

An Implementation of the International Safety Management Code for Supporting the Safety of the Barombong Training Ship

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Abstract: ISM Code as part of the provisions of Safety of Life at Sea (SOLAS) is the management of ship operations to improve the safety of ships and crew, aiming to see the extent of its effectiveness, using the qualitative methods of gap analysis. The results showed that the ISM Code had not been effectively applied to the training ship in the Barombong Maritime Polytechnic. The commitment between the management and the internal audit crew has never been carried out, with the vertical and horizontal lines have not been implemented properly.

Keywords: ISM Code, Safety, Coordination, effectively

Date of Submission: 27-02-2020

Date of Acceptance: 13-03-2020

I. Introduction

The ISM Code is an International Code on safety management of ship operations and pollution prevention, born as demand for safety management on board aims to reduce the level of work accidents at sea [1,2]. The application of the ISM Code in Indonesia should be carried out based on rules and regulations concerning to shipping, SOLAS as a result of an international conference on life safety at sea 1974, and the application of ship safety management for Indonesian-flagged vessels used for national and international shipping with a weight greater than 500 gross tonnage[3,4,5].

One of the ISM Code products are the Safety Management System (SMS), for safety on board and the protection of the marine environment by involving land and sea personnel based on their respective responsibilities and authorities [6].

Barombong Training Ship about 590 GT is a supporting facility for maritime education and training in order to improve the quality of seafarers' human resources for deck and engine officers. This ship, serves to improve the ability of practical training for cadets in accordance with international standard seafarers education curriculum according to amendments, Standards of Training Certification and Watch keeping for Seafarers (STCW, 2010) as well as shipping safety standards. Considering that the Barombong Training Ship is operated for education and training, it is thought that many factors need to be defined as a consequence of the application of the ISM Code for operation the ship of Barombong Training. Implementation is the treatment of public policy, in achieving the goals or objectives to be achieved [7]. The generally accidents occur at seas which are generally caused by negligence in the application of ISM code.

As stated by [6,8], Practices that are often ignored in the application of ISM Code are as follows: 1) Not following the rules and regulations, 2) Operation of navigation equipment that is not appropriate, 3) Not understanding the equipment maintenance procedures, 4) Do not understand the security measures, 5) Work without regard to the level of awareness, 6) Conditions that are often ignored are a) Maps, nautical publications and other inadequate / expired documentation, b) Weather conditions or unprofitable sea, c) Inadequate safety equipment, d) Dirty fuel and lubricants, and e) Poor workplace or environment, such as being too noisy or too hot.

The relationship between ship management and the ISM code is an international management standard which is safety management applied on the ship and the company aims to: 1) Guarantee the crew and safety of the ship, 2) Prevent accidents and fatalities of the ship, and 3) Prevent pollution, environmental damage and lost property. Reasons for implementing the ISM Code include 1) Ships being a safe place to work, 2) Protecting the oceans and waters in environmental pollution, 3) Classifying duties and responsibilities on the ship, and 4) As a source of law [2,4].

II. Research Methods

The approach used in this study is qualitative and Gap Analysis to determine the operational performance of the training ship. The gap will be positive (+) if the actual value is greater than the target value of the Low category (R), otherwise, it will be negative (-) if the target is greater than the actual value, in other words, the high category (T). The target value is getting bigger and the actual value is getting smaller, making the gap bigger and the Importance-Performance Analysis [9]. Importance-Performance Analysis is a combination of aspects of the level of importance and performance of quality or condition. The weight of each attribute on Importance and Performance is obtained from the processing of the questionnaire from the respondent. The results of the assessment of the interests and performance of respondents are discussed in the form of perception using the Likert scale with four levels of assessment. Based on the results of weighting on Importance and Performance), it can be illustrated in a Cartesian diagram (See Figure 1).

