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**A preliminary result of occupational safety and health management system compliance among gas contractor (Petroleum Pipeline) in Peninsular Malaysia**

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**KEYWORDS**

Occupational Safety and Health Management System (OSHMS), Critical Success Factor (CSF) and Occupational Safety and Health Monitoring Tools (OSHMT)

**A B S T R A C T**

Occupational Safety and Health Management System (OSHMS) is a framework that provides direction for compliance with the Occupational Safety and Health (OSH) requirements pursuant to national law & regulation. In Malaysia, gas contractors that intended to register with Department of Occupational Safety and Health (DOSH) have to provide their safety manual upon registration of their company. The aim of the study is to evaluate the current status of compliance and it Critical Success Factor (CSF) as compare with Malaysia Standard MS, 1722:2011 Occupational Safety and Health (OSH) Management Systems – Requirements (First Revision) among registered gas contractors in Peninsular Malaysia. A cross sectional study for nine (9) gas contractor companies using questionnaire has been done. All data consolidated in order to determine the pattern line for Occupational Safety and Health Management System current status and it Critical Success Factor (CSF) among gas contractors in Peninsular Malaysia that has registered with Department of Occupational Safety and Health. Established Questionnaire are based on Occupational Safety and Health Management System MS 1722:2011 elements requirement No 1: Policy, No 2: Organizing, No 3: Planning and Implementation, No 4: Evaluation and No 5: Action for Improvement as Parameter to come out with Descriptive Statistic for elaborating the finding and Central Tendency Measure using Mean and Standard Deviation in identifying value that deviate from standard score from elements requirement. Descriptive statistic showed that themain element score for Policy mean 74.78 and it standard deviation is 9.846, Organizing mean 74.22 and it standard deviation is 11.94, Planning and Implementation mean 80.22 and it standard deviation is 11.94, Evaluation mean 69.33% and it standard deviation 26.8 and Action for improvement mean 48.89 and it standard deviation 31.81.

**Introduction**

A management system is a proven framework for managing and continually improving the organization's policies, organizations to improve their environmental performance through a process of continuous improvement. (Lynnda N.

2012) An oversimplification is "Plan, Do, Check, Act" involve iterative trials, with particular attention paid to what did not work as intended. (Rother<sup>etal.</sup>, 2010) Occupational Safety and Health Management Systems

(OSHMS) also provide structured part for improved communication, accomplishment of goals and development of personnel and improved of business processes.

Occupational Safety and Health Management System is best viewed as an organizing framework that provides direction for compliance with the OSH requirements pursuant to national law & regulation. The OSHMS contain main elements Policy, Organizing, Planning and Implementation, Evaluation and Action for improvement (POPEA). This is a Malaysian Standards that provides requirements for the Occupational Safety and Health Management system (OSHMS) and basis for the development of OSH system an organization. (Department of Standard Malaysia, 2013)

Realizing the important in managing occupational safety and health, Department of Standards Malaysia as the national standardization and accreditation body has developed Malaysian Standard (MS 1722: Part 1:2011) on Occupational Safety and Health thru consensus by which comprise of balanced representative of producers, users, consumers and others with relevant interests, as may be appropriate to the subject in hand. To the greatest extent possible, Malaysian Standards are aligned to or are adoption of international standards (Malaysian Standard MS 1722:2011).

To ensure the safety, health and welfare of people at work as well as protection the people from safety and health hazards arising from the activities, Department of Occupational Safety and Health under Ministry of Human Resource (HRM) is responsible for the administration and enforcement of legislations related to occupational safety and health of the country, with a vision of becoming an organization which leads the nation in creating a safe and healthy work that contributes towards enhancing the quality of working.

Critical Success Factor for Occupational Safety and health is a cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment. The

goal of identifying the things that really matter for success, you can create a common point of reference to help you direct and measure the success of your business or project (University of Washington 2011). The effective implementation of Occupational Safety and health Management System (OSHMS) is controlled by certain process of identifying tasks and requirements for success by prioritize requirements from vision and mission statement while providing a degree a synergy and overlap in others. It forms an integral part of risk management process, and correctly implemented and introduced, will have a profound and desire impact and outputs.

According to Linda Parker Gates (2010), Critical Success Factors are defined as a handful of key areas where an organization must performed well on consistent basis to achieve it mission as to compare with Malaysia Standard MS, 1722:2011 among registered gas contractors in Peninsular Malaysia. By making CSFs explicit and communicating to everyone involved in meeting the success level before it ready for certification

The aim of the study is to evaluate the current status of compliance and it Critical Success Factor OSHMS among registered gas contractor in Peninsular Malaysia.

The Cross- Sectional Study and purposive sampling method were conducted at nine gas contractor registered office with Department of Occupational Safety and Health in Peninsular Malaysia. Quality Assurance Reliability Statistical Validity Analysis Cronbach's Alpha 0.952, Cronbach's Alpha based on standardize items 0.942 and N of items 105 is conducted in ensuring effectiveness of the Critical Success Factor monitoring Tools. All data gathered are interpreted in comparison with the Malaysian Standard MS 1722 Part 1:2011 Management System concepts main elements OSH Policy, Organizing, Planning and Implementation, Evaluation and action for Improvement.

