

Environmental management in Greek shipping companies

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Abstract

The paper examines the environmental management issue in the context of Greek shipping companies. The analysis is based on the results of a field survey among Greek shipping companies operating in the bulk shipping sector, certified with the ISO 14001 standard. It examines the design, implementation and certification of the Environmental Management Systems of the shipping companies as well as their motives to move towards it and their perceptions with regards to the achieved results. Results of the analysis show that the approaches adopted by the Greek shipping companies are not substantially different to those identified in the literature.

Keywords

Environmental Management System; ISO 14001; Social responsibility;

1. Introduction

Very often industry actors contest that shipping is an over-regulated industry. However, enforcement of the rules and regulations in this global industry is not an easy matter, since the control mechanisms are not always as strict as it is needed. Substandard operators will always find free space to operate and to produce externalities that destroy the image of the industry, as long as there are charterers willing to cooperate with them.

During the last decade shipping industry’s institutional framework has been expanded to include initiatives and regulations that promote the safety and quality of the offered services and improve the performance and image of the industry. The International Safety Management Code (ISM Code), which sets minimum standards, regarding the safety level of the offered services by the shipping companies, can be perceived as an attempt of shipping industry towards social responsibility. It was imposed by the International Maritime Organisation in the mid-90s and its implementation is obligatory for all shipping companies. ISM Code or any other mandatory regulation produce results as long as shipping companies are willing to implement them instead of simply being certified. Even this however is not enough as compliance to regulations does not ensure that shipping companies monitor and evaluate their operations’ impact on their stakeholders. The improvement of safety and quality performance of the

industry presupposes the existence of a culture that has prevention as a core value. Ergo, companies are supposed to act in a proactive and responsible way at all levels of operation.

Seeing the subject of externalities from a broad view, one should arrive at the notion of the Corporate Social Responsibility (CSR), i.e. “the obligation of the firm to use its resources in ways to benefit society, through committed participation as a member of society, taking into account the society at large, and improving welfare of society at large independently of direct gains of the company” (Kok et al., 2001). Shipping companies that adopt a supportive approach in terms of their CSR monitor and evaluate their impacts on their stakeholders. They are eager to undertake the cost of the design, development and implementation of management systems that will help them behave in accordance with their stakeholders’ expectations. Such an approach would mean that the shipping company will be proactive in securing the safety and reliability of its operation, the quality of the service and the protection of the marine environment. It also means that it will undertake initiatives with the aim of meeting the expectations of its stakeholders (employees, charterers, flag states, etc). Thus, shipping companies that are supportive to CSR are expected not only to conform to the requirements of regulations, such as the ISM Code, but also to move beyond compliance either by setting their own standards, or by complying with the non-obligatory ones. Fafaliou et al. (2002, 2005) classify to the supportive approach towards CSR those companies that are eager to undertake the cost of implementing non-obligatory standards which help them behave in accordance with the society’s expectations. DNV Research (2004) findings seem to support this approach, as it concludes that the quality shipping terminology captures part of what land-based companies refer to as social responsibility.

Gradually, shipping companies started to realise the need to operate in a way that respects the marine environment. An increasing number of companies move towards a proactive approach of managing the environmental aspects of their operation. They design and develop management systems that conform to the requirements of standards like the ISO 14001, and certify their proactive environmental approach. Many of them, report their relevant activities to the public through their annual environmental reports. On the other hand, there are also companies that develop and implement systems for the management of the quality and the environmental impacts, either for reasons related to competition or because of the requirements of

the charterers. This is more apparent in environmentally sensitive markets, like the oil market. Recently, the OCIMF introduced the Tanker Management and Self Assessment (TMSA) guide, which is a management system standard for tanker operators (ABS, 2005a). TMSA is based on the need for continuous improvement with regard to safety, quality and environmental protection; a goal that might direct companies to the idea of sustainability. In parallel, Intertanko is trying to increase the environmental awareness of its members. For this, it introduced the sustainability as a challenge that shipping companies need to manage. Thus, shipping companies make environmental management an integral part of their operation to meet the expectations of their stakeholders and/or to face the pressures imposed by their external environment (Theotokas, 2006).