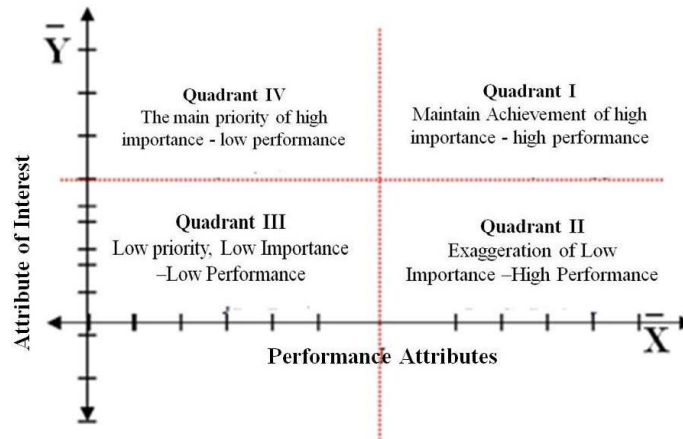


Figure 1. Cartesian Importance Performance Analysis Diagram

Each quadrant shows a different strategy.

- 1) Quadrant I has the meaning of high-importance and performance given so that the attributes included in this quadrant are the strengths and pillars of the organization, indicating opportunities to achieve or maintain competitive advantage and major strengths
- 2) Quadrant II has the meaning of Low Interest and High Performance, which shows attributes that are too emphasized by the organization but are not too important for service users, indicating that the resources of an attribute are excessive and need to be transferred or allocated elsewhere, for example in Quadrant I.
- 3) Quadrant III means Low-Importance and performance is labeled Low Priority. Thus, one of the attributes that fall into this quadrant is not important and does not pose a threat to the organization, minor weaknesses and does not require additional effort.
- 4) Quadrant IV has the meaning of high importance and low performance, so the attributes included in this quadrant represent the main areas that need to be improved with top priority, require immediate attention to improvement and show weaknesses.

III. Discussion

ISM-Code or Safety Management on board and shipping companies are Occupational Health and Safety (OSH) and Environmental management system standard. ISM Code is not a management system standard that is run on a voluntary principle but rather OHS management standard and an environment that is required through legislation and other requirements. OHS management system is an obligation based on the legislation in the Occupational Safety and Health Management System (OSHMS) which has been mandated through Government Regulation No. 50 of the year 2012, as shown in Table 1.

Table 1. The results of the analysis of the application of the ISM Code on the Barombong Training Ship

No.	Variables	Average		$\Delta = X - Y$
		Performance (X)	Interests (Y)	
a. Document Compliance				
1	Ship crews report to the Barombong Maritime Polytechnic regarding the validity of all certificates and documents needed in the operation of the ship	1.33	2	-0.67
2	Ship crews perform work steps to ensure safe scope of work in	2	2.13	-0.13

3	operating the ship Ship crews carry out preparatory work steps to deal with and cope with emergencies	2	2	0
4	Barombong Maritime Polytechnic makes policies regarding safety and protection on ships	1.41	1.25	0.16
5	The company carries out supervision in the form of an audit of the safety management system on board	1.25	1.75	-0.5
b. Qualified and Certified HR		1.70	1.93	-0.23
6	The Barombong Maritime Polytechnic selects qualified, certified and medically healthy ship crews to be employed on board	1.91	2.5	-0.59
7	All officers and special crew are given sufficient time to adjust to their duties, in this case the introduction of ships and emergency equipment.	1.91	2	-0.09
8	Ship Officers document that all crew members have received training and counseling and understand well about their duties	1.75	1.88	-0.13
9	Ship Crew conducts drill / training for all ship personnel in supporting the implementation of SMS	1.25	1.63	-0.38
10	All crew members use good communication to support the implementation of SMS responsibly	1.67	1.63	0.04
c. Periodic Maintenance and Repair		1.65	1.95	-0.30
11	Barombong Maritime Polytechnic makes procedures that guarantee ships can be maintained in accordance with applicable regulations	1.5	1.75	-0.25
12	Under the crew system, the Ship carries out maintenance plans that include maintenance procedures	2.08	2	0.08
13	Barombong Maritime Polytechnic conducts inspections to check the equipment maintenance system on the ship	1.08	1.75	-0.67
14	The Crew records and documents the results of inspections and maintenance that have been carried out on the ship	1.91	2.38	-0.47
15	The crew made a report to the Barombong Maritime Polytechnic in connection with inspection and maintenance procedures	1.67	1.85	-0.18
d. Continuous Care and Repair		1.69	1.95	0.254
16	The Barombong Maritime Polytechnic creates and develops procedures to oversee all documents and data related to SMS	1.33	1.75	-0.42
17	The document used for implementing the SMS is used as a reference as a Safety Management Handbook	2	2	0
18	Ship documents are not only stored on the ship, but they are also stored at the head office / company	1.08	1.38	-0.3
19	Documents that are still valid and expired are separated	1.41	1.63	-0.22
20	Ship Safety Management Guidelines are placed in a readable place	2.67	3	-0.33
Average		1.66	1.92	0.25

