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IMPROVING DOCUMENT MANAGEMENT WITH ISO 9001 AND IMPLEMENTATION COSTS ANALYSIS ON THE EXAMPLE OF KT SHIP LTD

Master's Thesis

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ABSTRACT

Despite numerous benefits that ISO 9001 certification brings to a company, the general attitude towards ISO implementation is that it increases paperwork and useless documentation that organizations are required to process. The introduction of ISO is very expensive and sometimes the benefits are not clear for the company.

In this work, the business performance of KT SHIP Ltd will be compared before and after ISO certification. KT SHIP Ltd operates in service sector, namely - marine crew management. Business performance is studied in terms of operational, marketing, financial indicators, as well as the changes in the working environment are investigated. In order to achieve an in depth analysis of ISO benefits, qualitative and quantitative research methods are applied.

This work proves that ISO implementation contributes to marketing benefits including maintaining the existing customer relationship, since ISO adoption was customer driven. The changes in operational and financial indicators show the same trend before and after ISO certification, meaning that there is no direct link between them. However, the working environment has improved, as it was evident from semi-structured interview results.

It is suggested by the author, that total costs of ISO implementation must be calculated considering direct costs and costs due to lost revenue. Apart from that, annual ISO expenses must also be considered when making decision to become ISO certified company.

Since the financial impact of ISO certification is unclear by a great number of contradictive research, this research possesses a value since it will contribute to better understanding of ISO benefit for a service sector enterprise.

Key words: quality, ISO 9000 standards, quality management systems, ISO certification, business performance, ISO certification benefits, opportunity cost.

INTRODUCTION

Contemporary business environment is full of challenges, global commerce and increased quality requirements are forcing suppliers to stream for faultless processes. Companies all over the world are faced with challenges to enhance their management efficiency, reduce risks and uncertainty.

A quality management system (QMS) can help to minimize uncertainty in all internal processes of any organization. QMS is a set of policies and procedures required for planning and manufacturing/service processes in areas that can influence the organization's ability to meet customer requirements (Hoyle, 2001). ISO 9001:2008 is an example of a quality management system. ISO 9000 standards bring tangible improvements to the quality management and minimizes expenses for an average real life enterprise resulting in less risk and more profit than a non-standardized economical entity.

However, the general attitude towards QMS is that it increases paperwork and useless documentation that some organizations are required to process. The introduction of QMS is very expensive and sometimes the benefits are not clear for the company.

The **research problem** is to find what the internal and external benefits of holding ISO 9001 are for a private employment agency. The practical aspect of the research problem is to proof a need and benefits for implementation of ISO 9001:2008 certificate in the service sector, although it is costly and time-consuming process.

The **research object** is an Estonian enterprise KT SHIP Ltd that is operating in service sector, namely - human resources business field. Its specialty is marine crew management, meaning supplying crew for different types of vessels. In the marine logistics, there is rapid growing demand for professional workforce and very high standards from ship owners must be fulfilled. This enterprise was awarded ISO 9001:2008 in 2013 and it is possible to investigate how the internal operations have changed and what benefits have been achieved since then.

Objectives of the research are as following:

- analyse the changes in document management system before and after ISO implementation;
- evaluate improvements in business performance due to ISO QMS implementation;
- to perform ISO total cost calculation considering lost revenue cost.

Research questions: Is the ISO mandatory extra document management worth it? Does the standardization procedure benefits outweigh the cost attributed with ISO standardization? This master thesis delves into the following **hypothesis**: ISO 9001 quality standard implementation leads to increase expenses in the company.

In order to achieve the set objectives and find the answer to research questions, the following **research tasks** will be completed:

1. Perform literature study to find how scientific research tackles the research problem;
2. Analyse the changes of new employee incorporation into company organization with and without ISO certified document workflow;
3. Compare number of documents before and after ISO implementation;
4. Develop framework for business performance comparison before and after ISO implementation;
5. Weight the costs and benefits of initial standardization plus mandatory yearly audits.

In this work, qualitative and quantitative research methods will be applied: qualitative method – in depth interviews with KT SHIP Ltd key employers; quantitative – comparative analysis of financial data of this enterprise before and after introduction of ISO certificate.

Short description of chapters: The first chapter describes what ISO organization is and why QMS are considered important by a wide range of companies through the world. The second chapter explains process of ISO standards implementation in a company and covers subjects of QMS certification benefits, motives and critics.

The third chapter gives a detailed presentation of KT SHIP Ltd company and its business environment, where it operates. Chapter 4 investigates what real world pros and cons are for implementing ISO 9001 standard on an example of real-life functioning enterprise. It is followed by Conclusion, where the author summarizes the findings and outlines proposals and recommendations.

1. THE CONCEPTS OF QUALITY AND ISO STANDARDS

"Quality is everyone's responsibility."
W. Edwards Deming

In this chapter, the theoretical background of different approaches to quality concept, quality management systems and ISO are presented. The aim of this chapter is to present the theoretical basis of quality management and quality management systems as well as certification. This chapter is based on various academic books and contemporary research papers in the field of quality management systems and ISO 9001.

1.1. The concept of Quality

The main purpose for organizations of any size and activity is to survive on the competitive market. In order to succeed in this challenge any organization must meet customer's expectation and satisfy them (Fukui et al. 2003, 6). There are many definitions of quality because the term "quality" can be viewed from several dimensions: as quality of a product, quality of a service, quality of an action, quality of encounter and quality of life (Bajaria 2001, 842). According to Reid and Sanders there is no unique universal definition (Reid, Sanders 2005, 138).

Traditionally quality is regarded as "customer satisfaction" (Juran, Godfrey 1998, 27). To expand the concept, it is important to define the term customer. A customer is anyone who is affected by the product or by the process used to produce the product; customers can be external or internal. (Christensen et al 2007, 234)

When speaking about quality it is essential to understand the term process: a process is an organized repeatable action whose objective is to create a value for a customer. A process transforms certain inputs into output like service or goods (Hoyle 2001, 69). The aim of the

process is to get as high quality as possible from the available inputs. Therefore, it is extremely valuable for any organization to know and understand their processes. The process definition is graphically presented in Figure 1.

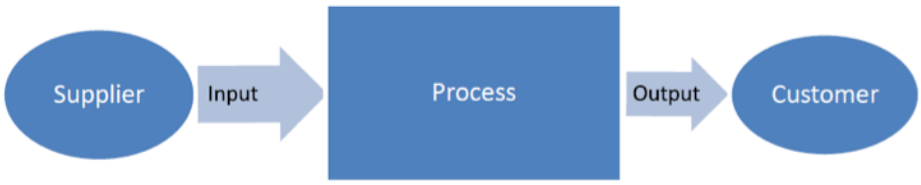

Figure 1. Process definition
Source: (composed by author)

According to Winston, the best definition for quality is "returning your customer more than they expect". Ishikawa states "Practicing quality means developing, designing, producing and providing a quality product or service that is most cost effective, most beneficial and always meets customer needs" (Winston 1997, 85-86). According to David Hoyle "The word quality has many meanings: a degree of excellence, conformance with requirements, the totality of characteristics of and entity that bear on its ability to satisfy stated or implied needs, fitness for use, freedom from defects, imperfections or contaminations and delighting customers" (Hoyle 2005, 7).

Some researchers consider quality as "meeting or satisfying customer needs" while other understand the concept of quality as "performance to standards". Additionally, quality refers to achieving competitive advantage as it was proved by several research studies and the main findings of these where following (Nahmias 2005, 661 - 669):

- quality is attributed the highest importance for business profitability;
- organizations that provide superior quality goods generally have a big market shares and early enter potential markets;
- quality has a direct positive and significant impact on greater return on investment for nearly all types of products and market conditions;
- a quality based strategy commonly leads to larger market share;
- organizations which provide inferior quality goods commonly charge premium prices.

At the same time, in the context of ISO 9001 above all quality is associated with totality of products features. ISO manual gives a shorter and more robust definition: quality – is fitness for use. The most important aspect is that ISO standard addresses is quality. Therefore, to sum up, a product that possesses features that satisfy customer needs is a quality product. Only the customer decides whether the quality of the products and services is satisfactory. If a company produces some goods to their own standards and these do not meet customer needs, customers do not have interest in these products since they do not correspond to customer's expectations. On the other hand, if the standards excess customer needs, the price may be too high than the customers are ready to pay. (Juran, Godfrey 1998, 223)

In the "bible" of quality – Juran's Quality book, it is stated that the concept of quality has two important meanings: 1) the particular features of products which meet customer needs and thereby provide customer satisfaction; 2) freedom from deficiencies and errors that require rework or that result in field failures, customer dissatisfaction, customer claims, and etc. This approach is depicted in Table 1. (Juran, Godfrey 1998, 26)

Table 1. The meaning of quality

Features that meet customer needs	**Freedom from deficiencies**
Higher quality enables companies to: - Increase customer satisfaction - Make products stable - Meet competition - Increase market share - Provide sales income - Secure Premium price	Higher quality enables companies to: - Reduce error rates - Reduce rework, waste - Reduce field failures - Reduce customer dissatisfaction - Reduce inspection, test - Shorten time to put new products on the market - Increase yields, capacity - Improve delivery performance

Source: (Juran, Godfrey 1998, 27)

The first meaning of quality has an emphasis on sales and is oriented to income. The purpose of such higher quality is to provide greater customer satisfaction and subsequently to increase income. However, providing more and better quality features usually requires an investment and therefore increased quality is associated with more costs. Higher quality in this

sense usually “costs more”. The second meaning is more oriented to internal operations within the organization - quality is directly linked to costs, and higher quality usually “costs less.” This approach – Juran’s model of optimum quality costs is depicted in the Figure 2. (Ibid.)

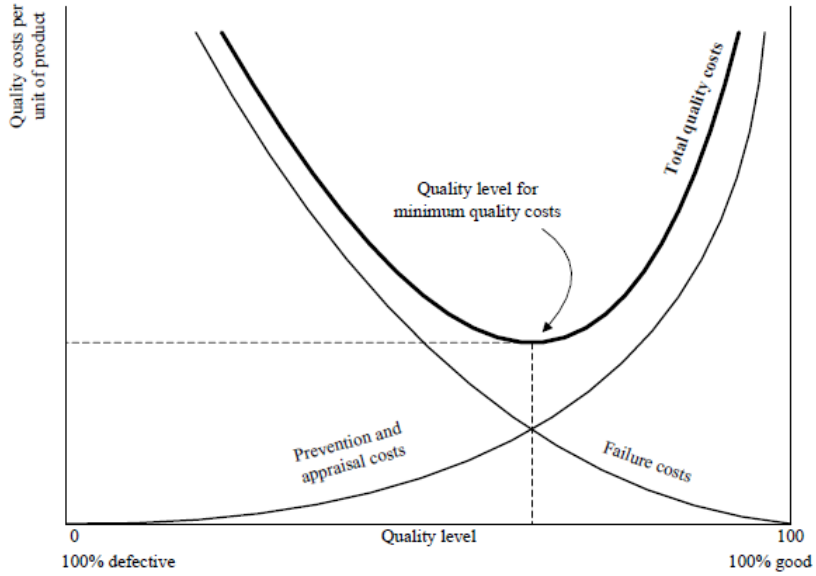

Figure 2. Quality costs dependency on quality level
Source: (Juran, Godfrey 1998, 27)

Recently quality has become very essential feature of any business operations. Reid and Sanders stated that the reason why quality has turned so important is that enterprises realized the “high cost of poor quality”. Quality influences every aspect of organizations and has significant consequences on costs. The most evident consequence can occur when low quality leads to unsatisfied customers and ultimately creates business losses. It can be concluded, that quality can contribute to cost saving (Reid, Sanders 2005, 140).

1.2. Quality Assurance and Quality Control

Quality assurance (QA) is a management method that is defined as “all these planned and systematic actions needed to provide adequate confidence that a product, service or result will satisfy given requirements for quality and be fit for use” A quality assurance program is defined as “the sum total of the activities aimed at achieving that required standard” (Hoyle 2002, 45). The components of QA programme are often classified into three levels: organizational level, tactical level and operational level. (Hoyle 2001, 59 - 61)

However, quality control and quality assurance have much in common; quality assurance is larger concept than quality control. Table 2 presents the main difference between quality control and quality assurance. Quality control is defined as "the operational techniques and activities used to fulfil requirements for quality". Quality control is the process involved within the system to ensure job management, competence and performance during the manufacturing of the product or service to ensure it meets the quality plan as designed. Quality plan is a document, which sets out all the actions, which are to be taken in order to assure the quality of the product or service. (Juran, Godfrey 1998, 322)

Table 2. Difference between quality control and quality assurance

Quality control	**Quality assurance**
Is product oriented activity	Is process oriented activity
Detects deviation from standard	Prevents deviation.
Can change product quality	Does not change product quality
An on-line activity	An off-line activity
Concerns the operational means to fulfil quality requirements	Concerns with creating confidence among stake-holders that requirements for quality will be fulfilled

Source: (Juran, Godfrey 1998, 322)

Quality control can be defined as a managerial process during which following tasks take place:

- evaluate actual performance;
- compare actual performance to goals;
- take action on the difference.

Similarly, another methodology for conducting control is known as Plan-Do-Chek-Act (PDCA) Control Cycle. The PDCA Control Cycle consists of (Ozeki et al 1990, 7):

- Plan: Determine your goals and develop a process for achieving these goals;
- Do: Implement your plan;
- Check: Evaluate the results of your plan and its implementation;
- Act: Take the necessary action constituting quality control.

PDCA concept is highly important methodology or tool for Continuous Improvement that is inseparable part of ISO 9001 standard.

1.3. Quality Management System

The roadmap to ISO certification starts with implementation of a Quality Management System (QMS). According to Goetsch and Davis a QMS "consists of all the organization' policies, procedures, plans, resources, processes and delineation of responsibility and authority, all deliberately aimed at achieving product or service quality levels consistent with customer satisfaction and the organization's objectives" (Pabedinskaite et al 2010, 3). A QMS typically consists of following elements:

- quality planning;
- quality assurance;
- quality control;
- quality improvement.

A QMS directs and controls organization's processes, which are crucial to sustain quality of products or services. Therefore, QMS can be defined as a systematic approach by which an organization aims to reduce and eliminate non-conformance to specifications, standards and customer expectations in the most cost effective and efficient manner (Hoyle 2001, 62 – 65).

The purpose of a QMS is to serve as a tool for controlling, managing and improving the quality of the organization's products. The system shall be well documented and the documentation will support the improvement work and comprise a base for the audits (Bergman et al 2010). The benefits of implementing a quality management system provide (Hoyle 2001, 62 – 65):

- a collaborative team environment;
- improved processes, products and services;
- improved organizational efficiency and effectiveness;
- improved customer satisfaction;
- improved conformance and compliance;
- improved employee engagement and organizational culture.

In other words, a QMS is a management technique used to communicate to employees the requirements to produce the desired quality of products and to influence employee actions to complete tasks according to the quality specifications (Ibid.).

1.4. Total Quality Management

The definition of Total Quality Management (TQM) by British Standard 4778:1991 is as follows: "A management philosophy embracing all activities through which the needs and expectations of the customer and community, and the objectives of the organization are satisfied in the most efficient and cost effective manner by maximizing the potential of all employees in a continuing drive for improvement."

TQM attempts to embed quality in every aspect of the organization. It is concerned with technical aspects of quality as well as the involvement of people in quality, such as customers, company employees, and suppliers. The main principles that comprise TQM philosophy are presented in Figure 3. (Reid et al 2005, 147)

Figure 3. Main principles of TQM
Source: (Reid et al 2005, 147)

Concepts that make up the philosophy of TQM (Isac 2008, 188 – 197):

Continuous improvement: Traditional systems operated on the assumption that once a company achieved a certain level of quality, it was successful and needed no further improvements. However, contemporary approach quality deals with Continuous improvement,

called kaizen by the Japanese, requires that the company continually strive to be better through learning and problem solving. The PDCA cycle describes the activities a company needs to perform in order to incorporate continuous improvement in its operation. This cycle also referred to as the Shewhart cycle or the Deming wheel. The circular nature of this cycle shows that continuous improvement is a never-ending process.

Customer focus: involves designing products or services that meet or exceed the customer's expectations. This involves the product itself, its functionality, attributes, convenience and even the means by which the information about a product is received by a client. The concept of Quality Function Deployment (QFD) is important tool for identifying customer needs and effective product features designing. (Nahmias 2005, 663)

Employee empowerment: Ensuring total employee involvement in achieving goals and business objectives will lead to employee empowerment and active participation from the employees in decision making and addressing quality related problems. Employee empowerment and involvement can be increased by making the workspace more open and devoid of fear.

Supplier quality management: Company suppliers must comply with the external quality requirements creating mutually beneficial supplier relationship. Traditionally, when materials arrived, an inspection was performed to check their quality. TQM views this practice as contributing to poor quality and wasted time and cost. The philosophy of TQM extends the concept of quality to suppliers and ensures that they engage in the same quality practices, meaning save of costs and time to the customer.

