occupational safety and health. The seminar focused on how to prevent and handle accident at the workplace.

In Malaysia, the employees' safety and health matters were under the management of Department of Occupational Safety and Health (DOSH). In doing so, DOSH enforces legislation such as *Acts, Regulations, Orders, Codes of Practice* and *Guidelines.* There are three acts being enforced by DOSH such as *Factories and Machinery Act 1967 (Act 139), Occupational Safety and Health Act 1994 (Act 514)* and *Petroleum Act (Safety Measures) 1984 (Act 302).* In addition, there are several regulations under the *Factories and Machinery Act 1967 (Act139)* like *Factories and Machinery (Administration) Regulations 1970, Factories and Machinery (Steam Boiler and Unfired Pressure Vessel) Regulations 1970, Factories and Machinery (Asbestos Process) Regulations 1986, Factories and Machinery (Compoundable Offences) Regulations 1978* and lots more. On the other hand, orders under the *Worker Health and Safety Act 1984 (Act 514)* are *Occupational Safety and Health (Safety and Health Officer) Order 1997* and *Occupational Safety and Health (Prohabition of Use of Substance) Order 1999.* Finally, list of guidelines published by DOSH are *Guidelines For Public Safety and Health At Construction Sites, Guidelines For The Prevention of Falls at Workplaces, Guidelines On Occupational Safety and Health Act 1994 (Act 514), Guidelines On Occupational Health Services, Guidelines On Occupational Safety and Health In Service Sector, Guidelines On Method Of Sampling and Analysis For Airborne Lead* and lots more.

Furthermore, there was approximately 1831 industrial accident cases involved temporary disability were reported to the Department of Occupational Safety and Health (DOSH) from January to July 2007. 91 accident cases which involved permanent disability were reported to DOSH from January to July 2007. Finally, 135 cases involved fatality were reported to DOSH from January to July 2007. Precisely, this can be clearly seen as the following figure:

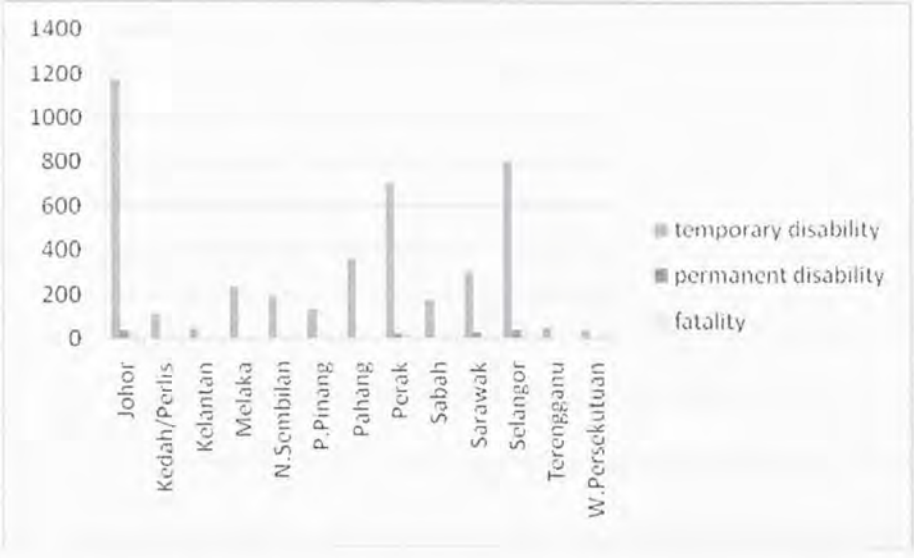
Figure 1.0: Accident cases reported to Department of Occupational Safety and Health in 2007



Source: '*Jumlah kemalangan yang dilaporkan ke Jabatan Kesihatan and Keselamatan Pekerja (JKKP) bagi tahun 2007'*. Department of Occupational Safety and Health (DOSH), 2008.

Another accident statistic prepared by DOSH was the accidents rate in 2006 based on region. It is clearly seen from the following figure 1.2 where Johor has the highest accident rate that involved '*tanpa hilang upaya kekal'* and '*hilang upaya kekal'* category with 1178 and 34 cases accordingly. While, Selangor has the highest accident rate that involved death with 39 cases in 2006.

Figure 1.1: Accident rate according to region in 2006



Source: '*Kemalangan mengikut negeri dan jenis kecederaan 2006*'. Department of Occupational Safety and Health, 2008.

In understanding safety matters or issues in an industry or organization, it is advisable to know the safety culture in that particular industry or organization. According to Olive and Mannan (2006), safety culture is defined as "the overarching policies and goals set by an organization relating to the overall safety of their facility or environment." Safety culture is consistent but not flexible enough to cope with changes. "In the aftermath of a significant accident, it is the climate of an organization, rather than the culture, that will undergo immediate modification" (Olive et al., 2006). Moreover, there are three vital components to explain the safety culture such as psychological, situational and behavioural. Psychological component is basically examined by safety climate questionnaires which are usually measuring people's norms, values, attitudes and perception towards safety. However, situational component can be examined by looking at the organizational structure such as its policies, working procedures, management systems and others. Last and

not least, behavioural component is measured via self-report measures, outcome measures and observations. (Gadd and Collins, 2002).

