DOI: 10.21276/sjbms.2017.2.1.3

Saudi Journal of Business and Management Studies **ISSN 2415-6663 (Print)**
Scholars Middle East Publishers **ISSN 2415-6671 (Online)**
Dubai, United Arab Emirates
Website: http://scholarsmepub.com/

The Effects of Safety Leadership on Safety Performance in Malaysia.

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Abstract: In the new global economy, workplace safety has become a central issue among companies all over the world. It is becoming difficult to ignore that this trend has also been happening in Malaysia especially the manufacturing sector. The worrying trend can be seen from the increasing number of workplace accident reported by Department of Occupational Safety and Health (DOSH), Malaysia in manufacturing companies. In recent years, researchers have shown an interest in studying the role of safety leadership to reduce workplace accidents. It is found that safety leadership plays a significant role in ensuring a safe and sound workplace. Due to this concern, this paper attempts to provide a conceptualization of safety leadership from the perspective of Malaysia's manufacturing sector. It is proposed that positive safety leadership leads to reduction of workplace accidents. In response to this matter, it is hypothesized that the higher level of safety leadership will affect the lower level of workplace accidents. A questionnaire from Wu *et al.* (2008) will be adopted to explain the conceptualization of safety leadership, it is expected that the concept of safety leadership practiced in Malaysia's manufacturing sector has a similar meaning from the perspective of western researchers.
Keywords: Safety leadership; Workplace accidents, Malaysia's Manufacturing Sector.

INTRODUCTION

In this era of globalization, almost all of the world's countries are in pursuit of development (Tharaldsen *et al.*, 2010) [36]. The advancement of technologies all over the world had leads to the raising awareness of peoples towards safety issues (Li *et al.*, 2009)[25], which has made workplace safety issues headline news all over the world (Wameedh *et al.*, 2011)[39]. For example, accident statistics have reported as many as 591000 cases of non-fatal injuries in the years 2011/2012 in the United Kingdom (Health and Safety Executive, 2012a)[20]. In addition, the United States recorded 760000 workplace accidents during 2011 (U.S. Bureau of Labor Statistics, 2012)[37]. Based on Health and Safety Executive (2012b)[21], there is a decreasing trend in workplace accidents in United Kingdom. However, the total number of reported cases of workplace accidents is not reassuring. In light of these numbers, issues concerning safety have become a central issue for many safety researchers (Choudhry *et al.*, 2009[7]; Wameed *et al.*, 2011[39]; Shang and Lu, 2009[33]).

LITERATURE REVIEW

Accidents have been defined as the events whose are unwanted, unplanned and unforeseen, which resulting the loss of cost, and even life (Alicia, 2009)[1]. Efforts to overcome workplace accidents were used to inhibit accidents from happening and improve workplace safety (Wu *et al.*, 2007)[42]. Several studies have been conducted on safety, vary from 1990s (Kennedy and Kirwan, 1998[24]; Hofmann and Morgeson, 1999[22]) to 2000s (Wu *et al.*, 2007[42]; Wu *et al.*,, 2008[43]; Fernandez-Muniz *et al.* 2007[16];Cooper and Phillip, 2004[10] ; Tam et al., 2004[35]), and finally, 2010s (Kapp, 2012[23]; Lu and Yang, 2010[27]). Within this paper, safety leadership shall be discussing as it was proposed by Griffin and Hu (2013) [19]that there are lack of specific actions of leadership has been studied for their contribution in workplace safety.

Workplace Accident in Malaysia

Years by years, Malaysia has developed and climbed to its robust position in the new global economy despite the challenges regarding safety issues (Ministry of Human Resources Malaysia, 2009[29]). Refer to Figure 1, the accidents rates is actually experiencing a downward trends from year 2000 to year 2011 (2000= 98281 cases; 2003= 81003 cases; 2006= 68008 cases; 2008= 56095 cases; 2011= 24290) (Department of Safety and Health, 2012[12]; Social Security Organization, 2011[34]). Nevertheless, total accidents from year 2011 to year 2012 experiencing an upturn trend, boosted from 24290 cases to 61552 cases (Department of Safety and Health, 2013[13]).

