



AN ANALYSIS ON SAFETY WORK CULTURE IN MALAYSIAN MANUFACTURING INDUSTRY

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Abstract- Effective safety work culture in the twenty-first century is a research area that needs further attention which involves paying attention to several factors and its correlation with accident rates. By paying attention to safety work culture, organizations can identify and capture potential hazards before they manifest as accidents in reducing accident rates in workplace. In Malaysia, the percentages of accidents in manufacturing sector are always higher than other sectors. Human resources management (HRM) practices included training and safety and health are important to reduce accidents rate in manufacturing sector. The uniqueness of this paper focuses on literature review of the factors that influence the effectiveness of safe work culture and it's correlation with the accident rate in Malaysian Manufacturing Industry. Moreover, we also will be providing some suggestions and critiques on the above objective.

Keywords- Safety work culture, Correlation factors, Accident rates, Manufacturing industry.

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Introduction

In 2009, a total 2,386 of accident has been reported by DOSH state to Division of research monitoring activity. Even though the decrease of accident case as much as 149 cases compared year 2008 with 2535 cases, there are no major changes (DOSH 2009 Annual Report). The percentages of accidents in manufacturing sector are always higher than other sectors. Accident in workplace often happen as a result of neglecting the precaution measures in the competitive market where advanced technologies, intensive exploitation of resources, the increasing of natural and technical threats which resulting in lower economic growth rate (M. Spilka, 2010).

So, in order to minimize the rate of fatal accidents in workplace, enactment of the Occupational Safety and Health Act (OSHA) in 1994 which aimed in self-regulation and also to improve the safety and health of the employee (as cited in Faridah Ismail et. al, 2010), manufacturing is one of the industries that still having a high causality in workplace every year although Social Security Organisation reported that other occupational accidents and causalities had declined gradually over the years (Idris, 2008).

According to International Labour Organization, ILO (1991), safety precautions such as good plant design which should include sufficient emergency exits, smoke detectors and water sprinkler, consistence and regular plant maintenance, adequate safety support on site and others should always be a minimum requirement at all operational industrial sites. On the other hand, the government should play an active role in ensuring the safety of employees as well. For example, Naavamukundan . A (2002) stated that the OSHA required all related industries to appoint a competent, qualified safety and health officer to ensure the compliance by the industry with the Occupational Safety and Health Act.

This topic is important to be studied in order to increase our awareness on safe work culture and also to enhance our knowledge on the causes and how to prevent accidents in manufacturing industry. The objective of this paper is to study the factors that influence the effectiveness of safe work culture and it's correlation with the accident rate in Malaysian Manufacturing Industry. Moreover, we also will be providing some suggestions and critiques on the above objective.

Definition

Safety defined as liberation from risk, injury and danger. In addition, safety can also be the manifestation of "caution" in order to avoid danger. Culture is defined as the values and beliefs that are being shared in order to create an identity of a group of people. Therefore, safe work culture can be defined as the patterns of behaviours and attitudes or products of people which creates commitment and efficiency in an organization.

Literature Review

Paivi Hamalainen, (2009) stated that many countries focus more to have prevention activities on occupational accidents than on work-related diseases. They also mentioned that most of the countries have made different laws and regulations to prevent the rise of the number of occupational accidents. Tsen (2006) stated that one of the important sources of economic growth to the Malaysian economy is the manufacturing industry. C.Wu (2001) mentioned that Malaysia's economy grew only slightly owing to a considerable decrease in the production of the manufacturing sector, despite the continued growth in the agriculture, forestry and fishing, construction, and other sectors in year 2001. According to Selected Social Statistics (2008), manufacturing sector has the highest number of industrial accidents between years 2003 to year 2006. However, it showed a decrease in the number of industrial accidents from year 2003 to year 2006.

Zaliha Hj Hussin (2008) studied the types and factors of accidents that happened in food-manufacturing factories in small and medium-sized industries and the actions taken by the employers following the occurrence of an accident in Malaysia. They studied the workplace accidents occurrences and the actions taken by the company following the accident occurrences by using a survey on "The Standard Implementation of OSHA in SMLs, Kedah". The results of the research showed that only little accident happened and most of the accidents are only slight injuries. Most of the accidents were caused by human factors such as partners' negligence, and a small cut was identified as the most common type of accident that happened. However, research also found out that most of the employers pay only little attention in giving out incentives to their workers that complied with all the safety rules and regulations. The most common punishment given to the workers who does not comply with the safety rules and regulations is a warning.

