COST CONTROL POLICY IN MAERSK LINE

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ABSTRACT:
Cost control is a key factor of the survival in most activities where many competitors are present, because the possibilities for product differentiation are very limited. Slow steaming improves the reliability in the maritime transport, considering that greater flexibility, especially on longer distances, is enabled. The new generation vessels, the so-called Triple-Es, are designed to maximally take advantage of the slow steaming. There were made significant changes concerning the architecture of the ships, where the engine is placed on the hull and specially adapted for the lesser speed. Considering the fact that maritime shipping represents the most significant transport activity on global scale, and that the most important part of the Maersk Group is Maersk Line, this will be the main subject of this paper. Finally, the aim of this paper is to analyse the cost savings in business dealings, with a special emphasis on the Slow Steaming and the technological innovations in shipping which contribute to the company’s savings plan.

Keywords: bunker cost, cost control, slow steaming, triple E-ships

1 INTRODUCTION
Maersk is one of the world’s leading shipping companies operating in 130 countries worldwide and employing around 110 thousand people, based in Copenhagen. The conglomerate’s portfolio encompasses several industries in which the company is a minority or a majority shareholder. The most important industries Maersk is involved in are global transport and energy, but also retail and banking services. Considering the fact that maritime shipping represents the most significant transport activity on global scale, and that the most important part of the Maersk Group is Maersk Line, this will be the main subject of this paper.

Maersk Line is the world’s leading container shipping company, continually investing in the innovations development and cost savings in certain segments of their activities. Bearing in mind that the pressure from competitors is constantly rising, this being one of the consequences of the world market globalization, the aim of this paper is to analyse the cost savings in business dealings, with a special emphasis on the Slow Steaming and the technological innovations in shipping which contribute to the company’s savings plan.

2 COST CONTROL IN THE MAERSK GROUP
2.1 Cost control on all levels
Cost control is a key factor of the survival in most activities where many competitors are present, because the possibilities for product differentiation are very limited. Before the very cost analysis, it is important to point out that the Maersk Group is not a monopolist, but a company operating in the competitive market. Even though the shipping companies are mostly large, not a single company can be considered a global monopolist. The market entry
is relatively free, and after the weakening of the conferences, it has been additionally facilitated. The market power of a shipping company is possible in specific lines or markets, but the global market power or a monopolistic position is difficult to achieve. The example of Maersk, as well as the MSC and some other shipping companies, show that, instead of being present in single markets, the companies have been trying to achieve a global presence. The alliances shipping companies occasionally enter are always under the global market competition agencies’ supervision. Most recent example is the pressure made by the American Alliance Regulator on the Maersk and the MSC alliance (Paris, 2014).

The capacity limitations policies cannot raise the prices, so Maersk has been forced to continue the cost limitations policies. One has to prepare for a price war because there is a surplus of the shipping companies present in the market (Wienberg, 2013). The price wars are definitely a market competition trait (The Economist, 2012). The possibilities for a physical product differentiation, considering the transit period, geographic coverage, the sailing frequency and reliability, are limited. High price premiums are not sustainable, and stimulations for the investment in new and bigger ships can lead to overcapacity and fragmentation of industry, while high fixed costs lead to cost-competiveness (A. P. Møller - Mærsk A/S, 2014, p. 10).

The costs can be reduced on several levels. Maersk has found itself in the position of having to reduce the costs after the acquisition of Sea-Land in 1999 and the P&O NedLloyd in 2006. At that time, the container business was not profitable, so the activities needed to be stabilized after the expansion. The company’s income increased by 600% from 1997 till 2007 (Jephson, Morgen, 2013, p. 328). Despite all difficulties, the company has demonstrated a great stability, managing to overcome the crisis fairly easily, despite the relatively unstable conditions. The entire A.P. Moller - Maersk Group conglomerate generated loss of $1 billion in the year 2009, for the first time in its 104-year-long business tradition. The main cause was the loss of $2.1 billion made by Maersk Line. The trade scope limitations, as a consequence of the crisis, resulted in the company’s income deductions by more than $8 billion, when comparing the years 2008 and 2009, i.e. the income dropped from 28,666 to 20,611 (Jephson, Morgen, 2013, p. 330). The liner shipping company survived mostly owing to the rest of the conglomerate. Nevertheless, the volatility of the shipping industry became evident the very next year, when Maersk Line recorded the profit of $2,642 billion.