Quality tools: The Seven Basic Tools of quality (Pareto Diagram, Cause & Effect Diagram, Histogram, Control Charts, Scatter Diagrams, Graphs, and Check Sheets) are a designation given to a fixed set of graphical techniques identified as being most helpful in troubleshooting issues related to quality. They are called basic because they are suitable for people with little formal training in statistics and because they can be used to solve the vast majority of quality-related issues. (Magar 2014)

Process management Process thinking and process handling are a fundamental part of total quality management. According to TQM a quality product comes from a quality process,

meaning that quality should be built into the process. Quality at the source is the belief that it is far better to uncover the source of quality problems and correct it than to discard defective items after production.

1.5. International Organization for Standardization

1.5.1. The purpose of ISO

The ISO (International Organization for Standardization) is an independent, non-governmental membership organization and the world's largest developer of voluntary International Standards. The official ISO organization website states that there are 162 member countries who are the national standards bodies around the world, with Central Secretariat, the main governing body, located in Geneva, Switzerland. (ISO website, 2016)

The ISO began in 1946 when delegates from 25 countries met at the Institute of Civil Engineers in London and decided to create a new international organization to facilitate the international coordination and unification of industrial standards. On 23 February 1947 the new organization, ISO, officially began operations. (Ibid.)

Throughout years of service, the organization has published over 19 500 International Standards covering almost all aspects of technology and manufacturing. Today there are members from 162 countries and 3 368 technical bodies to take care of standard development. More than 150 people work full time for ISO's Central Secretariat in Geneva, Switzerland. (Ibid.)

International Standards give world-class specifications for products, services and systems, to ensure quality, safety and efficiency. They are instrumental in facilitating international trade.

ISO governing body claims that it "only develops a standard if there is a market need for it" and that above all else, "International standards are created by the people who will use and be impacted by them. They come from industry, government, consumer organizations, academia, non-governmental organizations, and more." (ISO, 2009)

1.5.2. ISO 9000 series of standards

The ISO 9000 series is a set of standards that focuses on different parts of the quality system. The standards support the documentation of a management system that affects all functions in an organization. These standards can be applied to all types of organizations, both in the public and private sector, regardless of size or industry group. They can help both product and service organizations achieve standards of quality that are internationally recognized and respected throughout the world. (Hoyle 2001, 80 - 81)

The ISO 9000 family addresses various aspects of quality management and contains some of ISO's best-known standards, for example ISO 9001 standard. The ISO 9000 family of standards also contains an individual standard named ISO 9000. The standards provide guidance and tools for companies and organizations who want to ensure that their products and services consistently meet customer's requirements, and that quality is consistently improved. The ISO 9000 series contain these standards (ISO, 2012):

- ISO 9001:2015 - This standard sets out the requirements of a quality management system. ISO 9001 is an international standard of quality management system; it was first issued in 1987 and then revised in 1994, 2000, 2008 and 2015;
- ISO 9000:2015 - This standard sets fundamentals and vocabulary (definitions), covers the basic concepts and language related to QMS;
- ISO 9004:2009 - This standard is about managing for the sustained success of an organization (continuous improvement), focuses on how to make a quality management system more efficient and effective;
- ISO 19011:2011 - Guidelines for internal and external auditing management systems.

When an organization becomes certified to ISO 9001, for customers it means that, the organization has activated effective policies and procedure standards at the workplace that are formally recognized by an Accredited Certification Body. An accredited Certification Body (CB), "is organization certified to be qualified by a national body to perform audits to a standard (e.g. ISO 9001) and to register the audited facility as meeting these requirements for a given standard" (Hoyle 2001, 105 - 106). A CB is an organization that has been accredited in accordance with ISO/IEC 17021:2006 by their relevant national accreditation body.

Since the 2000 version of the standard, ISO 9001 integrated the Total Quality Management principles into the standard and more focuses on the process and performance rather than documentations. In addition, ISO 9001 also adopted the methodology of PDCA. (ISO, 2015)

The current ISO 9001 version of the standard is ISO 9001:2015, that according to ISO does not introduce new requirements, it only clarifies the existing requirements of ISO 9001:2000. The new version of ISO 9001, which was published in the autumn of 2015, focuses on the identification and control of risks. Moreover, it requires top management to take more active role in aligning quality policies with business needs (ISO, 2014).

In order to be certified according the ISO standard, the QMS of the organization must fulfil certain requirements. Those requirements are specified in ISO 9001 and are the part of the series, which cover organizational processes. The four main areas of the requirements are (ISO, 2012):

- management responsibility;
- resource management;
- product realization;
- management, analysis and improvement.

According to the requirements, top management shall provide evidence of its commitment to the development and implementation of the quality management system and continually improving its effectiveness. The organization shall plan and develop the processes needed for product realization. Planning of product realization shall be consistent with the requirements of the other processes of the quality management system. The organization shall plan and implement the monitoring, measurement, analysis and improvement processes needed:

- to demonstrate conformity to product requirements;
- to ensure conformity of the quality management system;
- to continually improve the effectiveness of the quality management system.

This shall include determination of applicable methods, including statistical techniques, and the extent of their use. The summary of the requirements is presented in Table 3.

Table 3. Requirements of ISO 9001:2008 standard

Area of requirement	**Explanation**
Management responsibility	
Management commitment	Demands on commitment of the QMS's improvement and development. Also demands on communication to the organization
Customer focus	Needs and expectations of the customers are identified and must be met for customer satisfaction
Quality policy	Establish a quality policy and objectives
planning	Plan the resources needed to meet the established goals.
Management review	The routine for the internal audit to make sure it is appropriate and meet tits purpose
Responsibility, authority and communication	Covers the requirements of administration of the quality management system
Resource management	
Provision of resources	Declaration of mobilization and needed resources
Human resources	The total needs of competence, i.e. education, training, skills and expertise. Ensure it is met.
Infrastructure	Management of infrastructure i.e. buildings, equipment and services needed for the business to be successful
Work environment	Management of the mental and physical environment
Product realization	
Planning of product realization	Documentation of product development
Customer-related processes	Find and review customers' and organizations' product requirement. Get feedback from customer
Design and development	Plan and control the product development. Establish procedures for review, validation and verification. Systematic processes of design and development.
Purchasing	Control to ensure conformity and supplier products. Evaluation of suppliers ability to deliver expected quality
Prediction and service provision	Controlled use of instructions, equipment and procedures. Establish controlled and documented traceability. Process control.
Control of monitoring and measuring equipment	Specify measurements, monitoring equipment needed to ensure product conformance. measuring capability of instruments,

Measurement, analysis and improvement	
General	Specify, plan and implement the measuring and supervision activities required to ensure fulfilment of standard and improvements, and how to do it
Monitoring and measurement	Monitor measured customer satisfaction, processes and products
Control of non-conforming products	Documented procedure for identifying and screening non-conforming products before market.
Analysis of data	Collect and analyze data to decide current state of customer satisfaction, process and product characteristics and suppliers
Improvement	Strategy for continuous improvement. Eliminate causes of variation and deviation

Source: (ISO 9001: 2008 standard)

These four "pillars" imply that ISO 9001:2008 standard promotes the formation of a quality system that would aid product realization by applying appropriate resources. Finally, the installation of such quality system would result in the continual quality improvement of the products, processes and overall performance of this organization. (ISO, 2012) The above-described QMS strongly is termed as a process-based quality management system and its model is presented in Figure 4.

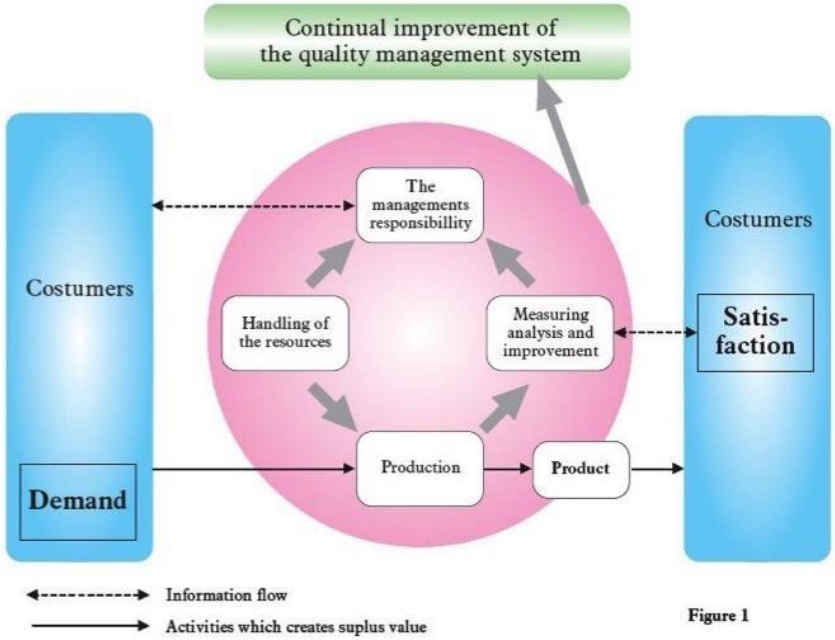

Figure 4. Process-based quality management system according to ISO 9001:2008

Source: (ISO, 2012)

Therefore, organization must match the requirements for the customer with it is own process capabilities. It is essential for the organization to monitor customer satisfaction and to analyze whether the customer requirements are met or not. If there are differences between customer requirements and the quality of the process, corrective actions must be taken.

1.5.3. Main Principles of ISO 9001

The ISO 9001 QMS architecture has been composed of eight basic principles (ISO, 2012):

Principle 1 – Customer focus: Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations.

Principle 2 – Leadership: Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.

Principle 3 – Involvement of people: People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.

Principle 4 – Process approach: A desired result is reached more efficiently when activities and related resources are managed as a process. Efficiency is better achieved when things are managed as processes, rather than as individual tasks.

Principle 5 – System approach to management: Identifying, understanding and managing interrelated processes as a system contributes to the organization's effectiveness and efficiency in achieving its objectives.

Principle 6 – Continuous improvement: Continual improvement of the organization's overall performance should be a permanent objective of the organization.

Principle 7 – Factual approach to decision making: Effective decisions are based on the analysis of data and information. Organizations succeed when they have established an evidence-based decision making process that entails gathering input from multiple sources.

Principle 8 – Mutually beneficial supplier relationships: An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

2. ISO IMPLEMENTATION IN A COMPANY

The aim of this chapter is to present ISO standard implementation process and its complexity. In addition, the other half of this chapter addresses motives, benefits resulting from ISO certification.

2.1. ISO implementation process

The amount of time it takes to complete the certification process depends on several factors (Paradis 2002, 8):

- the amount of existing documentation (quality manual, procedure, etc.; as Chapter 2.1.2 will present);
- the complexity and size of the organization;
- the ISO 9000 conformance model chosen for certification (there are 5 ISO Standards that are either conformance models or guides;
- the commitment of management;
- the documentation skills of the project team (writing technical documentation can be difficult and time consuming since requires education and appropriate experience);
- the project managements skills of the project teams;
- the availability of certification auditors.

In author's opinion, the most important factor is the commitment of management because if commitment is not evident to the employees then ISO standard will never truly be implemented throughout the organization. Employees at all levels of an organization will not be committed to a system that is not driven, supported, and believed-in by upper management.

2.1.1. ISO implementation steps

If an organization is willing to receive the ISO Certification, the following steps must be carried out that are presented in the following Table 4 (Paradis 2002, 8 - 9):

Table 4. Stages of the ISO certification

Stage	Name	Description
1	Strategic Planning	Management: - displays strong commitment to the certification effort, - selects a registration, - selects a conformance model for which organization may seek certification (ISO 9001, ISO 9002, ISO 9003) - forms a project team - establishes a timeline - assess training needs regarding ISO 9000 and organization background
2	Gap analysis (Gap Analysis is the comparison of an existing quality system to one ore more sets of external requirements)	Corrective action teams: - evaluate the existing quality system against the selected conformance model - evaluate the documentation against the quality system and the selected conformance model
3	Corrective Action (Corrective action is the closure of gaps between the existing quality system and what is required in the external set of requirements)	Corrective action teams institute changes in QMS as identified in stage 2
4	Documentation and Records	Corrective action teams: - implement a document structure and control system - institute a control of quality records process - revise documents, as necessary - provide training about changes, additions, and other topics as identified in stage 1.

5	Implementation	Management: - implements and monitors all changes in the QMS - ensures all gaps identified in Stage 2 are closed - maintains records of all changes
6	Precertification audit	Pre-assessment auditor ensures that all operations and documentations are according to the selected conformance model
7	Registrar Documentation review	Registrar reviews quality manual (and other requested documents) as advance organizer of the organization and the supporting documentation.
8	Site preparation	Management prepares organization for the registrar and certification audit
9	Certification audit	Registrar reviews quality system and documentation to determine if quality system meets the selected conformance model and can be certified as such.

Source: (Paradis 2002, 8 - 9)

It is suggested by an ISO consulting agency, that the ISO 9001 implementation process will not only result in the desired ISO 9001 registration but also prove to be one of the most valuable "exercises" can be done to improve virtually all aspects of your company. Most organizations seem to be primarily interested in how to get ISO 9001 certification - the quicker the better, despite investigating the numerous valuable benefits the implementation of ISO 9001 QMS.

2.1.2. ISO documentation

ISO 9001 requires certain mandatory documents. The purpose and the benefits of the QMS documentation are manifold: it provides a clear framework of the operations in an organization, it allows consistency of processes and better understanding of the QMS, and it provides evidence for achievement of objectives and goals.

ISO 9001 specifies four levels of QMS 9001 documentation that an organization must observe to document its QMS. The QMS documentation can consist of different types of documents such as quality policy, quality manual, procedures, work instruction, quality plans and records. The QMS documentation can be represented as a hierarchy as shown in Figure 5.

The document hierarchy is in the form of a pyramid because there is only one document at the top level, supported by an increasing number of documents as it is proceeded through the bottom three levels.

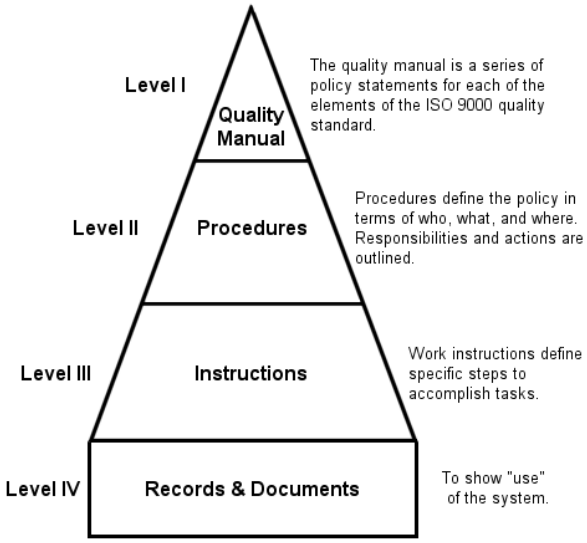

Figure 5. Document Pyramid
Source: (Novack 1995, 3)

The documents required or suggested by the ISO 9001:2000 series can be split into a 4 level hierarchy (Novack 1995, 3):

Level 1 – Quality Manual (asks the question **why**) gives the overview of the company and its products and services; agreement to comply with applicable ISO 9001 requirements; quality policy; system scope; quality objectives; exclusions; organization and responsibilities; sequence and interaction of processes; documented procedures.

Level 2 - Quality Procedures (ask questions **who, what, when, where**) describes the who, what when and where of quality processes and interdepartmental controls that address the ISO 9001 requirements; may be in ISO 9001 order or process order; reference lower-level documentation. ISO 9001 mandates six specific procedures.

Level 3 – Work Instructions or documents (ask question **how**) explains details of specific tasks or activities: the how of performing a specific task. This level may include quality plans, work instructions, drawings, flowcharts, workmanship standards, product specifications, machine manuals, etc.

Level 4 – Other Documents like forms, tags, labels and other documents that prompt the recording of evidence (per levels 1,2 and 3 documentation) of compliance to requirements. Records may be mandatory or implied for each ISO 9001 clause.

