The Influence of Work Concentration and Crew Rest Hours on Occupational Safety on the MV. Ammar

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Abstract
Occupational safety on ships is influenced by various factors, including crew work concentration and rest schedules. High workloads, ship operating rhythms, environmental conditions, and continuous duty duration can reduce crew physical and mental readiness, increasing the risk of accidents. This study aims to analyze the effects of work concentration and rest schedules on work safety aboard the MV Ammar. The method used was a descriptive quantitative approach, with questionnaires administered to all 23 crew members. Data were analyzed using simple regression to examine the relationship between work concentration (X1), rest schedules (X2), and work safety (Y). The results showed that work concentration significantly influenced work safety, contributing 43%, while rest schedules contributed 51%. Simultaneously, both variables had a positive and significant impact, accounting for 67% of work safety. This confirms that the quality of crew work, concentration, and rest schedules must be an important part of ship operational safety management. Recommendations for this study include adjusting work schedules in accordance with the 2006 Maritime Labour Convention (MLC), improving fatigue management, and enhancing discipline and safety awareness.

Keywords: *Crew Rest Hours, Occupational Safety, Work Concentration, MV Ammar.*

Abstrak
Keselamatan kerja di kapal dipengaruhi oleh berbagai faktor, termasuk konsentrasi kerja dan jadwal istirahat awak kapal. Beban kerja yang tinggi, ritme operasional kapal, kondisi lingkungan, dan durasi tugas yang terus menerus dapat mengurangi kesiapan fisik dan mental awak kapal, sehingga meningkatkan risiko kecelakaan. Studi ini bertujuan untuk menganalisis pengaruh konsentrasi kerja dan jadwal istirahat terhadap keselamatan kerja di atas kapal MV Ammar. Metode yang digunakan adalah pendekatan kuantitatif deskriptif, dengan kuesioner yang diberikan kepada seluruh 23 anggota awak kapal. Data dianalisis menggunakan regresi sederhana untuk menguji hubungan antara konsentrasi kerja (X1), jadwal istirahat (X2), dan keselamatan kerja (Y). Hasil menunjukkan bahwa konsentrasi kerja secara signifikan memengaruhi keselamatan kerja, dengan kontribusi sebesar 43%, sedangkan jadwal istirahat berkontribusi sebesar 51%. Secara bersamaan, kedua variabel tersebut memiliki dampak positif dan signifikan, dengan kontribusi sebesar 67% terhadap keselamatan kerja. Hal ini menegaskan bahwa kualitas kerja, konsentrasi, dan jadwal istirahat awak kapal harus menjadi bagian penting dari manajemen keselamatan operasional kapal. Rekomendasi untuk studi ini mencakup penyesuaian jadwal kerja sesuai dengan Konvensi Perburuhan Maritim (MLC) 2006, peningkatan manajemen kelelahan, dan peningkatan disiplin serta kesadaran akan keselamatan.

Kata kunci: *Jam Istirahat Awak Kapal, Keselamatan Kerja, Konsentrasi Kerja, MV Ammar.*

INTRODUCTION

Occupational safety on board ships is a fundamental aspect that must be considered in all shipping operations. The work environment on board ships has unique characteristics because all activities take place 24 hours a day, non-stop. This condition requires all crew members to maintain optimal physical and mental readiness to perform their duties properly. Various

international regulations have been designed to ensure this safety, including those issued by the International Maritime Organization (IMO) through the International Safety Management (ISM) Code and the Maritime Labor Convention (MLC) 2006. Both regulations set minimum standards for crew working hours and rest hours to reduce the risk of fatigue, which has been proven to be a major cause of maritime accidents.

Fatigue among seafarers often arises from high work intensity, sustained operational pressure, and inadequate sleep. The IMO notes that approximately 25% to 33% of ship accidents are directly related to crew fatigue. The impact of fatigue is not only felt physically but also affects decision-making, alertness, and work concentration. Work concentration plays a vital role, especially in critical and high-risk tasks, such as navigation, watch keeping, engine operation, loading and unloading supervision, and the use of safety equipment on board. A decrease in concentration, even for a short period, can trigger operational errors with fatal consequences for the ship and its crew.

