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DRILLS AND TRAINING ON BOARD SHIP IN MARITIME TRANSPORT

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ABSTRACT
The advancement of technology has dramatically altered the maritime sector during the previous several decades. With the sector changing so dramatically, the tasks of sailors have also undergone a drastic shift. Containerization and flag-of-convenience shipping are two examples of notable developments. As a result of the intense rivalry amongst the affiliated enterprises, sailors' performance and rest have changed. Fewer people (mostly from other countries) are working, and the length of time spent at the port has been dramatically decreased. Because of this increase in shipbuilding, sailors must be prepared to work in a variety of hard positions on board a variety of ships. Seafarers must have specialized training in order to operate on certain kinds of ships, which in turn necessitates specialized skills. For sailors, training is a crucial element of their preparation. Pre-sea and post-sea training for sailors might be separated in this way. Simulators are essential for sailors' post-sea training once they've earned experience on board.

Keywords: -Safety, Security, Safety Management Manual, STCW, maritime education and training (MET), Maritime Standards, Simulator Training, Uses of training, Marine simulator

INTRODUCTION

When it comes to seafarers, training and development has always been used to ensure that they do their duties effectively. The relevance of education and intellectual capital is being emphasized more and more as a means of gaining a competitive edge. Strategically implemented continuous learning helps marine firms accomplish their objectives by fostering the development of knowledge and skills. Human resources and training have the responsibility of creating and implementing a comprehensive plan for employee growth and development. The first step is to get an in-depth knowledge of the IMO laws, the business environment, and a grasp of the organization's goals and training and development alternatives.

There have been several publications on disaster planning in the operation of the bulk power supply system, a comparable sector full of dangers, many of which are distinct from the risks encountered by sea, but with a similar approach in planning and developing administrative processes. It was suggested by (Mao et al., 2014) to evaluate the overall drilling efficiency of shipborne Command and Control system by means of a specified assessment process and index system. There are certain fundamental concepts and guidelines to follow, as well as the hierarchical structure of evaluation, criteria and computation technique for each index, and the calculation method for each index. In the context of battleship training, their findings were put to use. Designing socio-technical solutions to promote

community participation in disaster exercises is based on a conceptual design paradigm (De Miguel and Diez, 2015).

The goal of any shipboard practice is to familiarize the crew with the different protocols to be followed in case of an emergency. It's a training exercise designed to familiarise the ship's crew with the tools and techniques they'll need in the event of a crisis.

LITERATURE REVIEW

Carine Dominguez-Péry (2021)–The number of marine transportation incidents has decreased steadily during the last decade. A single occurrence, such as the oil leaks from "super" tankers, may have catastrophic and long-term effects for marine ecosystems as well as the environment and local economy, as maritime vessels continue to grow in size There are several factors that may lead to a maritime transportation accident, which can result in the loss of human life and lasting ecological, environmental, and economic harm. Many studies show that human mistake, either directly or indirectly, is a key factor in maritime catastrophes, raising many issues concerning the best strategy to avoid catastrophic human error in marine environments. Some of these problems may be answered by looking at upstream maritime incidents from an organization science approach, which is presently unexplored in the literature. Ships may now be characterized in terms of organizations as well as an entire industry, which will lead to new and useful insights.

Prof. BhoopathyBhaskaran (2018)– The advancement of technology has dramatically altered the maritime sector during the previous several decades. With the sector changing so dramatically, the tasks of sailors have also undergone a drastic shift. Containerization and flag-of-convenience shipping are two examples of notable developments. As a result of the intense rivalry amongst the affiliated enterprises, sailors' performance and rest have changed. Fewer people (mostly from other countries) are working, and the length of time spent at the port has been dramatically decreased. Because of this increase in shipbuilding, sailors must be prepared to work in a variety of hard positions on board a variety of ships. Seafarers must have specialized training in order to operate on certain kinds of ships, which in turn necessitates specialized skills. For sailors, training is a crucial element of their preparation. Pre-sea and post-sea training for sailors might be separated in this way. As part of post-sea training, simulators are essential for seafarers who have already earned experience on board.

