



Study On Promote Occupational Safety And Health Practices In Construction Projects

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Abstract: The unsatisfactory OSH record of the construction industry has always been highlighted. It is because the OSHP system is a neglected area and a function that has not been pursued systematically in the construction industry. Safety is an important issue, but many employers do not feel it is vital to the success of companies. For a long time, the construction industry has been labeled as with poor OSHP and performance, which needs stern attention and in-depth research to put forward solutions to this issue. The objectives of this research are to investigate problems of OSHP in construction projects, to study the benefits of OSHP in construction projects and to recommend measures to promote OSHP in construction projects. The research was take place in Johor Bahru the capital of Johor State. The research based on quantitative research by using questionnaire to carry out the research. The questionnaire was designed based on the objectives each objective has ten statements with one option, in order to get accuracy results. A total of 67 questionnaires were gathered from a total of 217 contractors of G7 distributed at Johor Bahru, where the respondents were project manager, site supervisor, safety officer and site engineer. Data collected was analysed using the Statistical Package for the Social Science 22.0 software. The method of analysis that had being used in this research is percentage, frequency and means score value. The study proves that there are OSHP problems faced by contractors; workers' attitude, insufficient budget allocated, lack of enforcement of safety policies, less management support, etc. Moreover, there is high benefits of OSHP when its implement well; increase responsibility, higher on employees morale, build a positive work place environment, reduce rate of absenteeism, eliminate injuries and death ,etc. Furthermore, majority of the respondents agreed to the recommendation provided by the study to promote OSHP; management Penalties, provision of necessary safety gears, allocate a sum of money resources, management appreciation and motivation, etc. In conclusion, this paper will be beneficial to practitioners and academicians who study the practices of safety and health and work in construction site in order to improve the implementation of safety and health practices in the construction industry.

Keywords: Promote, Construction project, OSHP, Safety and Health.

1. Introduction

Occupational Safety and Health Practices (OSHP) are the strategies, policies, activities and procedures that can be implementation by the organization targeting safety of their employees (Vinodkumar, 2010). Safety and Health Practices may reduce the chances of an accident happen in the construction workplace (Hamid, 2015). Prevention of

accidents can be prevented by the existence of awareness among employees, industry and wider society. Company that provides a well OSHP can affect employee to enhance their safety performance in the workplace. In addition, a good OSHP apply in the organization will reduce the accident rate and also led a lot of good impacts for the organization (Huang et al., 2003).

However, the construction industry tends to have a low awareness of the long-term benefits of safety practices, while the tendering process often gives little attention to safety, resulting in cost and corner cutting (Biggs et al, 2005). Sometimes, safety is found to be the first item to face cost cutting. This is because some of the employers often believe that the implementation of OSHP system will cost more. In Malaysia, people are still not much aware about the safety and health for the workers on the construction industry. They are lack of knowledge on safety consciousness. Several studies have shown that, employer is little or no attention to employee safety and health (Othman, 2012).

Nowadays, we are always hearing that the accident cases are happened in construction industries (Gillespie, 2016). According the statistic of Occupational Accidents by Sector until December 2015 from DOSH, the number of construction industrial accidents is considerably high than other sectors. The result showed that the number of accidents in construction sector was increased 374 victims from 2014 to 2015 in Malaysia (DOSH, 2015). Accidents at workplaces will impact negatively on countries and organizations such as the loss of life, property or damages (Chan et al., 2010). The accident will always happen because of poor or do not care to act on Occupational Safety and Health Practices (OSHP) in several companies (Shamsudin, 2016). Hence, the application of an ‘effective’ OSHP can lead to safer systems of construction and reduce incidence of injuries and work related diseases (De Vaus ,2013).Therefore, the objectives of this study (i)to investigate the problems of occupational safety and health practices in construction project (ii)to study the benefits of occupational safety and health practices in construction projects (iii) to recommend the measures to promote occupational safety and health practices in construction project.

2. Literature Review

Based on Vinodkumar (2010), Occupational Safety and Health Practices (OSHP) are the strategies, policies, activities and procedures that can be implementation by the organization targeting safety of their employees. OSHP are encompassed many safety- related components. They are management commitment, safety training, workers involvement, safety rules and procedures and safety promotion policies. For this study, the researcher had been reviewed several literatures regarding the problems of occupational safety and health practices, benefits of occupational safety and health practices, measures to promote occupational safety and health practices in construction projects.