The most painful of all the measures a company can undertake to reduce the costs is to cut back employees, so in 2006, the number of workers was reduced by 1500 (Leach, 2008). After 2008, the employees’ cutback by 3000 was announced and the structure of the global regions in which Maersk operates was reorganized, and the number of the organizational units was reduced from 14 to 11. There was a general rationalization of the middle management, which lead to the layoffs of 400 out of 2200 employees in the company’s central offices (Weir, 2012). Excluding the number of seamen and the related services, which can be considered as fixed functions depending on the number of ships in the fleet, the number of employees was reduced from 25,768 in 2008 to 22,967 in 2009 (Jephson, Morgen, 2013, p. 330). After the consolidation the recovery followed, as well as the recruiting of employees (Maersk Line, 2013). The conclusion can be made that the company operated extremely rapidly and successfully. The cost of employees can certainly be reduced by cutting back the pays, but there is no data showing that Maersk conducted this kind of strategy.

Other significant cost segment a shipping company can influence by taking measures is the fuel cost, i.e the bunker cost. The fuel costs can reach up to half of a vessel’s total operational costs (Maloni, Paul, Gligor, 2013, p. 153). In the periods of high oil prices in the global
markets, companies try to minimize the expenditure per container unit. One way is to achieve the economies of scale, i.e. to build larger vessels which can transport more containers. The other solution is to optimize the sailing, i.e. to regulate the sailing speed, in order to deliver the goods relatively punctually, with the minimum fuel expenditure. The application of these strategies does not always lead to a success, which is evident in the example of the US Lines bankruptcy in 1986. In trying to address the fuel cost rising issue, Malcolm McLean ordered relatively larger and slower ships, the 12 so-called Jumbo Econships. It was expected that the fuel costs would be doubled in relation to the early 1980s. But the opposite happened, and the ships with these kinds of performances suddenly became uncompetitive. The speed of 18 knots they reached, as opposed to the normal speed of 22-24 knots, meant delays of several days, depending on the route length, in relation to the competitors. Every day, the ship generates costs because of the seamen wages, amortization and operating costs, and the opportunity costs which arise while the ship is not in operations. A faster ship can do more routes and in that way compensate for an eventual lower load-carrying capacity. The benefits of the technological solutions employed were not higher than the costs and the company went bankrupt. This bankruptcy was one of the largest in the American history (Margolick, 1991). Some ships were later on remodelled as to adapt to the market. Both strategies, the efficiency increase through acquiring larger ships and the fuel savings (slow steaming) are analyzed in more detail in the following two chapters.

2.2 Increase of the business efficiency
Increase in efficiency as a ratio of the provided service and the costs level is seen from two angles: financial and physical. In the first one, the analysis focuses on the number of employees needed to achieve a certain profit, and in the second one, it focuses on the number of ships required in order to transport a specific amount of cargo measured in TEUs in one year. The company rapidly answered to the decrease in profit by laying off approximately 10% of the workforce. The work efficiency was probably rising due to the technological progress as well, but it has to be taken in mind that Maersk has always been aware of the fact that the information technologies are a potential source of competitive advantages. In the economic terminology, one can say that Maersk has always strived to provide for its employees well in terms of the capital. As well as any other company, Maersk has employed the work and the capital according to the market logic, but what has distinguished it from other competitors is surely the information technologies (Jephson, Morgen, 2013, p. 196).

