

The Implementation Of Quality Management System (QMS) Via EN ISO 9001:2015 In Merchant Marine Academy Of Aspropyrgos

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Abstract

This paper provides an analysis of the implementation of the Quality Management System (QMS) through the EN ISO 9001:2015 model in the Maritime Academy of Aspropyrgos. The paper covers both the supportive and operational aspects of the standard, emphasizing the importance of implementing the standard to align all sectors with the Academy's quality objectives. The quality policy is a critical element in this approach, demonstrating the Academy's commitment to providing quality education and meeting stakeholders' needs. Recording the quality policy in each sector reinforces the Academy's management, promoting a culture of quality throughout the organization. Moreover, by recording the quality policy in each sector, the Academy establishes a framework for continuous improvement, improving the overall quality of education provided. The findings of this study contribute to the existing literature on ISO 9001 implementation in Merchant Marine Academy of Aspropyrgos and provide valuable guidance for other institutions seeking to adopt and implement the standard.

Keyword: *ISO 9001:2015, Total quality management, Higher marine education, Maritime education and training*

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I. Introduction

This paper provides a comprehensive overview of the Merchant Marine Academies in Greece, with a focus on the Merchant Marine Academy of Aspropyrgos. It discusses the curriculum and practical training offered through the implementation of a Quality Management System (QMS) based on the EN ISO 9001:2015 standard. The curriculum spans eight semesters, with theoretical education provided during the six semesters and practical training on ships during the remaining two semesters. The implementation of the QMS ensures adherence to national training requirements and covers various areas, such as the preparation of operating regulations, training programs, and the granting of certificates of seaworthiness (Merchant Marine Academy of Aspropyrgos, 2012).

The paper highlights the benefits, challenges and recommendations related to the implementation of QMS in educational institutions, based on various research studies. A study by Anto'nio Jorge Gamboa and his team investigates the success factors for the implementation of ISO 9001 in educational institutions, including the creation of a quality team, strategic focus on objectives and continuous improvement and support (Anto'nio Jorge Gamboa, 2012). This study emphasizes improved resource management, process measurement and evaluation, and meeting stakeholder needs as benefits of implementing ISO 9001 in educational institutions.

Another study by Jorge Antonio Arribas Díaz et al. examines the impact of ISO QMS implementation in schools, highlighting the improvements reported by teachers but also challenges such as dealing with excessive bureaucratic work (Jorge Antonio Arribas Díaz, 2018). This study highlights the need for continued commitment to quality management principles, staff training, and fostering positive attitudes among teachers and staff for better implementation. The paper also examines the impact of the implementation of ISO 9001 on teaching and learning processes in Spanish schools, as well as the importance of compliance with the International Convention on Standards of Training, Certification and Watchkeeping (STCW) for seafarers in the field of maritime education and training. Research by Jesús Miguel Rodríguez-Mantilla et al. reveals the significant impact of ISO 9001 on the management and planning system in schools (Jesús Miguel Rodríguez-Mantilla, 2018). This study demonstrates the positive results of ISO 9001 implementation in various dimensions of school management, including communication, learning process and external relations.

Additionally, a study by Cicek et al. emphasizes the benefits of implementing a robust QMS in producing competent graduates who meet industry demands (Cicek, 2021). This study highlights the importance of adhering to international standards, such as the STCW, and the role of a QMS in ensuring compliance and producing high-quality graduates. The paper further explores the benefits and challenges of implementing a QMS in higher education institutions, based on studies conducted at the VSB – Technical University of Ostrava in the Czech Republic.

Radim Farana's research highlights the improvement of university culture, stakeholder satisfaction, cost savings, and enhancement of university competitive advantage through QMS implementation (Radim Farana, 2007). This study emphasizes the strategic approach to QMS implementation and the importance of strong support and commitment from senior management. It also highlights the benefits of improved process management and better defined rules for handling standard situations. The paper also examines the perception and adoption of ISO 9001 standards in higher education institutions in Lithuania, as well as the effectiveness of ISO 9001:2008 and accreditation standards in improving the quality of higher education institutions.

A study by Kasperavičiūtė-Černiauskiė et al. examines the factors influencing the adoption of ISO 9001 standards in Lithuanian higher education institutions (Kasperavičiūtė-Černiauskiė, 2018). This study highlights the importance of perceived compatibility, relative advantage, and adaptability of ISO 9001 in its adoption.

Research by Mekić et al. provides empirical evidence of the effectiveness of ISO 9001:2008 and accreditation standards in improving the quality of higher education institutions (Mekić, 2014). This study demonstrates the positive impact of ISO 9001 implementation on various quality indicators in higher education institutions. Finally, the paper emphasizes the specific benefits of ISO 9001 implementation in educational institutions, including enhanced reputation, improved supplier management, a culture of continuous improvement, operational efficiency, and proactive risk management. Studies by Ölçer et al. highlight the benefits of ISO 9001 implementation in attracting more students, improving supplier management, fostering a culture of continuous improvement, and promoting operational efficiency (Ölçer, 2018). These studies emphasize the positive impact of ISO 9001 on various aspects of educational institutions, such as reputation, customer satisfaction, and operational effectiveness.