Sturle D. Tvedt (2018) - Individual seafarers and the ship's crew can only be protected to the greatest extent possible if everyone on board is acquainted with the ship's layout, safety equipment, and procedures. A ship's crew members are required by international maritime laws to undergo familiarization training. A lack of familiarity has been shown to be a factor in marine events, according to various research. The existing methods of familiarization provide a number of difficulties, including high costs, a lack of efficiency in planning, a wide range of familiarization techniques, and the lack of expertise of the facilitator. 58 students took part in this research, which compared conventional and virtual methods of getting to know one another. There was no overall difference between actual and virtual familiarization, although minor discrepancies were detected for individual waypoints. Treatment was less relevant than the variations between individuals, demonstrating that virtual familiarization may perform on par with more conventional methods.

Cristina Dragomir (2016) - There are a variety of exercises used in marine transportation to practice how to respond in the event of a ship emergency (e.g. a fire, piracy, ship sinking, or ship grounding). Training exercises are usually referred to as drills in the shipping industry. To ensure the safety of the ship, crew, and passengers on any journey, it is essential to conduct drills. An overview of the legislative framework and strategic relevance of efficient marine exercises and training is presented in this article.

Magnus Hontvedt (2015) - The employment of ship simulators to generate work-like environments in maritime training is the subject of this article, which falls within the purview of educational research. Ship simulators are often used in the maritime industry to bridge the gap between theoretical and actual seamanship. Simulations may be used to bridge the gap between school and employment in an educational situation. Training sessions were filmed and subjected to interaction analysis in order to conduct empirical research on ship simulator training. On the basis of three investigations carried out in a Norwegian school between 2009 and 2014, the report is presented here. It is argued in this work that chances for learning and teaching are rooted in social interaction, and this is supported by sociocultural and contextual approaches to learning. Simulations may help place learning in a real-world setting, according to the major results. There are several advantages to using role-playing as a teaching and learning tool, as shown in the first study. Future training should focus more on this interactional level of instruction, according to some experts.

Maritime Training- General

The International Marine Organization (IMO) has issued rules under the Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW) that emphasize the importance of training for the world's global maritime workforce. It is important to fit the training techniques to the scenario in order to get the best results. Each training approach must be evaluated by including the students in a feedback procedure. It's a way to make certain that the training is efficient and that students get the necessary skills and information in the way that's intended. For this purpose, the most sought-after outcomes are combined with those obtained via the use of the most popular and successful training techniques. A four-tiered technique is used to assess training. In addition to analyzing existing programs, this approach may be used to create new ones. The following are the four tiers of training outcomes that are addressed in this procedure:

- Reaction
- Learning
- Behavior
- Result

The importance of training can be adequately understood by the following quotes:

- What I hear, I forget. What I see, I remember. What I do, I understand.
- (Confucius, 451 B. C.)
- Tell me and I forget. Teach me and I remember. Involve me and I learn.
- (Benjamin Franklin)
- What we have to learn to do, we learn by doing.
- (Aristotle)

Brief Description of a Simulator

An offshore simulator, on the other hand, might be thought of as a machine with comparable controls that mimics the functioning of a ship or other offshore equipment in an accurate manner. Simulating a system's behaviour over time is basically a virtual representation of its behaviour. Selected physical or abstract systems and processes are simulated by creating an exact replica model of them. In contrast to simulation, which is an exact reproduction of the system in action, modelling represents the system as a whole.

A simulation should contain three fundamental characteristics. All three of these characteristics must present for anything to be considered a simulation. However, a simulation is not deemed to exist if even a single property is absent. These three characteristics are as follows:

a) Imitates something real, but

b) It is not real, and

c) It may be altered by its users (hence instructor plays an important role).