As early as 1982, department for managing TELEX\(^1\) logged 3000 incoming and 1500 outgoing messages per day (Jephson, Morgen, 2013, p. 105). A system resembling the today’s e-mail services already existed in the early 1980s, when the concept of a computer was not yet generally known. In the year 1984, the system was among the most advanced in the industries. Information systems which followed, like MAGIC (Maersk Advanced Global Information Concept) from the end of the 1980s, continually ensured competitive advantages. By 2012, the company employed over 12,000 workers in India and other locations in Asia, 8,000 of them with the task of servicing Maersk Line (Jephson, Morgen, 2013, pp. 97-125).

With the investment in the technology and physical capital, MAERSK understood very early the importance of human capital in relation to the efficiency increase. A.P Moller and Maersk McKinney Moller preferred the learning approach at work in the first half of the 20\(^{th}\) century. After the year 1950 they began with the corporation organization programmes, and in 1993 the Maersk International Shipping Education programme started, where they have worked in

\(^1\) TELEX is a system of communication in which messages are sent over long distances by using a telephone system and are printed by using a special machine.
collaboration with the business schools from Denmark and India in order to create high grade workers (Jephson, Morgen, 2013, pp. 164-166).

The fact that the shipping companies in each next generation order ever larger container carriers shows the existence of the economies of scale in the industry. Kremer (2013) points out that greater and bigger to a certain limit, which perhaps has not yet been reached in the container shipping, is better. The first container ship from 1956 was of the following dimensions: length - 137m, width - 17m and depth 9 m, and it could carry the cargo of 500 TEUs to 800 TEUs. On the other hand, the biggest container ships today, 400m in length, can carry up to 20,000 TEUs.

3. SLOW STEAMING IN SHIPPING INDUSTRY

The fuel cost is a significant factor in the total transport costs, and in the shipping terminology, it is known as the “bunker”. Today, most ships and vessels in the merchant fleet use fossil fuels, and the diesel motors prevail. The price of the fuel for ships depends on the raw oil price movement in the global markets, which in turn depends on various factors, from economic to political, so the price instability is a commonly accepted fact. Fuel savings can be accomplished by slower sailing. Other important aspect of the use of the fossil fuel for the drive is the emission of CO$_2$ in the atmosphere, which is why it is necessary to buy the emission rights. The shipping sector is a part of the ETS$^2$, which is an additional motive for reduction of speed, considering that lower speed means lower CO$_2$ emissions. The shipping sector CO$_2$ emissions equal the entire emissions in Germany. Table 1 shows how the shipping sector emits 2.62% of CO$_2$ in the world (International Maritime Organisation, 2014). After all, in the times of crisis, slower sailing means better use of the capacity surplus, because the job is conducted slower (Maloni, Paul, Gligor, 2013, p. 2-3).

<table>
<thead>
<tr>
<th>Year</th>
<th>Global CO$_2$</th>
<th>Total</th>
<th>% of global</th>
<th>International shipping</th>
<th>% of global</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>31.409</td>
<td>1.100</td>
<td>3.50%</td>
<td>885</td>
<td>2.82%</td>
</tr>
<tr>
<td>2008</td>
<td>32.204</td>
<td>1.135</td>
<td>3.52%</td>
<td>921</td>
<td>2.86%</td>
</tr>
<tr>
<td>2009</td>
<td>32.047</td>
<td>0.978</td>
<td>3.05%</td>
<td>855</td>
<td>2.67%</td>
</tr>
<tr>
<td>2010</td>
<td>33.612</td>
<td>0.915</td>
<td>2.72%</td>
<td>771</td>
<td>2.29%</td>
</tr>
<tr>
<td>2011</td>
<td>34.723</td>
<td>1.022</td>
<td>2.94%</td>
<td>850</td>
<td>2.45%</td>
</tr>
<tr>
<td>2012</td>
<td>35.640</td>
<td>0.938</td>
<td>2.63%</td>
<td>796</td>
<td>2.23%</td>
</tr>
</tbody>
</table>

Table 1. Shipping CO$_2$ emissions compared with global CO$_2$, millions of tons (International Maritime Organisation, 2014)

In 2014 global fleet-wide average of grams of CO$_2$ emissions per TEU carried per kilometer traveled was 53.4. Maersk Line is performing better than Clean Cargo Working Group’s (CCWG) average on almost all trades, and globally Maersk Line has more than a 10 percent advantage over the global CCWG industry average (Clean Cargo Working Group, 2015).