Research by Urbaniak demonstrates that ISO 9001 implementation positively impacts risk management practices in organizations (Urbaniak, 2022). This study highlights the systematic approach encouraged by ISO 9001 in identifying, evaluating, and addressing risks, leading to proactive risk management and improved overall quality management practices.

The implementation of EN ISO 9001 in the Merchant Marine Academy of Aspropyrgos serves as an exemplary model for both public and private maritime academies in Europe. By adopting a Quality Management System (QMS) based on the EN ISO 9001:2015 standard, the academy aims to enhance its operating regulations, training programs, and overall organizational structure. This implementation not only ensures compliance with national training requirements but also inspires other maritime academies to follow suit through emulation. The positive outcomes resulting from this implementation, such as an enhanced reputation, increased trust from industry stakeholders, and improved internal processes, provide strong incentives for the Merchant Marine Academy of Aspropyrgos and other academies to prioritize ISO 9001 implementation. This commitment to quality management will ultimately elevate the standard of education and training programs across the maritime industry. The objective of this paper is to assist other institutions in Greece and Europe in implementing ISO 9001 by providing a comprehensive overview of the process and highlighting its simplicity. By following the example set by the Marine Academy of Aspropyrgos, other academies and institutions can improve their operations, meet industry standards, and deliver high-quality education and training to their students.

II. Implementation Of Principles Of Quality Management System In Maritime Education

The Seafarers' Training Directorate of the Ministry of Maritime Affairs and Island Policy in Greece is tasked with overseeing the regulation, development, and management of education programs for public Merchant Marine Schools. Its responsibilities include issuing regulations and ensuring that schools operate efficiently and effectively.

To comply with the ISO 9001:2015 standards, organizations must follow several essential quality management principles (Luis Fonseca, 2017). By aligning its functional processes with these essential quality management principles, Seafarers' Training Directorate ensures efficient and effective maritime education and training.

Here is an overview of how Directorate's processes align with these principles:

1. Customer Focus: It involves evaluating and processing student requests and measuring their satisfaction, demonstrating a commitment to understanding and meeting customer needs.

2. Leadership: It involves defining a quality policy and creating the right environment for staff to actively contribute to its achievement, particularly in processes such as setting examination periods and managing procurements and services.
3. Engagement of People: Involves people at all levels of the organization in processes such as enrolling students in maritime schools or programs and keeping records of student performance, ensuring their active participation in meeting customer needs.
4. Process Approach: It involves defining and systematically managing processes and their interactions to achieve desired outcomes, as in processes such as setting examination periods and keeping records of student performance.
5. Improvement: It involves fostering a culture of continuous improvement by learning from mistakes and improving service delivery, seen in processes like evaluating and processing students' requests and measuring satisfaction.
6. Evidence-based Decision Making: Decisions are based on the analysis of data and information, as seen in processes like monitoring and implementing the STCW convention and recognizing and verifying foreign national identity documents.
7. Relationship Management: Involves maintaining mutually beneficial relationships with stakeholders through processes such as regulating the admission process of foreign students and issuing national identity cards, diplomas, licenses, and certifications.

The functional processes of Seafarers' Training Directorate are described and are critical for its effective function: (Organisational Manual ISO 9001:2015, 2022, Seminar Part C: Internal Auditor Training and Record Keeping., 2021), including the following:

1. Publication of Presidential Decree and Ministerial Decision: The publication of Presidential Decrees and Ministerial Decisions is essential for transparency and accountability in governance. To implement this process effectively, requirements such as a request from the Maritime Authority, compliance with international conventions and community legislation, and availability of human resources and technical equipment must be met.
2. Introduction of students to higher education institutions: The introduction of students to higher education institutions requires meeting several requirements. These include the Maritime Education Council meeting minutes, publication of a Joint Ministerial Decision (JMD), student application submissions, availability of resources, posting results, announcing enrollment periods, maintaining an archive of successful candidates and certificates, tracking enrolled students by specialty and category, issuing daily orders and instructions, delivering candidate folders to committees, and transferring performance indicators.
3. Evaluation of students' requests: The evaluation of students' requests involves several requirements to ensure a fair and thorough process. These requirements include the submission of applications by interested parties to higher education institutions within specified dates, the availability of human resources and technical equipment to facilitate the evaluation, access to relevant information, and the transfer of the student's file from their previous institution.
4. Keeping a logbook: Keeping a logbook requires meeting specific requirements, including operational cost per student, reports from higher education institutions, tables by specialty, human resources, technical equipment, and access to statistical data. Additionally, maintaining school logbooks for both the spring and winter semesters, along with reports categorized by specialty, category, and nationality, is essential.
5. Registration of students in a maritime school or program: The operational process performance indicator requires several requirements to effectively measure performance. These include determining the total number of students eligible for the first and second practical training voyages and calculating their percentage in relation to the number of enrolled students. Additionally, tracking the number of received manuals for directed education for each training voyage and calculating the percentage in relation to the eligible students is necessary. The number of students successfully completing each practical training voyage and their percentage in relation to those who received the manual is also important. Other requirements include exam results, availability of human resources and technical equipment, access to relevant information, issuing certificates for internship allowances to shipping companies, maintaining a trip diary, and documenting minutes of evaluation for educational trips.
6. Admission process for foreigners, co-nationals, and Cypriots in higher education institutions: The admission process for foreigners, co-nationals, and Cypriots in higher education institutions is governed by certain requirements. These requirements include the submission of minutes from the meeting of the Maritime Education Council, the publication of a joint ministerial decision (JMD), and the completion of an application for admission. Additionally, the institutions must ensure they have adequate human resources, technical equipment, and information to support the educational needs of the students. The applicants are also required to provide relevant certificates, diplomas, degrees, and a certificate of maritime competence. All the necessary

documentation and information are then compiled and stored in an archived file for future reference and record-keeping purposes.