2.1 Problems of Occupational Safety and Health Practices in Construction Projects

Recently, (Lee & Jaafar 2012) the issue of safety and health performance and practices has been focused at construction projects among all countries. As a matter of fact, the construction industry contributes in a significant proportion in the economic and social aspects. However, it is also considered to be the most hazardous industry in terms of personal safety and health. Many problems are involved in lower performance occurring of OSHP at construction sites. Table 1 is summaries the problems of occupational safety and health practices in construction projects. There are 10 major problems of OSHP which are; (i) inadequate training, (ii) insufficient budget allocated, (iii) awareness and understanding towards occupational safety and health practices, (iv) less management support, (v) workers’ attitude, (vi) lack of enforcement of safety policies, (vii) absence of protective gears, (viii) powerless HR-department, (ix) compensate affected employees, and (x) no health Programme. Therefore, problems of OSHP need to be avoided and eliminated for improving the performance of OSHP in construction projects.

Table 1 - Problems Of OSHP According An Authors

OSHP Problems	AUTHOR										
	1	2	3	4	5	6	7	8	9	10	11
1. Inadequate training		√		√	√	√	√	√	√		√
2. Insufficient budget allocated		√		√	√		√				√
3. Awareness and understanding towards occupational safety		√			√		√		√		√

and health										
4. Less management support	√	√				√				√
5. Workers' attitude	√	√				√	√		√	√
6. Lack of enforcement of safety policies				√						
7. Absence of protective gears									√	
8. Powerless HR-department						√				
9. Compensate affected employees									√	
10.No health Programme	√									

Note:
 1:Sawacha et al (1999)
 2: Toole (2002)
 3:Shin M.H (2006)
 4:Fang et al (2004)
 5:Tam et al (2004)
 6:Abdul Rashid et al (2007)
 7:Oman et al (32005)
 8:Mohd Khairolden et al (2008)
 9:Lee and Jaafar 2012
 10:Roelofs et al (2011)
 11:Ismail and Harun (2012)

2.2 Benefits of Occupational Safety and Health Practices in Construction Projects

According to Radhlinah (2000), the industries can have advantages and benefits from improved attitude change that cultivates a vision for the future which elevates safety and health concerns and effectively integrates into the overall management mix. The implementation of OSHP has been shown to significantly reduce the incidence of accidents, illness, injuries and death (Hussian, 2013). In addition, OSHP helps the business to improve the image, productivity and wider organization’s reputation of the firm (Warner, 2013). It also helps to encourage creativity and innovation , higher on the employees morale , build a positive workplace environment, and increase responsibility among workers and all stakeholders that their business is socially responsible (Federation, 2016). Moreover, OSHP also help to increase the profit of organizations. OSHP created the monetary benefit for the business (Zainudin, 2010).Organizations with safety programs in the workplace can benefit from reduced rate of absenteeism to workers and equipment damage as well as decrease compensation costs (Daniel,2011).

2.3 Measures to Promote OSHP in Construction Projects

Several measures and strategies have been suggested to overcome the problems of safety and health practices in construction projects, such as (i) the necessity of having first aid, safety bulletin boards, safety committee, safety officer at the workplace, (ii) management Penalties, (iii) provision of necessary safety gears, (iv) allocate a sum of money resources, (v) management appreciation and motivation, (vi) training and seminars including daily morning safety assemble, (vii) employees participation and involved in decision making. Table 2 is a summary of the measures and strategies to promote occupational safety and health practices in construction projects.

Table 2 - Measures to promote OSHP

Measures to promote OSHP	AUTHOR									
	1	2	3	4	5	6	7	8	9	10
1. Necessity of having first aid, safety bulletin boards, safety committee, safety officer at the workplace		√	√					√		

2. Management Penalties	√		√	√		√	
3. Provision of necessary safety gears							√
4. Allocate a sum of money resources	√					√	
5. Management appreciation and motivation	√	√	√			√	√
6. Training and seminars including daily morning safety assemble			√		√		
7. Employees participation and involved in decision making							√

Note:
 1: Zhou et. al (2011)
 2: Massayuki (2006)
 3: Choudy et al (2008)
 4: Lamy et al (2012)
 5: Patrik (2008)
 6: Bakri et al (2006)
 7: Chaikittiporn (2006)
 8: Mohd Khairoldan et al (2008)
 9: Misnan and Mohamed (2007)
 10: Abudeyyeh et al (2006)

3. Methodology

This research was aimed to enhance and promote occupational safety and health practices in construction projects. Research methodology using a two sources, its secondary and primary data. Secondary data referring to journal article, chapter in book, books and others from library, website online and others. Primary data is collected data from the fieldwork. Data analysis using Statistical Package for the Social Science (SPSS) software for answers the objective and problem statement. The analysis included mean, frequency and percentage. All the questioner to answers and identify based on problems of OSHP, benefits of OSHP and measures to promote OSHP in construction projects were done. 217 questionnaires were distributed to contractor G7 in Johor Bahru. The returned survey was 67 that makes the rate if respondent 30.9%.