This article aims at examining the environmental management issue in the context of Greek shipping companies. The analysis is based on the results of a field survey among Greek shipping companies certified with the ISO 14001 standard. It examines the design, implementation and certification of the Environmental Management Systems of the companies as well as their motives to move towards it and their perceptions with regard to the achieved results. Section 2 discusses the environmental management issue focusing on the implementation of ISO 14001. The methodology of the research follows in Section 3, while section 4 presents and discusses the results of the survey. Finally, conclusions and suggestions for further research are given in Section 5.

2. Environmental management and ISO 14001

Companies are facing pressures to become environment friendly. Zutshi and Sohal (2004) classify those pressures under four categories: the market, the social, the financial and the regulatory. Due to their effort to be proactive in handling matters related to the impact of their operation to the environment companies develop an Environmental Management System (EMS) which is the mean for the implementation of their environmental policy. The EMS directs companies to identify, measure and control the environmental impact of their operation (Bansal and Hunter, 2003). A good EMS allows companies to find ways for the limitation of their environmental impacts and the reduction of the costs or the increase of the productivity. Moreover, it helps them to find ways to improve their organisational efficiency and effectiveness (Bansal and Bogner, 2002). Research findings suggest that there is a correlation between the EMS level of advance and the performance achieved (Maier and Vanstone, 2005). The EMS can be either self-designed, implemented and imposed, or certified according to standards such as Eco-Management and Audit Scheme (EMAS)¹, or the ISO 14001. Companies

prefer to obtain certification with the standards as this allows them to achieve the tangible and intangible benefits of the EMS (Zutshi and Sohal, 2004). The presence of a certified formal EMS generates improvements to the company's performance (Melnik et al. 2003). Statistics reveal that while EMAS is adopted mainly by companies in the European territory, ISO 14001 has a more international status and is rapidly diffused worldwide (Viadiu et al., 2006). The number of companies certified according to ISO 14001 worldwide increased almost by eight times within a period of six years, reaching the 111.162 in December 2005 (ISO, 2006).

ISO 14001 is based on the plan-do-check-act cycle. It provides a list of specification and requirements that the EMS should meet and it is the standard against which the company can be certified (Gonzales-Benito and Gonzales-Benito, 2005). It requires continuous improvement in the EMS itself, which in turn leads to the improvements in companies' environmental performance (Raikes, 2002). For the compliance with the standard there are six steps that must be followed by the companies (Bansal and Hunter, 2003):

- Development of an environmental policy
- Identification of its activities, products and services that interact with the environment
- Identification of legislative/ regulatory requirements
- Identification of its priorities and setting of objectives and targets for the reduction of its environmental impact
- Adjustment of its organisational structure to meet the objectives
- Checking and correction of the EMS

The decision of a company to develop an EMS is affected by its previous experience on the development of certified management systems. Companies that have developed quality management systems also choose to develop environmental management systems. They are familiar with the cost and benefits of certification, which makes them prone to move for the ISO 14001 certification. It should be also noted that there are similarities between the ISO 9001:2000 and the ISO 14001 standards, which are considered as one of the factors that motivate companies to comply with both of them. These findings are proposed by research studies in different national contexts (del Brio et al., 2001; Nakamura et al. 2001; Poksinska et al., 2003; Lefebvre et al., 2003; Curkovic et al., 2005). The adoption of both standards and the development of integrated management systems can improve the environmental performance. Though, those two systems cannot be integrated automatically, as they have also certain differences (Poksinska et al., 2002)

¹ EMAS is a voluntary initiative that aims at recognising and rewarding organisations that "go beyond minimum legal compliance and continuously improve their

environmental performance". EMAS requires organisations to develop an EMS that meets the requirements of ISO 14001. (<http://www.emas.org.uk/aboutemas/mainframe.htm>).

As previously mentioned, ISO 14001 certification is an evidence of a company's proactive approach to environmental matters and can be considered as an indication of the company's approach towards CSR and sustainable development. Research shows that companies which adopted ISO 14001 in an early stage, made this in order to reinforce their strategy regarding the environmental legitimacy, rather than to reorienting it (Basnal – Hunter, 2003). It was also found that companies' approach on the sustainable development is positively related with their aim to pursue the ISO 14001 certification (Gonzales-Benito and Gonzales-Benito 2005).

