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ASSESSMENT OF EMPLOYEE SAFETY CLIMATE ON ORGANIZATION: MALAYSIA CITY RAIL TRANSPORT SYSTEM MANAGEMENT

PENILAIAN IKLIM KESELAMATAN PEKERJA TERHADAP ORGANISASI: SISTEM PENGURUSAN PENGANGKUTAN REL BANDAR MALAYSIA

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Abstract

Safety management practice indirectly minimize the costs of incidents and accidents by positively influence workers' safety capabilities and behaviour. In relation, this study was conducted to analyse the level of employee safety climate towards organization among the operational and maintenance staff of urban rail transport management organizations. The data were obtained through the survey method using questionnaire. The respondents were 441 employees that were randomly selected. The results show that the overall level of the organizational safety climate is moderate. This is a major challenge for the urban rail transport management system. Organizations need to focus more on safety values, safety training and safety systems to improve the safety climate level among their employees. This finding provides valuable guidance for researcher and responsible parties in organization especially the Malaysia railway organization. As a result, an organization could enhance its capabilities and enhance its image, and thus help Malaysia attract large numbers of foreign investors to the country.

Keywords: Safety climate, Railway management system, Organisational safety climate, Employee

Abstrak

Amalan pengurusan keselamatan secara tidak langsung meminimumkan kos insiden dan kemalangan dengan mempengaruhi keupayaan dan tingkah laku keselamatan positif pekerja. Sehubungan dengan itu, kajian dilaksanakan bertujuan untuk menganalisis tahap iklim keselamatan pekerja terhadap organisasi di kalangan kakitangan operasi dan penyelenggaraan organisasi pengurusan pengangkutan rel bandar. Data diperoleh melalui kaedah tinjauan menggunakan borang soal selidik. Responden yang terlibat adalah seramai 441 pekerja dan pemilihan dibuat secara rawak. Hasil kajian mendapati bahawa tahap penilaian iklim keselamatan organisasi secara keseluruhan berada di tahap sederhana. Perkara ini merupakan cabaran utama bagi sistem pengurusan pengangkutan rel bandar. Organisasi perlu lebih fokus terhadap nilai keselamatan, latihan keselamatan dan sistem keselamatan untuk meningkatkan tahap iklim keselamatan di kalangan pekerja. Dapatan kajian memberi panduan berharga bagi penyelidik dan pihak bertanggungjawab dalam organisasi terutama organisasi pengendali tren Malaysia. Impaknya, sesebuah organisasi

dapat meningkatkan keupayaan dan imej serta dengan membantu Malaysia menarik banyak pelabur asing ke negara ini.

Kata kunci: *Iklim keselamatan, Sistem pengurusan pengangkutan rel, Iklim keselamatan organisasi, Pekerja.*

INTRODUCTION

The concept of safety climate is based on Zohar's (1980) organizational climate concept. Schein (1985) describes organizational climate as the way in which something in an organization is developed that subsequently influences one's thinking, feelings and behaviour. For Schneider and Reichers (1985), the term climate refers to individual perceptions of practices, procedures and rewards based on the specific focus of strategies within an organization. As such, the security climate is more about what employees feel about the security aspects of the workplace than what the company has (Cooper 2000). The concept of safety climate is important to apply in any organization. This is because the concept enables management to predict the likelihood of incidents and accidents at work (DeJoy et al. 2004; McCaughey et al. 2013). Secondly, the concept of safety climate assists partly in the decision-making process of corporate management (Zohar 1980; 2008; Kines et al. 2011). Thirdly, the implementation of assessment helps improve the culture of safety among workers (Cooper 2000; Fernández-Muñiz et al. 2007).

Incidents and accidents occurring in the rail transport system can cause many negative effects; not just on the service employees, but also the management and the public. Incidents and accidents increase the risk of losing an employee, a problem of low productivity among employees, and may affect other employees' emotions (Fernández-Muñiz et al. 2007). Employee's attentiveness and focus increase when employees feel safe and comfortable at work (Khan & Pope-Ford 2015). Therefore, it is important for the management to know the true cause of each incident and accident. Thus, the introduction of the concept of safety climate is seen as a new alternative to improving the safety and health management systems in urban rail transport and reducing the number of incidents and accidents (Glendon & Evans 2007). In addition, the rail transport system in Malaysia has a large number of passengers of various ages.