While total accidents in Malaysia illustrated a downturn trend, there is a controversy when the focus swift to the sector of manufacturing. Refer to the evidences, manufacturing sector reported an increased number from 2002 until 2012 (2000= 43.67%; 2003= 41.85%; 2006= 39.80%; 2008= 33.94% ; 2011=67.89%; 2012= 27.1%). However, referring to the figure, it can be clearly seen that among all of the sectors, manufacturing sector recorded the higher numbers of accidents among the sectors in Malaysia (Department of Safety and Health, 2013)[13]. Therefore, there is a need to identify the problems of safety issues within manufacturing sector in Malaysia (Social Security Organization, 2011)[34].

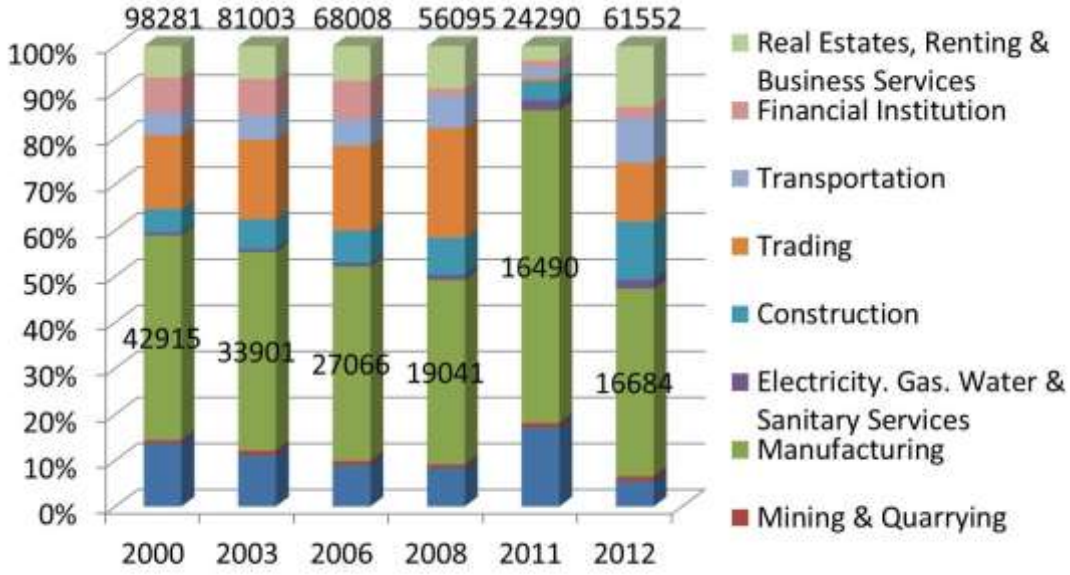

Fig-1: Workplace Accidents in Malaysia, 2000 to 2012 (Department of Safety and Health, Malaysia, 2013

Safety Leadership and Its Relation to Workplace Accidents

Safety leadership can be defined as the process which the leaders exert their influence on employees daily work routine through communication to achieve low accidents rate and positive safety performance (Lu and Yang, 2010[27]; Wu *et al.*, 2007[42]). Previous studies (Barling *et al.*, 2002[4]; Zohar, 2002[45]; Hofmann *et al.*, 2003[22]) shown that leadership practices is a vital factor of influencing the accidents rates. It has becoming the centre of attention on studies in numerous industries especially in energy and manufacturing sectors (Flin and Yule, 2004[17]; Rowley, 2009[30]). Cooper (2010) [9]offered that safety leadership is a necessity for top performing companies for shaping commitment towards safety issues as safety leadership plays a vital role in maintaining the behavioural safety process. According to Vredenburgh (2002)[38], safety leadership is far more effective in shaping positive safety behaviour and attitudes through inspiring and promoting. Thus, it is hypothesized that the higher the safety leadership in the organization, the lower the accident rate in the organization.

Previous studies have investigated the relationship of safety leadership and safety performance and have reported that there is significant influence of safety leadership on safety performance (Lingard *et al.*, 2012[26]; Yang *et al.*, 2010[44]; Zohar, 2002[45]; Rowley, 2009[30]). Wu (2005)[41] proposed leaders with efforts to coach and concerning their employees regarding safety issues formed a great safety performance, thus, it was recommended that safety caring and safety controlling shall be included in safety leadership. Wiegand (2007)[40] explained that safety coaching refers to the efforts of leaders in managing the safety performance and that these efforts involve interpersonal interaction and communication. Safety caring refers to the level of concern and attention amongst leaders towards safety issues and involves efforts to ensure the quality of safety in the workplace (Wu *et al.*, 2008[43]; Cooper, 1998[8]). Both Wu *et al.* (2008)[43] and Cooper (1998)[8] proposed that safety controlling is the use of power in outlining the safety rules and regulations to be complied with by the employees in order to achieve safe performance.