According to ISO 9001:2008 standard, the following documents must be developed by the organization, as is presented in Table 5 (ISO 9001:2008 International standard):

Table 5. Required documentation for ISO 9001:2008 certification

Document	**Description**
1. Quality Manual (or Quality Handbook)	A Quality Manual is a document that indicates the operational procedures that are required to achieve the consistency throughout the organization while fulfilling the customer requirements. The quality manual should contain the following: • The scope of QMS including details, justification and exclusions • References for the quality procedures used to describe all the QMS processes • A description of the interaction between the processes of the QMS
2. Quality Policy	Quality Policy is a brief statement or document that defines quality goals and objectives, a commitment to meeting them as well as continuous improvement. It provides an outline for creating, stating, and measuring performance of the quality objectives. The Quality Policy is thus a commitment from the top management to ensure compliance with the QMS, and to ensure continuous increase in customer satisfaction.
3. Quality Objectives	The quality objectives are those targets sought or aimed for by the organization that are related to quality. These quality objectives must be SMART (suitable, measurable, achievable, reviewed and timely). Whatever quality objectives are chosen they must be meaningful and adequately resourced by the organization.
4. Quality Records	Quality records therefore record the status of an event, a development result or a state of affairs and provide a snapshot of the situation characterized by the creator, unique project identification and date. The quality records must be kept in order to demonstrate that specified quality requirements have been satisfied and to record the effectiveness of the QMS. Quality records should be evaluated and used for initiating corrective and preventive measures.
5. Six Mandatory Procedures	

5.1. Control of Documents	A mandatory procedure to manage the approval and re-approval of procedures before issue creates as conforming that the present revision standing is displayed. To make sure that ISO 9001 documents are clean which the present versions are offered at purpose of use. To conjointly make sure that obsolete documents are controlled and documents from external parties.
5.2. Control of Records	The maintenance of records that shows if product is acceptable to use, including how it is identified, stored and protected so that they be retrieved as necessary.
5.3. Internal Audit	The ISO 9001 quality procedure to outline a planned program of audits to make sure that processes meet each ISO 9001 documents requirements and internal requirements conjointly for the coverage, follow up and records of those audits.
5.4. Control of Nonconforming Products	The document describes what controls are in place, who is responsible to make sure that a non-conforming product is not used, terms that can be put in place to allow the use of non-conforming product
5.5. Corrective Action	A written quality procedure to make sure that root causes of issues are known and actions taken to correct them, actions should be verified to make sure effectiveness
5.6. Preventive Action	A written procedure for corrective action however, the organization ought to take steps to spot prospective issues and eliminate them before an issue happens.

Source: (ISO 9001:2008 International standard)

The implementation of suitable Document Management System is of great importance for successful ISO 9001 adoption (Hernad, 2013). Below there is methodology presented to support document management system within ISO 9001:2008 Quality Management System. The proposed methodology consists of six steps, which help to prepare documentation associated with QMS:

- Step 1: Definition of document requirements;
- Step 2: Evaluation of existing system;
- Step 3: Identification of document management strategies in the organization, meaning different ways of document handling;
- Step 4: Design the document management system - a system used to track, manage and store documents;
- Step 5: Implementation of the document management system;
- Step 6: Maintenance and continuous improvements if the document management system.

2.2. The motives, benefits, barriers and drawbacks of ISO certification

However, the generic features and terminology of ISO 9001 standard makes it applicable by all types of companies, the majority of certifications under the standard belongs to manufacturing firms (Psomas, 2010). In developed economies, the percentage of population working in service industry is over 60% and plays a critical role in terms of employment (Machuca, 2007). Despite the fact that the service industry is highly important in the world economy, ISO certification is not vastly spread in this industry and thus the amount of research papers is limited.

2.2.1. The motives of ISO certification

The implementation of QMS and its subsequent certification is a voluntary process that is supported by the organization's own motivation, goals and policies. The most important reasons for certifications are (Kumar, 2011):

- to improve the efficiency of quality system;
- pressures from competitors/foreign partners;
- to maintain/increase market share;
- to meet government demands;
- to comply with customer requirements.

According to another method of classification, the reasons for ISO 9000 registration are categorized as follows (Jones et al, 1997):

- **Developmental Reasons:** Desire to improve the company's internal processes; desire to enhance the overall competitive performance of the company.
- **Non-Developmental Reasons:** Requirement of major customer(s), desire not to be locked out of future tendering processes or markets, realization that is progressively becoming a requirement of doing business, marketing and public relations tool.
- **Mixed reasons:** Constitutes the combination of development and non-developmental reasons.

Some organizations have stated that without ISO 9001 certification they would not have received that significant number of contractors. Therefore, ISO 9001 is frequently regarded as a marketing tool that would support promotion and new customers. (Kumar, 2011)

The motivations can be classified according to the following categories – internal and external motivations. As the terms imply, the internal motivations are related to the organization ambitions of achieving improvement, while external are related with customer pressures, marketing issue and improvement of market share – driven by external environment. (Georgiev et al, 2014)

2.2.2. ISO 9000 certification and business performance

ISO 9001 benefits can also be divided into external and internal categories. The first ones are related to improvements in terms of marketing and promotional aspects, whereas internal benefits are related with organizational improvements. It has been researched that if organizations motives to be ISO certified are externally driven, then the improvements obtained are mainly of external nature. The companies have obtained more internal benefits, whose ambition were driven by internal needs. The Table 6 presents most common ISO 9001 benefits. (Georgiev et al, 2014)

Table 6. ISO implementation benefits

External benefits	**Internal benefits**
Access to new markets	Productivity improvements
Corporate image improvement	Product defect rate decrease
Market share improvement	Quality awareness improvements
ISO certification as a marketing tool	Personnel motivation
Customer relationship improvements	Delivery times improvement
Customer satisfaction	Internal organization improvement
Customer communication improvements	Nonconformities decreases
	Customers' complaints decreases
	Internal communication improvements
	Product quality improvement
	Competitive advantage improvement

Source: (Sampaio, 2008)

Buttle's survey in 1997 of 1,220 certified UK companies found that improving operations as well as marketing gains were achieved by most of the firms following quality certification.

However, the large-scale descriptive studies report that the greatest benefit from quality certification is widening market opportunities rather than improvements in quality of products. (Heras, 2001)

Although there are many studies reporting increased market share and improved product quality due to ISO 9000 implementation, there is very few empirical research on actually achieved business performance benefits. Research on financial impact of ISO 9001 on firms is still not enough to make definitive conclusion on the financial impact. The financial impact is unclear or mixed. (Ibid.)

Regarding service companies, a study proofed that the service quality and operational performance of companies are significantly influenced by ISO 9001 effectiveness. According to the ISO standard "effectiveness" is explained as the extent to which the anticipated objectives are achieved", for example, it means that less material or time is required to manufacture a product. Since operational performance is correlated with financial performance, the impact of ISO 9001 is evident in financial results. Figure 6 presents the alleged link between ISO certification and financial performance. (Psomas, 2012)

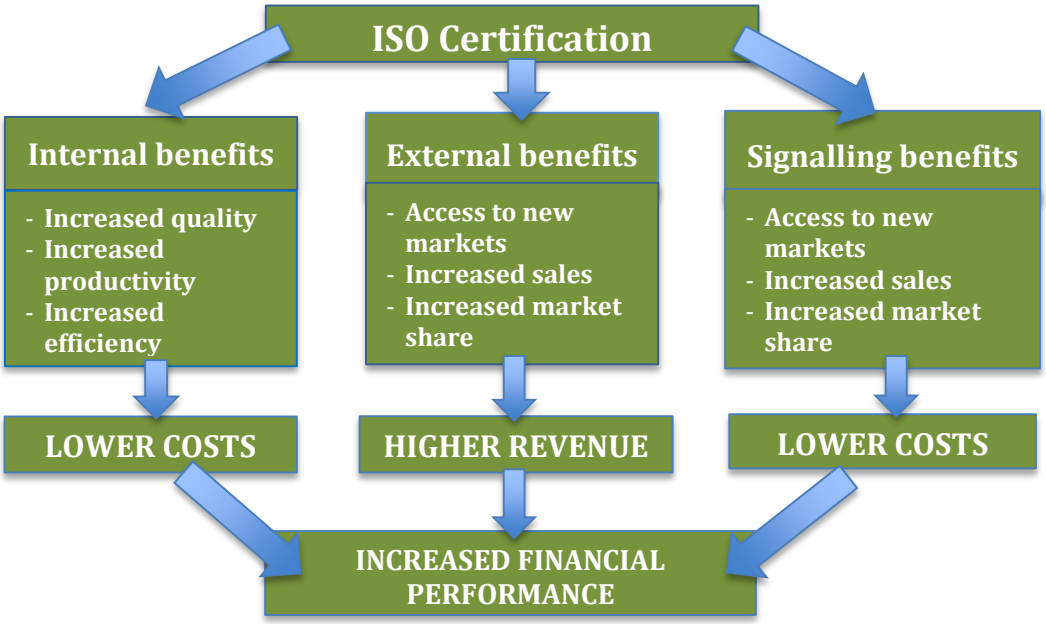

Figure 6. ISO 9001 contribution to financial performance of an organization

Source: composed by author (ISO, 2015)

Gore in 1994 suggested that when companies are reacting to external pressure for certification they might see ISO 9000 registration as the prime objective and adopt a minimalist approach to achieve it. Such companies may possess quality certification but they do not value the quality management system that quality certification requires, so will achieve limited benefits. If a company seeks quality certification because of externally imposed requirements to "obtain a certificate" it will experience fewer beneficial outcomes of certification than firms which have internal reasons for ISO certificate, for example an ambition for quality improvement. It can be stated that certification provides little guarantee of high performance outcomes unless it is accompanied by substantial changes in leadership, structure and communications.

Lloyds Register of Quality Assurance's (1996) survey found certified companies' sales growth, profit margins, and return on capital employed were much better than the industry average. A study of 400 accredited and 400 non-accredited firms between 1994 and 1998 proved that the returns on assets employed were consistently better in certified firms than in non-certified ones (Heras at al, 2002). It was noted that sales revenue did not increase, suggesting that the increased profitability was due to a reduction in internal costs.

According to analysis of the returns on capital employed of 800 companies between 1989 and 1995, it was found that in the three years after certification the returns averaged 23.6 per cent compared with an average of 24.3 per cent prior to registration However, after certification the registered firms enjoyed four years of better sales growth compared to the non-certified firms. (Heras et al, 2002)

It has been studied that the perceived benefits from ISO 9001 quality management system tend to decrease in time (Kumar, 2011). In order to minimize such negative effect, such activities as management reviews, corrective and preventive actions, internal and external audits, collection and analysis of data, measurement of performance and continual improvement are of key importance.

On the contrary, an empirical study found that quality certification had no significant, positive relationship with business performance. The main motivation for pursuing quality certification was the ability of the certificate to open customers' doors that were previously closed, or would close, if quality certification were not achieved. (Ibid.)

2.2.3. ISO 9000 criticism

However, despite the achieved benefits of certification to ISO QMS 9001 some organizations have reported common problems that they have faced during the process of ISO 9001 adoption (Sampaio, 2008):

- Leadership related issues (inadequate commitment by top management, lack of motivation, recognition, organizational learning, strategic planning and long term focus). Organizational learning is the process of creating, retaining, and transferring knowledge within an organization.
- Strategy related issues (mission, vision, values, strategic planning, strategy mapping, cascading down line, key performance indicators). Strategy mapping is a process of documenting the primary strategic goals being pursued by an organization or management team.
- Quality system related issues (weak PDCA cycle – meaning not efficient PDCA procedure, generic system – not tailored towards specific needs of a given organization, internal audit not in depth, non-value adding meetings/trainings and excessive paperwork, for example duplicating and overlapping documents.
- Society oriented gaps (corporate social responsibility, environmental management and sustainability).

If organization carefully manages those mentioned gaps, the implementation of ISO 9001 will be more beneficial and contribute for continual improvements and towards business excellence.

The main important barrier to the success of the implementation of ISO is considered a lack of management and leadership (Psomas, 2012). Other researchers has identified a lack of management support and lack of training. Park et al classified the barriers of ISO implementation into five categories:

- the company policy and cultural background;
- ISO 9001 requirements;
- ISO 9001 QMS effects;
- the certification body;
- customer policy.

Chow-chua emphasized a failure to exercise adequate control over mandatory documents requested by ISO standard, a failure to define responsibility and authority for personnel and inadequate training.

In spite of the fact that ISO 9000 implementation is very beneficial to the organization, this certification is much criticized, since it is not risk-free undertaking. Due to high explicit and implicit costs associated with its adoption, ISO 9000 certification does not guarantee improved performance. The research has proofed as well that ISO certification is too expensive, time and resource consuming, too formalized, and impersonal. In some cases, the implementation costs are greater than the received benefits. (Kumar, 2011)

Santos et al in 2012 found that industrial firms recover their investment in ISO 9001 more quickly than other firms. They showed that 66% of industrial firms, 46% of service firms and 72% of the manufacturing and service firms recovered their investment in ISO 9001 in less than three year. It was found that mid-size firms (number of employees less than 250, turnover less than 50 mln euro) recover their investment in ISO 9001 more quickly than large firms in three years' time after ISO 9001 certification. (Aba, 2015)

2.3. Methodology

According to the literature study, ISO 9001 certification brings many benefits to the company. In this work, the business performance of KT SHIP Ltd will be compared before and after ISO certification.

A situational analysis of KT SHIP Ltd will be performed with the purpose to understand in details the business and the market situation. Also, it is important to understand the reasons behind ISO certification. SWOT analysis and Porter's 5 forces analysis will be completed in order to thoroughly learn the internal and external environment of the company and recognize the motives for ISO implementation. The author of the work suggests a framework of business performance evaluation that is presented in Chapter 2.3.3

2.3.1. SWOT analysis

In order to start doing something right it is vital to understand where the company is now, what positive and negative aspects of the business there are. SWOT analysis is a very efficient instrument to get an overview about an organization's position in the market. The SWOT analysis tool stands for Strengths, Weaknesses, Opportunities and Threats, or for easier representation refer to the Table 7.

Table 7. SWOT analysis

	Positive	Negatives
Organization (internal factors)	**Strengths**	**Weaknesses**
Environment (external factors)	**Opportunities**	**Threats**

Source: (Kuura 2001, 95)

This system presents four major fields that must be scrutinized independently:

- Strengths: characteristics of the business or project that give it an advantage over others.
- Weaknesses: characteristics that place the business or project at a disadvantage relative to others.
- Opportunities: elements that the project could exploit to its advantage.
- Threats: elements in the environment that could cause trouble for the business or project.

"If executed correctly, a SWOT analysis helps you craft a strategy that helps differentiate yourself from your competitors. It helps you compete successfully in your chosen market - on your terms. It helps you focus on your key strengths to take the greatest possible advantage of opportunities available to you", states Martin Blake, Chairman of KPMG Australia.

The organization's negative features and threats are constraints that affect the achievement of goals; therefore, its determination is highly important. However, focusing on its strengths and opportunities promotes goal achievement. (Lukjanov 2000, 133)

As vital as SWOT analysis tool might seem, but it only corresponds to the P (Plan) phase of the PDCA approach. It gives a structure to work with but it does not go into detail how to go

into solving the identified problems or playing on the strengths identified with the SWOT tool itself.

2.3.2. Porter's 5 forces model

The business microenvironment is formed by the organization's customers, suppliers and its competitors. Therefore, the microenvironment is presented by groups and business units what are in tight contact with the given organization. In order to analyse the micro business environment, Porter's 5 forces model is used, that is presented in the following Figure 7 (Leimann et al 2003, 117).

Figure 7. Five defining forces according to Porter
Source: (Leimann et al 2003, 118)

The given model enables the entrepreneur to define the factors that have critical meaning in the sector, to analyze the competitive situation in the sector and to evaluate potential opportunities and threats (Leimann et al 2003, 118).

2.3.3. Analysis of Business Performance

Business performance is studied in terms of operational, marketing, financial indicators. The changes in the working environment will be investigated as well. In order to achieve an in

depth analysis of ISO certification benefits qualitative and quantitative research methods will be applied.

Among **qualitative** methods are widely applied semi-structured interviews, focus groups survey etc. Semi-structured interview is not structured research method, which is based on a small sample and is aimed at clarifying the situation that has arisen. This research method was chosen because the semi-structured interview allows obtaining information that is more detailed; compared to structured interviews, which generates very limited information (Мальхотра 2002, 196). Semi- structured interview questionnaire is presented in APPENDIX Section 1. All employees of KT SHIP Ltd were interviewed. Interviews with employees of different responsibilities and ISO QMS experience will enable the author of the work to make comprehensive judgement from different facets.

In the **quantitative** part of the research the financial performance in terms of sales growth and value added by labour will be researched for each accounting year. Due to the availability of financial statements, the business performance during 5-year period (2011 – 2015) will be investigated.

Since the financial impact of ISO certification is unclear by a great number of contradictive research, this research possesses a value since it will contribute to better understanding of financial benefit of a service sector enterprise. The methodology of this work is presented below in Figure 8.

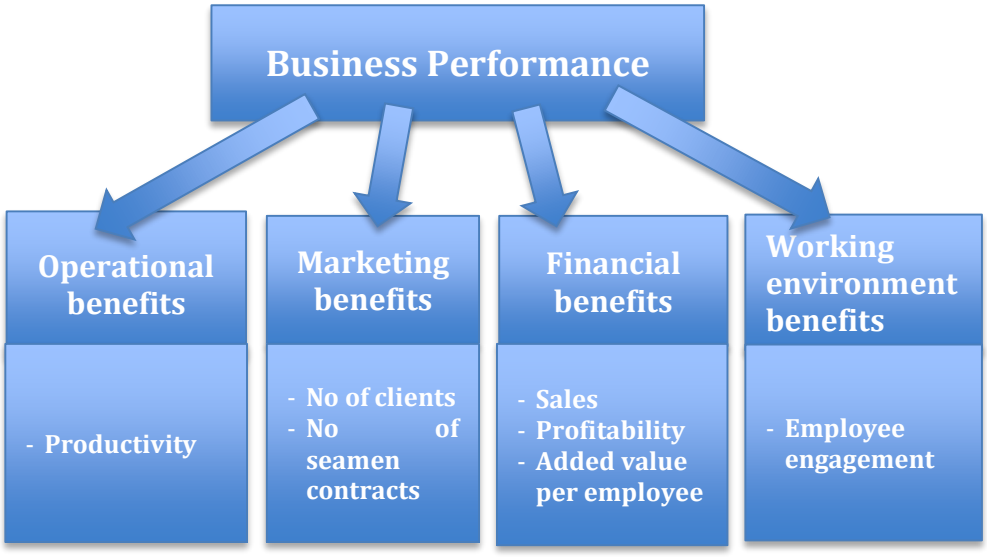

Figure 8. Methodology of the thesis

Source: composed by author

The proposed methodology of the research examines comprehensive benefits and the links between quality certification and improved performance, covering the different areas of organization. The business performance will be evaluated numerically, enabling to conduct fair objective comparison. Except for the benefits in the working environment, in this case the judgement will be based on qualitative information, received by interviewing employees. The research is based on the assumptions that all the changes in business performance are due to ISO 9001 certification. The table 8 presents methods of calculation of the performance indicators.

