

Effectiveness of Seafarers' Safety Measures Onboard Vessel

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Abstract - *This study aimed to determine the effectiveness of the safety measures on board. Specifically, it sought to identify the effectiveness of safety measures on board, determine the level of safety measures on board vessels, to determine the problems encountered by seafarers on board ships and to propose actions to enhance/improve safety measures on board. Descriptive type of research was employed in the study. Results show that safety measures on board are found to be highly effective. An action plan was proposed to improve the effectiveness of safety measures on board. It is recommended that seafarers may be aware of the effectiveness of safety measure while working on board a vessel so that they could be conversant with the standards.*

Keywords: *safety measures, vessel, shipping, on-board, effectiveness.*

INTRODUCTION

Maritime safety, efficient maritime transport and navigational system, as well as safety of humans and the environment, are among the prioritized concerns of those engaged in maritime industry (Javier and Aguado, 2012). In general safety is the state of being "safe", the condition of being protected against physical, social, spiritual, financial, political, emotional, occupational, psychological, educational or other types or consequences of failure, damage, error, accidents, harm or any other event which could be considered non-desirable. Safety is also a recognized hazard to achieve an acceptable level of risk. This can take the form of being protected from the event or from exposure to something that causes health or economical losses Wiki Safety (2010).

Personal safety in ship's operation as regards to meeting up with, knowing how the machinery are been maintained, familiarization with cargo operations, mooring equipment, knowing how and ways of handling chemicals, cleaning and general ship's operation. The International Maritime Organization (IMO) Regulation of International Safety Management (ISM) code (1993). Whose

purpose is to ensure Safety of life at Sea (SOLAS), to prevent human injury or loss of life, and to avoid damage to the environment and the ship. Personal safety or safety of life at sea comes at the top of the priority list as there is no loss that is considered greater than the loss of human life. Shipping companies understand the importance of the safety of human life at the sea and thus rank it at the very top. It is a known fact that without an efficient crew no shipping company can survive (Wankhede & Kantharia, 2012).

In particular, this includes the vital need for all concerned to understand the relationship between unsafe acts and serious incidents that may cause loss of life or severe damage to property and the environment. The importance of changing behaviour, and avoiding negative attitudes or complacency towards safety and environmental protection is also underlined ("Implementing an Effective Safety Culture", 2013). For shipboard, the term personal safety is a result of the systematic approach to working procedures without compromising on any protective measure. To ensure a safe working environment, start every job on the ship with "Safety First" attitude and everything else would fall into

place. As first steps towards personal safety, mariners (seafarers) has to follow these few important points; safety drills, safety meetings, safety videos, safety circulars, know your duties, avoid unsafe practices, stop others, inform and report, clear communication and stay alert always (Marine Insight, 2013)

According to the Ultimate Guide to Personal Safety on Ships (2013),

“A ship is a complex structure that comprises of several small and enclosed spaces. Many of these enclosed spaces are used for accommodating machinery or storing machine parts and workshop equipment. A ship also has a matrix of pipelines that runs through each of its parts, including enclosed spaces. Because of zero ventilation, these enclosed places or spaces have harmful toxic gases that are either produced from chemicals stored in the place or from leakages in the pipelines. If a person enters such place without taking necessary precaution, he or she may suffer unconsciousness or sometimes even death. To prevent any unfortunate circumstance, there is a proper procedure that needs to be followed for safety and wellness of the person entering the enclosed space.”

Safety is a vital aspect of any shipping operation because of the involvement of human lives and massive financial investments. Most marine accidents in Batangas Bay involve collisions and grounding while spill incidents were mainly oil or oil products of small manufacturing companies, cargo ships or tankers (Javier & Aguado, 2012). As cruise ships continue to become larger and accidents continue to be reported in the Philippines, people are left to wonder what exactly is being done to better train the crewmembers in the event of an emergency at sea or in port (Buted et al., 2014).

This research work hence hover across the following: personal safety should be the priority on ships, personal safety- your first step in ship, personal safety in every part of the ship, personal safety in ship's operations, how to use particular Personal Protective Equipment (PPE) of ships, miscellaneous safety tips & resources.

According to the IMO, “Shipping is perhaps the most international of all the world’s greatest industries and one of the most dangerous.” This means that in shipping industry even the most fundamental job of transporting cargo across oceans involves a great amount of risk, involving both physical and financial aspects. Every part of the shipping business is

bounded by stringent regulations, which prompts companies to act in disciplined and organized manner. To ensure that all operations are carried out in an efficient and smooth manner at the sea, the shipping companies resort to "safety" as their first tool for streamlining processes. Safety in all types of operations is the key factor in ensuring that the company always maintains its position about the profit line, both efficiently and ethically.