First in OSH management material and methodology is to evaluate the current status of compliance and identify all safety and health critical success factor facing by Gas Contractors registered with Department of Occupational Safety and Health in Peninsular Malaysia. (Department of Occupational Safety and Health, 2013)using developed questionnaire.

The following methodology is applied in ensuring objectives are achieves such as but not limited to identify Gas Contractor registered with DOSH, meeting certification body, gas contractors company for diagnose the current OSH management system status perception, values, responsibilities, motivation and activities. Gap analysis audit, for policies, communications, structures, practices manual, procedures, work instruction, report and record to identify occupational safety and health critical success factors. The strategy is established in ensuring effective and dynamic OSH plan and program. This means to measure suitability, effectiveness, adequacy and organizational performance.

Diagnose is the process by which results are considered against judgment, standards and criteria. to show that measures in place are adequate for the company to visualize the need of OSH critical success factor management system which are strongly recommended for the control measure includes both prevention of occupational safety and health critical control factors exposures and keeping losses to a minimum when incidents do occur. It also relates to the function of control in the OSH Management System.

### **Data Analysis**

Developed questionnaire was answer and data analysis using SPSS Version 21 to calculate the critical success factor risks and

come out with it control measures such as but not limited to elimination, substitution, isolation, engineering control, administration control and personnel protective equipment to companies with potential loss exposures that can result in major or catastrophic loss, physical hazard, chemical hazard, biological hazard, ergonomic hazard and physiological hazard by random sampling presenting Gas Contractor work in Malaysia.

The individual company's score for sub element questions are sum up and divide by total numbers of sub element questions and get the sub element score. All sub element score from individual main element are sum up and time by one hundred to get the percentage score of the individual main element. Each main element and sub element score from nine companies are sum up for the result of occupational safety and health management system compliance among gas contractor in Peninsular Malaysia. Based from the main element and sub element score we can get and determine the patent line in identifying the critical success factor among gas contractor in Peninsular Malaysia.

As shown in table 2 and figure 1 All gathered data from the total nine company's main element, it standard deviation, standard error and the percentage score were analyzed by using Statistical Package of Social Sciences (SPSS) Version 21. All data collected are based on the items and scale in questionnaires. These nine companies' statistical analyses data were used to determine the pattern line for Occupational Safety and Health Management System current status and it Critical Success Factor (CSF) among gas contractors in Peninsular Malaysia that has registered with Department of Occupational Safety and Health.

The nine companies' main and sub element statistical analyses data and percentage of compliance graph patent indicated the critical success factor. For Individual company score below the main and sub element of nine companies graph patent score are considered critical success factor and require immediate attention and for company graph patent score above the nine companies graph patent yet below 100% score are consider opportunities for continual improvement for certification compliance.

The percentage of compliance by all companies for main element of Policy is 74.7%, Organizing 74.2%, Planning and Implementation 80.2%, Evaluation 69.3% and Action for Improvement is 48.8%. Most of them have established, documented, implemented and maintained the OSHMS From the figure 1, the highest score would be planning and implementation of OSH main element and the lowest scored is Action for Improvement.

High score of sub-elements such as Initial Review 62%, OSH Objective 70%, Hazard Identification, Risk Assessment and Risk Control 76%, Emergency Prevention, Preparedness and Response 98%, Management of Change 96%, Procurement 74% and Contracting 89% contributed to the high score of Planning and Implementation. It shows that almost all Gas Contractor in Peninsular Malaysia has done their part in ensuring safety by planning and implementing the proper action plan including producing a safety manual as a guidelines for all employees to refer when it comes to safety issue

Policy element, the score is 75% which is the second highest score compared to other elements. It includes sub elements of OSH Policy scored 83% while Employee Participation scored 66%. Form the result, it

can be analyzed that although employee involved heavily in making the company safety policy, not all of them really know about safety policy that has been produced. Organizing element, the score is 74% which is the third highest score compared to other elements. It includes sub elements score of Responsibilities, Accountability and Authority 64%, Competence Training and Awareness 73%, OSHMS Documentation 84% and Communication 73%.

Evaluation element score is affected by sub-elements including Performance Monitoring and Measurement 78%, Incident Investigation 84%, Audit 37% and Management Review 70%. Among these sub-elements, almost all gas contractors did not do their safety audit which cause to the average score of Evaluation element. Other sub elements scored between 70-84%. All requirements in Evaluation element have an objective to ensure that gas contractors aware of their current status of safety in their companies.

Action for Improvement is the lowest score among all elements. For this element, most of the gas contractors had an average score 62% for Preventive and Corrective Action sub elements while most of them cannot fulfill the Action for Improvement requirement 22%. Action for Improvement is important element as it will help in increasing safety and reducing incidents in the workplace.