Table 8. Performance indicators and methods of calculation

Indicator	**Description and Method of Calculation**
Productivity	Revenue / total working hours (Owyong 1994, 20)
No of clients	Amount of clients, who have used the service provided by the company during certain period. The number of clients before ISO certification will be compared with number of clients after ISO certification.
Revenue	Size of accountable sales during certain period
Profit	Revenue minus operating expenses (Vranceanu 2013, 5 - 8)
Added value per employee (AVPE)	Value added per employee = Added value/average number of employees Added value = Revenue – Bought-in-Materials (Brown and Howard, 1992). Added value = operating profit (EBIT) + depreciation + labour costs + changes in inventories of unfinished and finished goods + own self-constructed assets Value added is the wealth the company has been able to create by its own and its employees‘ efforts during a period The value added of any enterprise may be loosely described as the difference between the revenues received for the sale of its output, and the costs which were incurred in producing the output after making the necessary stock adjustments. (John Sizer, 1994)
Employee engagement	Employee devotion and motivation, qualitative research method – in depth interview with company’s employees

Source: composed by author

The Table 8 outlines the necessary research areas, which are needed to better understand the changes that the KT SHIP Ltd company has undergone after ISO quality standard implementation.

In order to analyse if ISO implementation costs outweigh its benefits, the **opportunity cost** will be calculated. Opportunity cost is the cost of an alternative that must be forgone in order to pursue a certain action (Palmer, 1999). In fact, the investment for ISO certification could have been used alternatively bringing the other consequences to the business performance. ISO certification is quite time-consuming process, meaning that if employee is involved in ISO certification project, he is not able to perform his direct responsibilities during ISO implementation. Therefore, the profit will be lost due to the fact, that the working hours will be spent for ISO certification, not for revenue generation.

In order to calculate opportunity costs, it is important to find all costs related to ISO implementation, that in fact comprise not only from direct costs, but also from costs of lost revenue. The total ISO implementation costs will be calculated and compared with revenue benefits.

3. KT SHIP LTD PRESENTATION

3.1. KT SHIP Ltd enterprise overview

The author of this thesis has selected KT SHIP Ltd enterprise as the reference point of the practical application research for a certain reason. Namely, the author of this work was responsible for ISO implementation in mentioned company and has gathered a wide range of data and experience useful for the research.

KT SHIP Ltd is a management company registered in Estonia and offering crewing services for ship owners and seafarers all over the world. KT SHIP Ltd is the leading provider or crewing and staffing operations in the world: its customers include

KT SHIP Ltd was established in year 2008 as a subsidiary of Esman Group (established in 1995) that was a crewing company as well. Nowadays, majority of KT SHIP Ltd employees are former ESMAN group staff, that have a vast over 10 years experience in the field of supplying vessel crew. Figure 9 presents KT SHIP Ltd company structure.

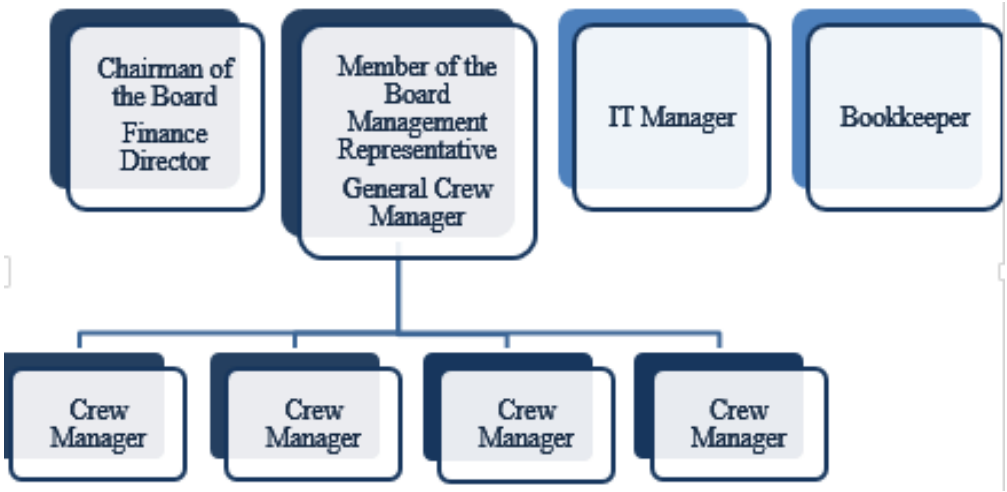

Figure 9: KT SHIP Ltd company structureorganization chart

Source: composed by authour

Despite being quite a small company on a very busy and competitive market, the employees at KT SHIP Ltd are totally convinced that when everyone is moving forward working hardly together, then success takes care of itself. In 2015 year the company's revenue was 316 767 euro, after covering all expenses the profit accounted for 132 759 euro being generated by only 8 employees.

In 2015, number of clients was 27, which includes ship-owners from all over the world. The Figure 10 presents detailed information about KT SHIP Ltd customers outlining most important customer's share in total revenue for the period from 2012 until 2015. The most valuable customers are BERNARD SCHULTE SHIPMANAGEMENT (BSM), TUTELA MARINE INC and UNITEAM MARINE that are largest marine ship management companies in the world.

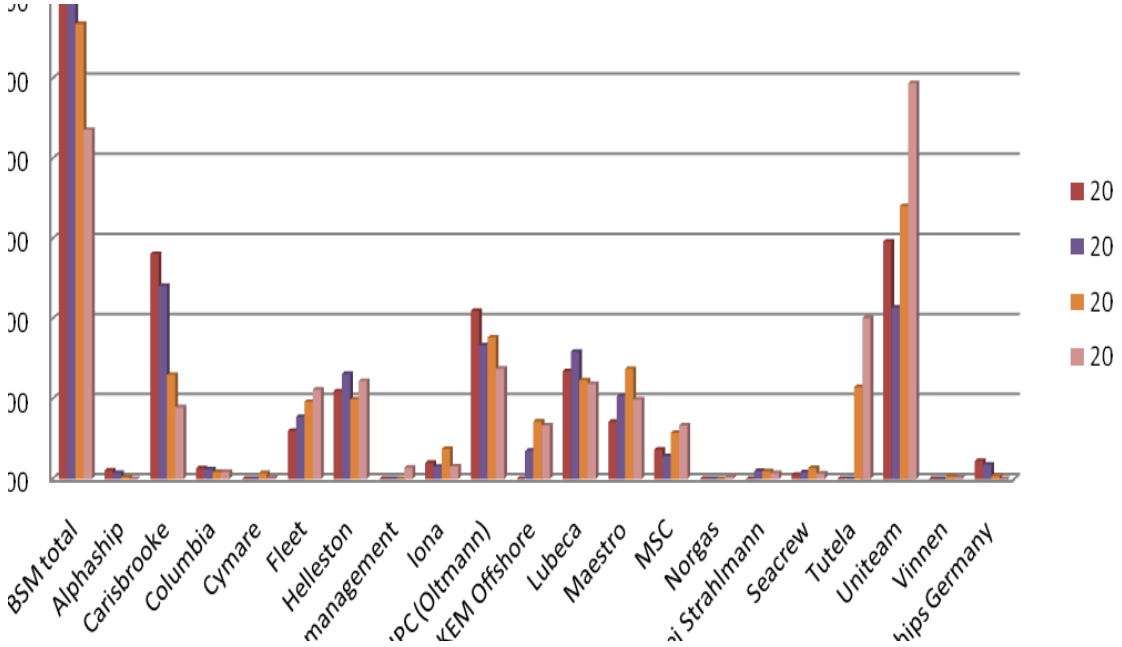

Figure 10. Total income (%) by customers 2012 – 2015, euro

Source: KT SHIP Ltd internal statistics (APPENDIX 5)

The main services provided by KT SHIP Ltd on the market are staffing and crewing operations. The company has over 38 000 pool of highly skilled seamen, 70% of them originate from Russia or Ukraine, the remaining 30% are from Baltic countries. This company has strong business relationship with reputable companies all over the world. The business process the KT SHIP Ltd operates on is described in Figure 11.

Figure 11. Main process in KT SHIP Ltd

Source: composed by author

KT SHIP Ltd is well experienced in supplying crew for different types of vessels with all kind of DWTs and equipped with any kind of engines. KT SHIP Ltd offers the following services:

- vast number of highly qualified seafarers;
- selection, testing and training of the seafarers;
- visa arrangements in any country seafarer is being located;
- arrangement of all Flag State Documents;
- travel arrangements when required;
- crew supervision and planning;
- full management, which includes charter and technical crew;
- crewing services for ship operators.

When a customer, represented by a given ship operating company issues a call for an application to be completed, the KT SHIP Ltd acts as a subcontractor with the agreement to perform tasks attributed to a manning agency. Every seafarer can apply for employment via KT SHIP Ltd and cannot be refused in being employed in case of availability of positions seafarer is qualified for. Seafarers are selected in accordance to the requirement of the customer. All potential candidates should:

1) complete an application form (preferable KT SHIP Ltd form);
2) have English language knowledge which is checked while the oral interview;
3) have relevant work experience;
4) have relevant professional references and documents (e.g. seaman's book, working license, STCW certificates);

5) have pass medical check;
6) have fulfill criteria stated by MLC and the customer (e.g. maximum age).

After approval of the seafarer by the customer, it is required:

1) to recheck the documents and identify any additional need (KT SHIP Ltd Check List);
2) to request license verification letter from Maritime Administration;
3) to arrange visa formalities;
4) to notify seafarer about requirements of additional medical certificate and medical tests;
5) to check availability of flag state documents or to apply for if required by the customer;
6) to arrange working clothes if required by customer;
7) to arrange travel documents (e.g. tickets, Letters of guarantee and etc.);
8) to arrange contract of employment.

After signing off from vessel, it is needed to:

1) check the readiness of seafarer for the next contract;
2) collect the feedback from both customer and seafarer;
3) receive decisions of reemployment;
4) inform seafarer about next possible position;
5) check the documents and identify any revalidation or additional need.

All relevant documents are retained in seafarer's personal folders and in customer files and can be consulted at any time.

3.2. MLC 2006 and its importance for a Crewing Agency business

Every customer has strict requirements towards their service providers in terms of compliance with Maritime Labour Convention (MLC) certificate. Because of this fact, all crewing agencies must fulfil MLC criteria.

The International Maritime Organization (IMO) is a specialised agency of the United Nations responsible for regulating shipping. The IMO's primary purpose is to develop and maintain a comprehensive regulatory framework for shipping including safety, environmental

concerns, legal matters, technical co-operation, maritime security and the efficiency of shipping. (IMO, 2016)

As shown in the Figure 12, the MCL 2006 convention is the fourth element in addition to the established STCW, SOLAS and MARPOL conventions.

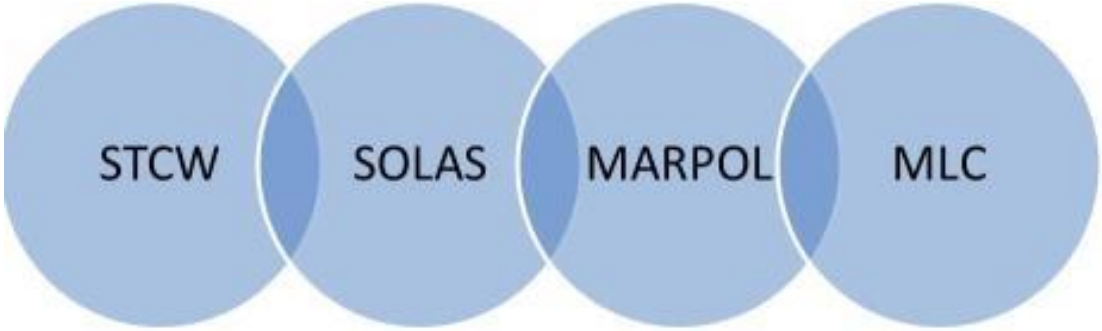

Figure 12. Main shipping regulations
Source: (MLC, 2012)

IMO aims that four of the above-mentioned conventions would cover all aspects of maritime regulation. IMO is the source of approximately 60 legal instruments that guide the regulatory development of its member states to improve safety at sea, facilitate trade among seafaring states and protect the maritime environment. The most well known among those apart from MLC are (MLC, 2016):

- The International Convention for the Safety of Life at Sea (SOLAS). It covers safety standards in construction, equipment and operations that must be followed on ships.
- The International Convention on Standards of Training, Certification and Watch keeping for Seafarers (STCW). It establishes basic requirements on training, certification and watchkeeping for seafarers on an international level.
- The Convention on the Prevention of Maritime Pollution (MARPOL 73/78). It covers not only accidental and operational oil pollution but also different types of pollution by chemicals, goods in packaged form, sewage, garbage and air pollution.

The MLC consists of the sixteen articles containing general provisions and covers following subjects (MLC, 2016):

- minimum requirements for seafarers to work on a ship;
- conditions of employment;
- accommodation, recreational facilities, food and catering;

- health protection, medical care, welfare and social security protection;
- compliance and enforcement.

The Maritime Labour Convention is an International Labour Organization convention established in 2006 as the fourth pillar of international maritime law and embodies "all up-to-date standards of existing international maritime labour Conventions and Recommendations, as well as the fundamental principles to be found in other international labour conventions". (MLC, 2012)

3.3. SWOT analysis

Any organization can be described by SWOT framework in order to better present its internal and external elements from different angles. Table 9 presents SWOT analysis of KT SHIP Ltd.

Table 9. SWOT analysis of KT SHIP Ltd

Strengths	**Weaknesses**
- Big pool of seamen - Decades of experience - Short business process - EU location - Established partnership with customers	- Understaffed - Loyalty based seamen pool
Opportunities	**Threats**
- Manning agency contracts - Full management contract	- Short term contracts - Global shipping recession - No pay and reputation loss due to misconduct - Competitive environment

Source: composed by author

The main strengths of KT SHIP Ltd are represented by big seamen pool, years of experience and EU location of the main office. The key personnel of KT SHIP Ltd have a long-term experience in vessel crewing operations for more than 10 years, meaning that their

knowledge and expertise can be considered as an asset for the company. The competitive advantages are the short process time for finding suitable candidate and reviewing appropriate documents that was highly appreciated by the customers and seamen. Since the majority of customers are located in European Union (EU), for them it is more convenient to deal with EU located partners and suppliers instead of non EU-situated companies.

The weaknesses are highlighted by chronically understaffed office and loyalty based seamen pool. Crewing agent is a very challenging job, which requires years of experience, agile mind and detective level attention to details. Because of these factors finding a suitable candidate proves to be a very difficult task. Knowing this, the management of the company trains by themselves new crew agent specialists that can result in longer period of new employee introduction.

The second weakness is based on the fact that the seamen are not bound by the contract to KT SHIP Ltd directly. All seamen are employed under condition of a single short-term contract, meaning that after its end a seaman can choose any other crewing agency. In order to minimize the threats and weaknesses, KT SHIP Ltd works with wide database of seamen. Having a long-term contract with ship owners to supply the crew for the whole vessel would contribute to the risk minimization and support opportunity for growth.

The competitive environment is quite tense; in 2016 in Estonia, there are found in total 8 direct competitors with the same field of KT SHIP Ltd:

- Euronurk Agency OÜ;
- Tschudi Ship Management AS;
- Baltic Group International OÜ;
- Amisco AS;
- Novatherm OÜ;
- Tankers Service Agency Tallot OÜ;
- Romy Shipping Estonia OÜ;
- Österströmi Laevanduse OÜ.

However, in 2010 there were 19 direct competitors in the same filed of business. The decrease in number of competitors signifies that the customers set very high standards in terms of quality and service price, meaning that only crewing agencies with strong competitive advantage will survive.

3.4. Analysis of five Porter's forces

Table 10. Analysis of microenvironment

Area	Threat level	Comment
New entrants threat	Low	Reputation is most important in the crewing business. No one is going to risk working with a new unproved service providers
Substitutes	Low	Direct competition is present, but there are currently no substitute services for manning a vessel.
Bargaining power of suppliers	Moderate	Big seamen pool provides room for manoeuvres during contract and terms negotiations.
Bargaining power of customers	High	Contract terms and salary limit must be strictly enforced. Short position review time and great number of mandatory documents to check.
Intensity of competitive rivalry	Moderate	Direct rivalry on the market has decreased in recent years due to disappearance of little companies or merges and acquisitions. At the same time, the market is highly developed and market competition is tense.