Simulators are a great way for students to practice their skills in a virtual environment. Engine-room simulators, cargo-handling simulators, and bridge/navigation/communication simulators are all excellent examples of simulators in the maritime and offshore industries respectively. These simulators provide new hires a chance to practice jobs that would otherwise be prohibitively costly, time consuming, and dangerous to accomplish in real life. When mistakes are repeatedly made, they may be avoided in the real world, where they would have been very costly. Training simulators for the marine sector are widely accessible across the world according to Cieutat, Gonzato, and Guitton (2001). There was once just acceptance of using Radar simulators for teaching purposes before the other types of simulators were included. In the past, developing a flight simulator would have been a daunting task. Nowadays, constructing a ship simulator is just as difficult. All of the equipment and systems necessary for a ship's navigation and operation, such as a meteorological environment, a control console, a steering system, sonar and radar, as well as marine chart visualization software, must be available to a student. The systems on board must also be monitored, operated, and maintained in accordance with established procedures.

Simulation in Marine Industry

Simulators in India and throughout the world for the maritime and offshore industries There are a number of elements that impact the adoption of simulation in the maritime sector. These include technical, economical as well as appropriateness and training demands. These are a few of the contributing factors:

- Because of technical developments, many ships may be replicated in a single simulator, resulting in a lower cost for simulation technology for multiple ship operations. Simulators may be used to familiarise new or less experienced trainees with current shipboard equipment.
- In simulators developed for this purpose, a student may experience and learn what he will do aboard a ship before ever setting foot on one.
- Specially designed equipment and scenarios may be used to model the whole spectrum of the ship's system in a simulation.
- If the simulators are available, training sessions may be scheduled, taking into account considerations such as time and space.

- It is not need to worry about fuel costs or time limits while operating the vessel on the simulator for training purposes (Thereby learning a lesson to save fuel when needed in real voyages).
- Training situations including tight quarters, extreme turns, and high-speed maneuvering are feasible.
- In contrast to ships, where every circumstance is fresh and little repetition is available, the environment conditions in a simulator may be repeated over and again to condition trainees.
- While theoretical principles may be evaluated on simulators, such as the operation in shallow water impact areas or changes made to the approaching and exiting port route plan, they can also be used in practice.
- One may choose the region of operation for optimal training value and to boost the morale and confidence of the learners. It is not feasible in real life to teach and practice two separate regions (or channels) or related procedures on the same day.
- Trainees may practice and operate a variety of ships in virtual reality simulators. When it comes to conventional cargo ships and oil carriers like VLCCs, they can really tell the difference in how they behave.
- As a result, trainees have a unique chance to learn through simulations that may be recorded and replayed to them for analysis, feedback, and pointing out faults made during the exercise.
- A trainee may shift over the activity or run the exercise at a tempo that is appropriate and required by training objectives and time limits. •
- The established environmental conditions in simulators are known and reproducible. As a result, it is feasible to score and evaluate performance under these circumstances in a consistent manner.
- It is possible for the teacher to pause and postpone activities in order to stress certain topics in the lessons.
- It is sometimes difficult for employees to get adequate knowledge with even regular operations for propulsion and auxiliary gear, when UMS operations are nearly a prerequisite. It is fairly uncommon for a person to face a new set of fault conditions when travelling. Simulators may be used to teach the ship's crew how to go through these kinds of situations.
- The ability to control the day/night cycle, as well as the weather and visibility, allows for more realistic training and experience for both the OOW and the bridge crew.
- When compared to actual ship operations, complicated and severe scenarios may be created utilizing simulators. Creating such scenarios aboard a ship is challenging, and dealing with them is much more difficult.
- With the simulators, it is possible to design tailor made courses, e.g., introduction of ships operation to new comers or specialized course for Pilot operations.

Muirhead (2003) has mentioned that “inexperienced marine professions are likely to make judgment mistakes early in maritime training. The effects of such mistakes could be expensive and at times catastrophic. In such situations the maritime simulator is considered a very helpful and beneficial tool. Learning using simulators could be an experience wherein the trainee could make mistakes and learn without having to worry about the consequences. The idea while running the exercises is mainly to learn so that under similar situations onboard, the mariner is now prepared in advance to initiate an action which he/she has practiced in a not so demanding environment.”

Fire drill is one such drill which holds great importance on ships.