The motives to implement ISO 14001 may vary, depending on the specific context in which companies operate. For example, in a study of 46 certified with ISO 14001 companies and their non-certified matched pairs it was found that the first were larger and more international than the latter (Bansal, 2002) while in the context of Japan it was found that environmental leaders were not domestically oriented firms (Nakamura et al., 2001). Similarly, in the Greek context, certified companies were found to be of large and medium size and oriented to exporting (Mandaraka and Georgakopoulos, 2006). Literature review also reveals that motives that are considered to be important include the following (Raikes, 2002, Poksinka et. al. 2002, Morrow and Rondinelli, 2002, Berthelot et al., 2003, Zutshi and Sohal, 2004, Schylander and Martinuzzi, 2007):

- improvement of corporate image,
- marketing advantage,
- customer pressure or demand,
- relations with communities,
- relations with authorities,
- compliance with existing regulatory requirements,
- the desire to display environmental leadership and economic savings,
- improvement of EMS already in place,
- enhancement of environmental performance,
- increase of competitiveness.

Similar motives were also found to prevail in Greek companies, the two most important being the improvement of the company's image and the improvement of the environmental performance (Mandaraka and Georgakopoulos, 2006)

On the realised benefits side, the following are proposed (Raikes, 2002, Poksinka et. al. 2002, Berthelot et al., 2003, Zutshi and Sohal, 2004, Schylander and Martinuzzi, 2007):

- improvement of EMS already in place,
- improved environmental performance,
- improved employee working conditions,
- improved corporate image,
- response to clients' demands and keep up with competition,
- increased customer's satisfaction,
- improved internal procedures,
- reduction in organisational risks,
- compliance to legislation,

- protection from prosecutions, fines and legal fees
- improved relations with authorities and communities.

In the case of Greek companies, the main benefits were found to be the environmental risk management, the improvement of health and safety of the employees, the increase of the employees' environmental awareness, and the improvement of the companies' environmental performance (Mandaraka and Georgakopoulos, 2006).

Literature review reveals that motives are not substantially different to the realised benefits. It could be said that the ISO 14001 certification satisfies the expectations of the companies that were actually their motives for the certification. Fulfillment of the expectations was found in several contexts: Berthelot et al., (2003), found that for the Canadian firms this was the case for the enhancement of corporate image and the improvement of environmental performance; Schylander and Martinuzzi, (2007) found that for the Austrian firms expectations regarding the legal compliance and the improvement of environmental performance were fulfilled; Gonzales-Benito and Gonzales-Benito (2005) found for Spain firms that ethical and competitive expectations were satisfied; Poksinka et al. (2002) found that Swedish firms fulfilled expectations with regard to the relations with stakeholders and marketing advantages; and Zutshi and Sohal (2004) found that the main expected benefits of the Australasian firms, i.e. compliance to the legislation and reduction in organizational risks were achieved.--- The comparison of motives and benefits for the Greek companies shows that expectations were met with regards to the improvement of environmental performance but not for the improvement of competitiveness and the improvement of the companies' image (Mandaraka and Georgakopoulos, 2006).

Data on the cost of EMS adoption and certification vary. Zutshi and Sohal (2004) found that costs related to EMS development and implementation, auditor fees, surveillance audit fees and expenses for training employees, which are some of the costs associated with the certification, may range from \$5.000 to \$50.000, depending on the size of the organization and the maturity of the system it has developed. Schylander and Martinuzzi (2007) found the average cost to be about 76.000, with 67% of it to be attributed to internal costs, 24% in consultant fees and 9% in certification cost. Bansal and Bogner (2002) relate the implementation cost to the size of the company and the existence of ISO 9000 certification, stating that the cost may vary from \$10.000 for small stand-alone sites, to \$200.000 for large industrial site.

