Assessment of health and safety culture maturity level in the shipping industry in Surabaya

Moch. Sahri 1, Muhammad Iqbal Ridho Maulana Arifin 2, Abdul Hakim Zakkiy Fasya 2, Mursyidul Ibad 2

ABSTRACT

**Introduction:** OHS culture can contribute to achieving productivity and zero accidents. Without a safety culture in workers, no matter how well the system or structure is designed and how sophisticated the safety devices are, there is no functioning due to the things underlying human behavior. This study aims to evaluate the description of the level of OHS cultural maturity using SCMM (Safety Culture Maturity Model).

**Method:** This study uses a descriptive quantitative design with a cross-sectional approach. The population used is all permanent workers of the Commercial Ship Division in the Shipping Industry, numbered 173. The total sample of all workers is 34 people using a non-probability sampling method. The variables of this study were 10 components of SCMM. The instrument used is a questionnaire sheet based on the SCMM (Safety Culture Maturity Model).

**Result:** The results showed that the components of management, commitment and visibility showed a value of 2.82, communication a value of 3.12, productivity versus safety a value of 3.94, learning organization a value of 4.44, safety resources a value of 3.26, participation value of 4.12, shared perceptions about safety score 4.88, trust value 3.88, industrial relations and job satisfaction score 4.38, and training value 3.70.

**Conclusion:** The conclusion in this study shows the level of maturity of OHS culture at the Shipping Industry has a final average score of 3.85 at the level involving. The advice is to increase the level of OHS culture by evaluating the fulfillment of the target of management visits to the field, evaluating OHS media, evaluating the fulfillment of safety patrols or visiting the OHS team to indoor places.

**Keywords:** Maturity Level, OHS Culture, Safety Culture Maturity Model.


INTRODUCTION

The number of work accidents continues to rise, beliefs that underlie direct, and give meaning in human behavior which are in a system or norm that applies in human life. Culture can be one factor influencing humans in acting and behaving. In occupational safety and health (OHS) culture contributes to achieving productivity and zero accidents. Gordon stated that without a safety culture in workers, no matter how well the system or structure is designed, no matter how sophisticated the safety devices, there will be no functioning due to the things that underlie human behavior, in this case the culture is not owned by workers. Based on data from BPJS Employment number of work accident cases in Indonesia began to increase from 173,415 cases in 2018 to 221,740 case. The number of work accidents continues to rise every year, becomes something that needs to be given special attention so that work accidents and occupational diseases do not cause material loss and loss of life and health problems for workers but can disrupt the entire production process even destroying the environment in the end impact on the wider community.  

Building an OSH culture in Indonesia became a focus for the government through the Ministry of Manpower. Various policies and activities created to create awareness of the world of work on the importance of OSH culture. OHS Culture become a national development vision in the field of OHS which has been proclaimed by the Ministry of Manpower since 1984.  

Analysis of the safety culture that developing tends to involve description norms and assumptions that are more or less shared by members of an organization that support organizational goals. Still, more than that generally there is no conclusion that whether culture is good or bad depicted, therefore Hudson made a theory about the level of cultural maturity OHS called Safety Culture Maturity Level (SCML). In this theory, a OHS cultural evolution classification allows to group achievement of an organization’s OHS culture. With This classification can be given a clear picture it is clear to what extent a company is cultured OHS. Goncalves Filho develops theory SCML as a measuring tool in the form of a Safety questionnaire Culture Maturity Model (SCMM) for measuring the maturity of OHS culture.  

Many companies have implemented an occupational health and safety management system. Still, in the process,
few companies do not know the level of maturity of the OHS culture in the company itself. One company that has implemented an occupational health and safety management system is PT. PAL Indonesia (Persero). Therefore researchers want to conduct research on the level of implementation of OSH culture by using the Safety Culture Maturity Model.

MATERIALS AND METHODS

Materials
The materials in this research are 10 variables of safety culture maturity model.

Table 1. Frequency Distribution of Respondents Characteristics of the Commercial Ship Division at PT. PAL Indonesia (Persero)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-30</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>31-35</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>36-40</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td>41-45</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>46-50</td>
<td>11</td>
<td>32</td>
</tr>
<tr>
<td>&gt;50</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior high school</td>
<td>30</td>
<td>88</td>
</tr>
<tr>
<td>Associate’s degree (D2)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Bachelor’s degree (S1)</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head of Department</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Head of Workshop or Bureau</td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>Employee</td>
<td>21</td>
<td>62</td>
</tr>
<tr>
<td>Working Period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-10 years</td>
<td>14</td>
<td>41</td>
</tr>
<tr>
<td>11-15 years</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>16-20 years</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>21-25 years</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>26-30 years</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td>&gt;31 years</td>
<td>6</td>
<td>18</td>
</tr>
</tbody>
</table>

1. Management commitment and visibility
2. Communication
3. Productivity versus safety
4. Learning organization
5. Safety resources
6. Participation
7. Shared perceptions about safety
8. Trust
9. Industrial relations and job satisfaction
10. Training

MATERIALS AND METHODS

Materials
The materials in this research are 10 variables of safety culture maturity model.