4. Results and Discussions

The data collected was analysed using SPSS 22.0 version. The analysis included mean, frequency and percentage for answers the objective and present by table. All of the data analysed and discussion was present based on responden background, problem OSH, benefit OSH and others.

4.1 Respondents Background

In this part, the respondents background will be determined depends on the types of respondents targeted. Various aspects of the study background was taken into consideration include gender, position, academic qualification, types of projects, and years of experience. All the 67 respondents in this survey were included project manager, site supervisor, safety officer and site engineer will be analysed in this section.

Table 3 - The Respondents Background

Respondents Profile	Frequency	Percentage %
Gender:	4	70.1
Male	7	
Female	2	29.9
Position:	3	55.2
Project Manager	7	
Site Supervisor	1	16.4

Safety Officer	3	4.5
Site Engineer	1	23.
Academic Qualification:		
PHD	1	1.5
Master Degree	1	25.
Bachelor Degree	2	41.
Diploma	2	31.
Types of Projects:		
Private	3	49.
Government	5	7.5
Both private and government	2	43.
Working Experience:		
0-5 years	1	3
5-10 years	2	29.
10-15 years	8	11.
15 years and above	1	26.

Table 3 is the respondent’s background. From 67 of the respondent, the highest respondent that answered the survey was project manager, which are 55.2% of the total percentage while the second highest are site engineer with 23.9%, then site supervisor with 16.4% and safety officer with 4.5 % of total respondents. Majority of the respondents have been in the construction industry within the range of 0-5 years which 31.3%. Only 11.9% of the respondents have been in the construction industry within range 10-15 years and the rest are in the range of 5-10 years with 29.9% of total percentage. While, the respondents have been in the construction industry with more than 15 years are with 26.9% from total percentage. Besides that, most of the respondents were male with 70.1% from total percentage. While, the female was only with 29.9% from total percentage. However, only 7.5% of projects type was government project type. While, both government and private project type was within 43.3% from total percentage. However, the major project type was for private projects types with 49.3% of total percentage. Finally, the respondent’s academic qualification majority was bachelor degree with 41.8%. While, master degree and diploma were only with 25.4% and 31.3% respectively from total percentage of academic qualification. However, only 1 respondent were had academic qualification of PHD.

4.2 Problems of Occupational Safety and Health Practices in Construction Projects

The first objective of this study is to investigate OSHP problems in construction projects. 10 problems were identified from the literature review and the highest rank of OSHP problems were in terms of worker’s attitude. The result of the data analysis was tabulated in Table 4 with the ranking of OSHP problems in construction projects from highest to the lowest mean value. Among all the questions have been asked in this section of the study, it is obvious that the average mean of all answers is 3.514, which is located under the “Agree” category of mean. The highest ranking has the mean of 3.85, while the lowest ranking is 3.19 with 0.66 differences in mean score value. This ranking provides an indication of OSHP problems in construction projects at Johor Bahru, which faced during constructing this projects.

Table 4 - Problems of Occupational Safety and Health Practices

Problems of Occupational safety and health practices in	Mean	Category	Ranking
Workers’ attitude	3.85	Agree	1
Insufficient budget allocated	3.69	Agree	2
Lack of enforcement of safety policies	3.64	Agree	3
less management support	3.60	Agree	4
Awareness and understanding towards occupational safety	3.58	Agree	5

health practices			
Inadequate training	3.57	Agree	6
Absence of protective gears	3.54	Agree	7
Powerless HR-department	3.24	Neither	8
		Agree	
		nor	
Compensate affected employees	3.24	Neither	9
		Agree	
		nor	
No health Programme	3.19	Neither	1
		Agree	0
		nor	

Among all the questions have been asked in this section of the study, it is obvious that the average mean of all answers is 3.514, which is located under the “Agree” category of mean. In other words, most of the respondents agree about the sentences given, which leads us to the following findings.