Literature review reveals that the importance of cost in the decision of a company to certify varies. For example, the cost of certification was not found to be an important factor in the choice of ISO 14001 certification in the Spanish case (del Brio et al., 2001). On the other hand the high cost it was found to be one of the major impediments for the Australasian organizations (Zutshi and Sohal, 2004). The same exists for the certified industrial companies of the US that perceive the high

cost of certification to be the greatest problem for the implementation of the ISO 14001 (Babakri et al. 2003). Mandaraka and Georgakopoulos (2006) have also found that Greek certified companies perceive the implementation cost as one of the important difficulties for the certification.

Various studies reveal that companies' size is positively related to a higher interest in the ISO 14001 standard (Gonzalez-Benito and Gonzalez-Benito, 2005, Hillary, 2004, Masurel, 2007, Halkos and Evangelinos, 2002, Bianchi and Noci, 1998). Examination of the companies' size reveals that mainly large and medium sized companies have ISO 14001 certified EMS. The International Standard Organization itself acknowledges that SMEs are reluctant to move for the certification and identifies several reasons for that (ISO, 2005). They include the absence of formal systems, the perception that ISO 14001 generates paperwork and costs without providing productivity improvements and the absence of knowledge, skills and expertise to implement an EMS. Companies of small size do not move toward certification, even when they have developed their own EMS. They face important internal barriers (company culture, sceptical of the benefits obtained, lack of human resources) when seeking to adopt and implement EMSs (Hillary, 2004). They also face higher cost for the certification of their EMS. Schylander and Martinuzzi (2007) found that in Austria, the cost per employee for the certification for companies employing fewer than 50 employees was 1516 euros, while the one for companies employing more than 500 employees was 128 euros. The broad examination of the attitude of SMEs towards the investment in environmental measures, shows that SMEs are motivated to do so more by external reasons, like stakeholders' pressure, than by internal reasons (e.g. cost reduction) (Masurel, 2007). SMEs tend to be reactive with regard to their "green" strategy, complying with external pressures, which is attributed to the nebulous prospects with regard to returns that a proactive strategy could brought in to the companies in the short and medium term (Bianchi and Noci, 1998). Other studies however, contend that there is a positive correlation between active environmental work and profitability; they confirm though, that the SMEs cannot make cost savings equivalent to the high cost of implementing an EMS (NUTEK, 2003).

Success of the certification is attributed to several factors. Literature review reveals that, the most important factors are the experience with other systems, the involvement and commitment of management in the certification process, the identification of environmental aspects, the training of the personnel, the financial support, the motivated and supporting team (Martin, 1998; del Brio et al. 2001; Poksinska et al., 2003; Curkovic et al. 2005)

3. Methodology of Research

For the scope of research a field survey was conducted. The population studied was the ISO 14001 certified Greek shipping companies. Since at the time of the

survey there were not available data on the number of certified companies, a research on secondary sources as well as on the sites of the shipping companies was conducted, in order to identify the population. Authors succeeded to identify 19 ISO 14001 certified Greek shipping companies, which consisted the population of the field survey. The survey took place in Athens and Piraeus during the period of July and August 2005. All companies were approached and asked to participate to the survey. Fifteen out of 19 companies accepted to participate and to provide the required data, which gives a response rate of 78,9%.

According to Petrofin Research, the total number of Greek shipping companies in 2005 was 690 (Petrofin Research, 2005). The number of the ISO certified companies constituted the 2,8% of the total number of Greek shipping companies, while the respective number of companies surveyed (15) constituted the 2,2%. If one compares these percentages, one might wonder whether the sample was adequate to draw conclusions for the Greek companies. However, it should be taken into account that this study is not a comparative one examining the differences between companies having developed EMS and those not having. The aim of the study is to focus on companies that have developed certified EMS. Based on this, this research realizes as the population the total number of ISO 14001 certified companies that authors succeeded to identify. Given that fifteen out of nineteen identified companies responded (78,9%), the sample is considered as adequate and representative of the population studied.