As a result of the full implementation of the ISM Code, which became mandatory for all ships via the SOLAS Convention between 1998 and 2002, there is a significant reduction in maritime casualties, serious oil spills, and most importantly the number of lives lost on board international cargo ships IMO (2013). However, some recent high-profile incidents suggest that there is still the absence of a fully implemented safety culture is still an issue that some shipping companies may need to address with additional rigour. Hence, the purpose of this research work is determined to know how effective these safety measures are on board and hence profane an action plan.

OBJECTIVES

This study sought to identify the effectiveness of safety measures on board. More specifically, it aims to determine the level of safety measures on board vessels, to identify the problems encountered by seafarers on board vessels and to propose actions to enhance/improve safety measures on board.

METHODS

Research Design

This study utilized the descriptive method of research. As widely accepted, the descriptive method of research is a fact-finding study that involves adequate and accurate interpretation of findings. Descriptive research describes a certain present condition. The technique that was used under descriptive method is the normative survey approach and evaluation, which is commonly used to explore opinions according to respondents that can represent a whole population. Specifically, the survey questionnaires with seafarers who have worked onboard in different categories of ships were conducted to provide further weight about the results of the survey. The purpose of employing descriptive method is to describe the nature of the effectiveness of safety measures on board.

Participants

The respondents of the study were thirty (30) maritime professionals. These include Masters,

Officers, and Ratings working or have worked on board. All of these participants were selected through random sampling. This sampling method is conducted where each member of a population has an equal opportunity to become part of the sample. For this purpose, a self-administrative questionnaire of 30 participants was given to the respondent to answer.

Instrument

The data needed in this study were gathered through a questionnaire made by the researchers. This data were validated by our adviser and maritime experts. The questionnaire proper was divided into two parts. Part I is about the safety measures on board and part II is about the problems encountered by seafarers on board vessel. The questions were structured using the Likert format. In this survey type, four choices are provided for every question or statement. The choices represent the degree of agreement each respondent has on the given question.

Procedures

The researchers selected a topic first to assess the effectiveness of safety measures on board. After the approval of the topic, they formed a drafted questionnaire that was proportionally distributed to thirty (30) seafarers. The content of the questionnaire

was written in a very clear and concise manner to prevent conflicts among respondents. Accomplished questionnaire were collected, tallied, computed and interpreted

Data Analysis

For this study, the following statistics were used in treating the responses of the thirty (30) maritime professionals/seafarers regarding the effectiveness of safety measures on board. Weighted mean was used to determine how effective the safety measures on board and the level of agreement of seafarers considering the problems encountered by seafarers on board vessel.

RESULTS AND DISCUSSION

Table 1 presents that the overall safety measures on board rating of items listed above is effective in so far as the results of the respondents are concerned, as shown by the composite mean of 3.64 and a range of weighted mean from 3.33 to 3.80. The result shows that "Emergency escape and evacuation routes must be clear, accessible and muster station symbols are visible", got the first rank with a weighted mean of 3.80 and interpreted as "Highly Effective". This means that most of the respondents were encouraged by its effective among all the items listed above.

Table 1. Effectiveness of Safety Measures on-board

Safety Measures on Board	WM	VI	Rank
1. Monitoring of deck, engine areas and areas surrounding the vessel	3.63	HE	7
2. Emergency and standby equipment are available to maintain essential services	3.67	HE	5
3. Emergency escape and evacuation routes must clear, accessible and muster station symbols are visible.	3.80	HE	1
4. There is a standard list of the procedures for training, drills and exercise associated with the ship safety plan	3.77	HE	2
5. There is an automatic intrusion detection device to alert the ship personnel of unauthorized access.	3.33	E	10
6. There is the capacity to implement all the machinery maintenance plan and emergency response plan on board vessel.	3.67	HE	5
7. Watch- keeping duties, numbers of ship Personnel particularly with implications on crew fatigue, alertness and performance are clearly established.	3.60	HE	9
8. Proper cargo handling procedures, particularly dangerous goods or hazardous substance should be strictly monitored.	3.77	HE	3
9. Adequate training of safety familiarization has been provided to shipboard personnel, as appropriate.	3.73	HE	5
10. High level of supervision of the ship personnel, passengers, visitors, vendors, repairs technicians, and dock workers	3.43	E	10
Composite mean		3.64	HE

Legend: 3.50-4.00=Highly Effective (HE); 2.50-3.49=Effective (E); 1.50-2.49=Less Effective (LE); 1.00-1.45=Not Effective (NE)

The respondents were encourage with question if “there is a standard list of the procedures for training, drills and exercise associated with the ship safety plan and Proper cargo handling procedures, particularly dangerous goods or hazardous substance should strictly monitored” which were "Highly Effective" as well, with a weighted mean of 3.77. This means that the respondents show clearly how effective those safety measures are been achieved on board ship. On the other hand, the responses to the items number five (5) the table also shows that the use of automatic intrusion detection devices to alert the ship personnel of unauthorized access got the lowest rank among the ten having a weighted mean of 3.33 and verbally interpreted as effective. "There are an automatic intrusion detection devices to alert the ship personnel of unauthorized access "were "Effective", this is because adequate attention by the international maritime organization (IMO) should be put in place to achieve what is been expected, since safety measure on board involves procedures, facilities and crew responsibilities.