Source: composed by author

The operational market is heavily influenced by the bargaining power of customers. For example, if a given position is not closed in an hour (or a day), other competitors may close the position or even secure a contract with the ship-owner as a long-term partner. Generally: the less positions are closed by a certain company, the less positions it may get in the future.

Porter's five forces analysis explains in detail why KT SHIP Ltd had to implement and standardize quality management system. Customers dictate the conditions and requirements for the recruitment partners. Some of them have set condition, that the future collaboration is only possible if staffing agency will acquire ISO certificate. Such customers' demand can be complete not by all staffing agencies, meaning that ISO acquisition can be a differentiating factor in this service industry.

The major contributing factor for KT SHIP Ltd to pursue the ISO standardization procedure was market driven requirement for such standard from a number of clients. By the

year 2010, the management of the KT SHIP Ltd company was informed that certain clients would require an ISO 9001 quality standard compliance certificate in the next two years. The top management prepared client portfolio analysis and divided existing clients into three major segments:

- Partners that require ISO certificate;
- Partners that prefer ISO certification;
- Partners that do not require ISO.

The Table 11 presents these segments together with number of customers in every segment and corresponding revenue, generated by such segment in year 2011.

Table 11. Customer segments in 2011

Customer segments	**require ISO**	**prefer ISO**	**do not require ISO**	**Total**
Number of customers	9	5	3	17
Revenue in 2011, euro	111 975 (50%)	74 650 (33%)	37 325 (17%)	238 214 (100%)

Source: composed by author using

Every customer that is mentioned in the above Table 11 has strict requirements towards their service providers to MLC certificate. Because of this fact, a manning agency under contract must comply with MLC criteria. As we can see from Table 11, half of customers have strong requirement for ISO certificate.

4. ANALYSIS OF BUSINESS PERFORMANCE AFTER ISO IMPLEMENTATION

In this chapter, the author is going to investigate how the business performance of KT SHIP Ltd has changed due to ISO implementation in terms of operational, marketing, financial indicators. In addition, the intangible changes in the working environment will be studied. In order to achieve an in depth analysis of ISO certification benefits qualitative and quantitative research methods will be applied as described in Chapter 2.3.3.

4.1. Marketing benefits

This chapter will present changes in number of customers and in number of contracts signed with supplied seamen by KT SHIP Ltd.

The main marketing benefit is that KT SHIP Ltd has retained its 12 customers that the company could lose unless ISO certificate would not be adopted. In addition, the customers that have preferences for ISO certified service providers could chose to change the supplier. The loss of customers would result in significant revenue reduction.

Considering the revenue from different segments presented in Figure 13, it is possible to evaluate the loss due to refusal of ISO implementation. For instance, in 2011 the KT SHIP Ltd company generated 238 214 euro revenue. If the management had chosen not to certify, in the coming years the company would have lost 111 975 euro of income for sales plus potentially another 74 650 euro. This amounts to 80% of total income disappearing due to noncompliance to ISO and clients leaving to other manning agency.

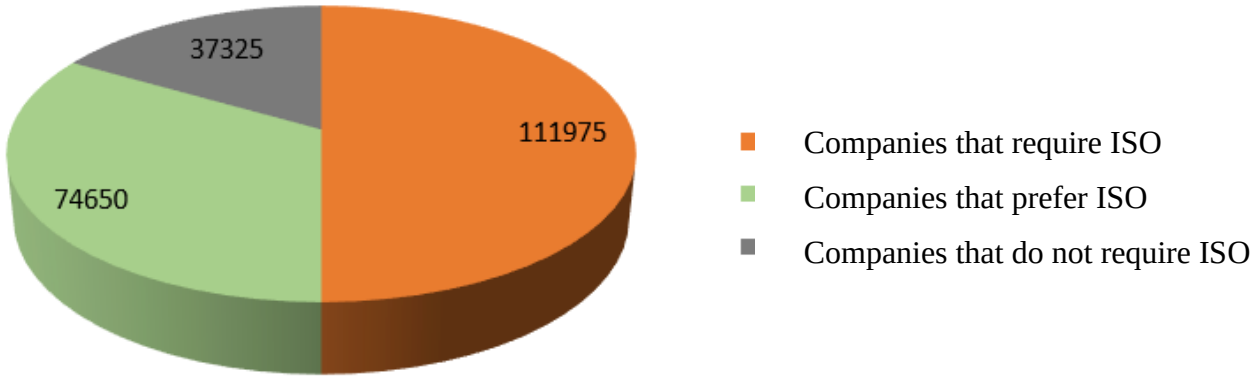

Figure 13. Revenue by segments, euro

Source: composed by author based on data from Table 11

The Table 12 presents the change in number of customers and in number of provided services over the years from 2011 until 2015.

Table 12. Marketing benefits

Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Customers	19	17	21	22	23	27
Customers growth (%) compared with previous year	-	-10%	24%	5%	5%	17%
Number of seamen contracts	N/A	N/A	747	799	816	804
Contracts growth (%) compared with previous year	-	-	-	7%	2%	-1,5%

Source: composed by author KT SHIP Ltd statistics (APPENDIX 5)

The Table 12 shows that ISO certificate adoption has not brought any significant number of new customers and signed contract. The ISO implementation was in year 2013, therefore the major changes in these indicators were anticipated in year 2014. However, the changes in this period are not very evident.

However, without ISO certificate, KT SHIP Ltd would not have achieved the mentioned above marketing results.

4.2. Document management benefits

In general implementing ISO standard in a given company is complex process. This process involves changes, which must be made to the established business process and accustomed habits. Business processes themselves as well as document templates and draft much be revised and changed. Employees must change their accustomed business practices in order to comply with ISO standard derived proceedings.

One of the major requirements for KT SHIP Ltd business operations from ISO 9001 standard audition procedure was the increase in data redundancy levels. The ISO standard dictates that multiple levels of data protection must be implemented, which resulted in additional unplanned expenses towards corresponding hardware and software purchases, which are described in detail in Chapter 4.5.

After ISO implementation, all documents are kept on a dedicated server. Server runs on RAID 1 technology, meaning that two hard disks drives simultaneously write document copy. Once per week all data is automatically backed up to an external hard drive. Five levels of digital data backup compose of following elements:

1 level – all data is not stored on personal computer;

2 level – RAID system is in use;

3 level – cloud based repository back up;

4 level – external hard drive;

5 level – every week the external hard drive is changed.

Before ISO certification, there were only two mandatory documents; while after ISO implementation the number of documents increased to 29 items. The Table 13 explains in detail which new documents are required by ISO QMS standard.

Table 13. Changes in document management

Before ISO implementation		After ISO implementation	
1	Application form	1	List of Forms
2	Seamen certificates' checklist	2	List of Documents of Ext. Origin
		3	List of Records
		4	KT SHIP Ltd Application Form
		5	KT SHIP Ltd Check List
		6	Customer Feedback Questionnaire
		7	List of Approved Suppliers
		8	Evaluation of Subcontractors
		9	List of Approved Subcontractors
		10	Internal Audit Program
		11	Internal Audit Plan
		12	Internal Audit Finding Report
		13	Internal Audit Summary Report
		14	Register of In – process Nonconformities
		15	Report of Handling Nonconformities
		16	Managing Review Meeting
		17	Register of Customer Complaints
		18	Report of Handling of Customer Complaint
		19	Training Program
		20	List of Licensed Software
		21	List of Work Instructions
		22	Analysis of Customer Feedback
		23	Complaint Procedure
		24	MLC 2006 Memorandum
		25	Statement
		26	Crew Feedback Questionnaire
		27	Analysis of Crew Feedback
		28	Procedure of Handling Not For Reemployment Crew
		29	Procedure of Protecting Crew Member in Case of Failure or Bankruptcy from the Side of Shipowner

Source: KT SHIP Ltd ISO documents (APPENDIX 3)

In order to compare how the KT SHIP Ltd company changed since adopting ISO 9001 quality standard in 2011 the following Table 14 was compiled. This table includes different areas of enterprise that were affected by ISO quality standard certification.

Table 14. Pre-ISO and past-ISO company analysis

Area of changes	**Before ISO (2012)**	**After ISO (2015)**
New employee introduction	320 work hours	80 work hours
Number of documents	2 documents	29 documents
Digital data backup	1 level	5 levels

Source: composed by author

A new employee requires supervision and education that results in less productivity for at least another corporate employee. At the same time, this increase in number of documents significantly decrease time needed for a new employee to get accustomed to the job at hand from 320 hours to only 80 hours.

4.3. Productivity benefits

In this chapter, the productivity changes in terms of how much revenue each employee generates are investigated. The Table 15 gives a labour productivity calculation details.

Table 15. Labour productivity calculation

Year	**Avg. no employees**	**Working hours**	**Revenue, euro**	**Revenue per hour, euro**
2011	8	15 408	223 949	14,53
2012	6	11 556	245 983	21,29
2013	6	11 556	278 837	24,13
2014	6	11 556	292 003	25,27
2015	8	15 408	316 767	20,56

Source: composed by author using annual statements of KT SHIP Ltd (APPENDIX 5)

The average workforce in 2011 was at 8 employees during the year. This amounted to a work budget of 15 408 productive hours, in which the company has managed to generate 223 949 euro income. In the following years from 2012 until 2014 average employee count was at 6 employees, which resulted in 11 556 working hours budget. Despite the decrease in available production, total revenue of the company grew steadily. In 2015, the reviewed company expanded once again to 8 employees and managed to generate 316 767 euro of revenue.

The more detailed analysis reveals the average productivity of employees grew steadily in the last four years. Even the 25% decrease in work-hour budget did not result in productivity numbers downfall. If on average an employee generated around 14,53 euro per hour in 2011, then in 2014 this number increased by 74%. The Figure 14 presents labour productivity changes during years 2011 till 2015.

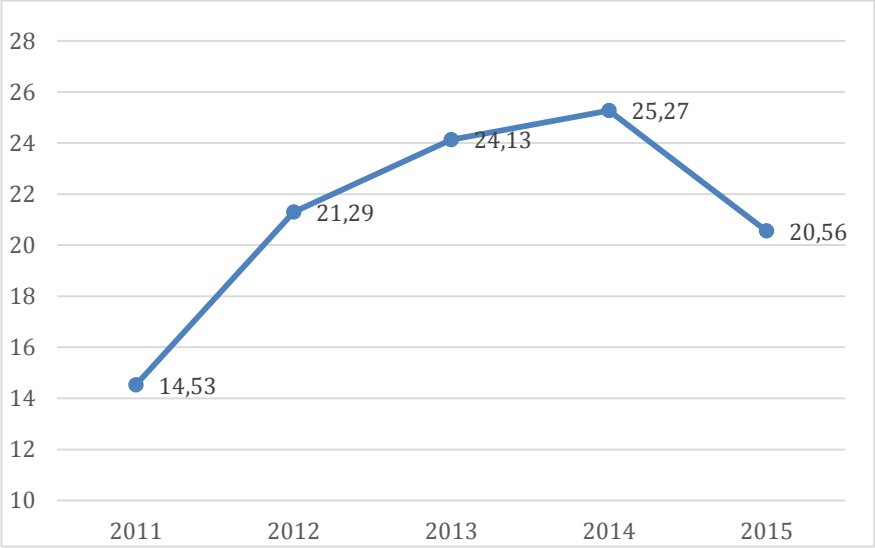

Figure 14. Labour productivity of KT SHIP Ltd employees, euro/h

Source: composed by author using Table 14

In 2015, the financial year of the described company ended in a 316 767 euro revenue. Given the number of employees and their dedication it can be measure that one-hour of a single employee resulted in a 20,56 euro of revenue for the company.

4.4. Financial benefits

The revenue numbers describe the ability to generate income of a given company. The total revenue generated by KT SHIP Ltd for the last four years has increased by 30.39%, comparing revenue from 2010 with revenue in 2014. On the annual base the revenue growth is on average 7.6%. The Figure 15 presents revenue generated from 2011 until 2015.

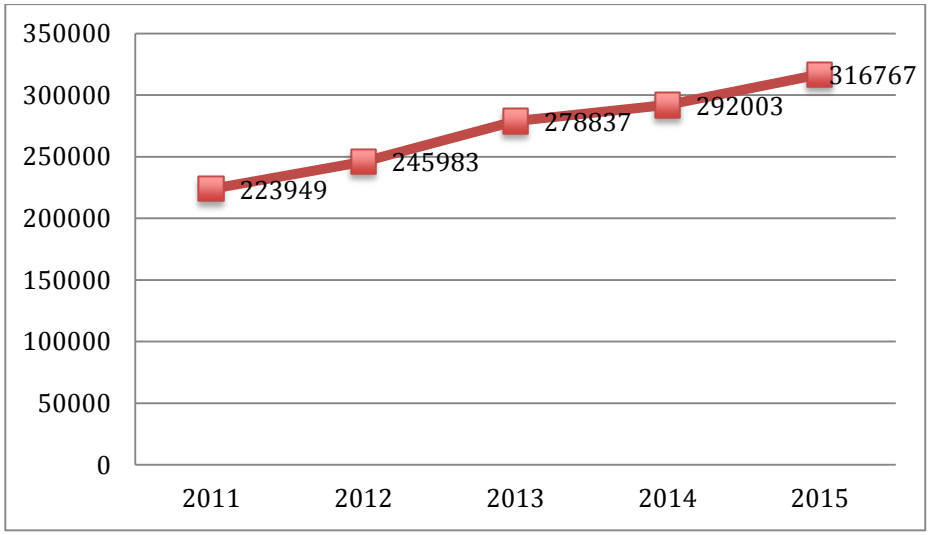

Figure 15. KT SHIP Ltd revenue during period 2011 – 2015, euro

Source: composed by author using annual statement data

The revenue is growing very steadily, however due to ISO certification, a dramatic increase would be highly anticipated in year 2014. That would signify strong financial benefit due to ISO certification.

At the same time, the expenses that a given company may sustain during its operations may result in loss of profitability. However, more importantly the main indicator for the owner of the company is its profitability and ability to pay dividends from business operations.

In 2011, the profit of the reviewed company was at its lowest point at 121 639 euro. After the introduction of ISO standardized document management procedures, the average profit grew by 10,89% annually or 12 163 euro gain on average. Figure 16 presents profit generated from 2011 until 2015.

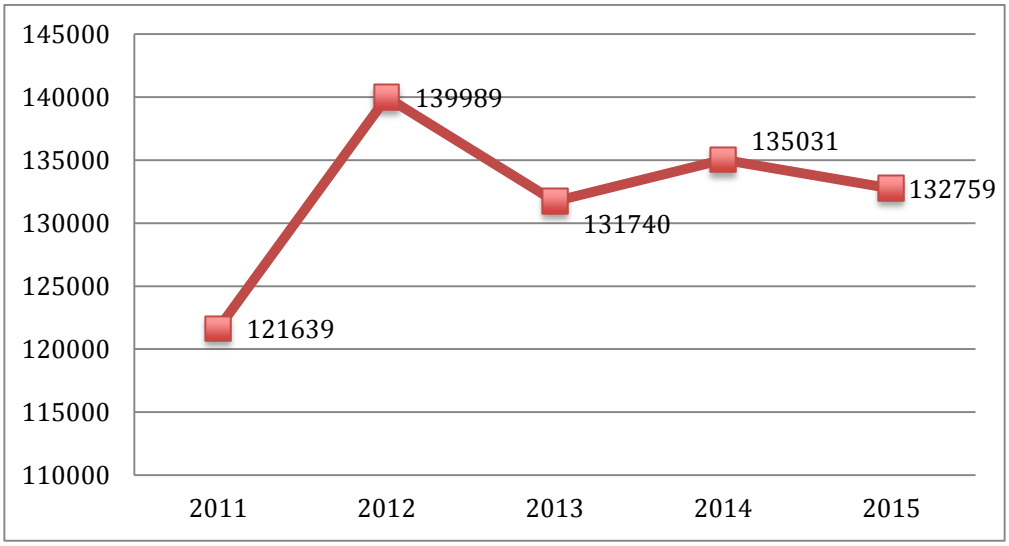

Figure 16. KT SHIP Ltd profit during period 2011 – 2015, euro

Source: composed by author using annual statement data

Moreover, it is important for a company to know how much added value is being generated for a certain period of time by its employees. Added value per employee (AVPE) is the major enterprise efficiency indicator. It is especially highly valued by Estonian Government, Enterprise Estonia (EAS) and other financial institutions. Value added per employee equation is presented on page 37 of this work and is calculated as following (Brown and Howard, 1992):

AVPE = (EBIT + depreciation + labour costs + changes in inventories of unfinished and finished goods + own self-constructed assets) / number of employees

Earnings before interest and taxes (EBIT) is a measure of a firm's profit that includes all expenses except interest and income tax expenses. It is the difference between operating revenues and operating expenses (Bodie, Kane et al 2004, 452):

EBIT (operating profit) = revenue – operating expenses

Table 17 presents AVPE calculation details.

