

Quality management in shipping. Case study: Maersk Line Denmark

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Abstract: *Quality assurance has become very important to the majority of production or service companies with international activity. Maritime transport companies were also required to take measures to implement a quality management system. Because of navigation accidents that had a significant impact on shipping, there was designed a ship safety management code. To put into practice the quality management system, each company adopts specific quality strategies according to their activity.*

Key-words: *shipping, quality management, quality strategy, distribution, products*

1. Introduction

Shipping is a vast and complex economic activity, both in the volume of goods in traffic annually and in material value. This complexity is driven also by huge investments in high-tech, represented by means of modern transport and ports as transshipment hubs. Meanwhile, the complexity lies in the specific environmental conditions in which they take place - the seas and oceans - which require special safety measures.

In making huge volume movement of goods, shipping plays a leading role, both quantitatively and as efficiency. The seas and oceans form a natural bridge undeniable, unavoidable, and lasting, effective and necessary between and among different countries (Caraiani and Georgescu, 2012). Among the most important benefits of shipping there are (Hollman and Handy, 1994):

- shipping is the most economical means of transport of goods, calculated either on the overall cost or per tonne transported, but especially tonne / mile, the advantage being highlighted on long distances, overseas;
- reported on the distances to be completed, shipping routes require
- incomparably lower than terrestrial facilities;

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- shipping allows the transport of goods in almost every area of the globe, including in areas with ice, without transshipment, customs operations and others, in terms of safety.

Shipping and ship management companies face, over time, increasingly varied issues. New requirements and regulations worldwide come to strengthen this problematic spectrum. This raises the need to address the new guidelines and directions as (<http://documents.tips/documents>):

- The protection and prevention of the marine and environment pollution;
- Individual and collective security for vessels operating personnel;
- Safer operating procedures of ships in the context of massive transport units tech ;
- Response methods for identified or likely emergency situations;
- Development of integrated management systems for quality - environment - safety;
- Improving the personnel embarked aboard for safety, knowledge and respect of international rules and regulations related to environmental safety and protection.

Using the quality in the shipping company's management system, imposed a series of organizational and design changes, making the transition from a military-style management to a participatory, open one.

In this way, quality assurance has become a real management tool that is used to overcoming shipping company challenges. Control and management of the ISM Code (International Management Code) to the shipping company, required training and specialization of a person in this area, for all situations and issues related to this Code.

In today's market it becomes increasingly difficult to operate, if there is not practiced some form of quality assurance. Partners' „charter” often have QA (quality assurance) clauses. As a result (<http://documents.tips/documents/>):

- Large oil carriers all have their own QA requirements;
- Suppliers of products necessary for ships, find it increasingly difficult to enter a company without QA;
- Maritime management companies need a recognized certificate in order to be considered their activity.

QA ubiquitous factor in the development of ISO range up to hybrid codes that link directly to marine management has been relatively quick towards the traditional industry development. In addition, in their development, codes each have a slightly different purpose. The most important of these is the ISM Code of IMO (International Maritime Organization). This Safety Management Code became gradually mandatory for various types of vessels, from 1998 to 2002. ISM Code has affected almost any operator in the world and virtually became gradually the license which is compulsory to be used for operation.

2. Shipping quality management

Functional requirements for a safety management system of the ship taken under debate, do not differ, as an idea. The stipulations relating to quality policy and environment, differ from those of a quality standard for a land company, on: responsibilities and authority of the company, the person designated responsible for safety, responsibilities and authority of the skipper and other officers on board. The quality requirements in a company are determined by the place and importance of the quality factor in the overall company's strategy, as well as on the ability and willingness of the employees to consider quality management as a continuous improvement process (Băltescu, 2010).

Financial, material and personnel resources involved in quality management and product safety are a particular effort for a navigation company, but its benefits are very high in the long run. Development of plans for shipboard operations, preparing ship for emergency situations, reporting and analysis of non-conformities, accidents and potentially dangerous situations are very important issues for the ship, its equipment and its maintenance.

The documents required for quality management system certification procedure in maritime transport are equally important for the ship and company, because in some countries and ports, ships no longer have access to the loading or unloading if these documents are not compiled and recorded properly.