Table 2. Table of OHS Cultural Maturity Levels on All Variables

<table>
<thead>
<tr>
<th>No.</th>
<th>Variable</th>
<th>Minimum Value</th>
<th>Maximum Value</th>
<th>Mean</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Management commitment and visibility</td>
<td>2</td>
<td>5</td>
<td>2.82</td>
<td>Managing</td>
</tr>
<tr>
<td>2.</td>
<td>Communication</td>
<td>1</td>
<td>5</td>
<td>3.12</td>
<td>Involving</td>
</tr>
<tr>
<td>3.</td>
<td>Productivity versus safety</td>
<td>1</td>
<td>5</td>
<td>3.94</td>
<td>Involving</td>
</tr>
<tr>
<td>4.</td>
<td>Learning organization</td>
<td>3</td>
<td>5</td>
<td>4.44</td>
<td>Cooperating</td>
</tr>
<tr>
<td>5.</td>
<td>Safety resources</td>
<td>1</td>
<td>4</td>
<td>3.26</td>
<td>Involving</td>
</tr>
<tr>
<td>6.</td>
<td>Participation</td>
<td>3</td>
<td>5</td>
<td>4.12</td>
<td>Cooperating</td>
</tr>
<tr>
<td>7.</td>
<td>Shared perceptions about safety</td>
<td>4</td>
<td>5</td>
<td>4.88</td>
<td>Cooperating</td>
</tr>
<tr>
<td>8.</td>
<td>Trust</td>
<td>1</td>
<td>5</td>
<td>3.88</td>
<td>Involving</td>
</tr>
<tr>
<td>9.</td>
<td>Industrial relations and job satisfaction</td>
<td>2</td>
<td>5</td>
<td>4.38</td>
<td>Cooperating</td>
</tr>
<tr>
<td>10.</td>
<td>Training</td>
<td>2</td>
<td>5</td>
<td>3.70</td>
<td>Involving</td>
</tr>
</tbody>
</table>

Average Value

3.89

Involving

Data analysis
This study uses a research design cross sectional. Quantitative data were analyzed using SPSS Statistics version 25.

RESULTS

Based on Table 1. The majority of respondents aged 46-50 years (32%), with last education is senior high school (88%), position as an employee (62%), and working period for 5-10 years (41%)

Table 2 shows the maturity level of OHS culture in the Commercial Ship Division at PT. PAL Indonesia (Persero) based on 10 SCMM components. The results of the table above show that several SCMM components are included in the level 4 (cooperating) category, namely the variable Learning organization, Participation, Shared perceptions about safety, Industrial relations and job satisfaction, the highest score at level 4 (cooperating) belongs to the Shared perceptions about safety variable (4.88). Category level 3 (involving) contains variables Communication, Productivity versus safety, Safety resources, Trust, Training, the highest value at level 3 (involving) belongs to the variable Productivity versus safety (3.94). Category level 2 (Managing) is owned by the variable Management commitment and visibility with the lowest value (2.82). The overall results show that the level of implementation of the company’s OHS culture is at level 3 (involving) and has a value of (3.89).
DISCUSSION

OHS Cultural Maturity Level at PT. PAL Indonesia (Persero) Commercial Ship Division

Maturity level of OHS culture at PT. PAL Indonesia (Persero) Commercial Ship Division meets the assumption of cultural maturity level set by Mark Flemming. The company already has SMOHS, uses internal ISO 45001, and complies with existing safety and health laws. When an accident occurs in an area in the Commercial Ship Division, the safety officer has the right to stop all production activities and carry out safety inspections in the chronology of the accident area. The OHS team always strives for the safety of workers by creating programs that support the safety and comfort of workers, such as the use of PPE in the area of the Commercial Ship Division.

Variable Management, commitment and visibility

The variable Management, commitment and visibility has a value of 3.85 at the level involving. The management is actively monitored, and data is used effectively. Most frontline workers are willing to work closely with management to improve occupational safety and health in the work environment. Staff workers accept personal responsibility for safety and their health, safety performance is actively monitored, and data is used effectively. PT. PAL Indonesia (Persero) Commercial Ship Division always strives for the safety and health of frontline employees in occupational safety and health is very important, if future improvements are to be achieved.

Based on the results of the accident rate study, it was found that at PT PAL, it showed that 75% of workers had never had an accident. The management realizes that various factors cause accidents, and the root cause comes from management decisions. Most frontline workers are willing to work closely with management to improve occupational safety and health in the work environment. Staff workers accept personal responsibility for safety and their health, safety performance is actively monitored, and data is used effectively.