7. Determination of examination periods: The operational procedure of Directorate (Department of Examination and Certification) follows a set of requirements to ensure its smooth functioning. These requirements include the issuance of a ministerial decision that determines the examination periods. The department must also have adequate human resources and technical equipment to conduct the examinations effectively. Once the examinations are completed, the results are posted and shared with the relevant authorities. The department maintains a file of ministerial decisions related to the examinations and a separate file to track the implementation of these decisions. Finally, the successful candidates or graduates are awarded diplomas, which serve as a testament to their achievements in the examination process.
8. Monitoring of the International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW): Monitoring of the International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW) is a crucial process that ensures the implementation and effectiveness of the convention's requirements. The International Maritime Organization (IMO) plays a central role in monitoring the STCW by regularly reviewing and updating its standards through the Maritime Safety Committee (MSC). National maritime authorities, such as flag states and port states, also have responsibilities in monitoring compliance with the STCW. Flag states issue seafarer certificates and undergo audits by the IMO to assess their adherence to the convention. Port states conduct inspections of foreign ships to verify compliance. Cooperation and information sharing among member states further enhance the monitoring process. Overall, the continuous monitoring of the STCW requirements is essential to maintain the safety and competence of seafarers worldwide.
9. Recognition of foreign national identity: Recognition of foreign national identity requires fulfilling various requirements. This includes responding to requests from other countries, allocating human resources and technical equipment, engaging external collaborators, establishing international agreements, informing involved authorities, maintaining a consolidated table for monitoring agreements, and keeping a monitoring file.
10. Issuance of national identity cards, diplomas, licenses, and certifications: The issuance of national identity cards, diplomas, licenses, and certifications involves meeting specific requirements. These include tracking the number of national identification cards issued annually per specialty, monitoring the number of certifications issued each year, and assessing the average time taken to issue certifications and national identification cards per specialty and year. Additionally, fulfilling these requirements necessitates responding to requests from interested parties, allocating appropriate human resources and technical equipment, engaging external collaborators, maintaining an archive for certificates, diplomas, degrees, and licenses, and utilizing detailed information forms and templates for these documents. It is also essential to have a legislation table that outlines the procedures for issuing certificates and certifications, as well as a maritime file archive for certificates.
11. Procurement management: Procurement management involves meeting specific requirements to ensure efficient operations. This includes recording the operational cost per Marine Academy student and generating proposals for procurement implementation and services provision. Adequate allocation of human resources, technical equipment, and engagement of external collaborators are essential for successful procurement implementation. Maintaining an annual consolidated table of requested procurement services, an approved budget, and making decisions on expense approvals and commitments are crucial aspects of procurement management. Additionally, utilizing electronic transaction kiosks, trip diaries, exam results, and minutes of evaluation for educational trips contribute to effective procurement processes. By adhering to these requirements, procurement management can be streamlined and monitored efficiently.

In summary, following the ISO 9001:2015 standard's quality management principles is crucial for businesses to improve the quality of their products or services, optimize their performance, and increase customer satisfaction. The Directorate of Marine Education and other organizations can benefit from complying with these principles to enhance their operations and meet their stakeholders' needs and expectations.

III. Implementation Of Quality Management System (QMS) In The Merchant Marine Academy Of Aspropyrgos

The Academy's Quality Management System can be categorized into two groups of processes - productive and supporting. The productive processes are externally-focused and contribute to the university's primary objectives by producing end results. The supporting processes, on the other hand, are internally-focused and provide assistance to the productive processes. These supporting processes aid in maintaining the operational function of the university and may include technical support or administrative tasks. (Seminar Part B: Internal Auditor Training and Record Keeping, 2021, Seafarers' Training Directorate, 2022)

The beforementioned processes are described in two separate parts A and B. In this work, the supporting processes of the Maritime Academy's QMS will be thoroughly analyzed. This is because supporting processes play a crucial role in maintaining the operational function of the academy and ensuring the productive processes can accomplish their objectives effectively.

The supporting processes form the basis of the academy's quality management practices and are instrumental in ensuring that the academy satisfies the requirements and expectations of its stakeholders.

By analysing and improving these supporting processes, the academy can enhance its overall quality management practices and achieve greater success in its educational and training programs. Therefore, understanding and improving the supporting processes of the academy's QMS is critical to its long-term success. (Organisational Manual ISO 9001:2015, 2022)

Maintained Files of Supporting Procedures Quality Policy

The Seafarers' Training Directorate of the Ministry of Maritime Affairs and Island Policy is tasked with overseeing the regulation, development, and management of education programs for public Merchant Marine Schools. Its responsibilities include issuing regulations and ensuring that schools operate efficiently and effectively. As the responsible authority the Seafarers' Training Directorate places a high priority on providing top-level training services that meet and exceed the needs of trainees. They are committed to complying with trainees' requirements and continuously enhancing and efficiently operating their services. To achieve this, they maintain high standards for educators and training facilities and constantly develop and implement new educational programs based on market demands and the needs of other interested parties. Concerns and issues raised by trainees and partners are swiftly addressed, and the Quality Management System is perpetually enhanced while adhering to regulatory requirements.