The MV. Ammar, a cargo ship serving regional routes, has a fairly high volume of sailings. The almost continuous operational activities make the work dynamics on board highly demanding on the crew's readiness. Distributing work hours based on shifts or watch keeping systems presents a challenge, especially when rest schedules are not fully adhered to due to operational needs. This situation can ultimately reduce the quality of crew rest and lead to decreased levels of focus while carrying out their duties. Several reports from crew members indicate fatigue impacting work performance, such as decreased alertness during night watch or when operating machinery.

These issues of fatigue and poor work concentration cannot be viewed as individual issues, but rather as part of the ship's overall safety management system. If the quality of work concentration decreases, the overall effectiveness of the crew can be compromised. Likewise, inappropriate rest schedules will affect operational stability and safety. Therefore, there is an urgent need to analyze in more depth how these factors contribute to crew safety, particularly on the MV. Ammar.

This study focuses on two main variables: work concentration and rest time management. Work concentration (X1) is viewed as the crew's ability to maintain focus and alertness while performing their duties. Meanwhile, rest time management (X2) refers to compliance with minimum rest time standards and the effectiveness of rest time management implemented on board. These two variables are analyzed to determine their impact on crew safety (Y).

Using a quantitative approach, this study administered questionnaires to 23 crew members of the MV Ammar, not only measuring the influence of each variable but also examining their simultaneous contribution to safety on board. Therefore, the results of this study are expected to provide an empirical overview of the importance of work concentration and rest time management in improving safety on board.

A study conducted by M. Ichsan Khatmi (2018) entitled Efforts to Overcome Lack of Crew Concentration for Safety on Board the MV. Sensho used quantitative data analysis methods to examine the effect of work concentration on work performance and safety on board. The results showed that a lack of crew concentration significantly affected crew work performance, whereas the compensation variable did not. In addition, the study showed that crew concentration had a significant effect on work safety on board. A study conducted by Wulung Imam Akbar (2020) entitled Analysis of the Implementation of Crew Working Hours on the MV. Oriental Ruby used qualitative analysis methods to examine the implementation of working hours and their impact on crew performance. The results showed that rest hours had a significant effect on crew performance on board, with unfulfilled rest patterns potentially reducing work readiness, focus, and potentially causing operational errors.

A study conducted by Wendy Wachidurrohman (2023), entitled "Implementation of Rest Hours Management on the KM Manalagi Samba," used qualitative methods to assess the implementation of rest-hour management on board. The results showed that the implementation of Rest Hours Management on the KM Manalagi Samba complied with the provisions of the 2006 Maritime Labor Convention (MLC), particularly regarding the fulfillment of minimum rest hours, the recording of working hours, and the monitoring of compliance by the ship's management.

Furthermore, the findings of this study are expected to serve as a reference for shipping companies and ship operators in developing strategies to improve occupational safety. Implementing better fatigue management, reviewing work schedules, and fostering discipline regarding rest hour compliance can be important steps to reduce the risk of accidents at sea. By considering these two variables, it is hoped that the safety culture on the MV Ammar and other merchant vessels can be further strengthened to achieve safe, efficient, and sustainable shipping.

METHOD

This study used a descriptive, quantitative approach to analyze the effects of work concentration and rest-time arrangements on occupational safety among the crew of the MV Ammar. The research instrument was a Likert-scale questionnaire distributed to all 23 crew members. The data obtained were analyzed using several techniques, including descriptive statistics, validity and reliability tests, simple and multiple regression analyses, the coefficient of determination (R^2), and a t-test to assess the significance of the influence of variables.

1. Descriptive statistics were used to describe the general profile of the research variables, such as the mean, minimum, maximum, and standard deviation values of the variables work concentration (X1), break schedule (X2), and work safety (Y).
2. Validity and reliability tests were used to ensure that the questionnaire was suitable as a measurement tool. Items were considered valid when they had a significant correlation with the total score, and reliable when Cronbach's Alpha ≥ 0.70.
3. Simple and multiple regression analyses were used to examine the partial and simultaneous effects of independent variables on the dependent variable. Simple regression examined the effects of X1 and X2 separately on Y, while multiple regression examined both simultaneously.
4. The coefficient of determination (R^2) was used to determine the model's ability to explain variations in work safety.
5. The t-test was used to determine whether each independent variable had a significant partial effect on work safety.