The balance of productivity and safety aspects in the Commercial Ship Division can be seen from the workers always giving time to participate in the TBM. The OHS team is very active in reminding workers regarding work hazards in the work environment and providing time for questions for workplace safety discussions. OHS cultural posters and banners are also given to each department, so that workers are not blind to information related to OHS.

The communication variable has an average value of 3.12 at the level involved. At this level, before making decisions regarding the safety program, the department head informs and accepts suggestions openly to workers and gets feedback from the department head. Safety communication at the Commercial Ship Division shows two-way communication and a good feedback mechanism. Most of the workforce has good knowledge and attitudes but has unfavorable actions towards using PPE. Six of the seven types of communication show a good category and have an influence on knowledge, attitudes and actions in using PPE.

Variable Productivity Versus Safety

The variable Productivity versus safety has a value of 3.94 at the Involving level, the company has tried to prioritize safety. Workers know the importance of safety and ensure safety aspects are met before starting work.

The participation variable has a value of 4.12 at the Cooperating level. At this level, employee involvement includes observing behavior and unsafe conditions in the company. Giving advice can also receive feedback from the head of the department.
or the OHS LH team who responds to reports that workers have made.\textsuperscript{17}

PT. PAL Indonesia (Persero) especially the Commercial Ship Division, requires workers to be careful in maintaining the safety of themselves, their work environment and others, which means that every worker who will carry out activities at PT. PAL Indonesia must understand what OHS LH is to avoid unwanted accidents. Employee participation is very important in the Commercial Ship Division which can be felt in the 5R program, which every worker must carry out during, during and after completion of work.\textsuperscript{17}

\textbf{Variable SCMM Shared Perception About Safety}

The variable shared perception about safety has a value of 4.88 at the cooperative level. This variable is the highest value than other variables. At this level, it feels like a forum for interaction between various levels in the company. Discovery ideas can come from lower levels or workers to identify problems that sometimes arise in the field, and management can review the suggestions from lower-level workers. So far, the Commercial Ship Division has always appreciated organizing opinions when the opinion can improve work performance to be more effective and efficient. The research results at PT PAL show that the aspects or components of the perception variable on safety performance are quite high.\textsuperscript{18}

\textbf{Variable SCMM Trust}

The trust variable has a value of 3.88 at the level involving. At this level, the cause of work accidents is focused on equipment damage and lack of maintenance. Management believes that workers have carried out incident prevention, but management is not aware of the system in involving. Workers in the Commercial Ship Division must have confidence in the head of the workshop and the mandate that has been given.\textsuperscript{19}

\textbf{Variable SCMM Industrial Relations and Job Satisfaction}

The variable industrial relations and job satisfaction is 4.38 at the cooperative level. At this level, the company aims to achieve the highest safety standards and see the final performance, such as decreased inspection findings during work. Workers declare to avoid accidents and protect workers in a state of danger. OHS itself has become part of the company and holds the safety of the workers in the perception of the workers, they are satisfied with the rules and duties of the OHS team as they should be.\textsuperscript{20}

\textbf{Variable SCMM Training}

The training variable has a value of 3.70 at the level involving. At this level, safety training is the responsibility of the OHS team. The Commercial Ship Division of OSH LH provides training towards the final stage of ship production being completed. The training provided is in the form of fire emergency response training, the training was chosen because of the dangers that are prone to occur during the production of a ship.\textsuperscript{17} Before the training, the workers will be given direction and training is made by way of a role model that involves workers to play a role. The workers play the role of victims and rescue workers. Training on OSH is urgently needed so that workers know the importance of working safely.\textsuperscript{19}

The limitation of this research is the small number of samples and only limited to discussing the level of OSH cultural maturity. So it is hoped that in future studies the sample used will be larger and it can be assessed the correlation of all variables with the OSH cultural maturity level

\textbf{CONCLUSION}

In general, the level of maturity of OHS culture at PT. PAL Indonesia (Persero) shows a value of 3.85 and is at the level involving.

\textbf{ACKNOWLEDGEMENT}

We would like to express our deepest gratitude to the respondents who have participated in this study and Universitas Nahdlatul Ulama Surabaya for the moral support.

\textbf{CONFLICT OF INTEREST}

The authors declare that they have no competing interests.

\textbf{ETHICAL APPROVAL}

This research has been declared ethically feasible by the research committee of Public Health Universitas Airlangga, with ethical clearance reference number 142/EA/KEPK/2022.

\textbf{AUTHOR CONTRIBUTION}

All authors contributed equally in conducting research and writing manuscripts.

\textbf{FUNDING}

No additional funding or third parties sponsor was involved during this study's phases.

\textbf{REFERENCES}

12. Khotijah Nur Ain Hidayah S. Hubungan Antara Komitmen Manajemen, Peran Pengurus Dan Tenaga Kerja Dengan Penerapan Ringkas,


