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Evaluation of Project Managers Understanding of Safety Management Plan on Construction Site

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Abstract.

Safety Management Plan (SMP) is a collection of documents that outline how the principal contractor will manage health and safety for employees, sub-contractors, suppliers, visitors and the general public. SMP formulates the approach to risk management and minimizes the potential human and financial loss to employers and employees alike. Thus, project managers are not expected to be health and safety experts, nor are they expected to conduct thorough worksite inspection. However, a basic appreciation of the safety and regulations issue most frequently encounter in construction site will help to ensure a safe work environment for employee and contractors, and minimize potential liability exposure. The objective of the paper is to determine the level of understanding of safety management system in workplace among the project managers of some selected sites in Kuala Lumpur. Structured or standardized questionnaires were used in the project manager's interview at 5 different construction sites, on average, the score form the five sites as regard to project manager's interview is 71.67%. In conclusion, the project managers have virtually all the potential and significant knowledge of the safety management plan practice in their sites, but still there was the need for improvement in the knowledge among the project managers as regard to the safety management system. The study therefore, recommended that in order to improve on the knowledge of safety management system on sites adequate training program should be incorporate into the organisational action plan for project managers. Such training program organised by National Institute of Occupational Safety and Health (NIOSH) Malaysia could be of great help in improving the knowledge of safety management system among the project manager.

Keywords Safety, Health, Management, Construction, Plan,

1. Introduction.

Project Manager is the person responsible for accomplishing the stated project objectives. The term and title 'project manager' has come to be used generically to describe anyone to complete a project. However, it is more properly used to describe a person with full responsibility and the same level of authority required completing a project. While, Safety Management Plan (SMP) is a collection of documents that outline how the principal contractor will manage health and safety for employees, sub-contractors, suppliers, visitors and the general public. It will cover all work activities that make up the job. The content and detail expected in an SMP will depend on the size and complexity of the proposed work (project). SMP formulates the approach to risk management and minimizes the potential human and financial loss to employers and employees alike. Plans form part of a construction company's health, safety and rehabilitation management systems. Thus, project manager are not expected to be health and safety experts, nor are they expected to conduct thorough worksite

inspection. However, a basic appreciation of the safety and regulation issue most frequently encounter in construction site will help to ensure a safe work environment for employee and contractors, and minimize potential liability exposure.

Many researchers like, (Shafai-Sahrai 1971), Smith *et al*. (1975), (Cohen 1977), (Griffiths 1985), Shannon *et al*. (1996,1997), Harper *et al*. (1997) and (DePasquale and Geller 1999), revealed that organizations with lower accidents rate were characterized by a few of the following factors: safety officers held high rank; management showed personal involvement in safety activities; higher priority for safety in meetings and decisions concerning work practice; more frequent attendance of senior managers at health and safety meetings etc

According to the guideline for safety management plans for the construction industry published by workplace standard Tasmania Department of Justice that the SMP must:

• Contain the Workplace Health & Safety Policy, a copy of the Workers Injury
Management and Rehabilitation Policy and other relevant policy documents

• Define the roles and responsibilities for key personnel, in particular the Contract
Manager, Responsible Officer and Site Supervisor as well as reference to the general duty of care all employees; contractors; sub-contractors and their employees; designers; manufacturers; suppliers; and installers.

• Outline the training and minimum competency requirements for employees

• Establish a process for identification of hazards associated with each phase of the work and the assessment and control methodology to be used.

• Contain copies of, or reference to, procedure documents relevant to the project activities and any safe work statements or site safety rules as applicable

• Indicate the site evacuation and emergency response procedures

• Outline the accident/incident notification, reporting, recording and investigation process

• Outline disciplinary procedures.

The SMP should ensure the orderly timing and conduct of all work at the site. This is required to the extent necessary to secure health and safety and assist the principal contractor and sub-contractors to discharge their obligations. This includes ensuring site activities do not put at risk the health and safety of visitors and members of the public on or near the site.

(Vredenburgh, 2002), that the commitment of the management toward safety management system can manifest itself through job training program, management participation in safety committee, consideration of safety in job design, and review of the pace of work.

