Progress in Engineering Application and Technology Vol. 4 No. 1 (2023) 147-151

PEAT

Homepage: http://publisher.uthm.edu.my/periodicals/index.php/peat
e-ISSN : 2773-5303

A Study on the Gap of Health, Safety and Environmental Related Matters Between Employees and Contractors in an Oil and Gas Company, Port Klang

Lyana Norli Hisham[1], Nurrul Hafeezah Sahak[1]*, Mohd Khairul Anuar Zainal Abidin[3]

[1]Department of Chemical Engineering Technology, Faculty of Engineering Technology,
Universiti Tun Hussein Onn Malaysia, Higher Education Hub, Pagoh, 84600, MALAYSIA

[2]HSE Department, Petroleum Equipment and Supplies Sdn Bhd, Lot 67894, Jalan FZ3-P6, Port Klang Free Zone / KS12, 42920 Pulau Indah, MALAYSIA

*Corresponding Author Designation

DOI: https://doi.org/10.30880/peat.2023.04.01.015
Received 14 January 2023; Accepted 15 January 2023; Available online 15 January 2023

Abstract: The main core business in the company at Port Klang is maintenance works of their technologies. While the employees are focusing on equipment service and maintenance, contractors deliver different kind of support. Employees have a proper system called Quest to support the deployment of HSE program. However, contractors do not have access to Quest. The aim of this study is to identify the gap in method used in maintaining health, safety and environmental related matters practice between employees and contractors. Data was taken from the employees and contractors within the company, collected using semi-structured interview and questionnaire. The outcome from this study shows that the gap of safety practice between employees and contractors are significant. A system can be endorsed to improve the current safety practice among contractors and as awareness to HSE department together with the line management of the contractors.

Keywords: Safety system, Contractors, Oil and gas, Gap of safety practice

1. Introduction

The company develops digital solutions and implement cutting-edge technology to allow the global energy industry's performance and sustainability. At Port Klang, the main core business is maintenance works of their technology. While the employees were focusing on equipment service and maintenance, contractors delivered different kind of support such as logistics, integrated facility management (IFM),

**Corresponding author: nurrul@uthm.edu.my*

non-destructive testing (NDT) and others. In total, the population headcount was 150 personnel in the company [1]. 67% were employees meanwhile 33% were contractors.

Employees have a proper system called Quest to support the deployment of Health, Safety and Environment (HSE) program. With the system, management could perform continuous improvement of HSE. However, contractors do not have access to Quest. This means that they do not have a proper system for hazard reporting, training competency record, competency validation and other HSE related matter. In the absence of the systematic monitoring system, contractors tend to take safety and health practice and other safety related matters halfheartedly.

The objectives of this study were to identify the gap in method used in maintaining health, safety and environmental related matters practice between employees and contractors, to analyze the usage effectiveness of current system used by employees of the company and lastly to recommend an organized system in reporting health, safety, and environmental related matters among contractors of a company in oil and gas industry at Port Klang.

2. Methodology

Research planning was done at the early stage of this study and proceed with research design and analysis. Past study, journals and research were gathered to get better understanding of this study specifically in oil and gas industry. It was all related to the issues with contractors, safety practice, safety system, etc.

2.1 Research Flowchart

The study population and the method to gather data was discussed with supervisors. To achieve objective 1, semi-structured interview questions was constructed to be done with the supervisors of the contractors' companies. To achieve objective 2, a set of questionnaires was distributed to both contractors and employees. The data then analyzed using IBM SPSS Statistic software to achieve the objectives of the study. The research flowchart is as below:

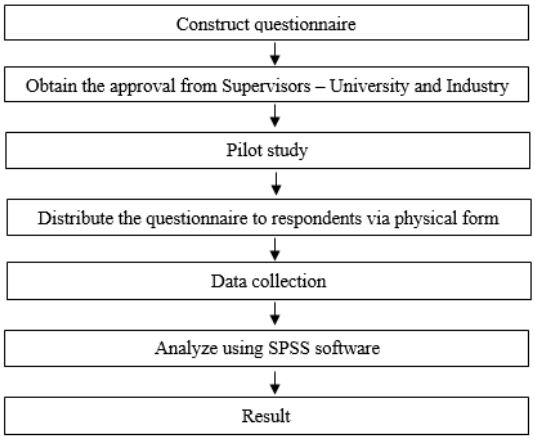

Figure 1: Research flowchart

2.2 Data Collection

There were 2 types of analysis which were the semi-structured interview questions to the supervisors of contractors and the questionnaires distributed to all contractors and employees. 80 sets of questionnaires from employees and 44 sets of questionnaires from contractors in the company was collected.

Interview was performed verbally and from an open-ended question in achieving the first objective. Semi structured interviews were conducted which consists of questions to determine the representatives from different contractor's companies' opinions of the current system used by employees and contractors. The criteria of the interviewees were selected.

In order to achieve the second objective via questionnaires, obtaining questionnaire approvals from both university and industry supervisors was done to identify whether the questions for employee and contractors were suitable for this study. In this study, a physical survey form was distributed.

A pilot test was done to 10 employees of the company and 10 contractors' personnel before handing out to all. The reliability test was analyzed via Cronbach Alpha. The result of employee's questionnaire was 0.90, meanwhile contractors was 0.71. The value was accepted because both questionnaires for employees and contractors were above 0.7 [2].

After pilot test was done, the questionnaires were handed over to the supervisor of each segment to distribute to their employees. Meanwhile the survey form for contractors will be given to the person in charge of the company to be transmitted to their team.