In implementing their Quality Policy, the Seafarers' Training Directorate operates based on principles that ensure each employee and partner is responsible for the quality of their work. They set targets, provide necessary resources, and analyze statistical results to continuously improve the training services provided. Appropriate training, equipment, and infrastructure are offered to staff to ensure they can perform their tasks correctly. An appointed Quality Process Manager oversees the application of the QMS and takes corrective actions where necessary. External providers, they cooperate with, must comply with Directorate commitments to trainees and other interested parties.

The strategic objectives of the Seafarers' Training Directorate are to ensure compliance with legal and regulatory requirements, continuously improve the quality of services, maintain service continuity and availability, and continuously monitor operational efficiency and effectiveness based on established targets and indicators. By pursuing these objectives, they aim to provide outstanding training services to trainees and meet the needs of stakeholders. The commitment to quality is firm, and it will continue to be prioritized in all operations.

Document & Records Management

The Document and Records Management Procedure is essential in ensuring that all documented information required by the ISO 9001:2015 standard is effectively managed within the organization. This procedure outlines the necessary steps for creating, reviewing, approving, controlling, and retaining documented information and records. (Seafarers' Training Directorate, 2022, Seminar Part B: Internal Auditor Training and Record Keeping, 2021, Seminar Part C: Internal Auditor Training and Record Keeping, 2021)

The ISO 9001:2015 standard mandates that organizations must effectively manage all documented information required by the standard. This involves accurately identifying and describing the information, maintaining it in an appropriate format and media, and regularly reviewing and updating it. To control documented information, organizations must establish a suitable process that defines controls for approving, reviewing, updating, identifying changes, revision status, and access. While there is no requirement for a documented procedure, clear communication and training on the documented information process is crucial to ensure personnel understand what types of information should be controlled and how. Effective management of documented information is vital for the smooth operation of the QMS, and compliance with the ISO 9001:2015 requirements is essential.

Problem Management

The aim of this procedure is to manage issues that arise in relation to the Quality Management System (QMS) processes, including non-conforming services in education, non-conformities identified through audits and inspections, and complaints related to the educational and certification processes. The Quality Team is responsible for overseeing the implementation of this procedure, which must be followed by all personnel involved in the QMS processes to ensure timely and effective resolutions of issues and continued compliance

with relevant standards. (Seafarers' Training Directorate, 2022, Seminar Part B: Internal Auditor Training and Record Keeping, 2021, Seminar Part C: Internal Auditor Training and Record Keeping, 2021)

Internal Audits

Auditing is a crucial process that evaluates the effectiveness and compliance of activities related to quality. It is guided by principles such as independence, ethics, fair presentation, evidence, and due professional care (Seafarers' Training Directorate, 2022, Seminar Part B: Internal Auditor Training and Record Keeping., 2021). Auditors play a vital role in objectively and systematically assessing operations, providing valuable information for management to improve processes. Trust and confidentiality are essential in the relationship between auditors and the auditee. However, audits are based on a sample of available information, as it is not possible to access and evaluate all available information within the limited timeframe of an audit.

Internal inspections and external audits are conducted to maintain and improve the Quality Management System (QMS). These audits are carried out in accordance with the organization's Quality Policy, the international standard ISO 9001, and the documentation of the QMS. The audits aim to evaluate the effectiveness and compliance of activities related to quality, address observations and non-conformities, and implement corrective actions if necessary. There are three types of audits: horizontal, vertical, and cross-functional. Each type focuses on different aspects of the organization's processes and interactions within the QMS.

The Internal Audit Program, also known as the Audit Plan, is crucial for organizations to identify improvement opportunities and gather valuable data. The Quality Process Manager is responsible for preparing the plan and organizing audits for each area of the Quality Management System. The audits should be conducted at least once a year, taking into account factors such as previous audit findings, new or modified processes, legislative requirements, criticality of functions, risks, supplier performance, and customer-user requirements. Various sources, including interviews, observation of activities, documents and records, analysis, and performance measurement indicators, are used to gather information during internal audits. Interviews are considered the most important means of collecting information, and different types of questioning can yield different results depending on the purpose of the interview. Seafarers' Training Directorate has a comprehensive internal audit program in place, overseen by the Internal Inspection Manager, to ensure compliance and identify areas for improvement in their quality management system.

Organization-Job descriptions

This procedure aims to create an organizational chart for the educational institution and its Schools of the Merchant Marine and establish guidelines for issuing job descriptions for personnel. Job descriptions should be reviewed and updated regularly to reflect changes in the organization and to ensure they are accurate and up-to-date. The organizational chart clearly shows the hierarchy of the institution, including reporting lines and relationships between positions, to ensure effective communication and decision making. It outlines the roles and responsibilities of each position and department, ensuring that all aspects of the academy are functioning efficiently and effectively. By establishing an effective organizational chart and issuing clear job descriptions, the educational institution and its Schools of the Merchant Marine can ensure that staff members understand their roles and responsibilities, which will improve communication, accountability, and overall performance. The Quality Team of the educational institution and the Quality Management Teams of the Merchant Marine Schools are responsible for overseeing the execution of this procedure.