Throughout the years, it can be seen that safety leadership has always been based using transformational and transactional leadership in engaging the dimensions, since Cooper (1998)[8]. Cooper (1998)[8], in initiating the dimensions of safety leadership, chosen to built the dimensions from the foundation of transformational and transactional leadership. Ultimately, primary dimensions of safety leadership, safety caring (transformational) and safety controlling (transactional) had been proposed. Extending from Cooper's (1998)[8] dimensions, Wu (2005)[41] to introduce an additional dimension under

transformational leadership, safety coaching without abandons the originated dimensions initiated by Cooper (1998)[8]. Nonetheless, while Wu (2005)[41] named her safety dimensions as safety caring, safety coaching, and safety controlling, there had been some situations when other scholars would have revised the names of such dimensions to other labels while retaining the meanings each dimensions carrying at the same time. Therese situations occurred when Lu and Yang (2010)[27] and Du and Sun (2012)[14] labelled Wu's (2005)[41] safety caring into safety motivation and active management respectively while safety coaching had been named safety policy and safety monitoring respectively by Lu and Yang (2010)[27] and Du and Sun (2012)[14] respectively.

Successive to the review of dimensions, Wu's (2005)[41] dimensions of safety caring, safety coaching, and safety controlling were chosen in this studies as it can be generalized to most of the industries (Shah Rollah Abdul Wahab, 2011)[32]. Thus, the conceptual framework of this study had been developed.

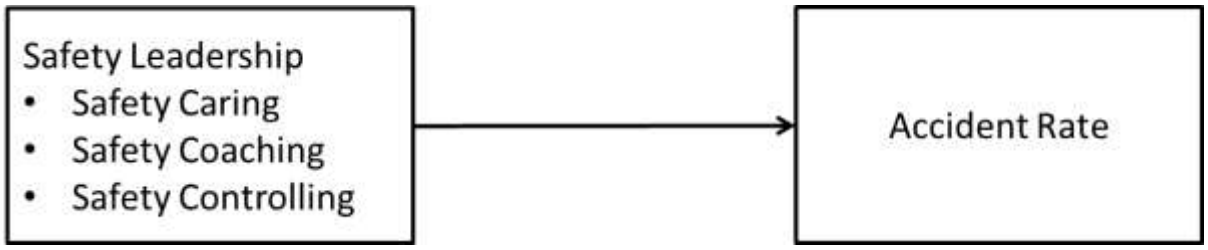

Fig- 2: Framework

H1: the higher level of safety leadership will ensure the lower level of workplace accidents.

RESEARCH METHODOLOGY

This research shall be a quantitative research. According to Creswell (2002)[11], a quantitative research refers to research that measures causal relationships, hypotheses testing, and theories testing using survey as data collection instrument. Creswell (2002)[11] further proposes that quantitative research should be used in research which contains a large amount of statistical data. Furthermore, the design of this research is descriptive and correlational study. Elifson (1998)[15] proposes that descriptive study describes the characteristics of the desired trends or situations. Descriptive study helps the researcher understand the phenomena and inter-correlation between the variables (Sekaran and Bougie, 2009)[31]. Correlational study had been defined as a technique that is able to describe and measure the link and relationship between two variables statistically (Gravetter and Wallnau, 2002)[18].

Respondents of this study will be employees from the iron and steel based manufacturing companies chosen from Federation of Malaysian Manufacturers (FMM) directory. A major reason for selecting these industries is that the number of accidents which occur in these industries is the highest among all other manufacturing industries, with an accident occurring every two working hours in Malaysia in 2011 (Social Security Organization, 2011)[34].

In this research, it is apparent that the questionnaire is an adaptation of questionnaires from and Wu *et al.* (2008)43]. In order to measure safety leadership, the Safety Leadership Scale developed by Wu *et al.* (2008)[43] shall be adopted. Meanwhile, adoption of Wu *et al.*'s (2008)[43] Safety Performance Scale shall adopted to explore the findings. The adoption of Wu *et al.*'s questionnaires in the measurements of independent variables, dependent variable, and also mediation is due to the proven high reliability of the questionnaires (Alpha Cronbach: 0.84 to 0.97) (Shah Rollah, 2011[32]; Wu *et al.*, 2008[43]).