ORGANISATIONAL SAFETY CLIMATE

Organizational safety climate refers to employees' perceptions of the policies and procedures set by the top management (Brondino et al. 2012). This section is labelled as the attitude of the management towards safety in Zohar (1980), the management's attention to employees' well-being in Brown et al. (2000), and management's commitment to safety (Hoffman & Stetzer 1996). The management should demonstrate an ongoing concern and positive actions regarding employees' safety and health issues (Hoffman et al. 1996). According to Hoffman and Stetzer (1996), the management should show commitment not only to the safety activities undertaken, but also to the behaviour and even daily conversations. The study by O'dea and Flin (2003), however, shows that the commitment shown by the management can also be evaluated in terms of leadership style, whereby it can build employees' trust and support. Zohar (2003) in his model emphasized that organizations should strive to improve employees' safety both physically and procedurally, while maintaining a balance between policy and reality as well as having positive leadership values.

Griffin and Neal's model (2000) divides organizational safety climate into management values (attention to employees' well-being, safety over achievement, production and attitude toward safety), safety communication (communication on safety issues), safety practices (efficiency and truthfulness of safety practice), safety training (adequate safety training) and safety equipment. Brondino et al. (2012) further divided organizational safety climate into four sections namely safety communication, safety training, safety systems and safety values. Referring to the models of Zohar (2003), Griffin and Neal (2000), Jiang et al. (2010) and Brondino et al. (2012) discussed, the organizational safety climate of this study covers four elements namely safety communication,

safety training, safety system and safety values.

Communication is important for improving employees' confidence and the quality of climate safety among employees. According to Brondino et al. (2012), communication refers to how well safety issues are communicated. The Griffin and Neal's (2000) model and Jiang et al. (2010) also mentioned communication as an important aspect in shaping a positive safety climate. Communication as described by Littlejohn and Foss (2008), is the process of exchanging information between two or more individuals. Employees who have positive communication with their employers tend to feel comfortable and secure while on duty (Hofmann and Morgeson 1999). Information transmitted through communication within an organization can be through presentations, sharing of information systems, meetings, e-mails, video presentations, notice boards, newspapers, posters and signage (Boswell & Olson-Buchanan 2007). There are two communication factors tested in this study, which were openness and consultation.

The second dimension of organizational safety climate is safety training. In Brondino et al. (2012), safety training refers to the quality and quantity of opportunities an employee has for safety training. Safety training is important to change employee attitudes and behaviour (Cooper & Phillips 2004; Cox et al. 1998). Griffin and Neal's (2000) model described also makes safety training a major dimension of safety climate. There are two factors of safety training tested in this study, which are the content of training and implementation.

The third dimension is safety system. Brondino et al. (2012) state that safety system refers to the system used by organizations in managing employees' safety and health issues as a whole. The models of safety systems and health that need to be applied in one organization are different from other organizations. It depends on the type of risk, the product processing system and the amount and type of incident and accident occurring in the workplace (Carrillo et al. 2013). A good safety and health system can reduce the number of accidents by improving understanding, motivation and commitment among employees (Fernández-Muñiz et al. 2007). There are two factors of safety system tested in this study, which are the factors of power and policy decline, and the efforts to solve hazards.

The fourth dimension is safety values. Griffin and Neal (2000) in their model stated that the dimension of safety values is a key dimension of safety climate. These dimensions are also known as the attitude of the management towards safety in Zohar's (1980) and Dedobbeleer and Beland's (1991) studies, management's attention to employees' welfare in Brown and Holmes' (1986) study, perception which indicates that safety is important in DeJoy's (1994) study, prioritization, commitment and compliance of the management in the study of Kines et al. (2011). Dimensions of management values in the model of Jiang et al. (2010) is known as management commitment. The factors for safety values in this study are productivity scheduling and leadership style.