Quality planning and environmental management system objectives, establishing the requirements relating to environmental management vessels are particularly important activities for the shipping company management. This should take into account a number of operational variables, the consequences of all measures to be taken and, especially, the degree of danger represented by ship and cargo carried.

There are two ways to improve the management quality and both are used in the shipping industry. They are not mutually exclusive, but there are differences of opinion regarding which of these should be implemented first. The two methods are:

- quality assurance;
- total quality management (<http://documents.tips/documents>).

It is usually that a shipping company to obtain a certificate of compliance with quality assurance system and then, pass the implementation of a quality management system. It has become a normal practice to distinguish between navigation, navigational equipment as its object and management of land and the sea.

In almost all marine accidents, the ship and shore management were sharply criticized in most reports. The interface between the ship and shore management was considered the main weakness of the safe operation of ships and, therefore, it was given special attention.

The International Maritime Organization response in matters relating to safety management was the adoption of a resolution by which to approve and promote

“IMO recommendations for ship safety and pollution prevention. “These recommendations have passed since the voluntary adoption of the ISM Code and, initially, became mandatory for certain types of vessels from the date of 1 July 1998. The implementation program of the code was as follows:

- 1st July, 1998 - all passenger ships and all ships with a gross tonnage of 500 TR of the following groups: tankers, gas transport ships, ships bulk carriers and cargo ships, high-speed;
- 1st July 2002 - all other cargo ships and drilling vessels with a gross tonnage of 500 TR.

3. Maersk Line Denmark Company description

A.P. Moller Maersk Group is a Danish company founded in 1904 that operates in several economic areas, known especially for its transport activity. The company's headquarters is in Copenhagen and it operates in more than 135 countries worldwide, with a total of 108,000 employees.

AP Moller Maersk Group's activities are organized into several segments: container transport and related activities; APM terminals, tankers, training, offshore activities and other shipping operations; business in the oil and natural gas; retail activities; shipbuilding and other industrial companies, involvement in Danske Bank etc. The company provides transport goods and services under the brands: Maersk Line, Safmarine and Damco. Since 1996, Maersk is the largest container shipping in the world.

Maersk Line is the world's largest container shipping company, known for reliable, flexible and eco-efficient services. It provides ocean transportation in all parts of the world. It serves the customers through 324 offices in 115 countries. It employs 7,600 seafarers and 23,200 land-based employees and operate 590 container vessels. It markets its services through the Maersk Line, Safmarine and SeaLand (Intra-Americas) brands. Maersk Line is the holding company for MCC Transport (Intra-Asia) and Seago Line (Intra-Europe).

Maersk Line is part of the Maersk Group, headquartered in Copenhagen, Denmark. The Group employs over 88,000 people in some 130 countries. 2015 revenue: USD 40.3 billion (<http://www.maerskline.com/ro>).

Maersk Line's 2015 result was USD 1.3 billion which is 44% lower than 2014 (USD 2.3bn) due to weak demand and very low freight rates. Revenue was USD 23.7 billion which is 13.2% lower than in 2014 (USD 27.4bn).

“2015 was a challenging year. We delivered a record first quarter result and a strong first half year result. However, the continued lack of demand and over-capacity resulted in sharply declining rates from the second quarter and onwards. At the end of 2015, rates were record low and our fourth quarter result was negative. In light of our expectations at the beginning of the year, our result is less than

satisfactory. But considering the market in 2015 it is a solid financial performance,” says Søren Skou, CEO of Maersk Line.

In 2015, Maersk Line improved their competitiveness by continuing to reduce unit cost. They successfully implemented 2M, the world’s largest vessel sharing agreement and launched a new container shipping line - SeaLand - in the Americas.

Maersk Tankers is involved in the transport of oil and gas. In July 2009, Maersk Tankers had 140 vessels: 20 crude oil carriers, 91 tankers and 21 gas transporters and eight LNG carriers (liquefied natural gas). All Maersk tanks are double insulated, an environmental requirement imposed after the ecological disaster caused by Exxon in 1989 in Valdez. Since 2009, the company (along with other operators) used a low-speed driving to reduce fuel consumption.