Faridah Ismail (2010) stated that there are many indicators or practices of good safety culture, but they did not showed they way to improve safety culture, which lead to improvement of safety behaviour. They also mentioned that there are three safety components in safety culture framework, which are psychological factors, behavioural factors, and situational factors. Therefore, the second factor that influences the effectiveness of safe work culture is the psychological factors. Psychological factors showed the values and beliefs that refer to the worker's behaviour. One's mind set determines the safety of working place. Thirdly, behavioural factors which are the behaviours that showed through the observable practices. Behaviours of workers determine the safety of working environment. Workers making noise may interrupt other workers concentration. This would cause accident too. Next, are the situational factors which are divided into two parts; internal situational factors that are more on safety management system of

one organization, and the external situational factors. System of an organization and cooperation given from other workers influences the effectiveness of safe work culture. To strive for the highest standard of occupational safety and health, Malaysia (2008) suggested that the importance of occupational safety and health programme such as awareness, education and training, enforcement and legislation, guidelines and codes of practices should be paying more attention among the implementation of an Occupational Safety and Health Management System (OSHMS).

Besides, M. Spilka (2010) also suggested that activities that are in the range of occupational health and safety management system must be understand and accepted by personnel and management, since it is important for the formation of high culture of the safety with tools usage such as courses and trainings, promote work which is connected with industrial safety, competitions about the industrial safety matter and audits. From the study of Abdul Rahim Abdul Hamid (2003), work place environment such as condition of floors, site tidiness and arrangement for debris collection should get more attention from the workers to prevent from industrial accidents. Not only that, Andi (2008) believed that safety culture have been progressing in manufacturing industry and defined safety culture as a part of corporate culture that imply to individual, job, and organizational feature that affect and influence health and safety. He concluded his paper that safety training and management commitment in carry out safety rules and procedures have to be improved although workers perception toward safety culture is considered good.

Heidel (2008) also concluded that it is important to develop a Prevention through Design (PtD) culture within manufacturing sector to show the business value of safety and health investments. He also stated that new facilities, processes, equipment, and tasks should be included in the range of PtD.

Safety Issue in Malaysian Manufacturing Industry

Manufacturing industry is an important engine in promoting economic growth and also in contributing Gross Domestic Product (GDP). Monthly Statistical Bulletin of Central Bank of Malaysia shows 3.1 % as the average growth of GDP from year 2003 to 2007 whereas the growth of GDP at constant price from 2003 to 2007 recorded as RM 152 262 million (Malaysia, 2008). Based on the above information, we can conclude that manufacturing industry is also as competitive as other sectors such as services and agriculture. There are few major manufacturing industries in Malaysia such as food processing industries, furniture manufacturing industries and electronics manufacturing industry. Malaysia, in manufacturing industry has been ranked at the 23rd among other countries. Manufacturing industry is also active in its exportation. Malaysia exports manufactured goods, transport equipments, machines and miscellaneous manufactured products to other countries. When the demand increases, the supply or export of these manufactured products also increases. This indirectly contributes to Malaysia's economic growth as well as its GDP. According to Tsen (2006), "today, Malaysia is one of the largest exporters of semiconductor devices, namely electrical goods and appliances and the manufacturing industry has generated a significant amount of employment to the economy."

Due the rapid growth of manufacturing industries, the amount of employment has also increased. This situation most probably

made many people to grab the opportunity to live a better life. Besides that, manufacturing industries plays a significant role in generating Malaysia share market. As the total output of this industry is always big, many global companies from a wider range hold Malaysia share market. When the value of share market rises, then it would indicate that manufacturing industry as one of significant contributor. For an overall view, we can say that manufacturing industry contributes to Malaysia's economy and GDP by attracting more investors, by improving the quality of products and also by the prospect value. Investors are willing to invest in Malaysia because of the prospect values of Malaysia's industries which are brighter compared to other countries. According to Tsen (2006), "over the decades, Malaysia has received substantial amounts of foreign direct investment (FDI) in its manufacturing industry." Foreign Direct Investment (FDI) is significantly motivated by longer term prospects. This longer term prospects is basically vital in making profits in manufacturing industries which is directly controlled by the investors. It can be summarized that FDI helps or promotes Malaysia in the development of manufacturing industry. Besides all these, manufacturing industry promotes foreign currency exchange and also in the transfer of technology (Tsen, 2006). Due to this, the economy status of Malaysia grows rapidly.