Understanding the fundamentals of fire prevention, as well as the following:

- An emergency scenario involving a ship fire necessitates training for the crew.
- Every member of the crew learns exactly what his or her role is in the event of an emergency.
- Firefighting equipment such as SCBAs, various extinguishers and CO2 flooding systems, as well as the Neil Robertson Stretcher, Inert Gas System, fireman's uniforms, life jackets and sprinkler systems, are all part of the training the crew will get.
- The crew may learn how to use a certain firefighting system and the precautions they need take before doing so by using this guide. For example, before activating the CO2 firefighting system in the engine room, there are a number of critical actions that must be taken.
- To familiarise the personnel with the locations of the emergency escape routes that would be utilized in the event that a specific zone became inaccessible.
- In order to educate the crew about the company's fire and safety rules, vital points on personal safety and survival at sea, latest safety circulars and M notifications, and fire-fighting equipment and preventative measures aboard ships,
- For the sake of preparing the crew for the potential outcomes of a fire on board, it is critical that a realistic fire drill be used.

Important points regarding fire drills on ships

- It is required by law and the commercial shipping legislation that muster and drills be conducted according to predetermined schedules.
- If more than a quarter of the crew hasn't participated in a fire drill in the preceding month, one must be held within 24 hours before departing the port.
- The ship's muster list for the exercise should be posted prominently in areas where crew members may quickly view it. Displaying the list in areas such as the bridge, engine room, and the crew quarters is also a good idea.
- It is essential that a well-defined strategy for fire suppression be implemented in all shipboard critical locations.
- Crew members should have clear instructions to follow in the event of an emergency. Each crew member's responsibilities and designated lifeboat number must be recorded on a card and kept in the cabin or outdoors.
- The schedule of the emergency exercises should be altered so that crew members who were unable to participate in the prior drill due of their other responsibilities may participate.
- The site of the exercises should also be modified in order to offer experience to the crew in diverse situations and to teach them to deal with different sorts of fires, such as machinery space fire, accommodation area fire, store room fire, cargo hold fire, and so forth.
- The muster station should be near enough to the embarkation point to be easily accessible from both the lodging and the workplace. In addition, there should be enough emergency lighting to keep the area safe.
- During an emergency, each part of the ship has a unique technique of dealing with the crisis. Crew members may be better prepared for a wide range of circumstances by doing exercises in a variety of settings.

- Upon joining the ship, it is the responsibility of every member of the crew to become familiar with the location of the emergency muster station. Muster list tasks and how to utilize fire extinguishers should also be familiar to him.
- Everyone on the ship should have access to the crew's survival handbook, which should be available in the crew's mess and entertainment area.
- Within two weeks after joining the ship, every new crew member should get onboard instruction on how to operate personal lifesaving equipment and survival craft (life boats and life rafts).

It is critical that every member of the crew conducts the exercise flawlessly, knowing exactly what his or her responsibilities are and how critical it is to the ships and the people on board's safety.

CONCLUSION

Performance, safety, and competitiveness may be attained early in the training process for marine transportation professionals. Reduced transport hazards and increased service safety are two benefits of having a well-trained workforce. As a result, sailors' workdays wouldn't be complete without exercises and training sessions, whether on board or ashore. During a drill, the crew learns how to deal with a variety of emergency situations such as fire, bad weather, flooding, collisions with rocks or other obstacles on the seabed, injuries sustained during an escape attempt, a person drowning, terrorism or a bomb threat. Drills are conducted under the direction and supervision of the appropriate authorities. In addition to reducing response time in actual emergencies, conducting exercises and training on board ship helps crew members become more adept at making quick judgments and familiarizes them with the vessel's equipment and procedures. Crew performance may be improved with the use of tried-and-true methods learned via exercises and training.

It is clear from the information provided above that simulator training is critical for marine life. In addition to being very efficient, this training helps teach crew members for situations they won't see on a frequent basis, but that they may encounter in the near future. Simulator training prepares students for certain scenarios, hence lowering the amount of damage caused by human mistake to the vessel (which is the biggest cause of accidents on board). We can also observe how technology is influencing maritime life, from vessel handling to training, in a significant manner. There will always be room for innovations in technology in our business since the maritime industry is one of few that quickly welcomes new developments. There will be an ever-increasing need for simulator training.

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