The roles and responsibilities of each position in the Merchant Maritime Academy according to the organization chart as determined in EN ISO 9001: 2015 are described as follows:

- Administration: Responsible for managing and directing the institution, setting goals, allocating resources, and overseeing budget, finances, and personnel.
- Quality Manager: Ensures that programs and services meet high quality standards through regular assessment, improvement, and policy development.
- Academy Secretary: Handles administrative tasks such as scheduling appointments, organizing meetings, and managing records.
- Management Team: Oversees daily operations, staff, and resources to ensure smooth program and service delivery.
- Department Director: Responsible for academic programs, curriculum development, faculty management, and maintaining educational standards.
- Supervision Department: Provides leadership and guidance to faculty and staff.
- Logistics: Coordinates and manages academy events.
- School Secretary: Handles administrative tasks and manages records.
- Secretary of Bibliothek: Manages the academy's library resources.
- Interconnection Office: Builds and maintains relationships with other organizations.
- Student Affairs: Ensures student welfare and provides support services.

- Educational Staff: Provides academic instruction and support to students.

Furthermore, the Quality Team's composition within the ISO framework is described. The team includes the Quality Management Officer (QMO), Internal Audit Responsible (IAR), Training Program Coordinator, Document Control Responsible, and Quality Equipment Responsible. Each individual has specific responsibilities related to ensuring compliance with ISO 9001:2015 standards, conducting internal audits, managing training programs, maintaining document control, and overseeing equipment management.

Overall, the organizational chart and job descriptions help ensure effective communication, accountability, and performance within the educational institution and its Schools of the Merchant Marine. Regular review and updates of job descriptions are necessary to reflect changes in the organization and maintain accuracy. The Quality Team is responsible for overseeing the execution of this procedure and ensuring compliance with ISO standards.

QMS Review

The Academy has put in place a process for evaluating the quality and efficiency of its various operations, which includes educational activities, research, innovation, services, infrastructure, management systems, and human resource development. The process aims to define specific objectives, set goals, establish ways to measure success, and ensure alignment with the Academy's overall objectives. By regularly monitoring and measuring these indicators, the Academy can continually improve its operations and meet the expectations of its stakeholders.

The quality review process is an essential aspect of the Academy's Quality Management System (QMS). It is designed to evaluate the suitability, adequacy, and effectiveness of the QMS to ensure it continues to operate effectively, meet stakeholder needs, and achieve organizational objectives. The process involves a systematic and comprehensive evaluation of the QMS, including the analysis of data, review of audit results, and examination of internal and external issues that may impact the QMS. The Quality Manager and Quality Teams of the Academy are responsible for implementing the review process. (Seafarers' Training Directorate, 2022, Seminar Part B: Internal Auditor Training and Record Keeping., 2021, Seminar Part C: Internal Auditor Training and Record Keeping., 2021)

In summary, the implementation of a QMS in a school setting requires the involvement and commitment of all relevant stakeholders, including the School Executive, School Quality Committee, and QMS Manager. The development and implementation of documented procedures and processes, along with regular monitoring and review, are essential for ensuring the effectiveness of the QMS.

Furthermore, communication and training are key factors in the successful implementation and maintenance of a QMS. All staff members must be aware of their roles and responsibilities in the QMS, and regular communication with students, parents, staff, and suppliers is necessary to ensure everyone is aware of the School's commitment to quality. Adequate resources, including funding and equipment, must also be provided to support the QMS. By following these guidelines, schools can effectively implement a QMS to improve their operations and achieve their objectives.

Quality Indicator Measurement

This procedure outlines how performance indicators for the processes of educational institutions and schools are identified, measured, and evaluated (Seminar Part C: Internal Auditor Training and Record Keeping., 2021). The Quality Manager and Quality Teams are responsible for implementing this procedure. The Seafarers' Training Directorate has established indicators and monitoring methods to ensure effective implementation of the Quality Management System, which includes continuous monitoring throughout the year and annual analysis during the Management Review Meeting. These indicators are based on data recorded in the Customer Satisfaction File related to the Academy's services, such as procurement procedures.

To measure the indicators, the Academy records the values in a relevant file that is presented during the annual Management Review Meeting. During the Management Review Meeting, the Quality Manager and Quality Teams review the measurement of indicators and compare them to the set targets. If the targets are not achieved, documentation of any required actions is recorded to ensure that measures are taken to converge in cases of deviation from the result. The results of the measurements and any required actions are also discussed during the meeting to continuously improve the Academy's Quality Management System. This ensures that the Academy remains committed to providing high-quality services and meeting the needs and expectations of its students and stakeholders.