The respondents who voluntarily participate in this study were required to answer all questions given and the data collection period started on July to September 2022. After the data collection was done, completed questionnaire then undergone statistical analysis using IBMM SPSS Statistics to obtain results in this proposed study.

3.0 Results and Discussion

Based on the interview session done with the contractor's supervisor, the outcome shows that the gap of maintaining HSE related matters between employees and contractors were significant, proven by the HSE practices among contractors below:

i. Manually updating database – less accuracy due to human error and no automatic reminder causes the data is not updated
ii. No standardization for contractors to submit hazard reporting as awareness of surrounding hazards
iii. No access to Hazard Assessment Risk Control (HARC) – delay of works or continue without following the proper control measure in HARC
iv. All 3 companies selected has cases reported recently

The current system was effective among employees: easily submit hazard reports, search and read the reports submitted from their colleagues globally, has access to updated and approved HARCs, easily monitor their training and competencies expiry date to renew their certifications.

The table below shows the overall descriptive statistics showing mean value of 4.48 which interprets high, shows that the current safety system (Quest) was a good medium, and the employees were satisfied with the system. The standard deviation of each item also shows a low value with the overall of 0.501, considers each employees rated the Likert scale within the similar score.

Table 1: Descriptive statistics of satisfaction towards the current safety system among employees

Satisfaction of current system	N	Mean	Std Deviation	Interpretation
Overall	80	4.48	0.501	High

An independent t-test was done to measure the difference between the two groups: employees and contractors. If the value in p is equal or less than 0.05, there is a significant difference on the dependent

variable for each of the two groups. If the value is above 0.05, there is no significant difference between the two groups [3]. Table 2 shows the outcome of the independent t-test results.

Table 2: Independent t-test outcome

Dependent Variable	Sig. (p)	t	Significant Difference
Current system is a good approach to main a safety culture	< 0.001	13.74	Yes
Understand the need of submitting hazard reporting	0.006	14.20	Yes
Hazard reporting can prevent any incident/accident	< 0.001	7.883	Yes
Hazard reporting helps to realize the importance of HSE	0.47	14.67	No
Current system helps to read/ search hazard reported by colleagues	0.11	16.80	No
Current system can easily trace training and certifications	0.02	10.53	Yes
Current system is a good record keeping for training certifications	0.22	12.43	No
Easily monitor any training required to comply with job scope	0.77	17.01	No
Easy to trace the expiry date of certifications	< 0.001	9.062	Yes
Easy to approach local HSE to attend refresher training	0.001	7.86	Yes
Understand the importance of training requires by the company	< 0.001	5.95	Yes
HARC is easily accessible with the current system	0.004	16.28	Yes
Understand the importance of HARC for relevant work activity	0.002	13.81	Yes
Read, understood, and comply with HARC control measures	0.003	11.64	Yes
Agree if contractors provided with similar safety system	0.72	-1.31	No
Aware that contractors do not have a safety system	0.96	7.06	No
Safety system like Quest can help contractors to maintain a good safety culture	0.065	1.34	No
Contractors will be more discipline if a safety system if provided	0.56	7.20	No
Agree that the gap of the safety system between employees and contractors are significant and should be improved	0.57	1.75	No

*Significant level p<0.05

Based on the table above, there were significant differences between employees and contractors in terms of the current system between employees and contractors, understanding the need of submitting hazard reporting, agree with hazard reporting can prevent any incident/accident, training and certifications with current system was easily traced, the expiry date of certifications with current system was easily accessible, local HSE was easy to approach to attend refresher training with current system, understanding the importance of training required by the company, accessible of HARC with the current system, understand the importance of HARC for relevant work activity and read, understood, and comply with HARC control measures

3. Conclusion

The findings from the study shows that with the negligence of a proper safety system, contractors tend to take safety matters lightly. From the interview, the gap of safety practice and discipline between employees and contractors were significant. This can also be proven by the statistic of the hazard reported by employees that no quaint cases from employees of Company ABC have been reported in the past years (since 2020 to 2022) due to their awareness of the HSE, unlike contractors. The company in Port Klang has just reached 1000 days free LTI on November 6th, 2022 (Quest, 2023) [1].

From the overall result of descriptive analysis shows that the current safety system (Quest) was a good medium, and effective to the employees. The employees were positive with the system. They also practice a good safety culture with the existence of the current system.

The other analysis was the independent t-test. There were significance differences between employees and contractors regarding the current system available for both parties. This shows that, it is important for the contractors to also have an established safety system to ensure they get better understanding of the HARCs, the importance of hazard reporting and other HSE related matters. A good system will also prevent from less data accuracy due to human errors. The contractors will get to attend adequate trainings relevant to their job scops, as a safety system could identify the relevant trainings for them as well.

A similar study should be conducted to compare the gap of HSE related matters between employees and contractors with the availability of the system for both parties. This is to identify whether is safety system were causes the gap of safety practices between them.

Acknowledgement

The authors would like to thank the Faculty of Engineering Technology, Universiti Tun Hussein Onn Malaysia

References

[1] Quest (2023), Personnel Details and Certification Management (Active). https://quest.slb.com/quest/IndexIE.asp

[2] Ursachi, (2013). How reliable are measurement scales? External factors with indirect influence on reliability estimators. Science Direct. https://pdf.sciencedirectassets.com/282136

[3] Julie. (2010). SPSS survival manual: a step-by-step guide to data analysis using SPSS. Maidenhead: Open University Press/McGraw-Hill