1.2 Research Problem

Most of the research done in aviation industry is focusing on one particular safety culture component or either combination of two components. For example, there was a review of human error in aviation maintenance and inspection. This paper was written by Latorella and Prabhu (2000) where their paper only concentrating on the human error in maintaining and inspecting the safety in aviation industry. The main idea of the paper is to discuss the appropriate approaches to investigate human error. Basically, this paper is focusing on the behavioural component. Another example is research on the development and initial validation of an Aviation Safety Climate Scale by Evans, Glendon and Creed (2007). This research included the psychological and situational components as it discussed on the employee's perception towards the safety management system.

Looking at the Malaysia's aviation industry, according to Kebabjian (2008), Malaysia Airlines was in rank 27 in world airlines accident ratings and rank 5 in Asia-Australia region as it was involved in one fatal accident in 1995. The incident happened in Tanjung Kupang where 97 passengers and 7 cabin crew were killed. It was believed that the flight (Flight 653) was being hijacked as it enters the cruise level.

In addition, one of the earliest helicopters crashed in Sarawak which was a Bell 206 belongs to Hornbill Skyways happened on 3rd March 1982. The chopper was on a flying doctor mission to Baram district in Sarawak. Another Bell Jet Ranger 206 helicopter crashed-landed on 11th July 1996 in Bario carrying a flying health team and fortunately, the pilot and the passengers were all survived the mishap. On 29th January 1997, another Bell 206 helicopter belongs to Kenari Aviation Services Sdn Bhd. crashed in Belaga jungles and killed four people including the pilot, the company manager and two engineers. However, two others were survived the crashed. The chopper was crashed due to engine failure while airborne after sending off spare parts to another chopper grounded near the Sarawak and Kalimantan border. 5 years later, a woman was killed as a Bell 206 helicopter crashed-landed in Beluru forest due to engine problem and bad weather. Meanwhile, the three others were injured. This incident happened on 18th February 2002 as the chopper was on its way to Miri Hospital from Long Akah. On July 2003, another helicopter belongs to Hornbill Skyways crashed in the deep jungle Lawas and killed two people including the pilot and a pastor who was on his way to the annual mass congregation at Gunung Murud in Limbang. The chopper was crashed due to bad weather (Bernama[a], 2004). One year after the incident, precisely on September 2004, another Hornbill's helicopter crashed in Asa Jaya Samarahan Kuching and killed four people including the pilot Abang Ibrahim Ismail, Sarawak deputy chief minister Tan Sri Alfred Jabu's private secretary Bettie Alex, photographer Yong Chan Leong, and another passenger known as Awang Iskandar (Wong, 2004). Few months after that, another Hornbill's helicopter crashed on July 2005. Two people were killed including the pilot and a military escort. The other one was survived and one passenger was missing. Based on the chopper crashes incident, the Malaysia Transport Minister, Datuk Seri Chan Kong Choy said that none decision to halt Hornbill's operation has

taken because the company's operation audit result showed that the pilot and flying procedures were all in order. Perhaps, he stated that Hornbill Skyways had implemented all the proposals made to it from the ministry's monthly audits (Bernama[b], 2005).

As according to the Malaysia Aviation Thread 7 (which was run from 2 November 2007 until 25 January 2008), there were few mishaps happened in the previous thread. A Malaysia Airlines System (MAS) flight was cancelled due to a technical problem precisely the aircraft's air-conditioning system had malfunctioned. The incident has caused 140 passengers including Menteri Besar Datuk Idris Jusoh and several state leaders were stranded in Kuala Terengganu airport. The flight was supposedly to depart at 4.10pm. On 27 October 2007, one MAS flight was delayed in Karachi due to bomb related threat. Another MAS flight departed from Hong Kong to Kuala Lumpur International Airport (KLIA) was returned back to Hong Kong airport after few hours as the pilot detected a malfunction. Besides that, a FAX Rural Air Service flight to Lawas from Miri was almost ended up in disaster when the flight engines were failed during the airborne. However, the determined pilot was able to restart one of the engines and nursed the plane back to Miri Airport (Airliners.net, 2008. Basically, most of the aviation accident or crashes which involved fatal incidents happened in the private organization like Hornbill Skyways. Meanwhile, the public organization like MAS has only involved in fatal accidents once in 1995 and in the recent cases, MAS able to escape the mishap or crashes.

Furthermore, there is less research done in the air transport industry in Malaysia. It is assumed that it is due to lack of awareness among the Malaysian regarding the safety and health in air transport. Although several helicopters crashed

from the last 1980s to the most recent in 2005, less research and investigation is done on that incidents. Perhaps, the Department of Occupational Safety and Health (DOSH) has overlooked the aviation industry and focusing more on the other industries such as construction and manufacturing.