Staff Training

ISO 9001:2015 mandates organizations to provide their employees with adequate training and development opportunities to ensure they possess the necessary competencies to perform their duties effectively. The standard emphasizes that training is a crucial element in promoting employee performance, improving

productivity, and ingraining a culture of quality throughout the organization. All employees, not just those involved in the quality management system, must receive training to clarify their roles and responsibilities, enhance product and service quality, and identify skills and knowledge gaps. To achieve this, organizations can adopt various training methods like on-the-job training, coaching, workshops, mentoring, and e-learning. (Seminar Part C: Internal Auditor Training and Record Keeping., 2021)

To ensure compliance, there are several steps that need to be followed and documented. First, the training needs of employees should be identified, whether it's due to new personnel or new duties. This can be recorded on the job description form. Additionally, any internal seminars that need to be conducted should be documented. To request staff participation in training events, a specific form needs to be filled out each time. Individual training records should be maintained, including notifications about duties, specific issues, and attendance at internal training seminars. The evaluation of training received by personnel should also be documented, completed by both the trainee and their supervisor. Lastly, information about participants during internal staff training sessions should be recorded using a provided template. By completing and documenting these forms, the organization ensures that staff receives the necessary training, tracks individual and organizational progress, and improves their quality management system to meet standards and regulations.

Equipment Maintenance

The objective of this procedure is to maintain accurate records of the equipment owned by the company and to ensure that it is properly maintained. The procedure specifically pertains to critical equipment used by the Seafarers Training Directorate and the Schools of Merchant Marine Academy.

To accomplish this, three forms must be completed and signed: The first form is the Equipment Catalogue form, which provides a comprehensive list of all equipment owned by the company. The second form is the Equipment Maintenance Card, which is used to track the maintenance history of each piece of equipment. The third form is the Critical Equipment Maintenance Program, which outlines the maintenance schedule for critical equipment and ensures that it is regularly inspected and serviced. Through the completion and use of these forms, the company can effectively manage its equipment and ensure that all critical equipment is properly maintained. (Seminar Part C: Internal Auditor Training and Record Keeping., 2021)

Satisfaction Measurement

The purpose of this procedure is to assess the satisfaction of citizens and collaborating entities with the administrative services provided by the Quality Assurance Unit and the Schools of Merchant Marine Academy. It involves measuring satisfaction with services provided by the School's Secretariat and Student Affairs Office, as well as administrative services provided to citizens and other entities. The company uses this feedback to evaluate the effectiveness of its services and make improvements where necessary. The Quality Management Representative is responsible for implementing this procedure and ensuring the availability of evaluation forms, monitoring responses, and initiating corrective or preventive actions based on the findings.

Change Management

Having effective change management procedures is crucial for maintaining a strong and efficient quality management system (QMS). In the ISO 9001:2015 standard, there are specific requirements that stress the importance of planning, controlling, reviewing, and mitigating the impact of changes to guarantee product and service conformity, operational planning, and control. To implement QMS change management, it is necessary to define the change, plan for it, communicate it, train employees, and execute the change. A well-executed change management process can reduce risk, guarantee compliance with regulations, and enhance product and service quality. Manufacturers must establish a strict change control process to ensure that any changes impacting the QMS are effectively managed and controlled and minimize the risk of negative effects on product quality and safety, ultimately ensuring customer satisfaction.

When deviations are identified through internal or external audits, incidents, and other sources, they are recorded in the Problem Management File. The Quality Management Representative investigates the causes of the deviation and proposes corrective or preventive actions with a set timeframe for implementation. A Responsible Person is appointed to implement the actions, and a Controller is responsible for verifying their effectiveness. If the deviation poses a threat, the Risk Management File is also completed. For requested changes, such as modifications to forms due to changes in legislation or QMS processes, the form E.Y.D.S.10.01 REQUEST AND IMPLEMENTATION OF CHANGES form is completed (Seafarers' Training Directorate, 2022, Seminar Part B: Internal Auditor Training and Record Keeping., 2021, Seminar Part C: Internal Auditor Training and Record Keeping., 2021).

Quality risk assessment

ISO 9001:2015 places a strong emphasis on risk-based thinking throughout the management system by defining measures to prioritize and address risks and opportunities. The organization maintains separate copies of the risk assessment and control form for each school, ensuring a tailored approach to risk management. Improvement opportunities are recorded using a specific form, and necessary actions are implemented by the Quality Process Manager, School Directors, and relevant employees. Delays are managed through the problem management procedure, allowing for efficient resolution of any issues. The process involves systematic analysis of operational processes to identify risks and opportunities, with a risk assessment and control worksheet used for this purpose. Risks are categorized into asset categories, and the impact of each risk or opportunity is determined to prioritize resource allocation. A SWOT analysis has been conducted to understand the organization's strengths, weaknesses, opportunities, and threats, and strategies have been developed and incorporated into the Quality Management System for continuous improvement.

SWOT analysis of maritime academy of aspropyrgos

The SWOT Analysis is a simple but widely accepted way to describe the areas in which you are strong or have weaknesses (Seafarers' Training Directorate, 2022). **'Only by knowing where you are can you predict where you will go.'**

The presentation of a SWOT (Strengths, Weaknesses, Opportunities, Threats) Analysis for the Marine Academy of Aspropyrgos was deemed necessary to describe the current situation and the prospects that are emerging for the Academy.

