UNIVERSITI
TEKNOLOGI
MARA

QS COLLOQUIUM 2020

SERIES XII
PROCEEDING

OCT 2020- FEB 2021

BACHELOR OF QUANTITY SURVEYING (HONS.)
Department of Built Environment Studies & Technology,
Universiti Teknologi MARA Perak

QS COLLOQUIUM 2020 SERIES XII

UNIVERSITI TEKNOLOGI MARA (UiTM) PERAK BRANCH
OCTOBER 2020 - FEBRUARY 2021

Perpustakaan Negara Malaysia

Editors
Sr Dr. Kartina Alauddin
Sr Puteri Sidrotul Nabihah Saarani
Noor Anisah Abdullah @ Dolah
Nur Fatiha Mohamed Yusof

SOLUTIONS TO INCREASE THE LEVEL OF SAFETY CULTURE IN MALAYSIAN CONSTRUCTION SITES

Nurina Farhana Mohammad Zaki[1] and Izatul Farrita Mohd Kamar[2]

[1][2] Centre of Studies for Quantity Surveying, Department of Built Environment Studies & Technology, Universiti Teknologi MARA, Perak Branch, Seri Iskandar, 32610, Seri Iskandar, Perak, Malaysia.

nurina9797@gmail.com[1], izatul739@uitm.edu.my[2]

Abstract:

An organization's safety culture is the product of personal and community beliefs, behaviors, expectations, and behavioral trends. The safety culture is implemented to identify areas that need to improve and raise awareness within the company. Moreover, due to high accident rates every year, fatality and incidence have forced the management to implement a safety culture at the construction site. The statistics by the Department of Safety and Health (DOSH) (2019), investigated by the State from January until June 2019 shows a higher number of occupational accidents from 2660 numbers occurred in 2018 to 3749 numbers in 2019. Thus, this study attempts to investigate the adoption level of safety culture in Malaysian construction sites. The objectives were to (1) identify the factors that influence the safety culture in Malaysian construction sites, (2) to determine the level of awareness for safety culture in Malaysian construction sites, and (3) to suggest solutions to increase the safety culture at Malaysian construction sites. Using the quantitative approach, a self-administered questionnaire was distributed to 155 targeted G7 Contractors in Klang Valley who are involved in Building Construction only. All the data collected were analysed using descriptive statistics. The study showed that the effectiveness of communication between employers and employees has increased the chances of workers to take proper action during critical situations. In terms of the level of awareness, most respondents perceived that the respondents are aware that organization and management give full commitment when it comes to safety at construction sites. In terms of the solutions, the majority of the respondents chose safety leadership is necessary to create workplace safety values. From the research, it can be concluded that the adoption of safety culture in terms of management and organization still has a long journey to travel to be accepted in the Malaysian construction industry.

Keywords: Safety Culture, Construction Industry, Accidents

1.0 INTRODUCTION/ RESEARCH BACKGROUND

According to Jebb (2015), the safety culture is characterized as common values and morals that engage with the coordination and management systems of an organization to generate behavioral safety standards. In most countries, incident rates were rising in proportion to the number of accidents and diseases in the construction sector than the global rate for all industries, such as manufacturing, mining, etc. (Tehrani *et al.,* 2019). It is caused by several factors, such as fatal accidents by risky circumstances or physics, and those caused by unsafe activities or acts. Therefore, a lot of studies have centered on people's actions as one of the key causes of injuries. Then, Bahn and Barratt-Pugh (2013) stated that the culture of safety is dictated not only through engagement, but by management skills, leadership, and communication styles that are reinforced by the individual's presence, skill, training, and actions.

1.1 Problem Statement

While numerous attempts have been made to mitigate accidents, such as the introduction of a safety culture at the construction site, there is still a continuous rise in the number of fatal occupational accidents at the Malaysia construction site. According to Hamid *et al.,* (2019), through his conducted studies, the statistics for occupational injuries indicate that the rate of accidents in the construction industry is still highest in the country. Other than that, the statistics by the Department of Safety and Health (DOSH) (2019), investigated by the State from January until June 2019 also shows a higher number of occupational accidents which is 3749 numbers than the statistics in 2018 which is 2660 numbers only.