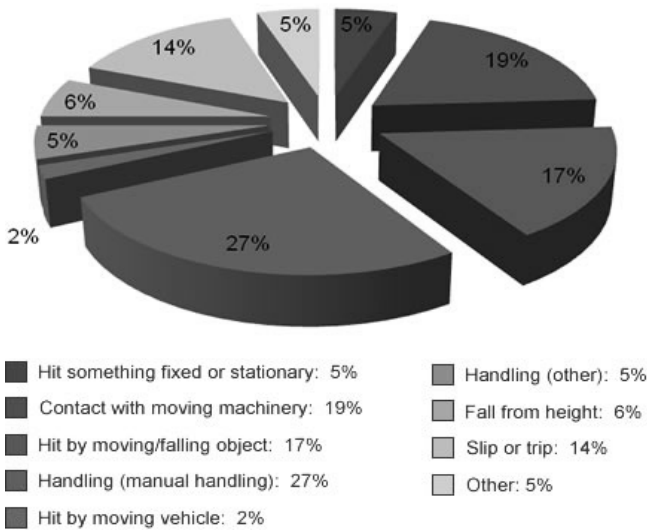


Fig.1- Causes of Accidents in Manufacturing Industry

(source: <http://www.hse.gov.uk/woodworking/statistics.htm>)

Several national agencies have been collecting data on occupational accidents and diseases. These agencies are The Department of Occupational Safety and Health (DOSH) under the Ministry of Human Resources and the National Institute of Occupational Safety and Health (NIOSH). Moreover, the Occupational Health Unit under the Ministry of Health, the Social Security Organization (SOCSO) and the Department of Labour also collect surveillance data related to occupational health. There are various causes of accidents in manufacturing industry. Based on the Fig. 1, we can say that accidents in manufacturing industry happen in its entire department or in all types of manufacturing work. The highest number of accidents is when workers are manually handling the machines and the lowest accident happens when the workers are being hit by moving vehicle. Table 1 shows the factors that may

influence the effectiveness of safe work culture. Management role, safety training and anticipation of hazards are important in order to reduce the number of accidents in manufacturing industry. Table 2 below as cited from Malaysia (2008), shows the number and rate of work-related accidents reported to SOCSO from 1995 to 2004. The data shows a decrease in the work-related accident rate from 15.4 accidents per 1,000 workers in 1995 to 6.7 accidents per 1,000 workers in 2004.

Table 1- Variables used in company safety practices

Factors	Variables Involved	Average Score for Factors
Management Role	Management involvement	4.23
	Provision of safety rules to employees	
	Erection of signs on safety regulations	
	Safety information and regulations	
	Keeping up-to-date safety matters	
Anticipation of Hazards	Participation of safety authorities in risk assessment	3.03
	Job hazard analysis	
	Investigation of near accidents	
	Housekeeping	
Safety Training	Internal Safety inspections	3.13
	Safety programs	
	Safety training for management, safety manager, line supervisor, workers	
	System for familiarizing new employees to safety rules	

Source: <http://scialert.net/fulltext/?doi=jas.2010.425.430&org=11>)

Based on the Fig. 2, the number declined from 85,926 in 2001 to 58,321 in 2006. It shows the effort done by the government and private sectors are taking its effect.

As what has been recorded in Table 2, we can say that the result shows the effort and the collaboration of Malaysian government and private sectors in creating a safer industrial workplace by implementing guidelines of the following four factors:

Psychological factor (or cognitive factor), whereby aspects of belief and safety culture in working environment is improving among the employees.

Behavioural factor, where the commitment of the management in resource allocation has been more diverted towards training and development of job safety and leadership. The risk factors in industrial environment are assessed and being identified via preliminary survey and observable practices.

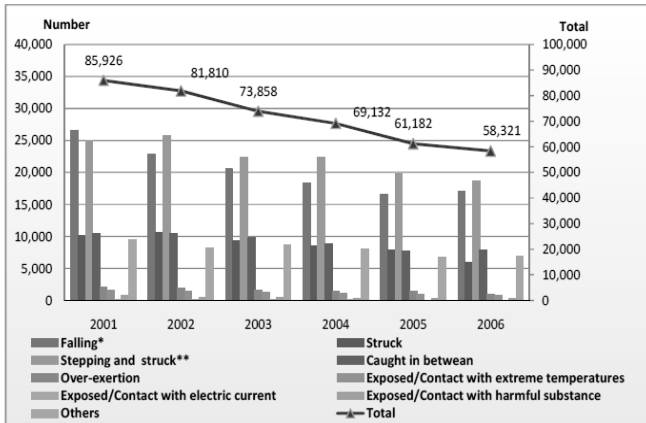
Internal Situational factors, whereby safety management system of the organization are portrayed through an internal organization environment by enforcing desired behaviour, it increases the adaptability to external factors and demands on the safety requirements are starting to increase.