The methodology followed for the data collection included the development of a questionnaire. In order to increase the response rate and the validity of data collected, personal interviews were chosen as method for the data collection. Personal interview based on the questionnaire was chosen as method for data collection because of the advantages it offers. More specifically, personal interview can secure depth of detail of information which it far exceeds the information secured from other forms of communication such as telephone or mail surveys. It also offers the ability to the interviewer to improve the quality of the information received (Cooper and Schindler, 2001). Although costly in terms of time and money, personal interview was also judged as the more appropriate method for the population, as earlier studies' findings proposed (Theotokas, 1997, Theotokas and Harlaftis, 2004). The questionnaire used for the personal interviews aimed at examining the motives of the companies to certify their EMS, the resulting benefits and the difficulties faced during the implementation of the system. The questionnaire consisted of five sections (companies' profile, approach to CSR, EMS development, EMS implementation and certification, realized benefits and difficulties of certification). The survey was based on personal interviews with the managers of companies' Safety, Quality and Environment Department.

The sample consisted of mainly companies of large size as presented in table 1. All companies of the sample managed ships that participated in the freight markets of the bulk shipping sector.

Table 1. Fleet size of the sample companies

Fleet size	Number of companies	Percentage
1-4 ships	1	7%
5-14 ships	5	33%
15+ ships	9	60%
Total	15	100%

4. Results and discussion

The analysis of the sample companies' size reveals that the majority of ISO 14001 certified companies are mainly of large size. This percentage, however, is not representative of the number of large sized Greek shipping companies. In 2005, the year that this research was conducted 445 out of 690 companies (64,5%) were of small size, 183 (26,5%) of medium size and 62 (9%) of large size (Petrofin Research, 2005). While the large sized companies represented the 9% of the total number of Greek shipping companies, ISO 14001 certified companies of large size represented the 60% of the sample. On the contrary, while the small sized firms represented the 64,5% of the total number, there was only one small sized certified company. One should take into account that even this company was classified as small because of the one-year earlier decision by the management to dispose the vast majority of the company's ships and accumulate capital gains. This means that at the time the decision to certify was taken, the company was a medium-sized one. This comparison confirms that companies' size is positively related to ISO certification (Gonzalez-Benito and Gonzalez-Benito, 2005, Hillary, 2004, Masurel, 2007, Bianchi and Noci, 1998).

A company's attitude towards CSR is related to its approach towards the management of environmental impacts of its operations. Based on that, interviewed persons were asked to express their opinion on ISO 14001 certification and its relation to their companies' social responsibility. As it can be seen in the Fig. 1, 14 out of 15 realised that environmental awareness and certification was an evidence of their companies' social responsibility. The vast majority of the companies (81,2%) were developing activities related to the management of their environmental impacts long before the ISO 14001 certification. This seems to confirm that companies deciding to certify according to ISO 14001 make it rather for reinforcing that reorienting their strategies (Bansal-Hunter, 2003)

In the case of our sample, 13 out of 15 companies had already developed certified QMS when they moved toward developing and certifying an EMS. Also, all of them implemented the ISM Code, which means that they had acquired an additional experience on the development of certified systems. Given that there are

plenty common requirements on ISM Code, ISO 9001:2000 and ISO 14001, the majority of the companies combined them into an integrated system for management of safety, quality and environmental issues. This approach increases the efficiency of the whole system by creating synergies. Certification bodies, like the classification societies, have developed such an integrated approach, proposing it to their clients (DNV, 2005, ABS, 2005b).

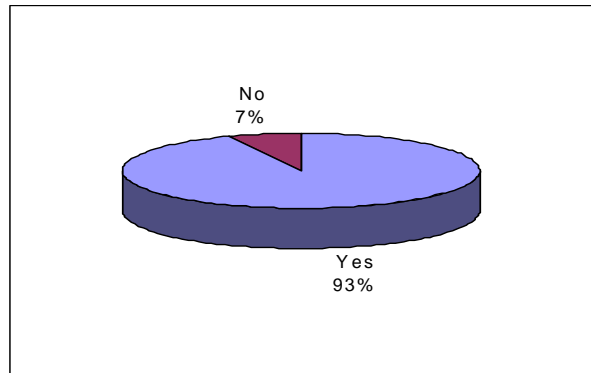


Figure 1. ISO 14001 certification as an evidence of the company's social responsibility

The motives of the companies for the certification of their EMS can be seen in Fig. 2. For the majority of the companies of the sample, the main motive was the expected improvement of their corporate image (57,1%). The change of company's organisational culture was also considered as an important motive (21,4%), while motives for small percentage of the companies referred to the response to charterers' requirements (14,3%) and the management of environmental risks (7,1%).