However, the awareness of the importance of safety in academic industry is increasing. In Taiwan, the accidents at university and college laboratories are alarming (Wu, Liu and Lu, 2007). Thus, an empirical study done by Lu, Liu and Chen (2007) has found out that organizational and individual factors like ownership, the presence of safety manager and safety committee, gender, age, title, accident experience and safety training significantly affected the safety climate. Perhaps, this finding may be different in Malaysia context due to the different organization culture and individual needs.

Apart from that, lack of awareness could be due to the belief among Malaysians which is fatalism. They believed that whatever incident happened to them was already fated and could not be changed. The question is that, how can the management change this kind of belief when it is already in the culture. Obviously, it is not easy to certainly change person behaviour or values but their behaviour can be controlled by the legislation. But however, it is possible to manipulate their behaviour via the working environment or situation.

Moreover, the employees' attitudes toward their jobs are varied from each other and it is hard to control their behaviour. Especially, those who do not understand the organization corporate culture and comply with the rules and regulations. However, the root to this problem is that, the top management should play an important role to establish and promote a desired working environment.

Otherwise, a positive organization culture should result in a positive organization climate. In the research context, a positive organization climate should create a positive safety climate which will derive the employees' behaviour. This is supported by Jonson (1982, cited in Coyle, Sleeman and Adams, 1995) where in his paper, he argued that safety problems occurred due to the poor attitude of the management toward occupational safety and health where the unsafe acts were supposedly view as the precede accidents.

Based on the interview session with some of the employees in aviation organizations in Kota Kinabalu, some of them do not know that they have safety manager and some even do not have safety committee in the organization. Besides that, the employees in the operational level claimed that it is very rarely that the top management communicates about the safety issue in the organization. Even some of them never had undergone safety training although they are working in the worksite that was exposed to danger such as at the airport building.

1.3 Research Questions

With regard to the research problem discussed earlier, several questions should be raised regarding the safety issue.

Firstly, as according to the scenario in Malaysia aviation industry, most of the crashes happened among the private organization like Hornbill Skyways and less in the public sector like Malaysia Airlines System. This has raised the first research question which was:

1.3.1 What is the impact of private ownership organization on safety climate?

As mentioned earlier on, top management plays an important role in ensuring that the existing safety legislation is being enforced and communicated to the employees. The role to manage the safety issue is usually in the hands of safety manager. Then, the managers will execute the safety committee to ensure that the employees complied with the existed legislation. This has raised the second and third research questions which is as below:

1.3.2 What is the impact of absence or presence of safety manager on safety climate?

1.3.3 What is the impact of absence or presence of safety committee on safety climate?

Moreover, most of the operational level employees are male rather than female. This kind of stereotyping assumed that the accidents occur because of the gender differences. The female employees are more careful when performing their jobs while among the male employees are more clumsy. This has raised the fourth question which is as below:

1.3.4 Does gender differences affect safety climate?

In Malaysia or perhaps in Asia, it is the culture to respect the elders. It is believed that the older that person is, the more experienced he or she is. Thus, the high intelligence and cognitive development that person has reached. As the person has reached that level then, it is assumed that person can make decision and respond to environment stimuli well. This has raised the fifth question which is as below:

1.3.5 What is the impact of age differences among employees on safety climate?

Next, it is assumed that a higher education level a person posses, the more intelligent that person is because he or she has reached certain level of thinking. With that high level of thinking, that person may respond to the environment and make decision systematically. Thus, this has raised the sixth question which is as below:

1.3.6 What is the impact of educational level of employees on safety climate?

Accident experience may give physical and emotional impact to the victims. It depends on the victims' perception whether to look at that experience as a positive or negative impact to their working or even their personal life. Perhaps, person who has experienced accident will become more cautious while dealing with danger situation or maybe not. And this does not mean that the person who has never experienced accident is very cautious and does not involve in unsafe act that lead to accident. This has raised the seventh question which is as below:

1.3.7 What is the impact of accident experience on safety climate?

Finally, safety training plays an important in providing safety knowledge to the employees. Thus employees' who has undergone safety training are assumed and expected to be more cautious while performing their jobs. It is also assumed that the person who has never undergone safety training has lower safety awareness than those who has undergone safety training because they do not posses appropriate knowledge about safety matter. This has raised the final question for the research which is as below:

1.3.8 What is the impact of safety training on safety climate?

1.4 Research Objectives

The main objective of this research is to investigate the impact of organizational and individual factors on safety climate based on five safety climate dimensions such as chief executive officer's safety commitment and action, manager's safety commitment and action, employee's safety commitment, perceived risk and emergency response). The specific objectives are as below:

1.4.1 To investigate the impact of organizational factors such as ownership, safety manager and safety committee on the five dimensions of safety climate (chief executive officer's safety commitment and action, safety manager's safety commitment and action, employee's safety commitment, perceived risk and emergency response).

1.4.2 To investigate the impact of individual factors such as gender, age, educational level, accident experience and safety training on five dimensions of safety climate (chief executive officer's safety commitment and action, safety manager's safety commitment and action, employee's safety commitment, perceived risk and emergency response).

1.5 Scope of the Study

It is to be recalled that there are three components of safety culture such as the psychological, situational and behavioural. Each of the components has different area of concern. Thus, this research is focusing on the psychological and situational area

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