The finding about OSHP problem on workers’ attitude was positively from respondents where most of them agreed that construction project at Johor Bahru faced a problem on individual carelessness. This finding supports a previous research by (Mohd Khairolden et al., 2008). Regarding to problem on insufficient budget allocated, the finding positively were most respondents agreed that construction projects at Johor Bahru faced a problem on insufficient budget allocated to implement OSHP. The finding to this OSHP problem supporting research by (Fang et al., 2004).

Furthermore, the finding regarding the problem on lack of enforcement of safety policies was also positively were most of respondents agreed to the statement. Most of the contractors agreed that there is a problem on lack of enforcement of safety policies which support a previous research by (Shim, M. H. 2006). While, the finding of OSHP problem on less management support was positively as well where most of respondents agreed. The construction project at Johor Bahru faced a problem on less management support, which supports previous research by (Omarn, et al., 2008), (Ismail & Harun, 2012).

Regarding to problem on awareness and understanding towards occupational safety and health practices was also positively where most of respondents agreed that construction project at Johor Bahru faced this kind of problem during applied OSHP which supports previous research by(Lee & Jaafar 2012) and (Tam et al.,2004). Moreover, the finding of OSHP problem on inadequate training was also positively as well as previous OSHP problems. Most respondents agreed that construction projects at Johor Bahru faced a problem on inadequate training lead to weaken the implementation of OSHP where this finding supported by previous research by (Lee & Jaafar 2012 ; Abdul-Rashid et al., 2007).

Moreover, OSHP problem on Absence of protective gear was found that respondents answer positively. The finding of problem on Absence of protective gears support previous research by (Roelofs et al.,2011). Regarding problems on **Powerless HR-department, Compensate affected employees and No health Programme**, All these OSHP problems of means score value lies in the range of $2.5 \leq \text{Average Index} < 3.50$, which is under “Neither Agree nor Disagree” category. **The finding of these problems is the respondents neither agreed nor disagreed that the OSHP for the three last problems in construction projects at Johor Bahru had been faced in the construction projects during applied OSHP.**

Finally, the respondent’s opinion in OSHP problems was specified on contractor management's problems and workers as well. They reported that the contractor management problems are the most significant causes to implement and promote of OSHP in the construction projects. Lack of awareness and experience with budget problems are the essential causes that to promote OSHP.

4.3 Benefits of Occupational Safety and Health Practices in Construction Projects

The second objective of this research to study the benefits of OSHP in construction projects. The result of the data analysis was tabulated in Table 5 with the ranking of the benefits of OSHP in construction projects from highest to the lowest value for the yes percentage of the respondents. The highest ranking has the percentage of 97%, while the lowest ranking is 67.2% with 29.8% differences in the percentage value. This ranking provides an indication of OSHP benefits in the construction projects that highly impact when it implement and practice to the construction projects..

Table 5 - Benefits of OSHP

	Benefits of OSHP in construction projects	percentage of Yes Answer	Ranking
C	Increase responsibility	97%	1
C	Higher on employees morale	92.5%	2
C	Build a positive work place Environment	88.1%	3
C	Reduce rate of absenteeism	88.1%	3
C	Eliminate injuries and death	86.6	4
C	Improvement of organization's reputation	85.1	5
C	Increase productivity	83.6	6
C1	Encourage creativity and innovation	76.1	7
C3	Increase the profit of projects	74.6	8
C2	Decrease Compensation Costs	67.2	9

Based on table 5, it is obvious that most of the respondents agree about the sentences given, which lead us to the following findings: The first benefits of OSHP that contracts is answer with a high percentage of acceptance is increase responsibility. This finding gives a positive view that proper use of OSHP system at the construction projects can offer employees with a clear accepted code of OSHP rules about the safe operation of machinery, various devices and appropriate behaviors. The next benefit of practicing OSHP effect on employees morale. It is unfortunate to notice that most respondents answered positively about effect on employees morale. This finding shows that when workers is understand and practicing the OSHP at the construction project that lead workers to work effectively and efficiently and this supported the research conduct by Lim ,2012. The third finding leads us to the OSHP benefit of build a positive workplace environment. The finding shows that most of the contractors at Johor Bahru understand that practicing the OSHP at the workplace change the environment to the positive side , which supported in some previous research such as (Hudson ,2010).

In another matter, it has been admitted that implementing of OSHP at the construction projects has a good benefit help to reducing the rate of absenteeism in the construction project at Johor Bahru, which mention by previous research such as (McCunney, 2001). Regarding to eliminate injuries and death, most of the respondents agreed that practicing and implementing OSHP lead to eliminate injuries and death within workers in construction projects at Johor Bahru and that is also mentioned and supported by previous research such as (Hussian, 2013) ;(Alli 2001).