External Situational factors such enforcement of rules and regulations by the government, increased awareness of the legislation and court decision, and higher safety requirements set by government policies.

Malaysia has ratified at least 15 ILO Conventions on occupational health and safety. The country has ratified the following:

- ILO 29 Forced Labour Convention
- ILO 50 Recruiting of Indigenous Workers Convention
- ILO 64 Contracts of Employment (Indigenous Workers) Convention
- ILO 65 Penal Sanctions (Indigenous Workers) Convention

- ILO 88 Employment Service Convention
- ILO 95 Protection of Wages Convention
- ILO 98 Right to Organize and Collective Bargaining Convention
- ILO 100 Equal Remuneration Convention
- ILO 105 Abolition of Forced Labour Convention
- ILO 119 Guarding of Machinery Convention
- ILO 123 Minimum Age (Underground Work) Convention
- ILO 138 Minimum Age Convention



Cause of accidents	2001	2002	2003	2004	2005	2006
Falling	26,548	22,770	20,522	18,379	16,529	16,974
Struck *	10,146	10,599	9,261	8,524	7,813	5,915
Stepping and struck**	24,855	25,730	22,365	22,409	19,710	18,621
Caught in between object	10,405	10,518	9,735	8,882	7,663	7,859
Over-exertion	2,137	1,923	1,610	1,435	1,409	965
Exposed/Contact with extreme temperatures	1,529	1,415	1,309	1,159	1,000	853
Exposed/Contact with electric current	62	93	64	70	42	33
Exposed/Contact with harmful substance	796	508	390	316	255	258
Others	9,448	8,254	8,602	7,958	6,761	6,843

Fig.2- (SOCSCO & EPF, 2008)

Table 2- Work Accidents Reported to the Occupational Health Division, 2003-2004,

Years	Number of Registered Workers	Number of Industrial Accidents	Accident Rate per 1000 workers
2004	1,03,18,209	69,132	6.7
2003	1,01,50,000	73,858	7.3
2002	79,12,385	81,810	10.3
2001	87,69,321	85,292	9.7
2000	88,77,304	95,006	10.7
1999	85,98,005	92,074	10.7
1998	84,28,589	85,338	10.1
1997	82,52,680	86,589	10.5
1996	76,13,635	1,06,508	14
1995	74,21,191	1,14,134	15.4

Source: National Institute of Occupational Safety and Health, Industrial Accident Trends, at <http://www.niosh.com.my/statistik.html> last accessed 28 March 2006.

This shows the effort of government in enforcing workplace safety and employee rights as seen above. (Sirajuddin, n.d.) By implementing on all those factors and by ratifying the ILO's, we would see many advantages than the disadvantages. The safety of work place can be enhanced and it would directly increase productivity. Moreover, can also reduce turnovers and cut cost on the medical expenses and insurances of workers.

A good "safe work culture" have high possibilities to reduce accident rate in manufacturing industry. In most cases, safety and security lapses cause accidents in manufacturing industry. According to Sivaprakash (2011), good attitude, behaviour and safety education may reduce number of accidents in manufacturing industry. Education on safe work culture may educate workers on how to prevent accidents in manufacturing industry and to instil awareness of practicing safe work culture (Sivaprakash, 2011). Besides that, education on safe work culture provides method and skill on work, highlighting workers on the importance of reporting any major or minor injuries to the top management, to teach them the cause of accidents in manufacturing industries and methods to prevent them and the most important one is to teach them on the first aid techniques.

Murat Chetin (2010) studied that "all injuries can be prevented, safety must be equal to quality, costs and productivity; safety is a line organization responsibility and more safety is business". He means that the organization of manufacturing industries should give equal priority and put equal effort into safe work culture context as how they do on the costs and productivity. All industries run for profit purpose. Therefore, the production, marketing and treasury are the most important departments in a company. The top management bothers less on the safe work culture. Murat Chetin (2010), found that strict quality controls, excellent and effective rules and regulation and legislation influences safety behaviour of workers; thus reducing the accident rate in manufacturing industry. In addition, wearing equipment or accessories as ordered by the company can also reduce the number of accidents in manufacturing industry in Malaysia. Based on our point of view, Malaysians take things for granted. They are not being exposed to the awareness of safety work culture unless they are working under an international or billion profit companies. For an example, wearing eye protector glasses and head helmet is very important especially in manufacturing industries where most of the time they deal with machines, drill and sharp wedges. Unfortunately, many think it as pressure and uncomfortable.