In 2007 the Maersk Romania company launched the first maritime transport line of containers, between Constanta and the ports of Asia. The new line, shortened by 15 days the transportation time to Asia and is a direct link between Constanța and ports in Russia, Ukraine, Bulgaria and Georgia. The first ship arrived in the Constanța port on the new route, had 294 meters length and 5,000 containers capacity.

Enterprises controlled by APM Group in Romania are:

- APM Terminals Romania SRL - company whose main activity consists in the provision of inland waterway transport, such as container handling, storage containers, container repairs, cargo handling and transport containers. In addition, APM Terminals Romania conducts terminal operator within the territory. According to the classification NACE code primary business of this company is “handling” (NACE code 5224);

- Maersk Romania SRL - company whose main activity is the “Other transportation support activities” (NACE code 5229);

- Damco Romania SRL - company whose main activity is the “Sea and coastal freight” (NACE code 5020). ([Http://www.manager.ro/articole](http://www.manager.ro/articole)).

The company Maersk Line has made considerable progress in terms of integrating the concept of sustainability in the business (<http://www.maersk.com/en>). This strategy extends over the period 2014-2018 and aims to “increase through low costs” for Maersk and society, focusing on the three main pawns:

- Trade development (volume growth);
- Education (skilled workers, employment);
- Environment (resource efficiency, reducing CO2 emissions).

Trade development

In this regard, the company will turn to three areas:

- Improving the business environment: the development of trade procedures more effective, efficient transport time, agreements with government institutions and other industries associated;

- Improved ability to penetrate other markets;
- Constraints at national level in terms of investing in infrastructure.

As regards investing in education (<http://www.maersk.com/en/>), the company aims again three directions:

- Providing trainings and education in developed markets;
- Developing social inclusion process-attracting low-income women and youth in trainings and internship programs;
- Improving the supply - providing tools and equipment for the development of skills and capacities to provide certain products.

Regarding the environment and energy efficiency, the company will focus on two directions:

- Reducing CO₂ emissions - is expected that by 2020, Maersk will reduce with up to 40% such emissions.
- With the aim of optimizing the overall transport chain and ensure a efficient cost, will implement a series of procedures to reduce fuel consumption.

The “Triple E Maersk” class defines the group of 20 super cargo ships belonging to Maersk, built by Daewoo shipyards. With a length of 400 meters, weighing 55,000 tonnes without cargo and 165,000 tonnes including cargo on maximum capacity and priced about 200 million dollars apiece, they were the largest built freighters in the world. They were surpassed recently by three Chinese cargo ships belonging to China Shipping.

Maerskcompetitors

1. Evergreen Marine Corporation - one of the largest container shipping companies in the world. It owns a fleet of about 160 container vessels specialized in the perishable goods transport. Evergreen has more than 240 service locations covering approximately 80 countries. Its most routes are among Asia / Pacific and North America (<http://www.hoovers.com/company-information/cs>).

2. China Ocean Shipping (Group) Company - carrier of freight containers. It operates a fleet of 450 vessels serving more than 400 ports worldwide and maintains a network of approximately 650 facilities in approximately 150 countries. CSC offers logistics and multimodal services, organization of transport of goods in containers on rivers, rail and road transport. It also provides refrigerated containers and provides cargo dangerous goods transport (<http://www.hoovers.com/company-information/cs>).

3. Mediterranean Shipping Company - MSC does not limit its operations only on the Mediterranean Sea. It has a fleet of over 375 container vessels providing regular services to about 335 ports on six continents (<https://www.cma-cgm.com/news>).

4. Quality strategies implemented by Maersk Line

Maersk Line is concerned to be seen as a supplier that distributes products in good condition. Thus, the equipment used are high quality, the average age of containers is less than 7 years. Also it handles and clean each container before offer them to the customers.

In addition to investing in high-quality equipment, the company ensures that the procedures throughout the distribution process to be affordable and professional. Also all strategies come with a policy of risks minimizing (<http://www.maerskdrilling.com>).

In order to be a successful company they selectively choose their suppliers and business partners. The contracts signed are carefully analyzed and the focus is on professionalism.