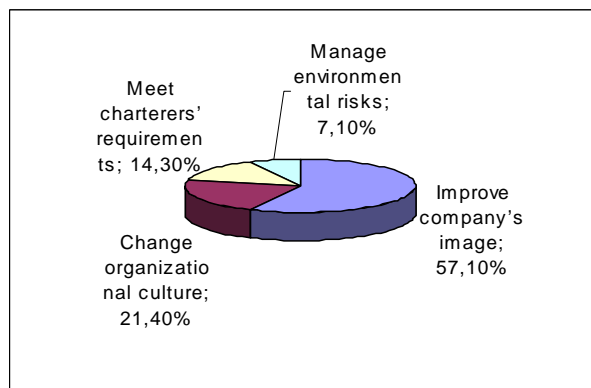


Figure 2. The main motive for the ISO 14001 certification

These results confirm findings of other studies (presented in section 2), which suggest the improvement of corporate image as being the main motive for the certification. Results also show that the majority of the companies had already developed environmental management systems that either helped them to meet the requirements of their charterers or to manage their operations' environmental risks. Taking into account that the vast majority of the certified companies

managed either tanker fleets, or differentiated fleets that contained tankers and operated in sensitive markets these results is a further evidence of their proactive approach on the environmental matters. They are also an evidence of the role that the specific context plays in the decision to implement ISO 14001.

During the implementation process of the EMS companies faced certain impediments. As it can be seen in the Fig. 3, the most important of them were related to the need for changes in the company's organization and in the attitude of the employees' towards change. More particularly, companies realised as impediments the bureaucracy (28,6%) which was related to the record-keeping, one of the main characteristics of an EMS, the need for change of the company's culture (21,4%), the modification of already existing systems/procedures (21,4%) and the incomplete understanding of the EMS' requirements by the employees. The latter is related also to the lack of employees' training, which is considered as a reason for failure of ISO 14001 adoption (del Brio et al. 2001). It should be noted that bureaucracy and modification of systems were also considered as impediments for the implementation of the companies' QMS. One should take into account that similar obstacles were also found to be important among the Greek certified companies of the industrial sector (Mandaraka and Georgakopoulos, 2006)

The employees' reaction, which is related to bureaucracy and the need for cultural change, and the lack of commitment by the company's management were also among the factors considered as the most important hindrances. The latter impediment, although mentioned by one company, is indicative of an approach that realises the ISO certification only as a marketing tool. One could relate this with the statement by one company that certification was not an evidence of the company's approach to its social responsibility.

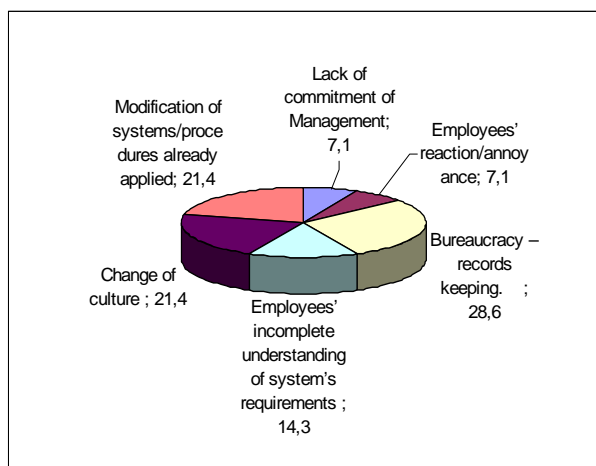


Figure 3. Major difficulties faced during implementation of ISO 14001

Literature review shows that opinions regarding the cost of certification and its importance in the decision of a company to certify its EMS vary. The respondents were hesitant to provide detailed data on the cost of

certification. However, based on the gathered data it could be said that while for companies operating fleets of six to ten ships the cost varied between \$20.000 to \$50.000, for companies operating fleets of more than 30 ships, the cost was raised to \$100.000. It seems that the certification cost for shipping companies is very similar to the cost found in other context, as they were presented in section 2. For the vast majority of the ISO 14001 certified companies (86,7%), the cost of certification was perceived as reasonable and expected. Only two companies perceived the level of cost higher than they expected. This seems to differentiate the shipping companies from other certified Greek companies that perceive the cost of developing and maintaining the system as one of the important difficulties for the certification (Mandaraka and Georgakopoulos, 2006), as well as from companies operating in other national contexts (see for example Babakri et al., 2003; Zutsi and Sohal, 2004). This also means that there should be reasons other than the cost which discourage shipping companies to develop and certify an EMS. Here again the context of each company seems to play a major role.