The objective of the paper is to determine the level of understanding of safety management system in workplace among the project managers of some selected sites in Kuala Lumpur. As the study will allow the project manages to realise their potential better, help many researchers in framing an inspiring research questions and make adequate research design for further improvement for project managers in understanding the dynamics and potential improvement needed for organizations and to strengthening its social innovation. The attitude of project manager towards the issue of safety management system has had a major role in accident contribution. . Blegan *et al* (2005), that various studies have attributed the following factors to workers injury; Supervisor's attitudes, actions, Supervisor's tasks that include safety, Senior management and workers involvement in safety issues, Organisation's commitment to safety and willingness to solve safety problems etc. Which, are part of the work expected of a project managers, but the accountability and responsibility in the safety and health at construction sites is the function of the senior management as required by the Occupational Health and Safety Act of 1994. In a study conducted by (Norfairuz, 2003) in Kuala Lumpur and Selangor, reveal that ignorance and lack of safety compliance from the management had caused employees to violate the safety procedure and the outcomes were

unsafe acts, hazardous condition, injuries and accidents. Also, that the awareness on the importance of safety compliance among construction companies is low.

According to perceived organisational support theory,(POS) employees develop global beliefs about the extent to which their employer values their contributions and is concerned about their well-being Eisenberger *et al*. (1986). In their review of the POS literature, (Rhoades and Eisenberger 2002) identified three sets of antecedents of POS: fairness, supervisor support, and organizational rewards and working conditions. Each of these represents some type of favourable treatment or valuation from the organization. The management of organisation provides support to the kind of organisational structure that will ensure effective site safety management. The company's management will ensure that training; personal protective equipment (PPE) and other resources are provided to the project management team in order to demonstrate its commitment. The project manager must make sure that all these are in place. To be successful in safety program implementation, James *et al* (2008), has this, that there must be an understanding of the operation "linking pin" of the management commitment, leadership, and the employee participation.

2. Material and Method.

A structured or standardized questionnaire were used in the project managers interview at 5 different construction sites i.e the construction industry standard (CIS), refer to as CIS 10:2008. The CIS was developed by the Technical committee on Safety and Health in construction with the assistance of construction industry development board (CIDB) Malaysia which acted as a moderator and facilitator for the technical committee throughout the process the standard. The project manager questions were abstracted from a developed safety and health in construction standard, as among employees interview contain in the CIS. For effective application of the project managers questionnaires at sites, the five construction sites are; building/ civil engineering construction sites, its contract price is above 20 million Malaysian Ringgit and the progress of the work is between 25% - 75% completion. In the project manager interview there are 60 questions for the five sites, and the project managers of each site were interview. This interview will provide an understanding of the project manager safety management plan implemented, enforced and practiced at sites/workplace. The following formula was used to determine the percentage level of understanding of safety management plan among the project managers:

$$\frac{\text{Total number of 'C' scored.}}{(12 - \text{Number of 'NA'})} \times 100 = \%\ \text{level of understanding.}$$

Where, C = obtained scores, NA = not applicable.

The percentage level obtain is interpreted from the star ranking table 1.

2.1 Basic Creteria.

The following were the basic criteria consider in the project manager's interview as abstracted from the standard questionnaire of employee's interview, refer to as CIS 10:2008;

a- OSH Policy. The project managers to describe the statement of the intention of the top management as regard to their obligation toward OSH matters and also to confirm the type of the system adopted by their organization such as OHSAS 18001, OSH MS 1722, ILO OSH MS 2001, ASNZS 4801:2002 OHS MS.

b- OSH Organization. The project manager's ability to describe the kind of organizational system had been practice in their organization and responsibility of each person on the chart most especially those of the safety and health committee organizational chart.

c- HIRARC (hazard identification, risk assessment, risk control.). the project manager ability to explain to their understanding of HIRARC and to know their involvement in the HIRARC excesses.

d- Training and Promotion. To verified project managers attendance of any formal safety training and to confirmed the answer with certificate or training attendance list or other record.

e- Material Management. To determine project managers understanding as regard to Occupational Safety and Health {USECHH (use and standards of exposure of chemicals hazardous to health)} and {CPLHC (classification, packing and labeling of hazardous chemical)} regulation under OSHA 1994.

f- Emergency Preparedness. To determine project managers understanding of what to do in an event of emergency/action to be taken in an event of an accident.

g- Accident Investigation and Reporting. Project managers understanding of the procedure of accident investigation and reporting, and how to comply with NADOPOD (notification of accident, dangerous occurrence, occupational poisoning and occupational disease) regulation.

3. Result and Discussion.

The result of Management interview conducted in five construction sites selected were show in table 2.

The result shows that site A and D scores 100% which means that the project managers at these sites have full knowledge of safety management plan. While site B have the lowest score with just 28.57%, a poor result that the project manager on the site need to improve on his knowledge on safety management plan at workplace at construction sites. On average, the scores form the five sites as regard to project manager's interview is 71.67%. The 71.67% fall within 70 – 84 in star ranking and qualified the project managers knowledge as 4-star. This is a good result as virtually all the project managers in the construction sites understood all the potential and significant issues contain in their safety management plan in their sites. Table 3 shows the combined scores of the management personnel interview from the five sites.