RESULTS AND DISCUSSION

This study seek to test the developed hypothesis in identifying the influence of safety leadership on workplace safety in Malaysia. Within this study, safety leadership shall be measured using safety leadership scale while workplace safety shall be measured by safety performance scale. The data were collected through data collection process and input in SPSS 16.0. Aiming to determine the influence of safety leadership on workplace safety, path analysis using SEM AMOS was engaged. In the process of analysis, measurement model was ran in AMOS seeking to achieve model fit. There are three levels of model fit in structural equation modelling, namely absolute fit, incremental fit, as well as parsimonious fit (Awang, 2015)[3]. In order to achieve absolute fit in measurement model, root mean square of error approximation (RMSEA) shall be less than 0.08 while a range between 0.05 to 0.1 is acceptable (Browne and Cudeck, 1993[6]; Awang, 2012[2]). Nevertheless, to achieve incremental fit, comparative fit index (CFI) shall higher than 0.9 (Bentler, 1990)[5] while parsimonious fit is achieve when ChiSquare divided by degrees of freedom (Chisq/df) less tha 5.0 (Marsh and Hocevar,1985)[28]. The initial measurement model shows the fitness indexes of RMSEA: 0.113; CFI: 0.816; Chisq/df: 5.865. As all of the three fits were not achieved, modification indices were examined and

items with highest values of modification indices were constraint one at a time until model fit were achieved. The final measurement model showed the model fit indexes of RMSEA: 0.10, CFI: 0.905, Chisq/df: 4.865. Referring to the model fit indexes, absolute fit, incremental fit, as well as parsimonious fit were achieved. Although RMSEA higher than 0.08, it remained in the acceptable range as suggested by Browne and Cudeck, 1993)[6], thus absolute fit was achieved. The final measurement model is shown below:

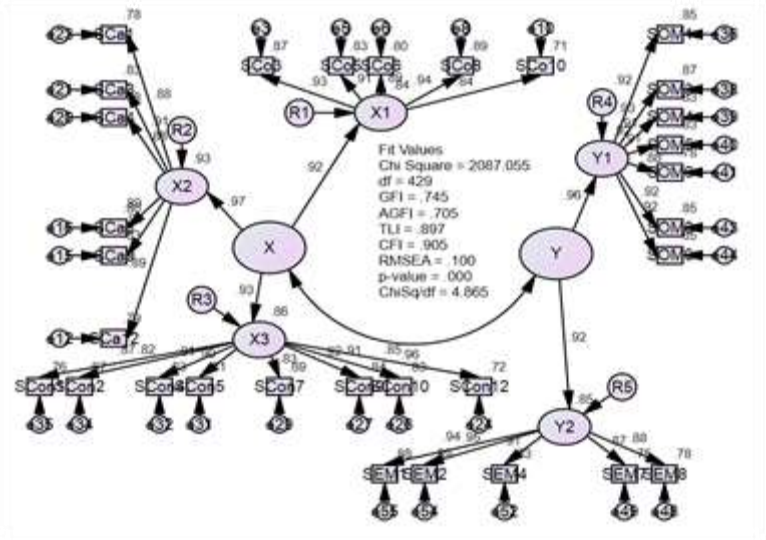

Fig- 3: Measurement Model

Examining data reliability, it is suggested that three types of reliability shall be fulfilled, internal reliability using Alpha Cronbach, composite reliability using CR value and average variance extracted (Awang, 2015)[3]. In this study, the Alpha Cronbach of safety leadership is 0.990 while Alpha Cronbach of safety performance is 0.990. Awang (2015, 2012)[2][3] suggested that composite reliability is achieved when CR value is 0.6 and higher while average variance extracted is achieved when AVE value is 0.5 and higher. In this research, the CR value of safety leadership is 0.974 while AVE value is 0.556. As for safety performance, the value of CR is 0.937 while the value of AVE will be 0.5. Thus, all three level of reliability have been achieved in this research. Next, the validity of this research were examine. In structural equation modelling, there are three levels of validity, convergent validity that required AVE value of 0.5 and higher, construct validity, which is achieved when all fitness indexes were achieved and discriminant validity, which achieved when the model is free from redundant items. In this research, the AVE value of both safety leadership and safety performance are higher than 0.5, yet the fitness indexes of absolute fit, incremental fit and parsimonious fit were all achieved as discussed above. Nonetheless, the model is free from redundant items. Therefore, all three convergent, construct and discriminant validity have been achieved.