To clarify further the matter, interviewed persons were asked to reveal the most important factors with regard to the cost during design and certification of the EMS and during its implementation. As it can be seen in Fig. 4, the most important costs of the certification phase were those related to the employees' training, the consultants' payment and the certification body fees. Cost related to employees' training was also highlighted as important or as an obstacle in several other contexts (Berthelot et al., 2003, Babakri et al., 2003). With regard to implementation of the EMS (Fig. 5), companies realised as most important cost elements those related to the auditing and the employees' training.

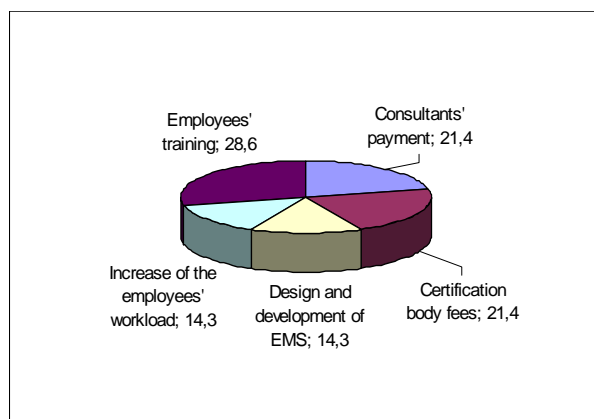


Figure 4. Cost elements' importance during design-development of the EMS

The field survey aimed at identifying if the certification led to a company's effectiveness increase in given areas. Interviewees' were given certain areas asked to identify whether they realized improvements/increases on those areas or not. As it can be seen in Fig. 6, almost all of the respondents detected a rise of their companies' effectiveness with regard to the decrease of their environmental impacts. The vast majority of them

realized that the charterers' satisfaction increased (71,4%) while half of them related certification with the increase of their number and the improvement of the companies internal communication. Areas that were less affected by certification were those related to relations with suppliers (35,7%), the cost level (28,6%), the productivity (28,6%) and the financial prospects (21,4%). These results may be related with the finding that there is a correlation between the EMS level of advance and the performance achieved (Maier and Vanstone, 2005).

