Original Article

The Relationship between Safety Behaviour and Safety Climate among Firemen

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ABSTRACT: *The study investigated the relationship of safety climate and safety behaviour among firemen in Selangor, Malaysia. Safety climate was measured in terms of employee perceptions for occupational safety and health management, safety communication, safety standard and goal, and individual involvement in their organization. Using a cross-sectional survey design, 150 firemen completed the questionnaire on safety climate and safety behaviour. Descriptive analysis and Pearson's correlation test were used to identify the significant relationship between variables. The analysis found that there was a significant relationship between safety climate and safety behaviour among firemen. There was a positive correlation of safety climate factors of communication ($p < 0.05$), safety standard and goal ($p < 0.05$) and individual involvement ($p < 0.05$) towards safety behaviour. Hence, the results indicated that the more positive safety climate is viewed, the more likely the firemen to practice the safety behaviour in job duties. In conclusion, this study can serve as the baseline for the management to prioritize the safety and health issue in the department and continuously improved their strategies to ensure the safety, health and well-being of the firemen in the organization.*

Keywords: *Firemen, Occupational Safety and Health Management, Safety Behaviour, Safety Climate*

1.0 INTRODUCTION

Safety refers to the state of being safe and protected from any harms. In specific, the workplace safety is concerned on the protection of health from any exposures to potential hazards. As the organization is expanding, the workplace safety become vital, as it may affect the competitiveness and corporate image to the society (Hamalainen et al., 2009). The conventional safety program only emphasized on the technicality and obligation to comply with safety regulations. The necessary mitigation measures are taking place when the accidents have occurred (Garcia et al., 2002). Also, the rigid version of safety management program is always isolated and not integrated with other organizational functions.

The term of safety climate is about the assessment on molar perceptions among employees shared about their working environments. The criteria of safety climate may diverse, as such, their roles

and responsibility on workplace safety, ability to communicate safety issues, accident reporting and safety reward systems (Zohar, 2000).

Meanwhile, the term of safety behaviour refers as the way and adherence to the established safety practices and procedures. In addition, safety behaviour can be affected and influenced by the safety climate in which firemen is immersed (Szubert and Sobala, 2002).

As the firemen tasks are hazardous and most of the hazards are difficult to remove, therefore it is important to make it as safe as possible (Walton et al., 2003). Researchers suggested that the fire service is one of the most hazardous industries based upon work-related injury rates (Bos et al., 2004). Since the hazards of firefighting cannot be removed, investigating the safety climate and safety behaviours among this population may help in forming necessary safety and risk reduction plans by addressing those controllable behavioural factors (Freaney, 2011).

In addition, the main duties of a firemen include responding to fire emergencies, oil spillages, accidents and various disaster responses. With that nature of job, it may expose the firemen to unexpected environmental stressors, heavy physical workloads, exposure to toxic agents and potential to obtain psychosocial hazards. It may have generated several health impairments such as injuries, traumas, respiratory diseases, cardiovascular diseases and cancers (Szubert and Sobala, 2002).

Many of the on-job accidents among the firemen happened due to the factors including problem in decision making, lack of communication and situational awareness, standard operating guidelines or protocol breach, and human error. Due to that condition, an effective safety climate practices are important to be implemented by the management in order to address human behavioural approach towards safety issues in their organization (Pedro et al., 2003). Recent research had highlighted that the safety climate can be used as a leading indicator to identify several safety-related issues of work organization (Nuruzzakiyah et al., 2019).

Thus, the purpose of this research is to investigate the relationship between organizational safety climate and safety behaviour. In addition, it will highlight the importance of establishing good organizational safety climate as the tool to encourage the enhancement of safety behaviour among the firemen.

2.0 METHOD

The research was a cross-sectional study conducted at two fire stations in Selangor, Malaysia. These fire stations were chosen based on the consideration of two factors; research timeline and approval from the respective Heads at the fire stations. The total population is approximately around 170 staff. For this research, a total of 150 firemen were managed to be employed as the respondents (Gill et al., 2010; Hamed, 2017).

A series of questionnaire was developed and scored based on the answers given by the respondents. The self-administered questionnaire consists of the socio-demographic of the respondents, safety climate survey (Cheyne et al., 1998) and safety behavior questions (Burke et al., 2008). The reliability test was conducted through Cronbach's alpha to determine on the internal consistency for each factor.

For the purpose of this study, the safety climate section consists of 18 questions based on 4 factors that rated on a Likert-type scale of "1 as strongly disagree" and "5 as strongly agree". The four-safety climate factor examined were (i) occupational safety and health management, (6 questions) (ii) safety communication, (5 questions) (iii) safety standard and goal, (2 questions) and (iv) individual involvement, (5 questions). Meanwhile, the safety behavior section contains 10 questions rated on a Likert-type scale of "1 as strongly disagree" and "5 as strongly agree".

The data collected were analysed by Statistical Package for the Social Science (SPSS). Descriptive analysis statistics was used to measure the means and standards deviations. Pearson's correlation coefficients tests were obtained to evaluate the relationship between safety climate and safety behaviour among firemen. This test is known as the best method of measuring the relationship or association between two variables (Harry, 2008).

3.0 RESULTS

3.1 Socio-Demographic Data

Table 1 presents the socio-demographic of the respondents. 81.3% of them were male and majority attained the highest education background at high school level. The data of education background is essential as the highest qualifications they achieve, the easiest they could to adhere to safety rules and regulations. It is due to their ability to digest and comprehend knowledge (Vinodkumar and Bhasi, 2009).