The company ensures that it receives an explicitly report of performance and is always looking for solutions to improve everything. Company's management requests feedback first from employees, from customers and investors. With every extra information, they are getting better put up with what needs changing.

Maersk Line is very much involved in the social area, points targeted in this area are (<http://www.maersk-fpsos.com>):

- Carbon emissions and waste materials;
- Risk management;
- Commitment to local businesses;
- Communication.

In this connection, Maersk Line, not only was involved in various projects to help the community, but managed to make its own advertising. In 2011 they launched a magazine in which two pages were devoted to projects DEVELOPMENT HSE (health, safety and education) and at least one page was devoted to projects that have involved community. For these projects, Maersk has well prepared employees, giving a good example of how to lessen the chance of emerging risks at work through various methods of protection and safety (<http://www.maersk-fpsos.com>).

Also part of Moller Maersk group was involved in the UN Global Compact (United Nations Global Compact). This is a strategic policy to align procedures and strategies at the 10 universally accepted principles in the areas of human rights, labor, environment and anticorruption. Moreover, the number of employees trained in anti-corruption techniques reached 25,356 (<http://www.maerskoil.com>).

Another point that Maersk has treated seriously is to create a safe and balanced environment workplace. In this regard, the company assumes the responsibility to provide employees all the rights they are entitled to - there is no discrimination of gender, race, politics or sexual orientation. All employees are equal and there is no preferential treatment. In the case of new employees, the company ensures that they receive training to work at full capacity and to ensure that

new employees understand the concept of quality and its importance (<http://www.maersk-fpsos.com>).

Since Maersk operates globally, it has provided employees a voluntary program by which those who want to work in the company, but in another country, to learn the language in question. The company makes also available: gym, fitness, psychologist, medical care, benefiting from free tests, controls and certain surgeries.

Maersk Line has noticed that it is among major polluters in the world through its mega vessels. There are currently containers of steel and covered with a protective coating of bromine, chromium, lead and other highly toxic materials (<http://www.archdaily.com>) to protect them from salt water to grind metal. Inside some containers there is also chemically treated wood, which can affect the environment through cut wood and toxic coatings and paints used. It is estimated that an average of 1,600 of these containers are lost at sea annually (<http://www.southernfriedscience.com>), affecting the seas and oceans.

In 2015, Maersk has signed an agreement on carbon emissions with the Dutch giant Phillips to reduce these unpleasant effects on the environment. More precisely, for each container manufactured by Phillips, the carbon footprint per built container must be reduced by 20% by 2020 through the introduction of resistant and environment-friendly materials in their composition (<http://www.maerskline.com/el>).

However, through the agreement signed, Phillips committed itself to increase the quality of engines and propulsion technologies for ships, by free development of new technologies in diesel-powered vessels.

The company is so much concerned with the environment that, in 2014, invested 5 million Danekroner in a project in collaboration with German engines and trucks MAN Diesel and University of Engineering and Mechanics of Denmark towards new technologies propulsion and refurbishment of vessels around the world to protect the environment. New ships can be fitted with new and effective engines but there are tens of thousands of ships in the world that use old engines and propellers. Therefore, Maersk Line and MAN have joined efforts to develop new technology in propulsion and propellers that can be adapted to old vessels.

5. Conclusions

Maersk Line implements strategies that can be used on global level. Thanks to the experience and level of development, it invests heavily in the employees and community interest.

As quality strategies, the company is focused very much on customer satisfaction, speed in solving certain requirements and risk mitigation, both at work and for the loss of customers. The target of the continuous improvement of quality is

the development of the company simultaneously with satisfying and attracting loyal customers (Boşcor, 2015).

In terms of sustainability strategy in recent years has been ready for a new phase involving gains both for business and for the community.

In order to be considered a quality provider Maersk Line has invested heavily in quality equipment, taking into account environmental protection. The company shall ensure that the distribution process is professional and accessible and environmentally friendly. Within the company, employees are trained and educated to minimize the rate of accidents at work and work safety.

Regarding the environment and the community, Maersk Line has participated in various projects, has signed agreements with collaborating companies to ensure that carbon emissions from transport will be reduced.