METHODS

The population and sample for this study is focused on employees in KTMB and Prasarana in Greater KL/KV area. This research is focused on operations and maintenance. This is because this section is the most important part of any rail transport system operating institution. The operations section is focused on communication with the train passengers while the maintenance section is focused on the train and railway mechanical expertise. Generally, the operating divisions of the urban rail transport system comprise of the sub-divisions of control centres, train operations and station operations. Employees in the control centre are responsible for operating, monitoring and controlling the control switch, traffic light, and rail location through a special screen room. Employees in the train operations division assist in managing the train. While employees at the station operations division assist in matters pertaining to ticket purchases, the public welfare of the station and the cleanliness of the station. Employee assignments in the operations department require high concentration especially in the control centre and train drivers. Where, employees need to ensure that trains are in safety control. The maintenance section of the city rail transport system consists of the sub-division of railway network management, power supply, communication and

signal as well as rolling stock. The task of the train maintenance division is important not only to ensure the coaches are comfortable and safe to use but also to ensure that the railway network, power supply centre, signal and communication equipment are in good condition. Employers in this division are at a high risk of being involved in occupational accidents due to complicated maintenance tasks and require focus, in addition to the presence of various hazards such as noise and dust.

RESULTS

The level of organizational safety climate in this study were identified through four sections, namely safety communication, safety training, safety system and safety values as shown in Table 1 to Table 4. The results of the studies shown in the table are a summary of the two employee divisions namely operational and maintenance. Data are presented in the form of mean, standard deviation, average mean and mean scale interpretation. The differences in the evaluation levels between the operational and maintenance divisions were tested with a one-way t-test, as shown in Table 5.

Table 1. Employees' evaluation of the level of organizational safety climate-safety communication

Safety communication	mean	Standard deviation	Average mean	Mean scale
Openness				
Creating a space for discussion and exchange ideas	3.52	0.757		Moderate
Listen carefully to safety ideas suggested by employees	3.51	0.769		Moderate
Involves employees in making decisions related to safety	3.48	0.777	3.58	Moderate
Creating a space to complain about any concerns related to safety issues among employees	3.50	0.826		Moderate
Share safety information freely with employees	3.90	0.590		High
Willingness to share safety information with employees accurately	3.73	0.796		High
Consultation				
Provide safety consultations to employees	3.88	0.749		High
Pay attention to any ideas that employees have in improving safety	3.69	0.785		High
Active in promoting safety	3.71	0.753	3.79	High
Proficient in communicating information in various ways	3.81	0.728		High
Channelling the most up-to-date safety-related information especially technically	3.86	0.739		High
Regularly provide safety reminder to employees	3.87	0.776		High
Overall	**3.71**	**0.479**		**High**

Safety communication is divided into two elements, which are openness and consultation. According to Table 1, the level of openness of the top organization in addressing safety and health issues was moderate (mean = 3.58). As for the consultation element, the results show that it is high (mean = 3.79). Overall, the level of safety communication for organizational safety climate was high (mean = 3.71, standard deviation = 0.479). This indicates that both institutions are concerned with the issue of communication in matters of occupational safety and health. Employees would be more comfortable in completing tasks if the two-way communication between employer and employees is positive (Hofmann & Morgeson 1999). The findings of the study are in line with the model by Griffin and Neal (2000) and Jiang et al. (2010) which emphasized the importance of communication within an organization to improve the quality of safety and health among employees.

The second subconstruct of organizational safety climate is safety training (Table 5.5). Safety training is important to be emphasized in an organization to shape employees' attitudes and

behaviour (Cooper & Philips 2004; Cox et al. 1998). Additionally, training programs provide an opportunity for employees to share ideas and insights on employee safety and health issues at work (Jiang et al. 2010). The safety training dimensions of this study are divided into two elements. Both elements are content and implementation. The element of content had a high overall score (mean = 3.98). For the implementation element, the mean score level was moderate (mean = 2.86). This means that there is a difference between the content and the implementation element, whereby the employees stated that the content of the training was in a good level, but the training program was not well implemented. This further sets the score level for the subconstruct of safety training at a moderate level (mean = 3.31, standard deviation = 0.497).

