ASSESSMENT ON OHSAS IMPLEMENTATION IN JABATAN PENGAIRAN DAN SALIRAN (JPS) MALAYSIA

Mohamad Saiful Azhar bin Harun,
Bahagian Perkhidmatan Mekanikal & Elektrikal,
Jabatan Pengairan dan Saliran,
51200 Kuala Lumpur.

Asmira bin Ashari
Jabatan Kejuruteraan Mekanikal
Politeknik Sultan Salahuddin Abdul Aziz Shah

Zulkhairi bin Khairuddin
Jabatan Kejuruteraan Mekanikal
Politeknik Sultan Salahuddin Abdul Aziz Shah

ABSTRACT

Occupational Safety and Health Act (OSHA) and Occupational Health and Safety Assessment Series (OHSAS 18001) become important to the government sector, especially JPS that involved the engineering sector. The purposes of this study are to compare and identify the effectiveness of OSHA and OHSAS 18001 on staff performance at nine Jabatan Pengairan Saliran Bahagian Perkhidmatan Mekanikal Elektrik (JPS BPME) workshops. Apart from that, it’s also to proposed a method of multiple-site certification OHSAS 18001. The analytical methods used are T-Test and ANOVA to analyze 261 stratified random sample. The results showed no significant relationships between OSHA and OHSAS 18001 on staff performance. Meanwhile, there were significant differences between OHSAS states on a staff performance. To continuously effectiveness of management systems at JPS Malaysia, seven steps were proposed to integrate OHSAS 18001 certification in Multiple-Site Certification methods. The study concluded that those five states that have implemented OSHA need more aggressive action to improve and increase staff performance on safety and health at workplaces. A multiple-site certification approach will assist JPS Malaysia in realizing inspiration of top management.

Keywords - Staff performance, workplace safety, employee productivity, OHSAS 18001 multiple-site certification

1. INTRODUCTION

OHSAS 18001 is an occupational health and safety assessment series under British Standard Institution has develop on 1999 for safety and health management system. In Malaysia, there are two standard where OHSAS 18001:2007 and also OHSMS MS1722: 2011. However, both of standard is compatible to legislation Acts under the Laws of Malaysian, namely The Occupational Safety and Health Act 1994 (Act 514) (OSHA) and Factories & Machineries Act 1967 (Act 139) (FMA). The aim of implementation of OHSAS 18001 actually to promote a safe working environment by following the requirement or framework that can help an organization to identify and control risk, reducing accidents, legal compliance and increase employee performance. According to (Bakri et al., 2006) a safer workplace will improve a productivity of organization, thus the benefit is cost reduction, increase output of production and increase profit. OHSAS 18001 presents an understanding of risks as measureable,
decontextualized, and mono-causal; these risks are conceptualized such that they can be observed, assessed and managed in an objective and technical manner (Hohnen et al., 2016).

Based on the 2013 OSH report by JPS Malaysia the number of accident cases is zero case fatalities, ten cases near miss, three cases non-permanent disability and zero case permanent disability. This data are collected from nine BPME workshops JPS Malaysia. The data showed the lower cases but in term of unsafe act it is an influence to the occurrence accident. Some examples of common practices are, working without supervision, maintenance at a pump house, drainage gate repaired, and electrical switchboard and so on. A probability of accidents will happen when employee not following a standard operation procedures, not wearing PPE, and un-plan work. Other than that, managements must ensure to provide any type of source to accomplish, maintain and improve occupational safety and health at the workplace. High injuries rate are due to inadequate and weakness during implemented OSHA management systems (Ahmad Bakri et al., 2006).

The purpose of this research is to compare the effect of OHSAS 18001:2007 and OSHA implementation on staff performance at JPS’s workshops, evaluate the effectiveness of OHSAS 18001:2007 implementation on staff performance at JPS’s and propose a suitable site certification method for OHSAS 18001:2007 implementation at JPS Malaysia.

1.1 Occupational, Safety and Health Act (OSHA)

In many countries such as United State (OSH Act of 1970), United Kingdom (Health and Safety at Work etc Act 1974), Canada (Occupational Health and Safety Act 1985) and Malaysia (Occupational Safety and Health Act 1994) have their own Act to cover the entire related Act on OSH. Department of Occupational Safety and Health (DOSH) under the Ministry of Human Resource are fully responsible to manage, monitoring and enforcement regarding the occupational sector in Malaysia. The main objectives of the Act are to protect safety, health and well being of employees from any of risk and illness, to promote workplace safety to employees this adapted with physiological and psychological needs and provide a safety guideline which are applicable to all industries are related to OSH.