The table provide the difference between the obtained scores and total scores of each component and this will enable the project manager to identify the components that need improvement. And figure 1 show the performance of various components considers for the interview in a chart form in relation to the total scores.

The total score of the five sites are 60 and the five sites score 43. From table 3 Training and Promotion score below average i.e 2 out of 5. Other components that need minor improvement are: HIRARC with 10 out of 15, material management with 6 out of 10. Others need slight improvement. If accidents free zone is to be achieved at construction sites, the project managers most have a full knowledge of the safety management plan practices in their sites.

4. Conclusion and Recommendation.

Understanding of the safety management plan system practice at a construction sites most especially by the project managers is vital to the growth and success of an organisation, as it will aid in maintaining accidents free sites. The study identified 7 basic criteria for interviewing project managers at construction sites. The result reveals a 70.71% level of understanding of the safety management system practice at the sites among the project manager, which is

encouraging i.e good result. In conclusion, the project managers have virtually all the potential and significant knowledge of the safety management plan practice in their sites, but still there is the need for improvement in the knowledge among the project managers as regard to the safety management system. The study therefore, recommended that in order to improve on the knowledge of safety management system on sites adequate training program should be incorporate into the organisational action plan for project managers. Such training program organised by construction industry development board (CIDB) Malaysia and national institute of occupational safety and health (NIOSH) Malaysia could be of great help in improving the knowledge of safety management system among the project manager.

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Table 1, Stars Ranking.

SHASSIC (score %).	Star(s) Awarded.	Justification.
85 to 100	*****	Potential and significant workplace high risks/hazards are managed and documented.
70 to 84	****	Potential and significant workplace high risks/hazards are managed and documented but there are few low risks work activities are neglected.
55 to 69	***	Potential and significant workplace high risks/hazards are managed and documented but there are few medium risks work activities are neglected.
40 to 54	**	Potential and significant workplace high risks/hazards partly managed and not properly documented.
39 and less	*	Potential and significant risks/ hazards poorly managed and not properly documented.

Source: CIDB CIS 10: 2008.

Table 2; % Scores Project Managers Interview from the five Sites.

Site A.	Site B.	Site C.	Site D.	Site E.
100%	33.33%	66.67%	100%	58.33%

Source: Data Analysis.

Table 3; Combined Scores from the Five Sites. (Project Manager Interview).

Components	Obtained scores	Total scores.
OSH policy	8	10
OSH organisation	9	10
HIRARC	10	15
Training and Promotion	2	5
Material Management	6	10
Emergency Preparedness	5	5
Accident investigation and reporting.	3	5
TOTAL=	43	60

Source: Data Analysis.

List of Figure.

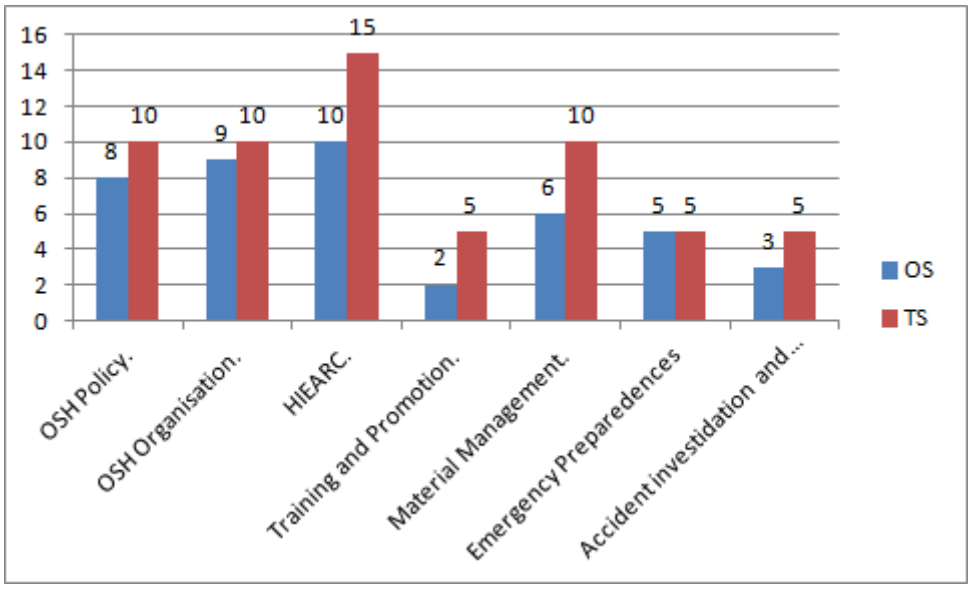

Figure 1; Bar Chart of Combined Scores.

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