Table 2. Employees' evaluation of the organizational safety climate- safety training

Safety training	mean	Standard deviation	Average mean	Mean scale
Content				
Sharpen skills	4.02	0.684		High
Improve knowledge	3.98	0.686	3.98	high
Helps improve the experience	3.97	0.660		High
Trained to be able to handle any emergency situation	3.96	0.695		High
Implementation				
Targeted to all employees involved in a project	2.91	1.018		Moderate
Adequate training is recommended when new safety procedures are introduced	2.95	1.085		Moderate
Adequate training is organized when any new equipment is introduced	2.68	0.882	2.86	Moderate
Provided periodically to each employee	2.72	0.917		Moderate
Provided continuously to each employee	3.02	0.858		Moderate
The number of training sessions is rational	2.88	0.891		Moderate
Overall	**3.31**	**0.497**		**Moderate**

The third sub-construct for organizational safety climate is safety system (Table 5.6). Well-placed safety systems can reduce accidents and improve employee safety (Antosen et al. 2008). The subconstructs of safety systems in this study is divided into two elements, namely safety policy and efforts in resolving hazards. Safety policy element had a high score (mean = 3.80). Meanwhile, the score level for the element of efforts in resolving hazards was moderate (mean = 3.36). This finding proves that there are differences between the two elements. The overall score level for the safety system subconstruct was moderate (mean = 3.51, standard deviation = 0.564). The finding shows that a majority of the employees agree with the organization's safety policies and moderately agree with the organization's efforts in resolving workplace hazards. The study by Gallagher et al. (2003) demonstrated that safety systems should include management commitment, workforce engagement and program integration.

Table 3. Employees' evaluation of the organizational safety climate- safety system

Safety system	mean	Standard deviation	Average mean	Mean scale
Safety policy				
Delegate the control of the organization safety to employee safety and health officer	3.76	0.707		High
Appointing safety and health committee members among various levels of employees	3.66	0.679	3.80	High
Safety policies are clear and easy to understand	3.89	0.684		High
Safety procedures are clear and easy to understand	3.88	0.699		High
Efforts in resolving hazards				
Concerned about any occupational hazard issues (dust, chemicals, noise, electricity, ergonomics and	3.31	0.895		Moderate

work stress)				
Concerned about any social hazard issues (racial discrimination, sexual harassment and bullying)	3.66	1.023		High
Provides all self-protection equipment	3.36	0.914		Moderate
Emphasize workspace that is away from high heat	3.27	0.871	3.36	Moderate
Perfectly ventilated workspace	3.31	0.901		Moderate
Perfectly lighted working room	3.31	0.913		Moderate
The top management is concerned about cleanliness in the workplace	3.44	0.957		Moderate
The top management is concerned about the neatness of the workspace	3.22	0.901		Moderate
Overall	**3.51**	**0.564**		**Moderate**

The fourth subset of organizational safety climate for this study is safety values. The level of the safety values subconstruct are tested with two elements, namely production scheduling and leadership style. For the production scheduling element, the score was moderate (mean = 3.07). Meanwhile, the score level for the leadership style element was also moderate (mean = 3.57). These findings formed a moderate mean score for all subgroups of safety values (mean = 3.30, standard deviation = 0.408). Organizational safety values refer to the sincerity of an organization's efforts to ensure employee well-being (Griffin & Neal 2000). Safety values are more in line with the commitment made by organizations in improving employees' safety (Jiang et al. 2010). The findings of the study are less in line with the study of Jiang et al. (2010), who found that organizational safety values as a sub-construct that needs attention in operation.