Table 1 Socio-Demographic Data

Variables	Category	Frequency (%)
Gender	Male	122 (81.3)
	Female	28 (18.7)
Race	Malay	127 (84.7)
	Chinese	0 (0)
	Indian	2 (1.3)
	Others	21 (14)
Academic Background	High School	116 (77.4)
	Diploma	17 (11.3)
	Degree	11 (7.3)
	Others	6 (4)

N=150

3.2 Reliability Analysis

Table 2 presents the value of Cronbach's Alpha for each variable in this study. The reliability of a research is recommended of at least 0.7 or above (Cronbach, 1990).

Table 2 Reliability Test

Measurement	Cronbach's Alpha
Occupational safety and health management	0.821
Communication	0.839
Safety standard and goal	0.783
Individual involvement	0.811
Safety behavior	0.708

3.3 Pearson's Correlation

Pearson correlation coefficient test is used to investigate the strength of relationship between safety climate factors and safety behaviour. The value of Pearson correlation coefficient (r) is ranged from -1 to +1. A positive value indicated a positive relationship and via versa (Weiers, 2008). The strength of correlation could be interpreted as suggested by Evans (1996) as shown in Table 3.

Table 3 Interpretation of Pearson's Correlation

R	Strength
0. – 0.19	Very weak
0.20 – 0.39	Weak
0.40 – 0.59	Moderate
0.60 – 0.79	Strong
0.80 – 1.00	Very strong

3.4 Correlation between safety behaviour and safety climate

Table 4 Correlation of Safety Climate Factors and Safety Behaviour

Safety Climate Factors	Mean (SD)	R	p-value
Occupational safety and health management	4.29 (0.75)	0.30	0.01**
Safety communication	4.36 (0.58)	0.43	0.01**
Safety standards and Goals	3.99 (0.81)	0.32	0.01**
Individual involvement	4.56 (0.54)	0.45	0.01**

***significant at p <0.05 level*

Table 5 Correlation Coefficient Ranking

(1)	Individual Involvement
(2)	Safety communication
(3)	Safety standards and Goals
(4)	Occupational safety and health management

(1) – The highest coefficient (r)

From Table 4 and 5, it is found that all safety climate factors were positively correlated with safety behaviour. Based on the interpretation in Table 3, safety climate factor on "Individual Involvement" was positively and moderately correlated with safety behaviour with correlation coefficient of 0.45. Other factor, "Safety communication" was positively and moderately correlated with safety behaviour with correlation coefficient of 0.43. However, "Safety standards and Goals" was found positive but weakly correlated with safety behaviour with correlation coefficient of 0.32. As well as, the factor of "Occupational safety and health management" was found positive but weakly correlated with correlation coefficient of 0.30.

4.0 DISCUSSION

Individual involvement in safety initiatives such as participation on safety training at the workplace may result in positive outcomes on safety behaviour and safety performance. A study has highlighted that the target of safety training is to prevent any workplace injuries (O'Toole, 2002). The participation in safety training may encourage the behaviour-based safety among the workers. Previous studies implied that the organization's safety performances will be improving as long as there is a full commitment by the management to conduct safety training programs (Mukherjee et al., 2000; Varonen and Mattila, 2000). This factor is necessary to the top management to provide proper safety trainings from a competent person to mould their safety attitudes (Mullen, 2004).

A clear safety standard and well-established communication channel within the organization may result in lower numbers of workplace accident. This finding is supported by Kinn et al. (2000), whom found that the effective safety standards and goals awareness in term of safety orientation and communication lead to a lower rate of injury. Moreover, this finding is consistent with other studies and suggested that employees who have received appropriate safety workplace through goal's setting and communication are expected to enhance their safety behaviour (Varonen and Mattila, 2000). It is believed that the workplace safety will works if there is an openness of communication and strong trust among the members (Carroll, 1998; Parker et al., 2001; Yeong and Shah, 2016).

Basically, the safety behavior among firemen is influenced by how they perceive their organization deals with safety issues. If the top management committed to place value through safety policy, procedures and good reward system, the firemen will put safety as their priority. In addition, employee perceptions regarding management's commitment through safety management system and risk control activities may conclude that the safety management as the main criteria in safety climate measurement (Flin et al., 2000). The fundamental for excellent safety performance is generally

recognized to a robust safety management system in the department (Smith et al., 1998). Previous study has suggested that the integration of safety management with safety behavior could oversee any human error. It signified the role of management practices as an important factor to compliance of safety behaviour (Tavares, 2009).

Firemen who attended the workplace safety training is aware with various types of hazards and gain skills in controlling the harms. It is essential as the firemen should be better prepared to prevent any injuries or fatality during job duties. It helps firemen to be aware of standard operating procedures implemented in fire department to eliminate existing hazards and dangerous occurrences (Osman et al., 2012).

Thus, it is important to have a positive correlation between safety climate and safety behavior among them. This finding further supports that having proper safety training, good safety management, strong teamwork and good communications will result with more knowledgeable, skillful and have better understanding of job risks among firemen (Taber et al., 2008).

4.0 CONCLUSION

In conclusion, it is found that there was a correlation of the safety climate factors examined in this research towards safety behaviour among firemen. The findings have derived the importance of the organization to assess their workplace safety climate and safety behaviour within this population. As the firemen are exposed to various types of stressors that may risk their life and expose them to physical dangers that possibly lead to traumatic injuries and mental stress, the findings of this study are important for the Fire Department to establish a good and effective organizational safety climate in the organization. The role of these perceptions is vital to highlight if any organizational system and physical changes are required. It is recommended that all organizations regularly monitor their workplace safety climate to improve the safety behaviour of the employees.

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