Table no 1: SWOT ANALYSIS

SWOT ANALYSIS	
STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ➤ Development and implementation of maritime education and training systems ➤ Measures to attract young people to the maritime profession ➤ Compliance with Quality Management System ➤ Student grants ➤ Modernization of educational and technological equipment ➤ Monitoring and harmonization of international legislation with the national legislation through the issuance of legislation in collaboration with other organizations ➤ Recognition of foreign Certificates of Competency and other qualifications ➤ Issuance of Certificates 	<ul style="list-style-type: none"> ➤ Change of management and staff due to transfers ➤ Lack of personnel ➤ Lack of technical infrastructure ➤ Restructuring of study programs ➤ Inability to conduct frequent training sessions.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ➤ Complete computerization of the required processes through the development of suitable applications ➤ Exploitation of the possibilities and popularity of social media as a means of information ➤ Implementation of modern distance learning for students/seafarers on board ships. 	<ul style="list-style-type: none"> ➤ Limited financial resources ➤ Lack of autonomy regarding procurement procedures ➤ Change of management and staff due to transfers ➤ Lack of personnel

To capitalize on opportunities and overcome external threats, the Merchant Marine Academy must implement a focused and effective strategy, utilizing quality improvement mechanisms and optimizing its human resources. Additionally, the Academy must secure new financial resources to increase its financial independence. By leveraging its strengths and addressing its weaknesses, the Academy can achieve these objectives and attain long-term success.

Risk Evaluation

To evaluate risks, a formula is used which takes into account the severity of the potential impact. The severity is determined by multiplying the probability of the risk occurring by the impact it would have if it did occur. The probability and impact are each rated on a scale to determine the overall severity.

The risk evaluation is carried out using the formula:

$$\text{Severity} = \text{Probability} \times \text{Impact} \quad (1)$$

Specifically, the rating scales for probability and impact are presented below (Table 2, Table 3 and Table 4):

Table no 2: Propability of Occurrence

Level	Probability	Observations
1	Rare	Probability of occurrence is low (1% -15%)
2	Very Low	Probability of occurrence is moderate (16% -39%)
3	Low	Probability of occurrence is low to moderate (40% -59%)
4	Medium	Probability of occurrence is moderate to high (60% -79%)
5	High	Probability of occurrence is high (80% -100%)

These are the impact levels ranked from the least severe to the most severe:

Table no 3: Impact Level

Level	Impact
1	Negligible
2	Minor
3	Serious
4	Critical
5	Catastrophic

The value matrix in risk management is a tool used to determine the severity of the risk and the appropriate response or action to take. The Value Matrix is based on a scale of 1 to 25, with the higher numbers indicating a more severe risk.

Table no 4: Value Matrix in Risk Management

Level	Severity= Impact * Probability of Occurrence				
	Rare	Very low	Low	Medium	High
Negligible	1	2	3	4	5
Small	2	4	6	8	10
Serious	3	6	9	12	15
Critical	4	8	12	16	20
Destructive	5	10	15	20	25

The actions that can be taken include acceptance of the risk, transferring the risk, avoidance of the risk, implementation of measures, or an opportunity for improvement. The Value Matrix helps organizations prioritize risks and allocate resources accordingly. It also helps in the decision-making process regarding the best course of action to take in managing the risk and reducing the likelihood of adverse events occurring.

The Value matrix is a critical tool in risk management as it provides a structured approach to identifying, assessing, and managing risks.(Table 5)

Table no 5: The Explanation of the value matrix in Risk Management

Value	Description	Risk Management / Actions
1 - 3	Too low: The risk is insignificant and unlikely increase in the near future without changing the existing conditions of operation and implementation of the services provided.	Acceptance of Risk, Transfer of Risk, Risk Avoidance, Implementation of Measures, Opportunity for Improvement
4 - 8	Low: The risk is small and controllable effectively using appropriate means or methods for the operation of the organization and implementation of the services provided.	Acceptance of Risk, Transfer of Risk, Risk Avoidance, Implementation of Measures, Opportunity for Improvement
9 - 14	Medium: The risk is not effectively controlled and not the occurrence of an adverse event is excluded in the organization.	Acceptance of Risk, Transfer of Risk, Risk Avoidance, Implementation of Measures, Opportunity for Improvement
15 - 19	High: The risk is not effectively controlled and there is a possibility of a serious adverse event incident in the organization.	Transfer of Risk, Risk Avoidance, Implementation of Measures, Opportunity for Improvement
20 - 25	Very high: The risk is not effectively controlled and there is a possibility of a very serious manifestation adverse event related to the operation of the organization and the implementation of the provided services.	Transfer of Risk, Risk Avoidance, Implementation of Measures, Opportunity for Improvement

Preventive and protective measures are crucial in the risk identification and assessment process. The goal of these measures is to eliminate, isolate, or reduce risks, and to train and inform personnel or subcontractors when necessary. It is important to regularly monitor, review, and revise these measures, especially when there are changes in work methods, legislation, equipment, or new persistent risks.

New information, regulations, standards, working conditions, inputs from SWOT analysis, changes in organizational structure, stakeholder requirements, and internal/external environment changes may prompt a review of the measures. Changes in the severity value matrix may also trigger a review and revision.

When risks are identified as high or very high, the Quality Process Manager works with School Directors and employees to develop plans for risk reduction and safety improvement. The plans consider the Quality Policy, student needs, laws and regulations, and other factors. If opportunities for improvement are identified, plans are developed to enhance organizational functions and levels. Both plans are communicated to all staff through the intranet and training sessions to ensure awareness and contribution to a safer and more effective organization.