Table 4. Employees' evaluation of the organizational safety climate- safety values

Safety values	mean	Standard deviation	Average mean	Mean scale
Production scheduling				
Take into account safety issues in each productivity schedule	3.04	0.831		Moderate
Take into account safety issues in employee exchanges	3.23	0.865		Moderate
Take into account safety issues with regards to employee promotion	2.98	0.805	3.07	Moderate
Take into account safety issues while productivity schedule is delayed	3.17	0.860		Moderate
Do not allow employees to take safety risks during tight production schedules	2.98	0.795		Moderate
Ensure a sufficient labour force for any operation	3.00	0.823		Moderate
Leadership style				
Set the best example in following all the work procedures.	3.61	0.719		Moderate
Reward employees who comply with safety	3.52	0.736		Moderate
Ensure safety issues encountered during assessment and inspection are corrected immediately	3.69	0.705	3.57	high
Collect accurate information in accident investigation	3.51	0.726		Moderate
Listen carefully to everyone involved in an accident	3.52	0.717		Moderate
Overall	**3.30**	**0.408**		**Moderate**

Figure 1 and Table 5 show the comparison of the level of organizational safety climate construct assessment among employees in the operations and maintenance divisions according to four sub-constructs. Average means for all elements and parts are between 3.28 and 3.73. The study found that there was one subconstruct that had significant differences between employees in the operation (mean = 3.10, standard deviation 0.509) and maintenance (mean = 3.53, standard

deviation = 0.370), which is safety training element (t = -10.223, p = 0.000). The magnitude of the mean difference was significant (eta squared = 0.19).

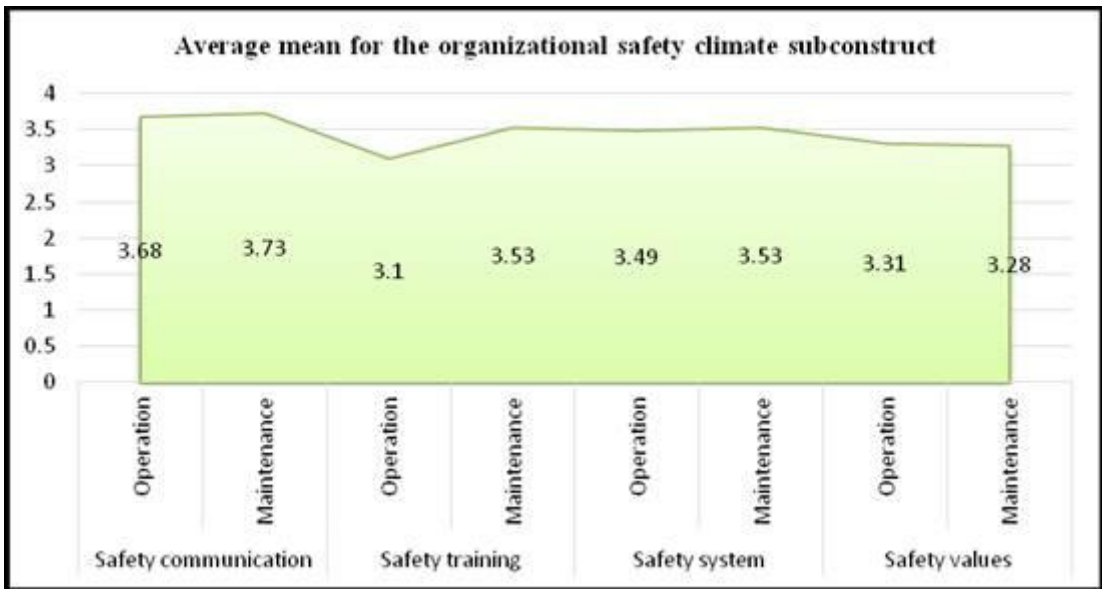

Figure 1. Average mean for the organizational safety climate subconstruct

Referring to Table 5 as a whole, findings show that the evaluation of the level of safety climate for employees at the operational and maintenance levels differed significantly (t = −4.478, p = 0.000). The magnitude of the difference between the two sections was small (eta squared = 0.04). Overall, organizational safety climate was at a moderate level (mean = 3.46, standard deviation = 0.299).