Moreover, the finding of improvement of organization's reputation that most of contractors has been agreed that implementing and promoting of OSHP at the construction projects lead to benefit of improvement of organization's reputation which has been supported by (Warner, 2013). The finding about increase productivity was positively where was most of the respondents agreed that implementing and promoting OSHP at the workplace lead to increase productivity of workers. Furthermore, encourage creativity and innovation which has been supported by Hudson, (2010). The finding about OSHP benefits factor of encouraging creativity and innovation was positively where most of the respondents agreed with the statement.

Additional, the finding about increase the profit of projects was also positively where most of the respondents were agreed to this statement of OSHP benefits. Regarding to decrease compensation costs, which has been supported and mentioned by previous research such as (Daniel, 2011) was positively where most of respondents agreed. Finally, the respondent’s opinion was represent the OSHP has more advantages and benefits to the construction industry at Johor Bahru. Some of the respondent’s opinion mention that promoting OSHP result to increase the moral of client, increase annual turnover for the staff, Promote Cooperation. They had been speaking up from an experience of implementing at real work, which seem similar to some previous researches.

4.4 Measures to Promote Occupational Safety and Health Practices in Construction Projects

The third objective of this research is to recommend the measures to promote OSHP in construction projects. The result of the data analysis was tabulated in Table 6 with the ranking of measures to promote OSHP in construction projects at Johor Bahru from highest to the lowest mean value. The highest ranking has the mean of 4.42, while the lowest ranking is 3.78 with 0.64 differences in mean score value. This ranking provides an indication of measures in the construction projects at Johor Bahru, which will be applied to promote occupational safety and health practices in construction projects.

Table 6 - Measures to Promote Occupational Safety and Health Practices in Construction Projects

Measures to Promote OSHP	Mean	Category	Rankin
Necessity of having first aid, safety bulletin boards, safety	4.42	Agree	1
Management Penalties	4.36	Agree	2
Provision of necessary safety gears	4.36	Agree	2
Allocate a sum of money resources	4.25	Agree	3
Management appreciation and motivation	4.24	Agree	4
Training and seminars including daily morning safety assemble	4.15	Agree	5
Employees participation and involved in decision making	3.78	Agree	6

In this section, promotion and measure factors are studied carefully in order to achieve the third objective of the study. Based on verified literatures, a group of professional recommendations were taken in order for them to be put for examination by the study's respondents. The first point of this section was about the necessity of having first aid, safety bulletin boards, safety committee, safety officer at the workplace. This recommendation is suggested by many professionals in and out of the construction industry such as Masayuki, (2006). Moreover, the acceptance rate of this recommendation is the highest acceptance rate 4.42. Management penalties is the second solution with a mean of 4.36. Supporting the recommendation and regarding to the study of Mohd Khairolden et al., (2008) and Zhou et al., (2011). Management penalties should be the first solution to comply with the management's requirement of OSHP this is because the workers were afraid of losing their money in paying fines.

Provision of necessary safety gears is the third accepted solution with a mean of 4.36 and have the same rate with previous recommendation. The Personal Protective Equipment (PPE) is very essential aspect to take care of to ensure construction projects settle correctly and smoothly with OSHP. Allocate a sum of money resources should be adequately highlighted to the contractors to organize a safety practices and programs is the fourth accepted solution with a mean of 4.25. Management appreciation and motivation is the fifth accepted recommendation with a mean of 4.24. This recommendation of management appreciation and motivation is suggested by many professionals in and out of the Malaysian construction industry (Masayuki, 2006; Chaikittiporn, 2002).

Training and seminars including daily morning safety assemble is the 6th accepted recommendation with a mean of 4.15. This recommendation is suggested by Patrick,(2008). Employees participation and involved in decision making is the 7th accepted recommendation with a mean of 3.78. Supporting the recommendation and regarding to the study of Bakri et al., (2006). Finally, the respondent's opinion was mostly focused on awareness and budget , as the most causes will help to promote OSHP.

5. Conclusion

In this research, a total of 30.9% rate of respondents have been collected through the survey of promoting occupational safety and health practices in construction projects. The research has highlighted the OSHP problems, benefits of OSHP in construction projects and shows which measures that are influencing the implementing of OSHP in the construction projects. The suggestions cover three aspects for the implementation of occupational safety and health practices, i.e. awareness of workers, commitment of top management and the allocation of budget . Due to the limited research on OSHP in construction industry, this research can be a fundamental step to introduce measures implementation in the construction real site, and improve its usage in the future.

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