Maintained Files of Productive Processes

The second part (Part B) of this work will focus on the productive processes of the Marine Academy's QMS. These processes are essential to the academy's core activities and directly contribute to achieving its objectives. The productive processes include Administrative Operations of the Academy, Financial Operations of the Academy, and Study, Execution, Supervision, and Receipt of Technical Works. These processes need to be effectively managed and controlled to ensure they meet the academy's quality standards and objectives. Through regular monitoring and measurement of these processes, the Maritime Academy can continuously improve its operations and services to meet the needs of its stakeholders.

The following Table 6 provides an overview of the different productive processes within the Marine Academy's QMS and the maintained files for each process. It outlines their respective process owners, performance indicators, and verified information. By tracking and analyzing these indicators, the Marine Academy can continuously improve its operations and services to meet the needs of its stakeholders. (Seafarers' Training Directorate, 2022.)

Table no 6: Productive Processes in Merchant Marine Academy of Aspropyrgos

Maintained Files (Code)	Process	Process Owner	Performance Indicator	Verified Information
01	Student Registration	Secretariat Of Each School	Total Number Of Graduates Per Year, By Gender, By Specialization (For All Aeis) • Number Of Applications Per Year, By Category, By Gender & Specialization • Number Of Enrolled Students Per Year, By Category, By Gender, By Specialization & School • Resolved Complaints / Number Of Complaints By Students (Average From All Schools)	<ul style="list-style-type: none"> • Application For Higher Institutions Registration, <ul style="list-style-type: none"> • Application For Registration By Deviation, • Application For Registration In Special Departments
02	Organization Of Studies & Programs,	Director Of Studies Of Each School		<ul style="list-style-type: none"> • Curriculum And Lesson Assignment Table • Detailed Weekly Teaching Program • Daily Attendance Record Of Student
03	Exam, Preparation, Conducting Exams & Announcement Of Results	Director Of Studies Of Each School		<ul style="list-style-type: none"> • Exam Schedule Attendance Record Of Exam Takers • Final Performance Table Grade Progress Waiver Statement • Final Performance Report
04	Granting Of Degrees, Certificates & Diplomas,	Director Of Studies Of Each School	Total Number Of Students Per Semester, By Specialization (For All Mmas)	<ul style="list-style-type: none"> • Application For Issuance Of Certificates & Diplomas <ul style="list-style-type: none"> • Degree Certificate Maritime Academy • Detailed Degree Certificate Maritime Academy • Graduation Certificate Maritime Academy • Detailed Graduation Certificate Maritime Academy • Degree Certificate Maritime Academy _New Protocoll

				<ul style="list-style-type: none"> • Detailed Degree Certificate Maritime Academy With New Protocoll • Graduation Certificate Maritime Academy _New Protocoll • Detailed Graduation Certificate With New Protocoll
05	Hiring Of Teaching Staff,	Director Of Studies Of Each School		<ul style="list-style-type: none"> • Request-Form For Hiring Teaching Staff Of School • Posted Announcement For Hiring Per School • Individual File Of Teaching Staff • Initial And Final Ranking Lists • Contract/Employment Of Teaching Staff • Evaluation Protocol Of Administration Of Teaching Staff
06	Evaluation Of Teaching Performance,	Director Of Studies Of Each School	Students' Satisfaction Rate Regarding The Provided Programs (Average From All Schools) • Students' Satisfaction Rate Regarding The Teachers (Average From All Schools) • Students' Satisfaction Rate Regarding The Infrastructure (Average From All Schools)	<ul style="list-style-type: none"> • Education Evaluation Form • Filing & Analysis System For Results
07	Maintenance Of Student Registry,	Secretariat Of Each School	Total Number Of Students Who Drop Out Before Completing Their Studies (For All Aens)	<ul style="list-style-type: none"> • Student Registry Book • Individual Student File

The above table 6 provided outlines the maintained files for each process in the Marine Academy's QMS with process code, process owner, performance indicators, and verified information. The processes range from student registration to maintenance of the student registry. The performance indicators allow the academy to track the effectiveness of each process and identify areas for improvement. Overall, the table demonstrates the academy's commitment to quality management and meeting the needs of its students and stakeholders.

IV. Conclusion

The Merchant Marine Academy of Aspropyrgos is dedicated to elevating its operations, training programs, and overall organizational structure through the implementation of the EN ISO 9001 standard. This implementation not only ensures compliance with national training requirements but also serves as a catalyst for other maritime academies (public or private) to embrace and adopt similar practices in their Quality Management Systems (QMS). By embracing QMS, the academy anticipates achieving favourable outcomes, including an enhanced reputation, increased trust from industry stakeholders, and improved internal processes.

To accomplish these objectives, the Seafarers' Training Directorate has established strategic goals which encompass guaranteeing compliance with legal and regulatory requirements, continuously improving service quality, maintaining service continuity and availability, as well as monitoring operational efficiency. These objectives are aimed at delivering exceptional training services to students while effectively addressing the needs of stakeholders.

The academy's commitment to quality is exemplified in its recruitment policies, where specialized personnel are carefully selected to deliver exemplary service. The Quality Policy of the Merchant Maritime Academy serves as a guiding framework for conducting operations with efficiency and effectiveness, emphasizing the institution's unwavering dedication to providing high-quality education. Overall, the implementation of the EN ISO 9001 standard and the academy's steadfast adherence to its Quality Policy unmistakably demonstrate its commitment to continuous improvement and excellence in maritime education.

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