Table **Error! No text of specified style in document.**. Comparison of the assessment between operations and maintenance divisions towards the organizational safety climate

Scale	Division	Mean	Standard deviation	t-value	Sig.
Safety communication	Operation	3.68	0.551	-1.180	0.239
	Maintenance	3.73	0.389		
Safety training	Operation	3.10	0.509	-10.223	0.000*
	Maintenance	3.53	0.370		
Safety system	Operation	3.49	0.603	-8.24	0.411
	Maintenance	3.53	0.520		
Safety values	Operation	3.31	0.448	0.876	0.382
	Maintenance	3.28	0.362		
Average	Operation	3.39	0.307	-4.478	0.000*
	Maintenance	3.52	0.276		
	Overall	3.46	0.299		

No of employees in operation division = 226, No of respondents in maintenance division = 215
*Significant at ≤ 0.05 level

DISCUSSION

The study found that only the safety communication subconstruct was high in score, while the other three subconstructs were medium in score. The average means for organizational safety climate is between 3.1 and 3.73. The finding of the study also found that the safety training subconstruct differed significantly with a magnitude of the impact of 0.19, between the operations and maintenance divisions. The overall study also found that organizational safety climate differed

significantly between employees in the operations and maintenance divisions with a small impact magnitude of 0.04. The study show that the overall organizational climate safety is at a moderate level.

An organization that cares about the safety and welfare of the employee enables the employee to obey and respect each and every instruction from the organization. Organizational safety climate is a latent variable that has four main subcategories and has 45 items. The main subconstructs are safety communication, safety training, safety system and safety values. According to the research findings, all subconstructs of organizational safety climate are important in the organizational safety climate construct and overall employees' safety climate. Among the four subconstructs, the most important subconstruct that affects employee safety performance is the subconstruct of communication.

Communication is one of the important subconstructs. The findings of this study support the study conducted by Griffin and Neal (2000) and Jiang et al. 2010), which demonstrates that safety communication is positively related to employee safety commitment and employee safety performance. Positive communication is important to minimize potential employee conflict by encouraging the sharing of ideas and goals (Palali & van Ours 2017). The findings of the study show that the safety system is the second most important in the organizational safety climate. The safety system of this study is divided into two sections, namely the reduction of power and policies and efforts to solve hazard problems in the workplace. In line with the study of Fernández-Muñiz et al. (2007), a well-designed safety system can enhance understanding, motivation and commitment among employees, which in turn helps reduce the number of accidents. The findings of the study also support the importance of the safety system to be taken care of, especially in terms of efforts to delegate power to officers and safety and health committee and clear policy objectives evidenced in the study of Brondino et al. (2012) and Zohar (1980). The findings are also in line with the requirements set out in the Occupational Safety and Health Act 1994 (Act 514) and the Factory and Machinery Act 1967 (Act 139).

Safety training is the third most important component of the model. The findings of the study support the theoretical model of Griffin and Neal (2000) and Brondino et al. (2012) that prove that safety training has an impact on employee safety performance. More precisely, safety training is able to change employees' attitudes and behaviours (Cooper & Phillips 2004; Cox et al. 1998) provided that they need to be comprehensive, thorough and repeatable (Brondino et al. 2012; Jiang et al. 2010).

The fourth most important construct is safety values. The study divides this subconstruct into two sections, which are production scheduling and leadership styles. The findings of the study are in line with Brondino et al. (2012), which demonstrates the importance of organizational concern over safety issues in production scheduling. In addition, the study of Wang et al. (2016) that emphasize constraints on employees' effectiveness and competencies can be a source of work-related stress, which in turn lowers employees' safety performance. Organizational leadership style in terms of transformation and transaction both enhances positive behaviour among employee (Zohar 2010; Martínez-Córcoles et al. 2011). Kines et al. (2011) in their study demonstrated the importance of displaying the best safety values to enhance the safety awareness of individual employees.

CONCLUSION

Rail transport system is the most needed public transport medium to connect urban and rural locations. As such, the safety and health issues of the employees need to be addressed by every railway system operating company. An employee's safety climate assessment of an organization construct provides an overview of the employee's view of the organization. However, the study concludes that the level of organizational safety climate assessment among employees is at a moderate level especially for employees in the operation division. This needs to be taken seriously by the organization. The findings of this study can serve as a guide for stakeholders especially the

railway management institutions in reducing workplace accidents among employees and thus increasing employee productivity.

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