Moreover, the States that shows the highest number of Occupational accidents is Selangor with 788 numbers than other States as shown in the statistics by the Department of Safety and Health (DOSH) (2019), investigated by the State from January until June 2019. All of these numbers have given us a realistic view of

the construction industry being one of the important areas in this country. Besides, Goh *et al.,* (2016) also stated that a large number of fatalities occurred at the worksite, especially at the construction site of the high-rise building. There were many unforeseen threats and injuries at the construction site every year, and thousands of employees were wounded and killed. In regards to safety practices at the construction site, this indicates that a major change is required. Therefore, this research is focused on investigating the level of safety culture implemented among the Malaysian construction site which could greater the awareness among contractors to come out with a better long-term solution.

1.2 Aim

This study attempts to investigate the adoption level of safety culture in Malaysian construction sites.

1.3 Research objectives
    i. To identify factors that influence the safety culture in Malaysian construction sites.
    ii. To determine the level of awareness for safety culture in Malaysian construction sites.
    iii. To suggest solutions in order to increase the level of safety culture in Malaysian construction sites.

1.4   Research questions
    i. What are the factors that influence the safety culture in Malaysian construction sites?
    ii. What is the level of awareness for safety culture in Malaysian construction sites?
    iii. How to increase the level of safety culture in Malaysian construction sites?

1.5   Scope of research
The scope of research is limited to contractors in Klang Valley, Selangor. It was chosen because Selangor recorded the highest accident rates according to DOSH (2019). 270 numbers (population) of contractors were involved in this research. The contractors were chosen due to their vast experience in the construction industry. It comes from Building Contractors only because most of the accidents also occurred in building construction. Then, the respondents are G7 contractors. The reason why G7 Building Contractors were selected instead of G1 to G6 Contractor as the sampling frame is that it acts as the foundation on construction sites, which operates projects greater than RM 10 million above and has no tender limit value (Lee and Jaafar, 2012). A close study about this project is held to investigate the adoption level of safety culture in construction sites located in Klang Valley.

2.0   LITERATURE REVIEW

2.1   Factors that Influence the Safety Culture in Malaysian Construction Sites
According to Hamid *et al.,* (2019), unsafe behavior is a breach of scheduled security protocols that can result in a reduction. Then, unsafe conditions are characterized as physically hazardous environments where accidents can be the cause. Therefore, some studies have stated that 88% of all incidents are caused by people's unsafe acts, then 20% were caused by improper machines or circumstances, and another 2% were affected by God's acts, which we considered a force majeure. In lowering accidents and fatalities in Malaysia, many aspects have contributed to the development of the safety culture such as communication, safety leadership, and etc.

2.2   The Level of Awareness for Safety Culture in Malaysian Construction Sites
According to Zou (2011), there are some analyses of existing safety management procedures in most companies and industries, which add to the key problem of lack of a sound safety culture. So, safety management must shape a sound organizational behavior to enhance safety efficiency, minimize construction injuries and accidents, and recognize the basis of safe conduct. However, there is some research on 50 projects focused on exploring the safety culture of employees, including beliefs, attitudes, and actions about safety. It

demonstrates that the safety habits of employees have been affected by several factors, such as project design, customer requirements, attitudes of managers, support for management, etc. So, the level of awareness of safety culture can be measured from the top management, management commitment, and etc.

2.3 The Solutions to Increase the Level of Safety Culture in Malaysian Construction Sites

According to Boniface (2016), the safety culture is essential for an organization, so the process consists of three steps using standard safety management ideas to develop a safety culture with the organizational culture. Firstly, the evaluation of the state of the safety culture of an organization. Secondly, identification and reinforcement of weak areas, monitoring, and review. Third, promoting continuous learning and improving the culture of security. This is supported by Bahn and Barratt-Pugh (2013), who described that someone's behaviors determine the safety acts that are performed by different organizational activities due to safety legislation, norms, guidelines, and protocols.