Recommendation

Although there are many issues arise regarding the worker's poor safety and fatal accidents during working at their workplace, there are few ways that the Human Resource Management, the government or even the respective ministries can practice in order to improve the workers' safety at workplace in Malaysia.

In order to improve the workers' safety in the workplace, a qualified health officer should be made necessary to be allocated in every company registered under the Companies Act 1965. According to Navamukundan (2002), a competent safety and health officer has to be appointed in industries which have been gazetted by the Minister and the safety and health officer's job is to ensure compliance with the Occupational Safety and Health Act which came into force in February 1994 and promote safe conduct of work. He added that medical surveillance is also mandatory in industries where work may pose risks to health of workers. Safety precautions can be improved with the briefing and disciplinary actions reinforced by the safety and health officers to all the workers in the company. Through these actions, the workers will understand more about safety precautions in workplace and eventually, fatal accidents by the workers can also be reduced.

Besides appointing safety and health officer in every company, basic trainings to the workers are also recommended, especially to all newly joined workers. According to International Labour Organization, ILO (1991), information and training of workers are necessary whereby workers should have the information and training about the in view of their crucial role in the prevention of major accidents. Apart from that, ILO mentioned that the works management should make sure that:

- Workers have a broad understanding of the process used;
- Workers are informed of the hazards of the substances used;
- Workers are adequately trained.

When workers of the company are provided with these information and training, fatal accidents are more likely to be reduced. This is because workers understand better on how to keep themselves and their colleagues safe, as well as know how to handle tough situations regarding accidents. According to Andi (2008), workers' adequate knowledge, skill and ability to their works, especially toward risks and dangers in their work, may minimize accidents and these competences can be enhanced through training and appropriate workers selection.

Workers should know their duties well to in an organization. Workers of the company should hold responsible of the task they have to do safely, and not by relying on others to be responsible on their safety. According to International Labour Organization, ILO (1991), it is the worker's duty to carry out their work safely and not compromise their abilities, or the ability of others, to do so. Besides that, workers and their representatives should cooperate with works management in promoting safety awareness and two-way communication on safety issues, as well as in the investigation of major accidents or near misses which could have led to a major accident. Eurocontrol (as cited in Faridah Ismail et. al., 2010) stated that the literature review on safety culture shows that there are numerous indicators or practices of good safety culture but the specifics that characterize their excellence and the measurement were descriptive and do not show the process on how safety culture can be improved, leading to improved safety behaviour. It also mentioned that while safety management system reflects the competency of the organization to manage safety, safety culture reflects the actual commitment throughout the organization.

Apart from the Human Resource Management and workers' duty to prevent accidents from happening in a workplace, the government plays an important role in this issue too. The government should collaborate with the companies in order to improve the awareness of safety of every worker during working. According to Navamukundan (2002), the government has encouraged a tripartite approach to promoting occupational safety and health at work. Trade unions and employer organizations play a key role in promoting safety and health education programmes for employers and workers. He added that the government has also established a National Institute of Occupational Safety and Health to promote education, research and development in this field, thus supporting the work of the Department of Occupational Safety and Health in the Ministry of Human Resources. Besides the government, non-government organizations also play an important role in increasing the awareness of the workers.

Conclusion

As a conclusion, safety precaution and management responsibilities influence the safety climate. It is important for employer, em-

ployee and also government to co-operate hand in hand to ensure a minimum danger risk level at the workplace. By practicing safe work culture, the manufacturing industry not only can reduce the number of accidents but also can increase their productivity, cut cost on medical expenses and insurances of workers, increase the ability to compete under various market conditions by having more potential human capital and able to develop the industry innovatively with the help of trained manpower.

Government need to enforce the law of Safety and Health to make sure all the industries follow the guidelines of safe work culture. Time by time, government also need to carry out some campaigns or workshops to increase people awareness on safe work culture and the necessary to follow the rules and regulations.

This research provided us some knowledge and insight on safe work culture and we have studied the factors that influence the effectiveness of safe work culture. Moreover, we get to know about the agencies or bodies that are involved in implementing safety in working place, especially manufacturing industry. In future, we would also be applying that information.

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