Maersk Line is a company with tradition, know-how and well-structured strategies. For diversified services, Maersk may introduce a line of land transport. In this way, they can meet the requirements of several companies and the costs would be lower.

6. References

- Banila, S.M., 2014. *ANALIZA: Maersk, uriasul si marea*. [online] Available at: <[http://www.manager.ro/articole/analize/analiza-maersk-uriasul – and -sea-57175.html](http://www.manager.ro/articole/analize/analiza-maersk-uriasul-and-sea-57175.html)> [Accessed 10 April 2016].
- Băltescu, C.A. 2010. *Strategii de marketing în turismul montan românesc*. Braşov: Editura Universităţii Transilvania din Braşov, p. 141.
- Boşcor, D., 2015. Export strategies adopted by the Romanian SME. *Bulletin of the Transilvania University of Braşov* 8(57), Series V, No. 1, pp. 227-232.
- Caraiani, Gh. and Georgescu, C., 2012. *Transporturi și expediții internaționale*. București: Ed. Universitară, p.21.
- Hollman, M.E. and Handy, A., 2009. *Book of shipowners and masters Review*. Londra: Editura W.H. Maisey, p.233.
- Lucrare de disertatie, 2008. *Management maritim si portuar*. [online] Available at: <<http://documents.tips/documents/aspecte-specifice-privind-managementul-calitatii-in-transportul-maritim.html>> [Accessed 15 April 2016].
- CMA CGM, 2016. *News*. [online] Available at: <<https://www.cma-cgm.com/news/279/2013-third-quarter-financial-results?cat=finance>> [Accessed 14 April 2016].
- Evergreen Marine Corporation Ltd. *Revenue and Financial Data*. [online] Available at: <[http://www.hoovers.com/company-information/cs/revenue-financial.EVERGREEN_MARINE_CORPORATION_\(TAIWAN\)_LTD.54fc34668bcd3166.html](http://www.hoovers.com/company-information/cs/revenue-financial.EVERGREEN_MARINE_CORPORATION_(TAIWAN)_LTD.54fc34668bcd3166.html)> [Accessed 14 April 2016].

- Maersk. *Our sustainability strategy*. [online] Available at: <<http://www.maersk.com/en/the-maersk-group/sustainability>> [Accessed 16 April 2016].
- Maersk. *Investing in education*. [online] Available at: <<http://www.maersk.com/en/the-maersk-group/sustainability/investing-in-education>> [Accessed 16 April 2016]
- Maersk drilling, 2011. *Quality Policy*. [online] Available at: <<http://www.maerskdrilling.com/~media/sustainability/reports/read-more/quality-policy-2011.pdf>> [Accessed 14 April 2016].
- Maersk Line, 2015. *Philips and Maersk Line commit to cut 20% CO2 for every Philips container moved*. [online] Available at: <<http://www.maerskline.com/el-gr/countries/int/news/news-articles/2015/11/philips-ml-commit-to-cut-co2>> [Accessed 10 April 2016].
- Maersk Line, 2016. *Maersk Line reports USD 1.3 billion profit in 2015*. [online] Available at: <<http://www.maerskline.com/ro-ro/countries/int/news/news-articles/2016/02/maersk-line-reports-usd-1-3-billion-profit-in-2015>> [Accessed 16 April 2016]
- Maersk Oil. [online] Available at: <http://www.maerskoil.com/about-us/Documents/Company_Profile_June_2014.pdf> [Accessed 10 April 2016].
- Maersk FPSOs, 2011. *Sustainability Report*. [online] Available at: <http://www.maersk-fpsos.com/Documents/Sustainability%20Report%202011_WEB.pdf> [Accessed 13 April 2016].
- Pagnotta, B., 2011. *The Pros and Cons of Cargo Container Architecture*. [online] Available at: <<http://www.archdaily.com/160892/the-pros-and-cons-of-cargo-container-architecture>> [Accessed 13 April 2016].
- Thaler, A.D., 2016. *Busting Ocean Myths: How many containers are really lost at sea?* [online] Available at: <<http://www.southernfriedscience.com/?p=17474>> [Accessed 13 April 2016].