3.0 METHODOLOGY

This study adopted a quantitative method that is the systematic empirical investigation using statistical, mathematical, or computer techniques of observable phenomena (Creswell, 1994). The population of the study is all G7 Contractors (n=270) of the construction industry in Klang Valley, Selangor. They are all chosen from the registered Contractors such as Construction Industry Development Board (CIDB). Based on Krejcie and Morgan (1970), the sample size was determined using a simple random sampling technique (n=155). Random sampling is a random sample that is selected from the population or group of people that has the same chance of being selected. The selection of the sample was contractors G7 that is involved in building construction. A random simple sample is then taken from each group. This type of sampling technique can provide more accurate estimates and allow the researcher to determine the desired level of sampling precision for each group.

A self-administered questionnaire comprising of 9 variables was distributed to the targeted respondents. The rating scale is used to measure the variables. The type of questions that have been used in the questionnaire survey is close-ended questions that include nominal choice and Likert Scale. All the data from the study were analyzed using descriptive analysis including mean and standard deviation. The data were analyzed using the Statistical Package for Social Science (SPSS) software and presented in tabulated form for ease of understanding.

4.0 ANALYSIS AND FINDINGS

One hundred and fifty-five (155) questionnaires were administered, but only 130 (80%) were returned and reliable for further analysis, and the other 25 (20%) of the questionnaire were not returned by the respondents. The reasons for the questionnaires that were not returned by the respondents are due to Pandemic Covid-19 as the contractors are busy and do not have much time to answer the survey. So, the questionnaires were also received late because I needed to wait for their answers to do the data analysis.

4.1 Factors that Influence the Safety Culture in Malaysian Construction Sites

Based on Table 1, the factors that influence the safety culture in Malaysian construction sites perceived that among the three (3) attributes of factors, the effectiveness of communication between employers and employees has increased the chances of workers to take proper action during critical situations was ranked first with the mean value of 4.65. The employer is responsible to provide instruction, educate and train workers on the proper use of PPE comes second with a mean of 4.60, followed by good attitudes among the workers towards safety can reduce high accidents rate and has a mean value of 4.59 (Rank 3). From the data, it can be said that most of the respondents chose the effectiveness of communication between employers and employees. This is because, through communication, the awareness among employees can be gained by the management with the communication or talk about their concerns or care about the worker's safety (Sarkam *et al.,* 2018).

Table 1: Mean, standard deviation and rank of the respondents' factors that influence the safety culture

RANK	FACTORS	MEAN	STANDARD DEVIATION
1	The effectiveness of communication between employers and employees has increased the chances of workers to take proper action during critical situations.	4.65	0.524
2	Employers are responsible to provide instruction, educate and train workers on proper use of PPE.	4.6	0.63
3	Good attitudes among the workers towards safety can reduce high accidents rate.	4.59	0.689

4.2 The Level of Awareness for Safety Culture in Malaysian Construction Sites

Based on Table 2, the level of awareness for safety culture in Malaysian construction sites perceived that among the three (3) attributes of awareness, the highest value of mean is 4.20 under the statement that the organization and management give full commitment when it comes to safety at construction sites. The safety culture implemented at construction sites among the employers and employees comes second with a mean of 4.18, followed by top management is aware of their roles on different aspects regarding the construction site safety has a mean value of 4.09. From the finding it can be said that the respondents are aware with organization and management gives full commitment when it comes to safety at construction in line with the study by Sarkam *et al.,* (2018), where all management must support the safety efforts actively in the company and should not put full blaming for occupational accidents on employees.

Table 2: Mean, standard deviation and rank of the respondents' level of awareness for safety culture

RANK	AWARENESS	MEAN	STANDARD DEVIATION
1	The organization and management gives full commitment when it comes to safety at construction sites.	4.2	0.791
2	The safety culture is implemented at construction sites among the employers and employees.	4.18	0.805
3	Top management are aware of their roles on different aspects regarding the construction site safety.	4.09	0.762

4.3   The Solutions to Increase the Level of Safety Culture in Malaysian Construction Sites

Based on Table 3, the solutions to increase the level of safety culture in Malaysian construction sites perceived that among the three (3) attributes of solutions, the study found that the highest value of mean is 4.63 under the statement that safety leadership is necessary to create workplace safety values. The Malaysian government must hold a safety awareness-raising campaign to workers comes second with a mean of 4.61, followed by Toolbox talks are needed to encourage and facilitate site safety when at the construction site has a mean value of 4.56. The finding in tandem with the study by Yeong (2018) who found that safety leadership is necessary to create workplace safety values that can reduce accidents at the workplace. Therefore, effective safety leadership helps to encourage employees to join safety decision-making and become active in safety activities within an organization.