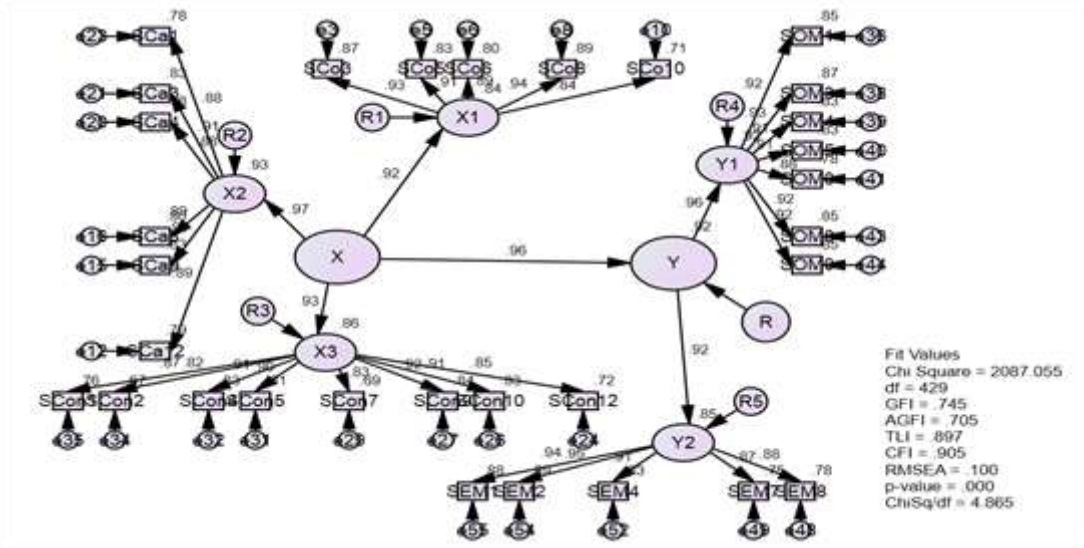

Fig- 4: Structural Model

Next, the measurement model was assemble into structural model with the purpose to test the hypothesis. The structural model of this research is shown in Figure 3. Structural model is assemble with the purpose to execute the path analysis which in turn test the hypothesis of this research. The hypothesis of this research is *the higher level of safety leadership will ensure the lower level of workplace accidents.* The result of path analysis is shown below:

Table 1: Standardized Regression Weight of the Model

Path		Path	Standardized Beta Estimate	Comment
Y	←	**X**	**0.957**	Standardized beta

Referring to the result showed in Table 1, the standardized beta of X towards Y is 0.957. In this research, X represent safety leadership while Y represent safety performance in measuring workplace safety. Therefore, the standardized beta estimate of safety leadership towards safety performance is 0.957. The results defines that when safety leadership goes up by 1 standard deviation, safety performance goes up by 0.957 standard deviations.

Table 2: Hypothesis Testing for the causal effect of X to Y

			Estimate	S.E.	C.R.	P
Y	<---	X	.869	.036	23.981	***
***indicates a highly significant at <0.001						

Table 2 shows the results for hypothesis testing for the causal effect of safety leadership on safety performance. Refers to the results, the probability of getting a critical ratio as large as 23.981 in absolute value is less than 0.001. In other words, the regression weight for in the prediction of is significantly different from zero at the 0.001 level (two-tailed). Therefore, the above research hypothesis is supported. In other words, the better the safety leadership, the better the safety performance. It is known that safety performance in this study is adopted with the purpose to measure workplace safety. Thus, it can be concluded that *the* higher level of safety leadership will ensure the lower level of workplace accidents.

CONCLUSION

In conclusion, this study supported the important constructs of safety leadership in affecting the workplace safety. Suggestible, safety leadership acts an important role in determining the level of workplace safety through safety coaching, safety caring, and safety controlling. Furthermore, the perception of employees towards safety-related leadership in the organizations influences their behavior in handling their works, either safely or unsafely. The outcomes of this research highlights the importance of leaders within the organizations to implement safety-related leadership skills as well as provide more attention on safety issues in return for safer workplace.

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