According to the study, most of the registered company does have safety manual, procedures, arrangement, form and record in the organization but the developed documents does not fully comply with main and sub elements requirement of Malaysia Standard, MS 1722:2011 thus they are not ready for Occupational Safety and Health Management System certification.

From methods questionnaire to evaluate the current status of compliance by gas contractors on OSHMS elements requirements reveal that the key areas where an organization must performed well on consistent basis can be further improved in

meeting MS 1722:2011 requirements. Gas contractors should comply with all elements in meeting the standard requirements for certification and enhancing the element compliance in preventing incident.

**Table.1 Demography Analysis Results**

Descriptive statistic on demographic analysis for gas contractor companies in Peninsular Malaysia (Nine Companies)		
		Statistic
Company Names	Mean	5.00
	Std. deviation	2.73
Location	Mean	1.00
	Std. deviation	0.00
Business sector gas contractor petroleum pipelines	Mean	1.00
	Std. deviation	0.0
Register with DOSH	Mean	1.00
	Std. deviation	0.00
Business operation in peninsular Malaysia	Mean	1.00
	Std. deviation	0.00
Position	Mean	2.44
	Std. deviation	1.42
Year in Services	Mean	1.78
	Std. deviation	0.83
Number of Employees Including contractor	Mean	3.00
	Std. deviation	0.70

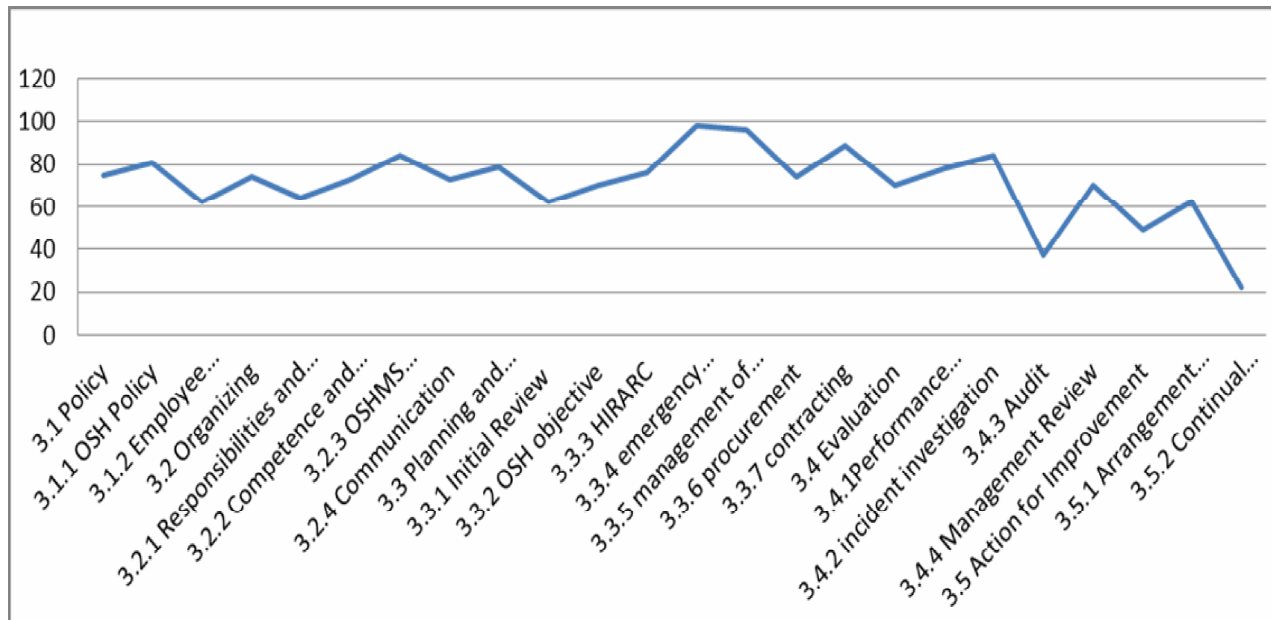
This part contains 8 items to describe the socio-demographic of the nine respondents companies. Items in this part are mean, standard deviation and statistic score.

**Table.2 Descriptive Statistical Analysis Result**

Descriptive statistic preliminary results of OSHMS Compliance among gas contractor (petroleum pipeline) in Peninsular Malaysia (Nine Companies)			
		Statistic	Standard Error
Policy score	Mean	74.78	3.28
	Std. deviation	9.846	
Organizing score	Mean	74.22	4.47
	Std. deviation	13.414	
Planning & Implementation score	Mean	80.22	3.98
	Std. deviation	11.94	
Evaluation score	Mean	69.33	8.93
	Std. deviation	26.8	
Action for improvement score	Mean	48.89	10.60
	Std. deviation	31.81	



**Figure.1** Percentage of compliance for each main and sub-elements of OSHMS according to MS 1722:2011



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