Given this, the guidelines of IMO conventions responsible for safety measures should be implemented onboard. It clearly shows that most of the accidents on board will minimize. Because of incessant maritime pollution IMO was able to come up with the idea of Marine Pollution (MARPOL) Convention 1973 and Shipboard Oil Pollution Emergency Plan (SOPEP) convention 1997 to eradicate and minimize marine pollution caused by ship operators. Personnel, passengers, visitors, vendors, repair technicians and dock workers having a weighted mean of 3.43 and still verbally interpreted as effective. This shows that the two lowest that are classified as effective have a great influence on the effectiveness of safety measures on board.

However, Watchkeeping duties, ship personnel, particularly with implications on crew fatigue, alertness and performance that clearly established got the next rank having weighted mean of 3.60 which is verbally interrupted as highly effective has the highest effective. As shown from the result, the highly effective has the highest rank among all the safety measures listed because it mainly deals with the safety awareness of the crew and the ship herself. Automation and alarm systems of machines are always helpful in detecting early stage faults; however, it is a known fact that human vigilance is more capable of detecting and interpreting errors more accurately (Orence & Laguador, 2013).

Table 2. Problems Encountered by Seafarers Onboard Vessel

Problem Encountered	WM	VI	Rank
1. Seafarers face homesickness and boredom	3.40	Often	2
2. Seafarers feel underrated and have low self-esteem	2.83	Often	5
3. Seafarers encounter job securities	3.67	Always	1
4. Seafarers lack the ability to concentrate on the job due to disturbance	3.07	Often	4
5. There is inability to access and use service equipment such as telephone, computer system or the internet.	3.27	Often	3
Composite Mean	3.25	Often	

Legend: 1.00 – 1.49 =Never; 1.50-2.49 =Seldom; 2.5-3.49= Often; 3.5-4= Always

Table 2 presents the mean score of problems encountered by seafarers on board vessel. It is observed from the table above that all problems face by seafarers on board vessel is often by the composite mean of 3.248. The items registered high to very high mean ranging from 2.83 to 3.67, interpreted from “Often” to “Always”. This analysis shows that seafarers often face homesickness and boredom (3.40) which is due to the lack of family conversations. Furthermore, seafarers often feel underrated and have low self-esteem (2.83) which is due to vaporization for the seafarers.

Also, from the analysis seafarers encounter job securities got the highest weighted mean of 3.67 and interpreted as Always. The new convention has been described by the Director-General of the International Labour Office (ILO), Somavia (2012) as making labour history. It has taken the ILOs treaty-making activity since 1920 one stage further, in the sense that it reflects an international tripartite consensus on the standards needed to achieve fair globalization in the maritime sector.

It consists of agreed minimum standards to help secure conditions of decent work for workers and to also ensure fair competition among employers. Other analysis on seafarer lack ability to concentrate or the job due to disturbance got the weighted mean of 3.07 and interpreted as often. The seafarer may have the problem with the family, company or with the superior on board, it may have an impact on job concentration as instructed, due to mental disorder or illness also can also lead to that.

Table 3. Proposed Action Plan to Improve the Effectiveness of Safety Measures On Board

Key Result area	Strategies	Persons involved
Seafarers encounter job security	The seafarer should be organized to voice out the problems that they encounter while on board a vessel and negotiate for a more satisfying working environment. Company see to the opinions	Seafarers shipping company
Seafarers face homesickness and boredom	Engage in more worthwhile activities to lessen boredom and homesickness	Seafarers
There is inability to access and use service equipment such as telephone, computer system or the internet	Provide regulated access to the necessary equipment needed by the seafarers to ease communication	Shipping company

Finally, the inability to access and uses service equipment such as telephone, computer system or the internet got the weighted mean of 3.27 and interpreted as often. These rarely happen, only in the port, cell phone can easily reach the shore but when already at the sea. Seafarers face homesickness and boredom very often. The computer system is very important since all operations can easily be monitored with the help of the computer.

CONCLUSIONS AND RECOMMENDATIONS

The effectiveness of safety measures on board according to the research was highly effective. Seafarers encounter job security, face homesickness and boredom. An action plan was proposed to improve the effectiveness of safety measures on board.

It is recommended that the seafarers may be aware of the effectiveness of safety measure while working on board a vessel so that they could be conversant with the standards. The seafarers may react to problems in very intellectual and controlled manner so that the problems would not escalate and prevent the further problem from occurring. The seafarers may look for a possible solution to the problems that they encounter and should not allow those problems have the continuous effect on their professional work. The shipping companies, the government and the regulation body of the maritime industry may work together alleviate the suffering of seafarers, particularly when encounter problems and to make sure that the Maritime Labour Congress should be strictly observed. A study related to the present study should be done soon to enrich the literature of the field of the study and validate the result of the present study.

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