1.2 Occupational Health Safety Management System (OHSMS)

OHSMS standard now become an attention of employers among private organization and government sector. Until December 2013, SIRIM QAS already certified 529 companies from various sectors (SIRIM QAS Website). According to Mohd Arif et al., (2013) safety culture in Malaysia still need to promoted either small or large company by all parties whether from government, NGO or private sectors. In Malaysia we has two type of standards which recognize on occupational safety and health namely MS1722: 2011 and ISO OHSAS 18001:2007, but both of the system are same the objective.

1.3. OHSAS 18001: 2007

The elements of OHSAS are considered as the best practices of a successful organization. They are designed to be available and suitable for any size of an organization, regardless of the nature of their activities. Under the five basic principles, OHSAS standard has seventeen (17) elements that need to be complied and executed by organization. Thus, from seventeen elements they will combine into 5 elements as Figure 1 below. In order to evaluate the system of OHSAS 18001, Plan, Do, Check and Act (PDCA) is a tool for implementing a quality management and program for continues quality improvement. PDCA is a prepare an activity to related to objective, thus implemented the activities, evaluate the effectiveness and solved to the problem.
1.4 Multiple Site Certification (MSC)

Meaning of MSC is Multiple-site certification a method to integrate the management system by controlling and standardize all activities at branches or networks by central office (SIRIM-QAS). Multiple-site certifications are suitable for organization that has many branches with the same activities of work. Purposely to standardize the scope and activities, documentation, and also reduced the cost and time for renewal process of the certification. According to Kadir Ariffin et al., (2009), the organization needs to spent between RM 40,000.00 – 80,000.00 until succeed obtain OHSMS certification for one site.

2.0 METHODOLOGY

The data collection is based on the survey sent to nine JPS BPME Workshops. A questionnaire was distributed to 315 employees, where at every workshop requires at least 20 people of respondents. The data was analyzed using SPSS Version 22.0. This study methods used analysis of data use comparative test (t-test) and one-way analysis of variance (ANOVA). Significant level was used 95% (p=0.00-0.05) to interpret the difference of data produced. Figure 2 showed the structure of hypothesis to support the objective 1 and objective 2. However on Figure 3 showed the method of OHSAS multi-site process flow.

Figure 1  Five (5) elements of OHSAS 18001: 2007

Figure 2  Staff performance hypothesis
3 RESULT & DISCUSSION

3.1. Comparison of OHSAS and OSHA score on workplace safety, workplace injury and illness and employees productivity.

3.1.1 Workplace Safety

There is significant difference between OSHA and OHSAS in the means of occupational accident and near misses. The mean scores for accident for OSHA ($M=2.28$, $SD=\pm 1.19$) and OHSAS ($M=2.84$, $SD=\pm 0.65$). The mean of near misses ($M=2.73$, $SD=\pm 0.85$) for OHSAS was significant higher than that of OSHA ($M=2.49$, $SD=\pm 1.05$) (Table 1).

Table 1. Workplace, accident, near misses, and unsafe act on workplace safety.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean OSHA</th>
<th>Mean OHSAS</th>
<th>t statistic (df)</th>
<th>p value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workplace safe</td>
<td>2.70 (0.81)</td>
<td>2.82 (0.83)</td>
<td>-1.385 (259)</td>
<td>0.17</td>
</tr>
<tr>
<td>Occupational accident</td>
<td>2.28 (1.19)</td>
<td>2.84 (0.65)</td>
<td>-4.375 (259)</td>
<td><strong>0.001</strong></td>
</tr>
<tr>
<td>Near misses</td>
<td>2.49 (1.05)</td>
<td>2.73 (0.85)</td>
<td>-2.081 (259)</td>
<td><strong>0.04</strong></td>
</tr>
<tr>
<td>Unsafe act</td>
<td>2.16 (1.26)</td>
<td>2.21 (1.28)</td>
<td>-0.356 (259)</td>
<td>0.72</td>
</tr>
<tr>
<td>Medical leave</td>
<td>2.02 (1.38)</td>
<td>2.02 (1.38)</td>
<td>-0.007 (259)</td>
<td>0.99</td>
</tr>
<tr>
<td>Health promotion</td>
<td>1.09 (1.34)</td>
<td>1.30 (1.40)</td>
<td>1.866 (259)</td>
<td>0.06</td>
</tr>
</tbody>
</table>