Table 17. AVPE calculation

Year	Labour costs, euro	No of employee	EBIT, euro	Depreciation, euro	AVPE, euro
2011	34 908	8	126 826	-3 821	19 739,13
2012	48 303	6	141 470	-5 078	30 782,5
2013	60 194	6	131 740	2 242	32 362,67
2014	85 540	6	135 031	-13 556	34 502,5
2015	97 516	8	132 759	-12 816	27 182,38

Source: composed by author (KT SHIP Ltd financial data)

The added value per employee calculation shows that there is no direct link between generated value by company employees and ISO certification.

4.5. Working environment benefits

The analyse of respondents' answers proves for following conclusions:

- ISO implementation has a major impact on main business process performed by company employees, rather than on strategic management and supporting staff.
- Workflow of crew managers has increased, because the number of documents has increased. However, the level of stress is lower because of the standardized procedure of process is in place.
- Before ISO implementation, new worker introduction took at least half a year; however after ISO is only one month. Before ISO implementation, most of new employees decided to quit the job because of stress and unstructured workflow.
- Management staff proved that customer are more satisfied and there is less pressure in the company.
- The main positive feature of ISO implementation is that workflow has become more transparent and easily understandable by new workers and made internal training of new worker much easier.
- All employees confirmed that they feel more engaged into work and are motivated to show better performance.

4.6. ISO implementation total costs calculation

The total costs related to ISO implementation can be divided in three groups, as presented in Figure 18:

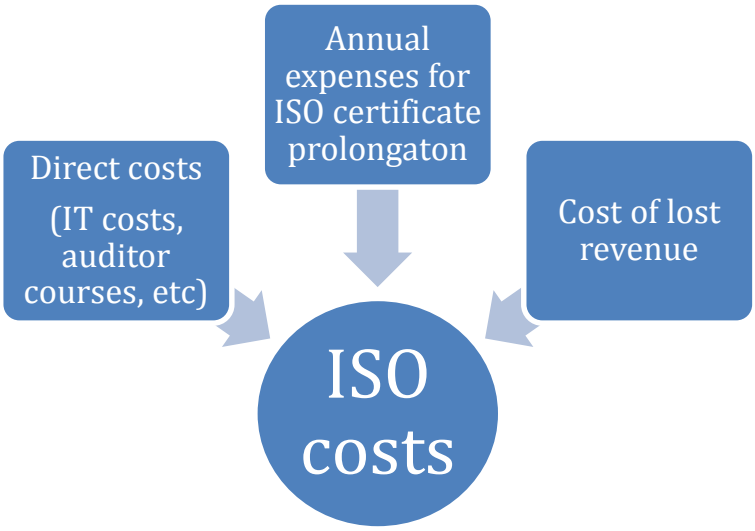

Figure 18. ISO costs stricture

Source: composed by author

Among the direct expenses attributed to ISO implementation are IT costs – required hardware and software acquisition in amount of 2 150 euro. The company had to purchase dedicated file server PC with RAID 1 to enable 5 level data redundancy or backup (750 euro) since ISO requirement is risk minimization attributed to data loss. Additional costs involved external 4 hard- drives (400 euro), and Microsoft server 2008 license (1 000euro).

The other part of direct costs are expenses related to ISO certification itself, for example: cost of internal audit courses, cost of the standard itself and cost of external audit.

The annual expenses are related to mandatory audit that is also costly and time-consuming.

It is important to consider hidden labour cost into this calculation, since while the employee is dealing with ISO project he is not able to deal with his direct responsibilities and some revenue will be lost. Therefore, the lost revenue will be included into this calculation. The lost revenue is calculated by multiplying labour hours spent with labour productivity values.

The Table 18 presents direct cost calculation related to ISO certification.

Table 18. ISO implementation initial direct costs calculation

Expenses	**euro**
File server PC with RAID 1	750
Microsoft server 2008 license	1 000
External hard- drives	400
Internal auditors course	137
Original ISO standard (pdf format)	150
External audit by ISO Certified Body	2 125
TOTAL	4 562

Source: composed by author

The following Table 19 shows labour cost calculation due to ISO implementation due to utilization of working hours for ISO implementation, considering that labour productivity in 2013 was 24,13 euro/h (Chapter 4.2).

Table 19. ISO implementation labour cost

ISO activity	**Labour hours spent, h**	**Lost revenue, euro (labour hours x productivity**
Internal auditors course	24	579
Employees' time spent for ISO project	416	10 039
Initial standardization	32	772
TOTAL	472	11 390

Source: composed by author

The "labour hours spent" column describes the amount of employee time it takes to fulfil corresponding tasks. The lost revenue column shows how much it costs for KT SHIP Ltd to allocate work hours to ISO procedures instead of generating revenue.

In details employees' time spent for ISO can be broken down into following details:

- educate two additional employees;
- above mentioned two additional employees' working hours spent;
- review existing documents;

- perform internal audit;
- compile mandatory documents.

The initial standardization costs 4 562 euro, but on top of that the whole procedure had taken further 472 working hours, therefore it contributed for lost revenue in amount of 11 390 euro. Based on the above mentioned calculation the true cost of initial implementation equals 15 952 euro:

- 4 562 euro of direct costs;
- 472 hours of worktime amounting to 11 390 euro. 472 working hours comprise 4% of total working hours pool in year 2013.

The amount of 15 952 is ISO opportunity cost, because KT SHIP Ltd could have decided not to proceed with ISO certification process and attributed expenses. In such case at least half of revenue (139 418 euro) in 2013 would not be earned, since half of customers require ISO certification. Therefore, ISO benefits outweigh its costs significantly.

Every year, in order to get ISO certificate prolongation a company must do process review, improve current documentations, compose a last year performance report, based on the report develop goals for the next year. In 2014 for such activities, it was spent 158 working hours. It is followed by an external audit that will check how ISO requirements are fulfilled. The calculation of annual ISO expenses is presented in Table 20.

Table 20. ISO annual expenses in 2014 year

Name	**Cost, euro**	**Working hours, h**	**Lost revenue, euro (labour hours x productivity[1])**
Employee time spent		168	4 245
Yearly audits	1 475	48	1 213
TOTAL	1 475	216	5 458

Therefore, a company must consider annual expenses related to ISO certificate. In example of KT SHIP Ltd, the total annual ISO expenses are 5 458 euro.

[1] Labour productivity in 2014 was 25,27 euro/h

CONCLUSION

The aim of this master thesis is to investigate the internal and external benefits that are related with ISO certification. The research tasks set in the introduction of this work are completed. The objectives of the research are achieved:

- the document management system before and after ISO implementation is analysed;
- business performance improvements due to ISO QMS implementation are evaluated;
- ISO total cost calculation considering labour cost is performed.

In order to achieve the objectives of the research and find answers to the research question the following research tasks were completed:

- literature was studied to find how scientific research tackles the research problem;
- the changes of new employee incorporation into company organization with and without ISO certified document workflow were analysed;
- number of documents before and after ISO implementation was compared;
- the framework for business performance comparison before and after ISO implementation was developed;
- the costs and benefits of initial standardization plus mandatory yearly audits were calculated.

The performed literature study has proved that quality must be embedded into all process in an organization. Certification according to ISO 9001 means that the QMS matches the requirements of this particular standard and gives customer confidence that all efforts are for the sake of satisfying customer needs. The implementation process of ISO contains of several steps and is time and resource consuming. Though the major aspect of ISO is alighting an organization QMS to the requirements of the standard, it sets requirements to the documentation as well.

The motives for ISO implementation can be internal and external. The achieved benefits also can be divided into internal and external as well. The first ones are related to improvements

in terms of marketing and promotional aspects, whereas internal benefits are related with organizational improvements.

Some organizations have stated that without ISO 9001 certification they would not have received that significant number of contractors. Therefore, ISO 9001 is frequently regarded as a marketing tool that would support promotion and new customers.

Although there are many studies reporting increased market share and improved product quality due to ISO 9000 implementation, there is very few empirical research on actually achieved business performance benefits. Research on financial impact of ISO 9001 on firms is still not enough to make definitive conclusion on the financial impact. The financial impact is unclear or mixed.

Since the financial impact of ISO certification is unclear by a great number of contradictive research, this research possesses a value since it will contribute to better understanding of ISO benefit for a service sector enterprise.

The situational analysis of KT SHIP Ltd has proved that ISO implementation is driven by customers. The market is highly competitive and customers can select any crewing service providers. If the company had chosen not to certificate, it would experience great losses since customers would use services by ISO certified suppliers.

Business performance is studied in terms of operational, marketing and financial indicators, as well as the changes in the working environment are investigated. In order to achieve an in depth analysis of ISO benefits, qualitative and quantitative research methods were applied.

This work proves that ISO implementation contributes to marketing benefits including maintaining the existing customer relationship, since ISO adoption was customer driven. The changes in operational and financial indicators show the same trend before and after ISO certification, meaning that there is no direct link between them. Indeed labour productivity, revenue, profit and added value per employee do not show any significant improvement due to ISO implementation.

However, the working environment has improved, as it was evident from semi-structured interview results. All respondents have confirmed that after ISO implementation there is less stress, documents are structured and it is much easier to train a newcomer.

Before ISO certification, there were only two mandatory documents; while after ISO implementation the number of documents increased to 29 items. At the same time, this increase

in number of documents significantly decrease time needed for a new employee to get accustomed to the job at hand from 320 hours to only 80 hours.

The successful ISO 9001 quality standard certification assured clients that KT SHIP Ltd is a company capable of meeting even the strictest demands and is flexible enough to change its business practices accordingly.

It is suggested by the author, that total costs of ISO implementation must be calculated considering direct costs and "hidden" labour costs due to lost revenue. In fact, the investment for ISO certification could have been used alternatively bringing the other consequences to the business performance. ISO certification is quite time-consuming process, meaning that if employee is involved in ISO certification project, he is not able to perform his direct responsibilities during ISO implementation. Therefore, the profit will be lost due to the fact, that the working hours will be spent for ISO certification, not for revenue generation. Apart from that, annual ISO expenses must also be considered when making decision to become ISO certified company.

It can be concluded that ISO mandatory extra document management is it worth its implementation and its benefits outweigh the cost attributed with ISO standardization. Despite little benefits in financial situation, the market share has not decreased and some intangible benefits also achieved – better employee engagement and better working environment.

The hypothesis is also proved: ISO 9001 quality standard implementation leads to increase expenses in the company. Every year a company must prove its accordance to the ISO standard and arrange internal and external audit. However, the majority of annual ISO cost is formed by "hidden" labour cost.

If KT SHIP Ltd would not have gained an ISO standard, then the company would have lost at least 50% of its revenue in 2013, but saved 15 952 euro, that is total cost of ISO implementation. Therefore, ISO benefits outweigh its costs significantly.

The general recommendations for companies considering ISO certification is that it requires significant amount of time and expenses that will not necessarily lead to improvement of financial performance.

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RESUMEE

Vaatamata kaasnevatele eelistele, mida ISO 9001 sertifikaat toob ettevõttele, üldine arvamus ISO rakendamisest seisneb selles, et see suurendab paberimajandust ja kasutut dokumentatsiooni. ISO kasutuselevõtt on väga kallis ja mitte igal konkreetsel juhul on kasud aimatavad ettevõtte juhtidele.

Selles töös on erinevad äritegevuse näitajad võrreldud enne ja pärast ISO sertifitseerimist KT SHIP OÜ ettevõttes, mille tegevusalaks on merendussektori tööjõu vahendamine. Turundus-, finants-, operatsiooni- ja töökeskkonna muutused on uuritud selleks, et aru saada ISO rakendamise mõju ettevõttele. Selle eesmärgi saavutamiseks on kasutatud kvalitatiivsed ja kvantitatiivsed uurimismeetodid.

Antud lõputöö näitab, et ISO rakendamine toob kaasa turunduskasud: ettevõte säilitas olemasolevaid kliente, sest ISO juurutamine oli klientide poolt nõutud. Operatsiooni- ja finantsnäitajate muutused näitavad samasugust tendentsi, kui neid võrrelda enne ja pärast ISO sertifitseerimist. See tähendab, et otsene seos ISO sertifitseerimisega ja finantsnäitajatega puudub. Samas töökeskkond on muutunud palju paremaks ja stressivabaks, nagu see oli järeldatud pool-struktureeritud intervjuude analüüsist.

Autor soovitab arvutada ISO rakendamise kogukulude arvestmisel nii otsesed kulud kui ka kaotatud tulu. Peale selle, iga-aastased ISO kulud tuleb ka arvesse võtta, juhul kui ettevõtte otsustab ISO sertifitseerimise kasuks.

Kuna ISO juurutamisega seotud mõju ettevõtte finantsolukorrale on ebaselge vasturääkivate teadusuuringute tõttu, antud töö aitab paremini mõista ISO rakendamisest saadavat kasu teenindussektori ettevõttel.

Märksõnad: kvaliteet, ISO 9000 standard, ISO kvaliteedijuhtimissüsteem, ISO sertifitseerimine eelised, alternatiivkulu.

APPENDIX 1. SEMI-STRUCTURED INTERVIEW QUESTIONNAIRE

1. How do you think ISO have affected your everyday job?
2. Was it difficult to get used to new way of working?
3. What do you think about checklists?
4. How much time it takes to teach a new employee?
5. What do you think is the main difficulty in your job?
6. Do you agree that ISO is mainly a “paperwork” and has no value?
7. How changed the customers’ attitude after you implemented ISO 9001?
8. Do you think ISO has improved your workflow?
9. Do you think ISO affected the financial performance
10. Do you agree that you have less stress since ISO introduction?

APPENDIX 2. SEMISTRUCTURED INTERVIEW TRANSCIPTIONS

Interview 1: Crew Manager A

1. How do you think ISO have affected your everyday job?

The work got structured better overall. Now there is a standard

2. Was it difficult to get used to new way of working?

It took around two or three months to get used to the new way of working.

3. What do you think about checklists?

It is a necessary asset that helps to control quality of services provided.

4. How much time it takes to teach a new employee?

It used to take a few months. Maybe even half a year. Now, every a new employee can perform tasks after just a few weeks.

5. What do you think is the main difficulty in your job?

Keeping track of all the documents.

6. Do you agree that ISO is mainly a “paperwork” and has no value?

No. In our case ISO helped to gather together all the paperwork required as a system.

7. How has changed the customers’ attitude after you implemented ISO 9001?

The number of customers increased.

8. Do you think ISO has improved your workflow?

Yes. It has made easier to perform everyday tasks.

9. Do you think ISO affected the financial performance

Not sure.

10. Do you agree that you have less stress since ISO introduction?
Yes. There is less variation in everyday tasks.

Interview 2: Crew Manager B - newcomer

1. How do you think ISO have affected your everyday job?
Thanks to ISO there is less stress when I work with documents.

2. Was it difficult to get used to new way of working?
I took part in ISO implementation so for me the transition went swiftly.

3. What do you think about checklists?
We had some checklists before ISO, but now it is impossible to imagine how we managed without them.

4. How much time it takes to teach a new employee?
Two weeks. Maybe a bit more.

5. What do you think is the main difficulty in your job?
Not forgetting to making sure that every document is valid.

6. Do you agree that ISO is mainly a "paperwork" and has no value?
Yes, in a way. Some documents that ISO stresses as vital are never actually used.

7. How has changed the customers' attitude after you implemented ISO 9001?
Companies that threatened to leave, continue to use our services.

8. Do you think ISO has improved your workflow?
Not really. The basic workflow remains the same. It added a few mandatory documents.
9. Do you think ISO affected the financial performance

Not sure.

10. Do you agree that you have less stress since ISO introduction?
Yes. The clients are more happy now.

Interview 3: IT Manager

1. How do you think ISO have affected your everyday job?
Everyday job – not so much. It has more to do with annual audits.

2. Was it difficult to get used to new way of working?
No. It does not affect my work related tasks at all.

3. What do you think about checklists?
Checklists are vital in IT related operations.

4. How much time it takes to teach a new employee?
Not sure.

5. What do you think is the main difficulty in your job?
Making swift fixes to the hardware and software. Sometime it takes days to fix a certain problem.

6. Do you agree that ISO is mainly a "paperwork" and has no value?
Yes. It gives a few tips, but overall it is more for the image.
7. How has changed the customers' attitude after you implemented ISO 9001?
They like to see their partners ISO certified.

8. Do you think ISO has improved your workflow?
Not really. The basic workflow remains the same. It added a few mandatory documents.

9. Do you think ISO affected the financial performance

Not sure.

10. Do you agree that you have less stress since ISO introduction?

Yes. All of the software related serial numbers and codes are now in one place.

Interview 4: Bookkeeper

1. How do you think ISO have affected your everyday job?

Not sure.

2. Was it difficult to get used to new way of working?

No. Nothing major change.

3. What do you think about checklists?

Checklists are extra paper, but they help to manage risks.

4. How much time it takes to teach a new employee?

Around a month, depends on a person.

5. What do you think is the main difficulty in your job?

Keeping track of all the invoices and their statuses.

6. Do you agree that ISO is mainly a "paperwork" and has no value?

Not sure.