Table 1 shows the results of the average value between performance and interests. Most of the factors in each aspect of both performance and importance have an average value of more than 1 on a scale of 4, which is 1.66 on average performance and 1.92 on average interests or expectations. Furthermore, the average value of each factor on performance and importance by mapping in diagrams are divided into 4 quadrants, as shown in Figure 2.

Factors of all four aspects of the Figure 2 related to the ISM Code of the Barombong Training Ship is illustrated in a diagram divided into four quadrants which indicate the priority level of the required follow-up. Figure 2 shows the distribution of aspects of performance in the current conditions with the interests as the expectations of the perpetrators of activities.

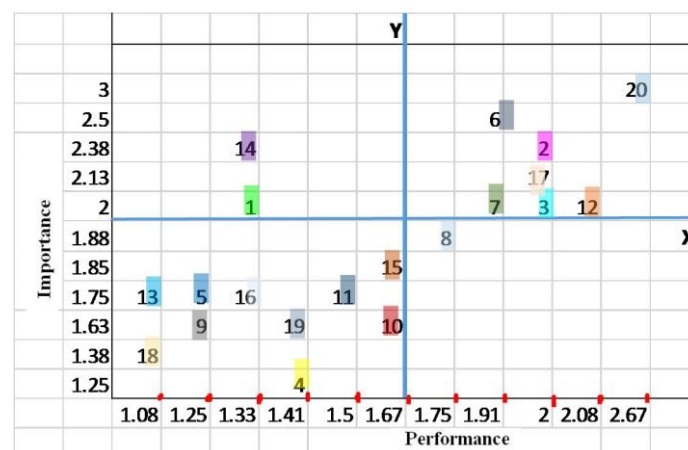


Figure 2. Distribution of Performance and Interest Aspects

1. **Quadrant 1:** Maintain Performance, this quadrant shows factors that have a high level of performance and importance. This factor must be maintained because the level of performance is in accordance with the level of importance expected by the parties concerned. These factors are in aspects number 2, 3, 6, 7, 12, 17 and 20.
2. **Quadrant 2:** Excessive, a factor that has a high level of performance but a low level of importance. This factor is considered less important and is felt to be too excessive. The factor included in quadrant 2 is aspect number 8.
3. **Quadrant 3:** Low Priority, factors that have a low level of performance and importance. Factors that are considered less important and low performance. Quality improvements included in quadrant 3 can be reconsidered because their effect on benefits is felt below. Factors included in quadrant 3 include aspects number 4, 5, 9, 10, 11, 13, 15, 16, 18, and 19.
4. **Quadrant 4:** Top Priority, factors that have a low level of performance and a high level of importance. Factors that are considered important, but in reality these factors are not in accordance with the level of importance, so these factors must be improved. Factors included in quadrant 4 include aspects number 1 and 14.

Related to the application of the ISM Code, it is necessary to apply the ISM Code that is run optimally to achieve shipping safety and ship operation. To see the conditions of understanding related to the application of the ISM Code, questionnaires or questionnaires are distributed with the following indicators: 1) Conformity of the document, which is the crew knows all the documents to be checked, reports are made and to whom this document is reported to support shipping safety. 2) Qualified and Certified Human Resources, that is, management accepts and employs crew members in accordance with certificates and expertise in accordance with their respective qualifications [2,10] , 3) Periodic Maintenance and Repair, that is, management makes procedures to be carried out by the ship for maintenance and repairs according to the procedure. 4) Continuous maintenance and repair that is the understanding of ship crews in carrying out maintenance and repairs and stated in the report and communicated with all the crew and the management.