*Independent t test  p<0.05 (statistically significant)  ***p<0.001 (statistically highly significant)

The workplace safe score was higher for OHSAS than OSHA states. It’s showed the awareness of employees on the safety aspect at the workplace area is importance. According to Bakri et al., (2006) the rules and legislations are important to protecting the worker safety and ensure healthy workplaces. The probability value for occupational accident is 0.001 which is less than the predetermined alpha value 0.05, thus it show that there is a significant difference in the mean score between OHSA and OHSAS. Near misses result showed that there is a significant difference between OHSAS and OHSAS. Thus, occupational accident and near misses the null hypothesis was rejected. Therefore, hypothesis 1(H1), which suggests that there is a no significant difference between workplace safe, unsafe act, medical leave and health promotion is a fail to reject.

3.1.2 Employees Productivity

There were significant difference between OHSA and OHSAS in the mean of monitoring and motivation. The means score for monitoring for OSHA ($M=4.32$, $SD=\pm 0.67$) and OHSAS ($M=4.47$, $SD=\pm 0.52$). The motivation means score for OHSAS was higher ($M=3.90$, $SD=\pm 1.10$) than OSHA ($M=3.47$, $SD=\pm 1.15$) (Table 2).
Table 2. Training, monitoring, employees’ responsibilities, employer responsibilities and motivation on employee productivity.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>t statistic</th>
<th>p valuea</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA</td>
<td>OHSAS</td>
<td>(df)</td>
</tr>
<tr>
<td>Training</td>
<td>4.23 (0.73)</td>
<td>4.10 (0.69)</td>
<td>1.46 (259)</td>
</tr>
<tr>
<td>Monitoring</td>
<td>4.32 (0.67)</td>
<td>4.47 (0.52)</td>
<td>-2.04 (259)</td>
</tr>
<tr>
<td>Employee responsibilities</td>
<td>4.24 (0.63)</td>
<td>4.31 (0.57)</td>
<td>0.38 (259)</td>
</tr>
<tr>
<td>Employer responsibilities</td>
<td>4.33 (0.68)</td>
<td>4.41 (0.85)</td>
<td>0.17 (259)</td>
</tr>
<tr>
<td>Motivation</td>
<td>3.47 (1.15)</td>
<td>3.90 (1.10)</td>
<td>-3.05 (259)</td>
</tr>
</tbody>
</table>

aIndependent t test  *p<0.05 (statistically significant)

Surprisingly, the findings indicate this three variable factors insignificant role in OSH implementation at BPME workshops. This finding inconsistently with a previous study by Waehrer and Miller (2009), where training is a main factors to the increase of awareness of employee on accident at the workplaces. However, according to the Surienty et al., (2011) factor of lack of knowledge on OSHA and not take as a serious issue are influence to this result. OHSAS states showed significant higher score of monitoring than OSHA states, where the probability value obtained 0.042, which is less than 0.05 from the significant level setting.

Motivation also showed a positive impact to the employee, where there is a significant difference on motivation between OHSA and OHSAS employees. Therefore, hypothesis 2(H2), which suggests that there is a no significant difference between training, employee responsibilities and employer responsibilities, is a fail to reject.

3.2 Effectiveness of Occupational Health Safety Assessment Series (OHSAS) 18001:2007. Workplace Safe

There were significant differences in the means of workplaces safe, near misses and unsafe act based on the OHSAS state respondents (p value <0.05). The workplaces mean for Pahang-PHG state was higher (2.93, ± SD 0.46) than respondents at Terengganu-TRG (2.89, ± SD 0.53), Kedah (2.79, ± SD 0.68) and Kelantan-KLT (2.57, ± SD 0.93). However, there was no significant difference in accident mean between OHSAS states. The means scores for near misses are showed higher compared to others state (2.91, ± SD 0.51). For unsafe act, the means scores for Kedah-KDH are the lower compare to Pahang, Terengganu and Kelantan (1.62, ± SD 1.50) (Table 3).