Table 3: The solutions to increase the level of safety culture in Malaysian construction sites

RANK	SOLUTIONS	MEAN	STANDARD DEVIATION
1	Safety leadership is necessary to create workplace safety values.	4.63	0.559
2	Malaysian government must hold a safety awareness -rising campaign for workers.	4.61	0.577
3	Toolbox talks are needed to encourage and facilitate site safety when at construction sites.	4.56	0.597

5.0 CONCLUSION

The understanding of the respondent's on the adoption level of safety culture towards the factors that influence the safety culture in Malaysian construction sites, and the level of awareness in addressing the safety culture in Klang Valley's construction sites may be defined. The findings of the study are significant to the effectiveness of communication between employers and employees has increased the chances of workers to take proper action during critical situations, the organization and management give full commitment when it comes to safety at construction sites as well as safety leadership is necessary to create workplace safety values in general for the improvement of current and future safety culture in our construction industry.

6.0   REFERENCES

Accidents Statistics by State from January until June. (2019). [Online]. https://www.dosh.gov.my/index.php/statistic-v/occupational-accident-statistics-v/occupational-accident-statistic-2019. Accessed: 27 October 2019.

Bahn, S. T. and Barratt-Pugh, L. G. (2013). Improving Safety Culture : The Impact of the Construction Induction Training On the Construction Industry in Western Australia, *27th AIRAANZ Conference*, pp. 11–25.

Boniface, O. D. (2016). A Safety Culture Development Model for the SMEs in the Building and Construction Industry, *Department of Business Management*, 7(3), pp. 106–115.

Creswell, J.W. (1994). Research Design: Qualitative and Quantitative Approaches. Sage Publications. California.

Goh, K. C., Goh, H. H., Omar, M. F., Toh, T. C., and Mohd Zin, A. A. (2016). Accidents preventive practice for high-rise construction, *MATEC Web of Conferences*, 47(1).

Hamid, A. R. A., Noor Azmi, M. R.A., Aminudin, E., Jaya, R. P., Zakaria, R., Zawawi, A. M.M., Yahya, K., Haron, Z., Yunus, R., Saar, C. C. (2019). Causes of Fatal Construction Accidents in Malaysia, *IOP Conference Series: Earth and Environmental Science*, 220(1).

Jebb, S. (2015). *Reducing Workplace Safety Incidents: Bridging the Gap between Safety Culture Theory and Practice*, PhD thesis, Queensland University of Technology.

Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activities. Educational and Psychological Measurement, 30(3), 607–610.

Lee, C. K. and Jaafar, Y. (2012). Prioritization of Factors Influencing Safety Performance on Construction Sites: A Study Based on Grade Seven (G7) Main Contractors' Perspectives. *Universiti Malaysia Pahang*. 57(2), pp. 6-12.

Sarkam, S. F., Shaharuddin, L. S., Zaki, B. M., Masdek, N.R., Yaacob, N. J. A., and Mustapha, M. (2018). Factors Influencing Safety Performance at the Construction Site, *International Journal of Academic Research in Business and Social Sciences,* 8(9), pp. 1057–1068.

Tehrani, V. Z., Rezaifar, O., Gholhaki, M., and Khosravi, Y. (2019). Investigating Factors of Safety Culture Assessment in Construction Industry Projects, *Civil Engineering Journal*, 5(4), pp. 971–983.

Yeong, S. S. (2018). *Safety Communication, safety Culture, and Safety Leadership on Safety Participation among Manufacturing Employees*, PhD thesis, Universiti Teknologi Malaysia.

Zou, P. X. W. (2011). Fostering a Strong Construction Safety Culture, *Leadership and Management in Engineering*, 11(1), pp. 11–22.