7. How has changed the customers' attitude after you implemented ISO 9001?

They stopped asking for ISO certification. Every one can see it on our webpage.

8. Do you think ISO has improved your workflow?

No.

9. Do you think ISO affected the financial performance

Yes. The clients that threatened to leave continue to cooperate.

10. Do you agree that you have less stress since ISO introduction?

No. Nothing change on my part.

Interview 5: General Crew Manager

1. How do you think ISO have affected your everyday job?

ISO requirements make me monitor more documents, which takes more time.

2. Was it difficult to get used to new way of working?

Yes. After four years, there a certain habits that are hard to forget.

3. What do you think about checklists?

Clients demand checklists and while it does take more time we have to do what the client asks.

4. How much time it takes to teach a new employee?

Two to three week, but that time you can see if he or she is good enough for the job.

5. What do you think is the main difficulty in your job?

Managing big amount of information flow. Positions open and close fast so we have to react faster still.

6. Do you agree that ISO is mainly a "paperwork" and has no value?

Yes and no. But we have to comply with it, because the clients demand it.

7. How has changed the customers' attitude after you implemented ISO 9001?

The old clients continue to cooperate. New companies came as well.

8. Do you think ISO has improved your workflow?

No. Do not see any difference.

9. Do you think ISO affected the financial performance

Yes. Most definitely. Without ISO certificate there would be no KT SHIP.

10. Do you agree that you have less stress since ISO introduction?

No. More stress, because more documents need to be compiled.

Interview 6: Chairman of the Board

1. How do you think ISO have affected your everyday job?

It did not affect my everyday job.

2. Was it difficult to get used to new way of working?

Not in my position, no.

3. What do you think about checklists?

Clients demand checklists. We must complete them properly.

4. How much time it takes to teach a new employee?

Under a month.

5. What do you think is the main difficulty in your job?

Staying in touch with clients and their changing demand.

6. Do you agree that ISO is mainly a "paperwork" and has no value?

No. It boosts the image of the company, which helps the sales.

7. How has changed the customers' attitude after you implemented ISO 9001?

They were happy that we got certified. Future cooperation could be continued.

8. Do you think ISO has improved your workflow?

No. Maybe in case of the mandatory annual audits.

9. Do you think ISO affected the financial performance

Yes. Most definitely. Without ISO certificate there would be no KT SHIP.

10. Do you agree that you have less stress since ISO introduction?

No. More stress, because more documents need to be compiled.

APPENDIX 3. F - 1 - List of Forms Rev 05

LIST OF FORMS

No.	Name of Form	Media*	Revision No.	Record holder (active location)	Final storage location*
F – 1	List of Forms	E	5	Crewing Department – File Server	External HD
F – 2	List of Documents of Ext. Origin	E	5	Crewing Department – File Server	External HD
F – 3	List of Records	E	3	Crewing Department – File Server	External HD
F – 4	KT Ship Ltd Application Form	E	5	Crewing Department – File Server	External HD
F – 5	KT Ship Ltd Check List	E	4	Crewing Department – File Server	External HD
F – 6	Customer Feedback Questionnaire	E	1	Crewing Department – File Server	External HD
F – 7	List of Approved Suppliers	E	2	Crewing Department – File Server	External HD
F – 8	Evaluation of Subcontractors	E	4	Crewing Department – File Server	External HD
F – 9	List of Approved Subcontractors	E	4	Crewing Department – File Server	External HD
F – 10	Internal Audit Program	E	1	Crewing Department – File Server	External HD
F – 11	Internal Audit Plan	E	2	Crewing Department – File Server	External HD
F – 12	Internal Audit Finding Report	E	1	Crewing Department – File Server	External HD

F – 13	Internal Audit Summary Report	E	1	Crewing Department – File Server	External HD
F – 14	Register of In – process Nonconformities	E	1	Crewing Department – File Server	External HD
F – 15	Report of Handling Nonconformities	E	1	Crewing Department – File Server	External HD
F – 16	Managing Review Meeting	E	1	Crewing Department – File Server	External HD
F – 17	Register of Customer Complaints	E	1	Crewing Department – File Server	External HD
F – 18	Report of Handling of Customer Complaint	E	1	Crewing Department – File Server	External HD
F – 19	Training Program	E	1	Crewing Department – File Server	External HD
F – 20	List of Licensed Software	E	2	Crewing Department – File Server	External HD
F – 21	List of Work Instructions	E	2	Crewing Department – File Server	External HD
F – 22	Analysis of Customer Feedback	E	2	Crewing Department – File Server	External HD
F – 23	Complaint Procedure	E	1	Crewing Department – File Server	External HD
F – 24	MLC 2006 Memorandum	E	5	Crewing Department – File Server	External HD
F – 25	Statement	E	1	Crewing Department – File Server	External HD
F – 26	Crew Feedback Questionnaire	E	1	Crewing Department – File Server	External HD
F – 27	Analysis of Crew Feedback	E	1	Crewing Department – File Server	External HD
F – 28	Procedure of Handling Not For Reemployment Crew	E	1	Crewing Department – File Server	External HD
F – 29	Procedure of Protecting Crew Member in Case of Failure or Bankruptcy from the Side of Shipowner	E	1	Crewing Department – File Server	External HD

Media*: E – Electronic, H – Hard Copy
Final storage location*: External HD – External Hard Disk

APPENDIX 4. ANNUAL REPORTS

MAJANDUSAASTA ARUANNE 2012

Bilanss (eurodes)

	31.12.2012	31.12.2011
Varad		
Käibevara		
Raha	237 791	153 415
Finantsinvesteeringud	2 500	2 500
Nõuded ja ettemaksed	12 326	7 247
Kokku käibevara	**252 617**	**163 162**
Kokku varad	**252 617**	**163 162**
Kohustused ja omakapital		
Kohustused		
Lühiajalised kohustused		
Laenukohustused	1 707	1 442
Võlad ja ettemaksed	65 289	7 569
Kokku lühiajalised kohustused	**66 996**	**9 011**
Kokku kohustused	**66 996**	**9 011**
Omakapital		
Osakapital nimiväärtuses	2 500	2 500
Kohustuslik reservkapital	256	256
Eelmiste perioodide jaotamata kasum (kahjum)	41 395	24 569
Aruandeaasta kasum (kahjum)	141 470	126 826
Kokku omakapital	**185 621**	**154 151**
Kokku kohustused ja omakapital	**252 617**	**163 162**

Kasumiaruanne (eurodes)

	2012	2011
Müügitulu	245 983	223 949
Kaubad, toore, materjal ja teenused	-57 691	-67 402
Tööjõukulud	-48 303	-34 908
Ärikasum (kahjum)	**139 989**	**121 639**
Finantstulud ja -kulud	1 481	5 187
Kasum (kahjum) enne tulumaksustamist	**141 470**	**126 826**
Aruandeaasta kasum (kahjum)	**141 470**	**126 826**

Bilanss
(eurodes)

	31.12.2014	31.12.2013
Varad		
Käibevara		
Raha	270 171	277 943
Finantsinvesteeringud	2 500	2 500
Nõuded ja ettemaksed	25 549	10 084
Kokku käibevara	**298 220**	**290 527**
Põhivara		
Materiaalne põhivara	62 182	0
Kokku põhivara	**62 182**	**0**
Kokku varad	**360 402**	**290 527**
Kohustused ja omakapital		
Kohustused		
Lühiajalised kohustused		
Laenukohustused	3 950	1 055
Võlad ja ettemaksed	164 061	92 111
Kokku lühiajalised kohustused	**168 011**	**93 166**
Kokku kohustused	**168 011**	**93 166**
Omakapital		
Osakapital nimiväärtuses	2 500	2 500
Kohustuslik reservkapital	256	256
Eelmiste perioodide jaotamata kasum (kahjum)	54 604	62 865
Aruandeaasta kasum (kahjum)	135 031	131 740
Kokku omakapital	**192 391**	**197 361**
Kokku kohustused ja omakapital	**360 402**	**290 527**

Kasumiaruanne
(eurodes)

	2014	2013
Müügitulu	292 003	278 837
Kaubad, toore, materjal ja teenused	-90 459	-87 512
Tööjõukulud	-85 540	-60 194
Kokku ärikasum (-kahjum)	**116 004**	**131 131**
Intressikulud	19 027	609
Kasum (kahjum) enne tulumaksustamist	**135 031**	**131 740**
Aruandeaasta kasum (kahjum)	**135 031**	**131 740**

Bilanss (eurodes)

	31.12.2015	31.12.2014
Varad		
Käibevara		
Raha	312 722	270 171
Finantsinvesteeringud	2 500	2 500
Nõuded ja ettemaksed	2 466	25 549
Kokku käibevara	**317 688**	**298 220**
Põhivara		
Materiaalne põhivara	49 366	62 182
Kokku põhivara	**49 366**	**62 182**
Kokku varad	**367 054**	**360 402**
Kohustused ja omakapital		
Kohustused		
Lühiajalised kohustused		
Laenukohustused	4 904	3 950
Võlad ja ettemaksed	157 000	164 061
Kokku lühiajalised kohustused	**161 904**	**168 011**
Kokku kohustused	**161 904**	**168 011**
Omakapital		
Osakapital nimiväärtuses	2 500	2 500
Kohustuslik reservkapital	256	256
Eelmiste perioodide jaotamata kasum (kahjum)	69 635	54 604
Aruandeaasta kasum (kahjum)	132 759	135 031
Kokku omakapital	**205 150**	**192 391**
Kokku kohustused ja omakapital	**367 054**	**360 402**

Kasumiaruanne (eurodes)

	2015	2014
Müügitulu	316 767	292 003
Kaubad, toore, materjal ja teenused	-112 892	-90 459
Tööjõukulud	-97 516	-85 540
Kokku ärikasum (-kahjum)	**106 359**	**116 004**
Intressikulud	26 400	19 027
Kasum (kahjum) enne tulumaksustamist	**132 759**	**135 031**
Aruandeaasta kasum (kahjum)	**132 759**	**135 031**

APPENDIX 5. Annual Internal Statistics Report 2015

KT ShIP Ltd STATISTICS 2015

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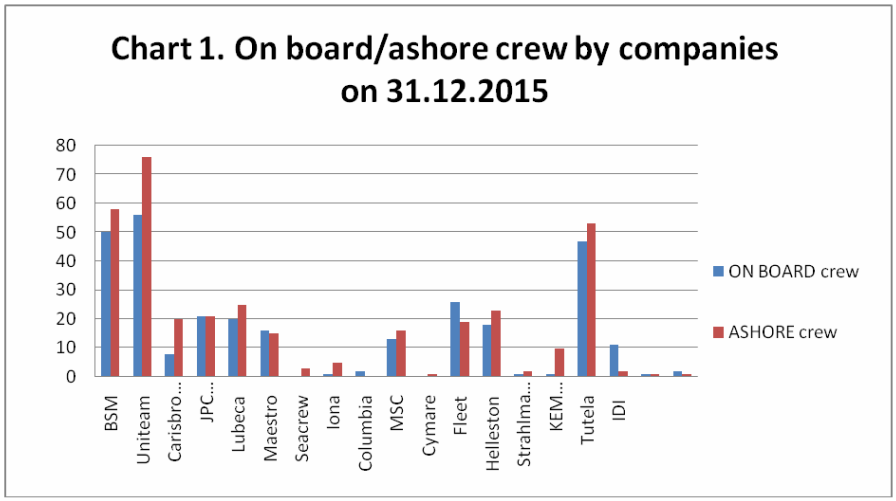
Table 1. Number of signed on/signed off crew by companies – every month 2015

Year	Month		BSM	UT	OLT	MSC	LUB	CARIS	MSM	TUT	Fleet	IONA	VSH	COL	HELL	RStr	Alden	CY	Vinne	IDI	Jaw	ESM	KEM	Vega	Seac	Nor	Total	onboard
2015	January	on	13	13	5	3	6	6	3	16	2				5	1							5				78	
	January	off	12	12	3	3	7	2	1	16	2				3								5				66	317
	February	on	11	16	3	1	5	2	2	11	3				2								1		1		58	
	February	off	19	9	3	1	4	5	4	12	3	1			2	1							1		1		66	309
	March	on	10	9	7	3	9	3	4	10	6	1		1	5		1						4		1	2	76	
	March	off	12	17	6	2	2	3	4	5	5	3		1	1	1							4				66	319
	April	on	9	18	3	2	2	2	2	7	4	1		1	1			1					1				54	
	April	off	13	16	3	5	5	5	3	7					4								1				62	311
	May	on	17	10	3	1	4	2	3	13	7				6	1							4		1		72	
	May	off	14	14	5	2	6	6	4	14	2				6								4		1		78	305
	June	on	11	21	4	2	5	5	4	9	1				3	1				1							67	
	June	off	15	16	6	2	3	6	3	11	9				4			1								2	78	294
	July	on	11	18	7	6	3	5	4	9	1	2								1			5		1		73	
	July	off	13	13	8		8	4	3	12	5	1			3		1						5		2		78	289
	August	on	11	17		5	6	5	7	7	3				6				1								68	
	August	off	12	14	1	3	5	5	5	5	3	1		1	6												61	296
	September	on	13	11	3	2	4	3	3	11	2				1					1			5		1		60	
	September	off	11	13	4	1	6	3	3	10	4			1	3	2				1			5		1		68	288
	October	on	10	18	3	8	7	1	2	11	7			1					1	7						1	77	
	October	off	11	18	2	3	3	1	2	12	4																56	309
	November	on	16	11	10		3	2	3	5	9				5					4			1				69	
	November	off	16	23	4	5	4	5	2	4	3	1			4					1			1				73	305
	December	on	8	16	1	1	4		3	6	4	1		1	5	1			1								52	
	December	off	12	14	2	6	3	3	6	3	2	1			3				1	1			4		1		62	295
	Total sign on:		140	178	49	34	58	36	40	115	49	5	0	4	39	4	1	1	3	14	0	0	26	0	5	3	804	
	Total sign off:		160	179	47	33	56	48	40	111	42	8	0	3	39	4	1	1	1	3	0	0	30	0	6	2	814	
	on board		50	56	20	13	21	8	16	47	26	1	0	2	18	1	0	0	2	11	0	0	1	0	0	1		294

total sign on this year
total sign off this year
at the moment on board

Table 2. Total number of crew - on board/ashore by companies on 31.12.2015

Company	Total	ON BOARD crew		ASHORE crew	
			%		%
BSM	108	50	46,30	58	53,70
Uniteam	132	56	42,42	76	57,58
Carisbrooke	28	8	28,57	20	71,43
JPC (Oltmann)	42	21	50,00	21	50,00
Lubeca	45	20	44,44	25	55,56
Maestro	31	16	51,61	15	48,39
Seacrew	3	0	0,00	3	100,00
Iona	6	1	16,67	5	83,33
Columbia	2	2	100,00	0	0,00
MSC	29	13	44,83	16	55,17
Cymare	1	0	0,00	1	100,00
Fleet	45	26	57,78	19	42,22
Helleston	41	18	43,90	23	56,10
Strahlmann	3	1	33,33	2	66,67
KEM Offshore	11	1	9,09	10	90,91
Tutela	100	47	47,00	53	53,00
IDI	13	11	84,62	2	15,38
Norgas	2	1	50,00	1	50,00
Vinnen	3	2	66,67	1	33,33
TOTAL:	**645**	**294**	**45,58**	**351**	**54,42**



3

Table 3. Actual number of crew on board (last day of month) 2015

Company / Month		Jan	Febr	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
BSM	Germany	18	16	16	14	15	11	10	4	1	1	0	0	9
BSM	Cyprus	11	7	7	7	12	11	8	6	5	2	0	0	6
BSM	Hellas	5	4	4	3	3	2	1	0	0	0	0	0	2
BSM	UK	3	4	4	3	3	2	2	0	0	0	0	0	2
BSM	Singapore	22	16	16	18	17	13	11	7	3	2	0	1	11
BSM	Hong Kong	6	8	8	7	8	5	5	3	1	0	0	0	4
BSM	India	3	3	4	3	3	3	0	0	0	0	0	0	2
BSM	Latvia	-	-	-	-	-	11	21	32	28	25	18	9	21
BSM	St. Petersburg	-	-	-	-	-	-	-	-	3	4	6	7	5
BSM	Ukraine	-	-	-	-	-	-	-	-	13	19	28	29	22
BSM	Kaliningrad	-	-	-	-	-	-	-	-	-	-	2	3	3
BSM	Novorossiysk	-	-	-	-	-	-	-	-	-	-	-	1	1
BSM	total	68	58	59	55	61	58	58	52	54	53	54	50	57
Uniteam		58	64	57	58	54	63	64	71	66	67	54	56	61
Carisbrooke		24	22	20	17	13	13	16	16	16	17	13	8	16
JPC		20	20	21	22	19	17	16	15	15	15	21	20	18
Lubeca		18	22	26	25	22	25	18	20	17	21	20	21	21
Maestro		17	16	15	14	13	16	17	19	18	18	19	16	17
Seacrew		1	1	2	2	2	2	1	1	1	1	1	0	1
Iona		4	3	1	2	2	2	3	2	2	2	1	1	2
Columbia		1	1	0	2	2	2	2	1	0	1	1	2	1
MSC		12	12	13	10	9	9	15	17	18	23	18	13	14
Tutela		44	44	48	47	46	44	41	43	45	43	44	47	45
Fleet		19	20	20	25	30	23	20	17	15	20	25	26	22
Helleston		19	20	18	19	20	18	16	17	5	15	16	18	17
Cymare		0	0	0	1	1	0	0	0	0	0	0	0	0
Strahlmann		2	1	0	0	1	2	2	2	1	0	0	1	1
Kem Offshore		5	5	5	5	5	5	5	5	5	5	5	1	5
IDI		-	-	-	-	-	1	2	2	3	9	12	11	6
Norgas		-	-	2	2	2	0	0	0	0	1	1	1	1
Vinnen		0	0	0	0	0	0	0	1	1	2	2	2	1
Total:		312	309	307	306	302	300	296	301	282	313	307	294	302