Table 3. Workplace Safety

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>t statistic</th>
<th>p valuea</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KDH (n=29)</td>
<td>PHG (n=42)</td>
<td>TRG (n=35)</td>
</tr>
<tr>
<td>Workplaces safe</td>
<td>2.79</td>
<td>2.93</td>
<td>2.89 (0.53)</td>
</tr>
<tr>
<td>Occupational</td>
<td>2.79</td>
<td>2.83</td>
<td>2.91 (0.51)</td>
</tr>
<tr>
<td>accident</td>
<td>2.79</td>
<td>2.76</td>
<td>2.91 (0.51)</td>
</tr>
<tr>
<td>Near misses</td>
<td>2.79</td>
<td>2.76</td>
<td>2.91 (0.51)</td>
</tr>
<tr>
<td>Unsafe act</td>
<td>1.62</td>
<td>2.31</td>
<td>2.40 (1.22)</td>
</tr>
<tr>
<td>Medical leave</td>
<td>1.66</td>
<td>2.26</td>
<td>2.23 (1.26)</td>
</tr>
<tr>
<td>Health promotion</td>
<td>2.70</td>
<td>1.05</td>
<td>0.09 (0.51)</td>
</tr>
</tbody>
</table>

aOne-way ANOVA, b1 Non-parametric Levene’s test , *p<0.05, ***p<0.001
The results showed that workplaces safe, near misses, unsafe acts and health promotion had a significant difference with states implement OHSAS. It’s showed that states are implement OHSAS 18001 has a high self awareness on a safety at workplaces. This result is in line with a study conducted by Raja Prasad et al., (2013) where it prove that by implement OHSAS 18001 can help organization to reduce the accident rate, improving their company image, improve productivity and working environment at the workplaces. However, occupational accidents and medical leave are no significant difference between employees. The finding by EU-OSHA (2012) where the improvements activities are implemented in occupational health and safety management systems had been reduced accident, incidents and medical leave at workplace. The finding by Ahmed Shafik and Abd El-Mohsen (2012) health promotion program will increase the employees information, attitude and awareness on safety measures. Therefore, hypothesis 3(H3), which suggests that there is a significant difference between workplaces safe, near misses, unsafe acts, medical leave and health promotion, is reject.

3.2.1 Employees Productivity

There were significant difference in training, employee responsibilities, employer responsibilities and motivation in respondents of OHSAS states. The mean scores for Kelantan was higher compare to other states (4.43, ± SD 0.60). No significant difference in the monitoring for respondents OHSAS states. Employee responsibilities, employer responsibilities and motivation were conducted using non-parametric Levene’s test (Table 4).

### Table 4. Employee Productivity

<table>
<thead>
<tr>
<th>Variable</th>
<th>KDH (n=29)</th>
<th>PHG (n=42)</th>
<th>TRG (n=35)</th>
<th>KLT (n=21)</th>
<th>t statistic (df)</th>
<th>p value&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>4.17 (0.76)</td>
<td>3.88 (0.63)</td>
<td>4.11 (0.68)</td>
<td>4.43 (0.60)</td>
<td>3.297 (3,123)</td>
<td>0.023</td>
</tr>
<tr>
<td>Monitoring</td>
<td>4.41 (0.57)</td>
<td>4.33 (0.48)</td>
<td>4.57 (0.50)</td>
<td>4.67 (0.48)</td>
<td>2.656 (3,123)</td>
<td>0.051</td>
</tr>
<tr>
<td>Employees responsibilities</td>
<td>4.21 (0.49)</td>
<td>4.43 (0.63)</td>
<td>4.54 (0.50)</td>
<td>4.48 (0.48)</td>
<td>47.024 (3,123)</td>
<td><strong>0.001</strong>*&lt;sup&gt;b1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Employer responsibilities</td>
<td>4.41 (0.87)</td>
<td>4.31 (0.64)</td>
<td>4.31 (0.51)</td>
<td>4.76 (0.51)</td>
<td>21.522 (3,123)</td>
<td><strong>0.001</strong>*&lt;sup&gt;b1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Motivation</td>
<td>3.90 (1.37)</td>
<td>4.02 (0.81)</td>
<td>3.80 (1.16)</td>
<td>3.81 (0.44)</td>
<td>2.823 (3,123)</td>
<td><strong>0.042</strong>&lt;sup&gt;b1&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup>One-way ANOVA, <sup>b1</sup>Non-parametric Levene’s test , *p<0.05, ***p<0.001