RESEARCH RESULTS

1. Descriptive Statistics

   The descriptive statistics show that:

   a. Crew work concentration is in the good category, but there are still variations in focus levels, especially during long working hours and high wave conditions.
   b. Rest hour arrangements show a fairly good trend, but do not fully comply with the 2006 Maritime Labor Convention (MLC) standards.
   c. Occupational safety levels are considered quite high, although crews acknowledge the potential for decreased alertness when rest hours are not met.

2. Validity and Reliability
   All items in variables X1, X2, and Y were declared valid based on significant correlation values. The reliability test showed that all variables had Cronbach's Alpha values above 0.70, thus declaring the questionnaire reliable and consistent.
3. Simple Regression
   a. Effect of Work Concentration (X1) on Work Safety (Y):
      The results indicate that work concentration has a significant effect, contributing 43%. This means that the higher the crew's focus and alertness, the lower the risk of accidents on board.
   b. The Effect of Rest Hour Regulation (X2) on Occupational Safety (Y):
      Regulation of rest hours also has a significant impact, contributing 51%, indicating that good quality rest improves the crew's physical and mental readiness for work.
4. Multiple Regression
   The results of the multiple regression show that work concentration and rest hour arrangements have a significant simultaneous effect on occupational safety, with a total contribution of 67%.
5. Coefficient of Determination (R^2)
   The R^2 value of 0.67 indicates that 67% of the variation in occupational safety can be explained by work concentration and rest hour arrangements, while the remaining 33% is influenced by other factors such as weather conditions, additional workload, operational stress, and crew physical condition.
6. t-Test Results
   a. Work concentration has a calculated t value > t-table (significant), indicating a significant effect on occupational safety.
   b. Rest hour arrangements also have a calculated t value > t-table, indicating a partial significant effec

DISCUSSION

The results of this study indicate that occupational safety on the MV. Ammar is significantly influenced by the crew's work concentration and rest schedules.

1. Work Concentration (X1)
   Concentration is a crucial factor in ship operations, particularly when performing navigational tasks, deck watch keeping, and technical work in the engine room. The finding that work concentration accounted for 43% indicates that decreased crew focus can increase the risk of accidents, such as slips, falls, or procedural errors in equipment operation.
2. Rest Schedule (X2)
   Rest schedule contributed 51% to occupational safety. This finding aligns with fatigue management theory, which states that sleep deprivation can impair motor response, attention span, and the crew's ability to make quick decisions. Non-compliance with rest schedules in accordance with the 2006 MLC standards has been shown to potentially reduce crew alertness.
3. Simultaneous Effect of Both Variables
   The R^2 value of 67% indicates that the combination of work concentration and rest patterns plays a dominant role in maintaining occupational safety. Working conditions that require high alertness emphasize the need for a balance between workload and quality rest.
4. Other Influencing Factors
   Another 33% of factors, such as adverse weather, operational pressure, engine conditions, and crew psychological factors, also require further study to provide a clearer picture of occupational safety.

CONCLUSION

1. The research results show that work concentration plays a crucial role in maintaining crew safety. Its 43% contribution confirms that the crew's level of focus, alertness, and ability to maintain attention while on duty significantly determines whether or not work accidents occur. When concentration decreases due to fatigue, work pressure, or unfavorable environmental conditions, the risk of accidents such as procedural errors, negligence, or equipment failure increases significantly. Therefore, maintaining work concentration is a key factor in improving operational safety on ships.
2. Rest schedules have been shown to have a greater impact than work concentration, contributing 51% to crew safety. These findings indicate that the quality and adequacy of rest periods play a direct role in restoring the crew's physical and mental condition before carrying out the next task. Rest periods that do not align with maritime work standards can lead to chronic fatigue, reduced responsiveness, slower decision-making, and increased accident risk. Therefore, regular work and rest schedules are crucial factors in maintaining crew readiness and minimizing potential hazards on board.
3. When work concentration and rest time management are analyzed simultaneously, both variables contribute 67% to occupational safety. This indicates that the combination of good work focus and adequate rest time strongly influences the level of safety on board. In other words, occupational safety is not influenced by a single factor but is the result of a synergy among the crew's physical and mental conditions and rest time management. The remaining 33% is influenced by other factors such as weather, equipment condition, additional workload, and the ship's safety management system. These findings emphasize the importance of good workload management and rest patterns in creating a safe working environment on board.

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