In 2007, Maersk Line introduced for the first time the so-called "Slow Steaming", whose characteristic is that cargo ships sail with a lesser engine load, which has eventually become a standard (Reinhardt, Casadesus-Masanell, Nellemann, 2012, p. 12). Slow steaming was developed as a part of the framework dealing with the simultaneous cost decrease on all levels and the increase of business efficiency, but with the emphasis on retaining the reliability and

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$^2$ Emission trading system - is a cornerstone of the European Union's policy to combat climate change and its key tool for reducing industrial greenhouse gas emissions cost-effectively.
respecting the set delivery deadlines. At that time, the Maersk team of expert engineers closely monitored the fuel expenditure on specific routes, reaching to some conclusions on the fuel savings. The exemplary route from Europe to Singapore with the then largest ship "Emma Maersk" showed that the possible fuel saving was about 4000 tons of fuel.

In the period from 2007 till 2008 the era of "Slow Steaming" started. At that time, the shipping companies recorded a surplus in the transport cargo. The freights were extremely low, and the bunker costs high. One of the most important reasons why shipping companies opt for this strategy is the raise of the fuel prices. Besides, the lower emission of harmful gases in the atmosphere is important, as well as the absorption of the tonnage surplus in the cargo (Woo, Moon, 2014, pp. 177-178).

Full speed in practice means sailing at the speed of 24 knots, which implies the use of 85-90% of the engine capacity. There are different gradations of the “slow steaming” below this level, so the sail at the speed of 21 knots is considered “slow steaming”, of 18 knots “extra slow steaming” and of 15 knots “super slow steaming”. Already at the slow steaming, with the bunker prices of $500 a ton, 5-7% is saved (Maloni, Paul, Gligor, 2013, p. 3). The bunker price movement at Maersk Line during the last 10 years was from 189.3 dollar per ton in 2004 to 661 dollar per ton in 2012. Prices instability is also depicted in the fact that in the year 1998 the cost was only 81 dollar per ton of fuel (Jephson, Morgen, 2013, pp. 131-132).

Slow steaming improves the reliability in the maritime transport, considering that greater flexibility, especially on longer distances, is enabled. The delays can occur due to many reasons, and as a rule, can be compensated with the increase of the speed. Working below full speed therefore means greater flexibility, which can be significant, due to the fact that in 2010 only 50-60% of the arrivals in the ports were on time. Although the logic is pretty clear, there are uncertainties as to whether slow steaming could improve the reliability (Maloni, Paul, Gligor, 2013, pp. 4-5).

The new generation vessels, the so-called Triple-Es, are designed to maximally take advantage of the slow steaming. There were made significant changes concerning the architecture of the ships, where the engine is placed on the hull and specially adapted for the lesser speed. Therefore the space beneath the deck is larger, which enables more cargo to be transported. The ships sail with the lesser motor load and at lesser speeds. Besides that, the engines are weaker than in the former "Emma Maersk". When compared, the emission of CO₂ is lesser by 30% than the average on the route from Asia to Afrika.

Nevertheless, besides all the positive characteristics, the slow steaming has to be primarily seen as the answer to the rise of global concern about the climate changes. Business logic, in the first place, requires larger and faster. Longer sailing means lesser utilization of the ships, which are extremely expensive and long-term investments. The prolongation of the transport deadline can mean lesser possibilities of long-term planning. Furthermore, the issues can occur when the goods are of a short shelf life, like perishable goods and products (short life cycle products), like seasonal clothes and electronics.

The shipping market has cyclic characteristics, so the question arises what sense the slow steaming sailing makes. Since the very slower way of sailing is in the first place the answer to the oil prices increase in the world markets, it is expected that, in the periods of recovery in the shipping markets, the sailing speeds will come back to normal, or ever become higher (Hong Liang, 2014). Although denying the benefits of the slow steaming, Maersk Line points
out that, despite the drop of oil prices in the world market, it will continue to use the strategy, therefore minimizing the effect of low and unstable freights.