Employee productivity is significant difference with training, employee’s responsibilities, employer responsibilities and motivation. Kelantan showed significantly higher score of training on occupational safety and health than Kedah, Pahang also Terengganu. From the record also proved that staffs under management system at Kelantan has well enough training. The finding by S.X. Zeng et al., (2008) found employees has well trained improve the safety awareness at the workplaces. Based on that, the finding showed employees agreed and give a fully commitment on occupational health and safety management systems. Employees agree that employer duties to provide a safe working environment, commitment to OSH, training and so on. As a results, the productivity of employees increase and decrease absenteeism. Correlation between training, employee responsibilities, and employer responsibilities has been affect to the employee’s motivation at BPME’s workshops. Therefore, hypothesis 4(H4), which proposed that there is a significant difference between training, employee responsibilities, employer responsibilities and motivation, is accepted.
3.2.2 Multiple – site certification of OHSAS 18001

In the third part of this study, its will look into a method of multiple site certifications of OHSAS 18001:2007 at JPS Malaysia. These processes are involved in eight processes as showed in Figure 4 Organization management of JPS set the direction by demonstrate commitment on safety and health at the workplace where the first item is express the department policy and objectives of programs to shown their commitment on employee’s safety. Top managements decided states are has already certified by SIRIM or NIOSH under occupational health and safety assessment series shall join in this program.

Document tunings actually is a process of standardized the documents to become master documents. The main contents are included in this document are policy, scope, objective, responsibilities, accountability, authority and so on. It also briefly explains on the other documents such as procedure, operation and record control. Document controls actually are an OHSAS standard requirements and it's a compulsory to complied. It is to ensure the latest version of document is updated and controlled and prevent the use of obsolete documents. Thus, office should have document master officers to controlling all documents, where at every state also should have documents officer to monitor and compile any amendment required to documents master officers.

Internal audit program actually to ensure the management systems implemented successfully. The internal audit shall be scheduled once a year. The purpose of internal audit are to comply OHSAS 18001 standard requirements, ensure management systems implemented and maintained with comply of policy requirements and objectives programs, and to identified the effectiveness of safety and health from any risk and incidents. Thus, to ensure the system running well, Management review are held by top management to discussing continual improvement on safety and health and effectiveness on management systems at least once a year.

Final stage on this multiple-site OHSAS 18001:2007 certification on JPS Malaysia is external audit. The external audits are conducted by certification bodies are appointed by organization. It will be held two times of audits, it is a stage 1 and stage 2. The auditor will select any states out of seven to be audited. Finally, is an OHSAS 18001 certificate. The certification body will issue an OHSAS 18001:2007 multiple-site certifications if the organization complies with all the standards and requirements are stated.

Figure 4. Method of multiple – site certification of OHSAS 18001
4. CONCLUSION AND RECOMMENDATION.

The finding of this research on the workplace safety and employees productivity showed implementation of OSHA at BPME workshops considered as low since all states showed low compliance. Two of six indicate that there were significant relationships between occupational accident and near miss with workplace safety. Meanwhile, two of five also had significant relationships between monitoring and motivation with employee productivity. Thus, implementation of occupational health and safety at five states need more aggressive on compliance of act to increase staff performance on safety and health at workplace.

Meanwhile, high compliance on management systems are shown on four states. The hypothesis result showed there were significant differences on workplace safety and employee productivity with OHSAS 18001. This proved that the effectiveness of staffs performance are working at states has implemented management systems was successfully.

As such, the practical approach shown in this paper provided a method to integrate the multiple-site certification of OHSAS 18001 at JPS Malaysia. The approach provides guidance through seven steps on certification of multiple-site OHSAS 18001. In addition, this approach is based on OHSAS standard requirements and also from certification bodies. These methods are applicable to any organizations but they need to adjust to their suitability.

Finally, this research will help other states to improve and strengthen their awareness on occupational safety and health at workplace at the same time improves their staff performance.

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BIBLIOGRAFI PENULIS-PENULIS

Nama : Mohamad Saiful Azhar bin Harun
Institusi : Jabatan Pengairan dan Saliran
Email : saifulazhar.harun@gmail.com
No.telefon : 0192663646

Nama : Asmira bin Ashari
Institusi : Politeknik Sultan Salahuddin Abdul Aziz Shah
Email : wev6319@yahoo.com.my
No.telefon : 0136353976

Nama : Zulkhairi bin Khairudin
Institusi : Politeknik Sultan Salahuddin Abdul Aziz Shah
Email : zulkhairi6649@gmail.com
No.telefon : 0137786649