Provisions or rules for the application of the ISM Code on Barombong Training ships are in the low category. With this result, it can be stated that the Barombong Maritime Polytechnic makes safety and protection policies on board, the rules and procedures related to maintenance and repair, the Barombong Maritime Polytechnic conducts supervision related to shipping safety rules and procedures, and Ship Crew conducts drill / training for all ship personnel in supporting the implementation of Shipping Safety. Based on the results shown in the processed data results are lower because based on the results of the analysis of the questions on the questionnaire.

The relationship between the application of the Barombong Training ship Code is that there is no Safety Management Certificate (SMC) and Document of Compliance (DoC) certificate but can apply the ISM Code Safety on Board because of it only requires a commitment between the management and the crew of the Barombong Training Ship to apply the documents and carry out the continuous application of the ISM Code. Provisions or rules for the application of the International Safety Management Code (ISM Code) in Barombong Training Ship in the high category with this result can be stated that the crew does the work according to the work steps to ensure the safety and operation of the ship, the Barombong Maritime Polytechnic chooses a crew the member who has the quality and certified human resources, all officers and crew members know each other's duties based on responsibility, and the crew performs maintenance and repairs in accordance with applicable regulations. Based on the results shown in the processed of high data results, because it is based on the analysis of questions on the questionnaire.

The relationship between the applications of the Barombong Training Ship ISM Code is that it can apply the ISM Code on the Barombong Training Ship because it is seen from qualified and certified human resources so that it has responsibilities according to their respective duties. Both of the above requires a commitment between the institution/management and the ship in implementing the ISM Code on the Barombong Training Ship.

Governance of education and training institutions to adapt to ISM Code rules

One of the important indicators in the Management of Training Institutions in accordance with the ISM Code is the Indicator of ship safety and shipping. The ship must have safety equipment, documents and certificates, ship-worthy conditions and the health of the crew so that the voyage will be safe and secure. The Ship Safety Management Certificate consists of the Document of Compliance (DoC) for the company and the Safety Management Certificate (SMC) for the ship.

Looking at the results data of the Barombong Training ship can apply the ISM Code to make safety improvements so that it can minimize accidents when shipping.

The results that can be applied on the Barombong training ship is 1) Safety and Environmental Protection Policy, 2) Corporate Responsibility and Authority; 3) Reports and analysis on non-conformities,

accidents and dangerous events; 4) Documentation: related to all maintenance and repair activities and reports; 5) Review of company verification and evaluation results; 6) Government certification, verification, and control.

IV. Conclusions And Recommendations

Conclusion

Based on the previous discussion, it can be concluded as follows: 1) Factors Causing ISM Code Provisions / Rules Difficult to Apply on the Barombong Training Ship are a) There is no commitment between management and the Barombong Trained Ship Crew, b) The absence of an internal audit institution for the Designated Person Ashore (DPA), c) There is no coordination path between the Ship Crew, Management and the Director of the Barombong Maritime Polytechnic. 2) Governance of Education and Training Institutions to Adapt to the Rules in the ISM Code. The Barombong Maritime Polytechnic must take the following steps to make the ISM Code effective on the Barombong Training Ship: a) Environmental Safety and Protection Policy; b) Corporate Responsibility and Authority; c) Reports and analysis on non-conformities, accidents and dangerous events; d) Documentation: related to all maintenance and repair activities and reports; e) Review of company verification and evaluation results; f) Government certification, verification, and control.

Recommendation

Discussion and conclusions obtained, the following recommendations can be made: 1) Management of the Barombong Maritime Polytechnic must be able to adapt to applicable regulations in accordance with the provisions of the ISM Code; 2) The crew must have a certificate in accordance with international standard certificates, 3) The enforcement of the ISM Code on board the ship is intended to support the safety of shipping.

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Muhammad Choeroni, etal. "An Implementation of the International Safety Management Code for Supporting the Safety of the Barombong Training Ship" *IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE)* 17(1), (2020): 44-48.