Table 4. Actual number of crew (%) on board (last day of month) - by BSM groups – 2015

Company / Month		Jan	Febr	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
BSM	Germany	26	28	27	25	25	19	17	8	2	2	0	0	**15**
BSM	Cyprus	16	12	12	13	20	19	14	12	9	4	0	0	**11**
BSM	Hellas	7	7	7	5	5	3	2	0	0	0	0	0	**3**
BSM	UK	4	7	7	5	5	3	3	0	0	0	0	0	**3**
BSM	Singapore	32	28	27	33	28	22	19	13	6	4	0	2	**18**
BSM	Hong Kong	9	14	14	13	13	9	9	6	2	0	0	0	**7**
BSM	India	4	5	7	5	5	5	0	0	0	0	0	0	**3**
BSM	Latvia	0	0	0	0	0	19	36	62	52	47	33	18	**22**
BSM	St. Petersburg	0	0	0	0	0	0	0	0	6	8	11	14	**3**
BSM	Ukraine	0	0	0	0	0	0	0	0	24	36	52	58	**14**
BSM	Kaliningrad	0	0	0	0	0	0	0	0	0	0	4	6	**1**
BSM	Novorossiysk	0	0	0	0	0	0	0	0	0	0	0	2	**0**
Total %		100	100	100	100	100	100	100	100	100	100	100	100	**100**

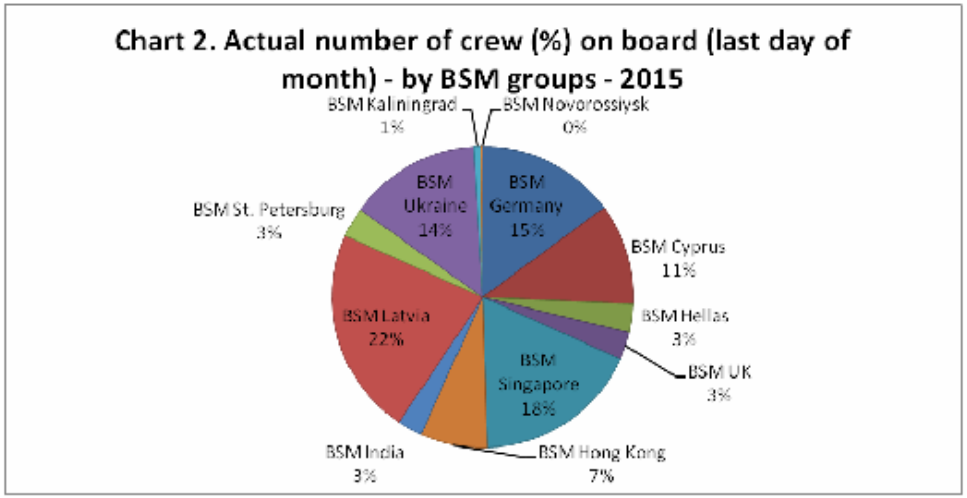


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Table 5. Actual % of crew on board (last day of month) – by companies 2015

Company / Month	Jan	Febr	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
BSM	22	19	19	18	20	19	20	17	19	17	18	17	19
Uniteam	19	21	19	19	18	21	22	24	23	21	18	19	20
Carisbrooke	8	7	7	6	4	4	5	5	6	5	4	3	5
JPC	6	6	7	7	6	6	5	5	5	5	7	7	6
Lubeca	6	7	8	8	7	8	6	7	6	7	7	7	7
Maestro	5	5	5	5	4	5	6	6	6	6	6	5	5
Seacrew	0	0	1	1	1	1	0	0	0	0	0	0	0
Iona	1	1	0	1	1	1	1	1	1	1	0	0	1
Columbia	0	0	0	1	1	1	1	0	0	0	0	1	0
MSC	4	4	4	3	3	3	5	6	6	7	6	4	5
Tutela	14	14	16	15	15	15	14	14	16	14	14	16	15
Fleet	6	6	7	8	10	8	7	6	5	6	8	9	7
Helleston	6	6	6	6	7	6	5	6	2	5	5	6	6
Cymare	0	0	0	0	0	0	0	0	0	0	0	0	0
Strahlmann	1	0	0	0	0	1	1	1	0	0	0	0	0
Kem Offshore	2	2	2	2	2	2	2	2	2	2	2	0	2
IDI	0	0	0	0	0	0	1	1	1	3	4	4	1
Norgas	0	0	1	1	1	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	1	1	1	0
Total %	100	100	100	100	100	100	100	100	100	100	100	100	100

Chart 3. Actual % of crew on board (average every month) - by companies - 2015

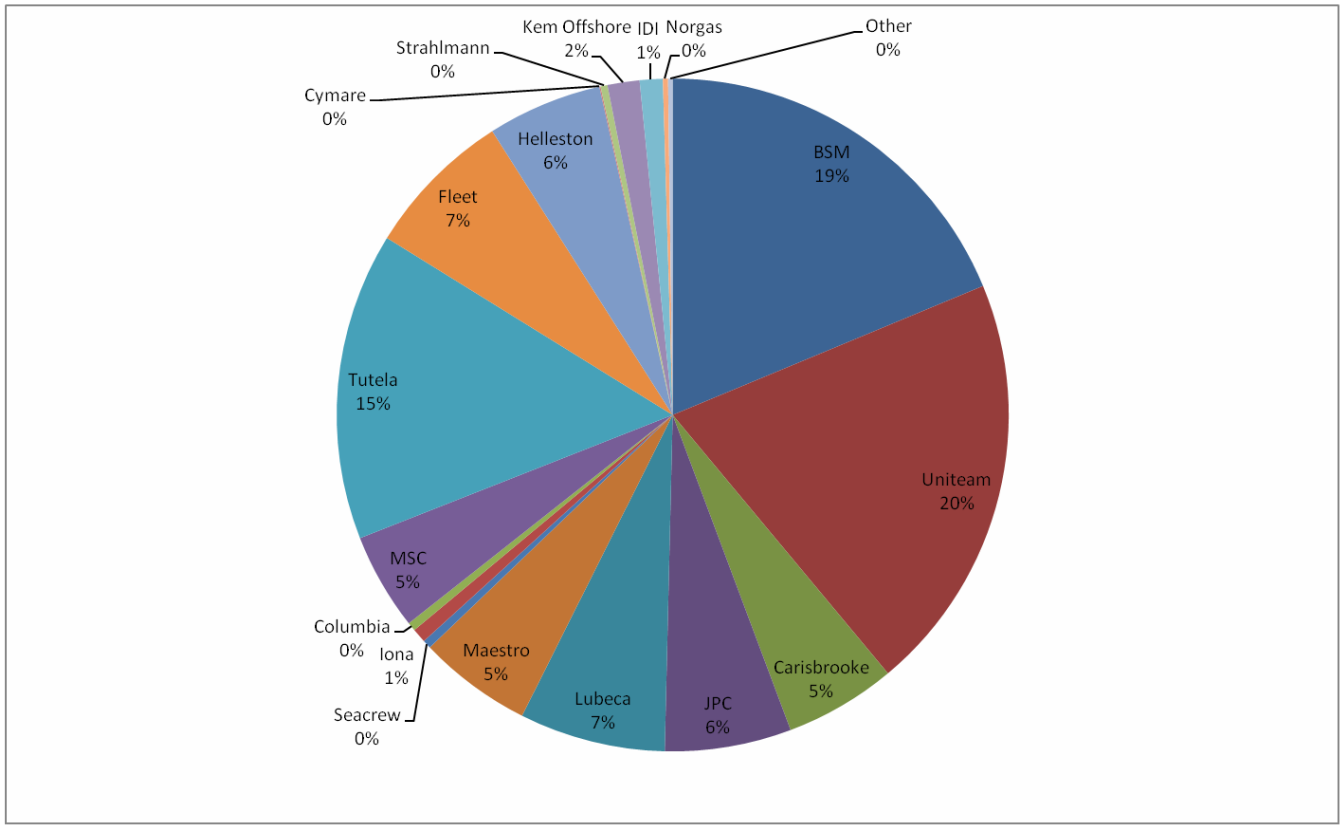

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Table 6. Total income by companies 2012-2015

COMPANY	2012		2013		2014		2015	
	EUR	%	EUR	%	EUR	%	EUR	%
BSM Germany	72034,47	27,27	71470,95	23,86	41325,21	13,54	12402,00	3,71
BSM Cyprus + Hellas	9353,80	3,54	18336,17	6,12	16313,69	5,35	11292,74	3,38
BSM UK + India	1670,09	0,63	4017,75	1,34	5383,41	1,76	5073,73	1,52
BSM Singapore	10296,33	3,90	16978,68	5,67	17471,19	5,72	14471,03	4,33
BSM China + Hong Kon	3140,55	1,19	5147,47	1,72	6206,71	2,03	7160,00	2,14
BSM Latvia	0,00	0,00	0,00	0,00	0,00	0,00	13683,88	4,10
BSM Ukraine	0,00	0,00	0,00	0,00	0,00	0,00	6882,00	2,06
BSM St. Petersburg	0,00	0,00	0,00	0,00	0,00	0,00	1434,00	0,43
BSM Kaliningrad	0,00	0,00	0,00	0,00	0,00	0,00	363,00	0,11
BSM total	96495,24	36,52	115951,02	38,71	86700,21	28,41	72762,38	21,79
Alphaship	1408,01	0,53	1064,95	0,36	349,33	0,11	0,00	0,00
Carisbrooke	37104,89	14,04	36078,74	12,04	19826,40	6,50	14912,13	4,47
Columbia	1748,73	0,66	1791,50	0,60	1326,00	0,43	1421,00	0,43
Cymare	0,00	0,00	0,00	0,00	1089,00	0,36	222,00	0,07
Fleet	7876,36	2,98	11565,67	3,86	14665,61	4,81	18615,00	5,58
Helleston	14456,69	5,47	19655,77	6,56	15148,67	4,96	20394,43	6,11
IDI Shipmanagement	0,00	0,00	0,00	0,00	0,00	0,00	2340,00	0,70
Iona	2635,19	1,00	2268,86	0,76	5695,59	1,87	2578,64	0,77
JPC (Oltmann)	27728,48	10,50	24993,96	8,34	26946,19	8,83	22975,17	6,88
KEM Offshore	0,00	0,00	5233,06	1,75	10946,06	3,59	11136,99	3,34
Lubeca	17722,66	6,71	23769,17	7,94	18783,50	6,15	19779,50	5,92
Maestro	9415,60	3,56	15495,58	5,17	20938,78	6,86	16550,39	4,96
MSC	4805,20	1,82	4256,72	1,42	8784,85	2,88	11122,88	3,33
Norgas	0,00	0,00	0,00	0,00	0,00	0,00	447,10	0,13
Reedrei Strahlmann	0,00	0,00	1482,40	0,49	1455,00	0,48	1182,00	0,35
Seacrew	681,50	0,26	1213,50	0,41	2083,00	0,68	1145,53	0,34
Tutela	0,00	0,00	0,00	0,00	17479,41	5,73	33470,71	10,02
Uniteam	39144,72	14,82	32046,00	10,70	51981,64	17,03	82480,05	24,70
Vinnen	0,00	0,00	0,00	0,00	463,33	0,15	346,66	0,10
Vships Germany	2976,00	1,13	2677,13	0,89	519,17	0,17	0,00	0,00
Total:	264199,27	100,00	299544,03	100,00	305181,74	100,00	333882,56	100,00

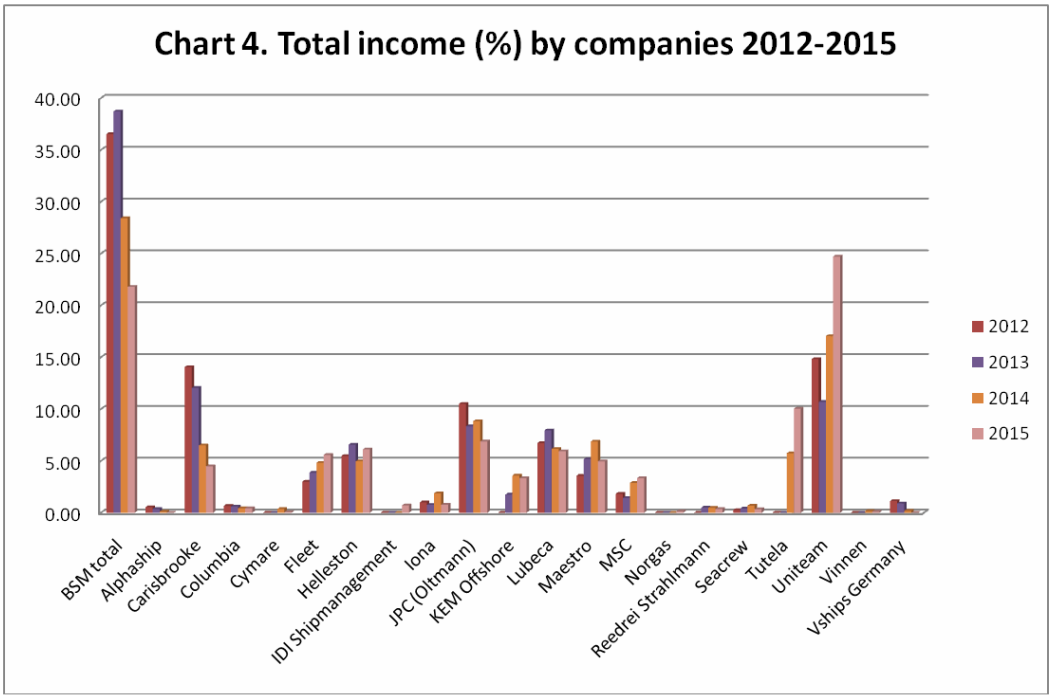
Chart 4. Total income (%) by companies 2012-2015
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
BSM total
Alphaship
Carisbrooke
Columbia
Cymare
Fleet
Helleston
IDI Shipmanagement
Iona
JPC (Oltmann)
KEM Offshore
Lubeca
Maestro
MSC
Norgas
Reedrei Strahlmann
Seacrew
Tutela
Uniteam
Vinnen
Vships Germany
2012
2013
2014
2015

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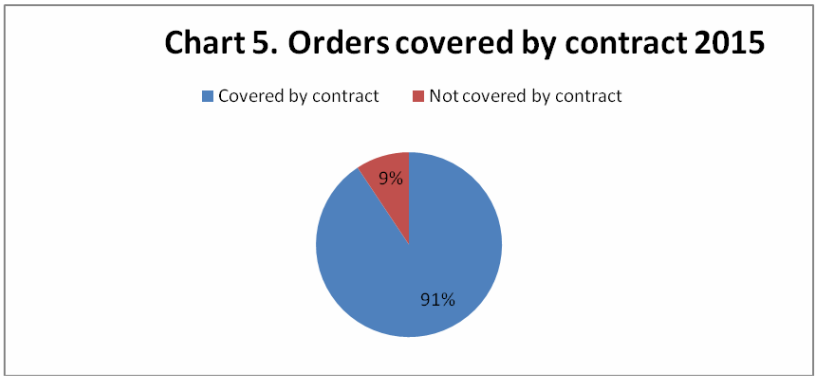
Table 7. Number of orders covered by contract 2015

COMPANY	% of total income 2015	Covered by contract	Not covered by contract
BSM Germany	3,71	+	
BSM Cyprus + Hellas	3,38	+	
BSM UK + India	1,52	+	
BSM Singapore	4,33	+	
BSM China + Hong Kong	2,14	+	
BSM Latvia	4,1	+	
BSM Ukraine	2,06	+	
BSM St. Petersburg	0,43	+	
BSM Kaliningrad	0,11	+	
BSM Novorossiysk	0,00	+	
Carisbrooke	4,47	+	
Columbia	0,43		+
Cymare	0,07	+	
Fleet	5,58		+
Helleston	6,11	+	
IDI Shipmanagement	0,71		
Iona	0,77	+	
JPC (Oltmann)	6,88	+	
KEM Offshore	3,34		+
Lubeca	5,92	+	
Maestro	4,96	+	
MSC	3,33	+	
Norgas	0,13	+	
Reedrei Strahlmann	0,35	+	
Seacrew	0,34	+	
Tutela	10,02	+	
Uniteam	24,71	+	
Vinnen	0,10	+	
Total:	100,00	90,65	9,35



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