4. TRIPLE-E SHIPS
Innovations are an integral part of the modern-day business, and the innovations in shipping are at the same time directed towards the energy and economy efficiency, as well as the reliability. The investment in Triple-E ships, which the Daewoo Shipbuilding & Marine Engineering (DSME) is building for MAERSK, is seen as one of the most significant innovations in the shipping recently. Triple-E means economies of scope, energy efficiency and ecologically more acceptable vessel. As already mentioned in the chapter on container shipping within a conglomerate, Triple-E class is an improved and modified version of “Emma Maersk”, until recently the largest ship in the world. Unlike “Emma Maersk”, which has 22 rows along the entire width, triple-E ships have 23 rows, i.e. capacity for 1500 more containers. The carrying capacity of a triple-E ship is 18,000 TEUs. The dimensions of a Triple-E are 400m in length, 59m in width and 73 m in height. The draught is 14.5m and the carrying capacity 165,000 tons. The highest possible speed estimated for this type of a container ship is 23 knots. Triple-Es are driven by two slow running engines powered by two large propellers, this combination being known as the “Twin Skeg”. The reason for using this combination has come from the Maersk Line study which showed that, in that way, the saving of energy is achieved by further 4% in relation to the design with one engine, i.e. one propeller.

Special optimization of the hull and the shape of the bow have enabled the achievement of the highest possible speed of 23 knots, compared to “Emma Maersk” whose speed maximum was 25 knots. This small difference in the speed maximum decreases the outgoing power of the engine by 19%, which enables lesser engine torque curve and much more economical (lesser) fuel expenditure. Bearing in mind better efficiency, the vessels will have lower emission of carbon dioxide. The emission of CO₂ per delivered container is lesser by 20% in relation to most efficient container ships now available. The optimized design ensures the sailing with the maximum load at the speeds prevailing in the industry.

For the decrease of the influence on the environment of the ships outside their life cycle, Maersk Line has set new standards concerning the way of their recycling. All the materials used for the building of Triple-E class will be documented and mapped at the ship as the “cradle-to-cradle passport”. This means that when a ship is sent to a ship breaking yard, this document will ensure that all materials can be reused, recycled or disposed off in the safest and most efficient way (Maersk Line).

Triple-E ships will enable Maersk to conduct cost-efficiency policy on all levels through the fuel savings, considering that the engines are specially adapted to operate under lesser load and for slower sailing, i.e. slow streaming, and the savings by the unit cost of the goods transport, better utilization of a ship’s space because of the architectural changes and the possibility of transporting more containers.

5. CONCLUSION
Although cost control brings numerous advantages, it can be very risky, and should be seen as a means of answering to the recession and as a short-term solution. For a given measure to be successful, it should be conducted along with the increase of efficiency. The increase of efficiency is conducted by investing in the existing workforce and technological innovations.

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3 Slow Running Engines - “Ultra-Long Stroke”
In the period of crisis one should think outside the box and adapt to the occurring situation as soon as possible. The most recent crisis, among other things, has caused the prices in the oil market to rampage.

As an answer to the same issue, Maersk Line has adapted its fleet to the slow steaming way of sailing. Besides, ships that can carry more cargo are being built. On the other hand, the sailing time is being prolonged. An important example of the innovations is Triple-E vessels which can carry more cargo with a significantly lesser unit cost. They sail under lesser load of the engine, therefore saving fuel. In this case, the innovation is created to ensure savings, which do not only encompass fuel, but the freight as well, which is very important for the clients. In this line of business, good relations with the clients are extremely important, and they are reflected through the reliability which is ensured by complying with their demands and strictly respecting the timetables. Additionally, with the innovations companies try to achieve a more favourable impact on the environment, which is achieved through lesser emissions of CO₂ in the atmosphere and with the reuse of materials after a ship is sent to a breaking yard.

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