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# ASSESSING THE EFFECTIVENESS OF TRANSITIONING FROM PAPER-BASED TO ELECTRONIC WORK PERMIT SYSTEMS IN THE CONTEXT OF SHIPBOARD TECHNICAL SYSTEMS AND COMPLEXES

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**Introduction.** This study aims to investigate the effectiveness of transitioning from the traditional paper-based work permit system to a modern electronic system on ships. We seek to identify potential problems associated with the current process and evaluate the anticipated benefits of implementing an electronic system, with a special focus on the technical systems and complexes onboard.

*Research problems and questions*:

Based on preliminary analysis, we have identified several key questions that require detailed investigation:

*Technical aspects*: What technical requirements are necessary for implementing an electronic system? It is crucial to ensure that the ship's servers and equipment are compatible with the new system, and to consider the feasibility of providing a stable internet connection for working with the web platform.

*Personnel training*: What is the level of crew readiness to work with electronic systems? Training must be provided to ensure effective use of the new system. What difficulties in training might arise and how can they be overcome [1]?

*Data security and confidentiality*: How can data security and confidentiality be ensured during the transition to an electronic system? It is important to consider potential cybersecurity threats and information protection measures.

*Adaptation process*: What psychological and organizational barriers might arise when transitioning to a new system? Some crew members may resist changes due to fear of new technologies or a habituation to paper-based processes [2].

*Legal and regulatory aspects*: Are there any legislative or regulatory requirements that might complicate the transition to an electronic system? Compliance with relevant regulations and standards must be considered.

**Main research planning**.

*Literature review*: Conducting a literature review is the first step in our research. This stage involves a systematic search and analysis of existing scientific papers, articles, books, and reports on the topics of work permit systems, implementation of electronic systems, safety regulations, and maritime industry standards. The primary task is to define existing theoretical frameworks, uncover under-researched aspects, and identify gaps in knowledge. This will allow us to understand the current state of technology implementation and determine the most relevant areas for our study.

*Data collection*: In the second stage, we collect primary data from maritime companies, crew members, and industry experts through surveys, interviews, and observations. This includes:

*Surveys*: Developing and distributing surveys among maritime companies and crews to assess their experience with using both paper and electronic work permits.

*Interviews*: Conducting in-depth interviews with key industry experts and crew members who have experience with both systems. This will help gather detailed perspectives and personal evaluations regarding the effectiveness and challenges of both systems.

*Observations*: Conducting on-board observations to directly observe work processes and crew interactions with work permit systems.

*Data analysis*: After data collection, the next step involves analyzing the data. We use statistical software to process quantitative data and qualitative analysis methods for textual responses [3]. This helps identify trends, detect correlations, and understand the deep motivations and perceptions of participants. It is important to identify both general trends and individual differences in user experiences.

*Effectiveness assessment*: At this stage, we assess the effectiveness of electronic work permits using predefined criteria such as processing time for applications, error frequency, onboard safety level, crew satisfaction, economic efficiency, and system integration with other systems. We compare these metrics with similar data for paper systems to determine the advantages and disadvantages of both approaches.

*Conclusions and recommendations*: In the final stage, we formulate conclusions based on the analysis of collected data. We develop recommendations for optimizing the transition process to electronic work permits and maximizing their benefits. Recommendations may include proposals for improving technical infrastructure [4], training programs for personnel, strengthening cybersecurity measures, and developing adaptation strategies to ensure a smooth transition.

This detailed approach provides a deep understanding of the potential impact of technological innovations on safety and work efficiency on maritime vessels, as well as enables the development of effective strategies for their implementation.

*Expected outcomes*: The study aims not only to assess the advantages and disadvantages of transitioning to an electronic work permit system but also to develop practical recommendations for its implementation. The results are expected to enhance crew work efficiency, reduce the likelihood of errors, and increase safety levels onboard.

**Conclusions.** This comprehensive study thoroughly evaluates the transition from paper-based to electronic work permit systems within the context of shipboard technical systems and complexes. The research highlights significant potential benefits, including enhanced operational efficiency, reduced error rates, improved safety [5], and better compliance with regulatory standards.

Key findings from the study underline the necessity of addressing several critical aspects during the transition process. These include ensuring technical compatibility, providing adequate training for crew members, safeguarding data security, and managing the psychological and organizational change within crew dynamics. Moreover, attention must be paid to legal and regulatory frameworks to ensure seamless integration and compliance.

In conclusion, transitioning to an electronic work permit system appears to be a promising strategy to enhance maritime operational efficiency and safety. However, successful implementation depends on careful planning, including technical setup, comprehensive training, and supportive change management practices. Recommendations generated from this study serve as a guideline for maritime entities considering or undergoing this digital transformation, aiming to optimize not only their operational workflows but also to ensure the highest standards of safety and efficiency in maritime operations.

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