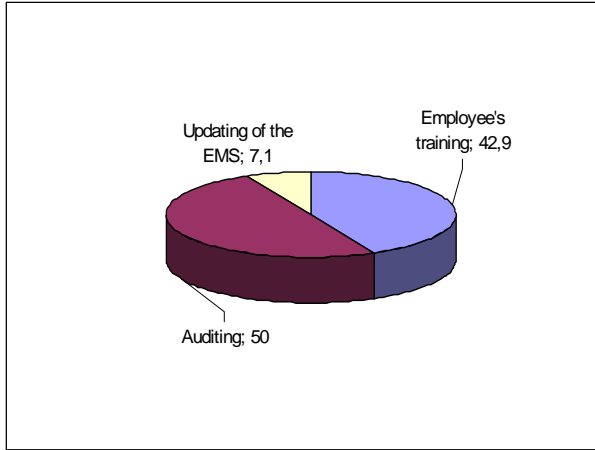


Figure 5. Cost elements' importance during implementation of the EMS

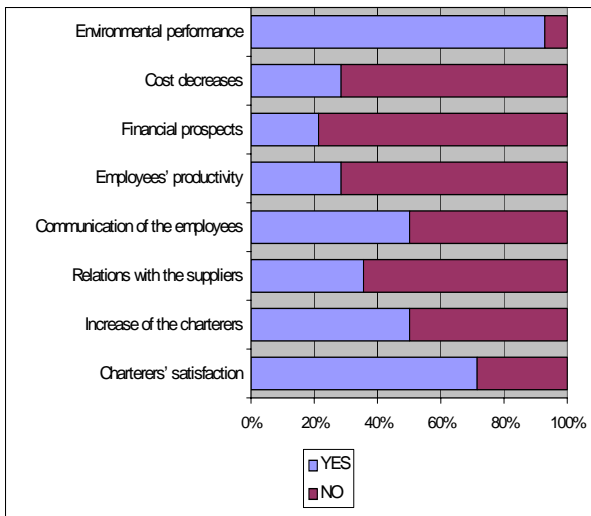


Figure 6. ISO 14001 and increase of effectiveness

The interviewed persons were also asked to identify which they consider as the most important benefit of the certification for their companies. Half of them realised that there was an improvement of the company's image. One should note that this percentage is comparable to the one related to the main motive for the certification. As in can be seen in Fig. 7, a percentage of 21,4% of the companies stated that the main benefit was considered to be the chance they had to prove their social responsibility. Other benefits suggested by companies were the response to charterers' requirements (14,3%), the change of company's culture (7.1%), and the cost decreases (7,1). It should be noted that cultural change

was considered as a benefit that led to more effective implementation of the company's safety management system. Results presented in Fig. 6 and 7 confirm that certification satisfied the expectations that were actually the motives of the companies to certify their EMS.

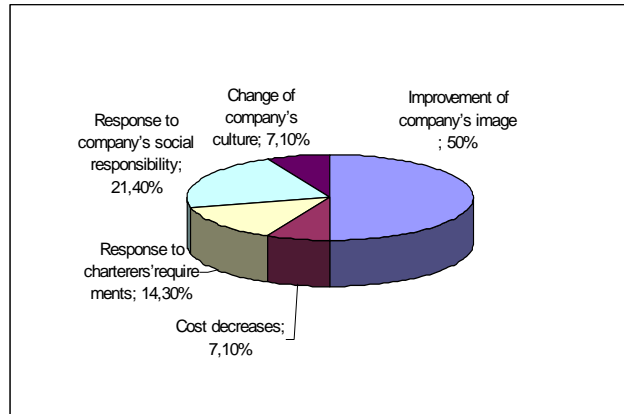


Figure 7. The most important realised benefits

The next examined area was related to the perceived as the most important negative elements of the certification, which are presented in Fig. 8. These elements were noticed while companies were preparing for the certification of their EMS. Many of them were also identified as difficulties faced during the implementation of the EMS, as they were presented in Fig. 3, which implies that certification did not lead to the instant adaptation of the companies to the needs of the EMS and that its implementation needs continuous effort.

There seems to be a lack of agreement on the negative elements of certification, which proved that the company's specific context plays a decisive role on that. For 35.7% of the companies bureaucracy that brings in the certification in the form of procedures, lists, controls etc was considered as the most important negative element of the certification. The observed difficulties in understanding the standard's requirements, the high cost of EMS maintenance and employees' training, and the employees's annoyance for the increase of their workload were further perceived as negative elements. By combining this result with the one mentioned above which shows that certified companies perceive the cost of certification as logical and expected, one could conclude that factors such as the corporate culture and the human resources of the companies play a vital role on the decision to develop and EMS. It should be taken into account that ISO 14001 which is characterized as intensive in human capital (del Brio et al., 2001) changes the corporate culture by making management and employees more sensitive to the implications of company's operation to the environment (Bansal-Hunter 2002).

An additional issue that the questionnaire aimed to uncover was the perceived as the most important change that the certification brought into the companies. As it can be seen in Fig. 9. the majority of the respondents (57,2%) realised as an important change the setting of

environmental objectives. The commitment of senior management to the environmental protection was also considered as important (21,4%). Of the same importance is considered the change of companies' culture. This finding is similar to one found in the literature, where it is stated that ISO 14001 by increasing the sensitivity of management and staff to the environmental operation of their operations change the culture of the companies (Bansal and Hunter, 2003). One could say that these factors are directly related with the desire of the companies to "be a good neighbour" which is in accordance to what literature review proposes as the main motive for the ISO 14001 certification.

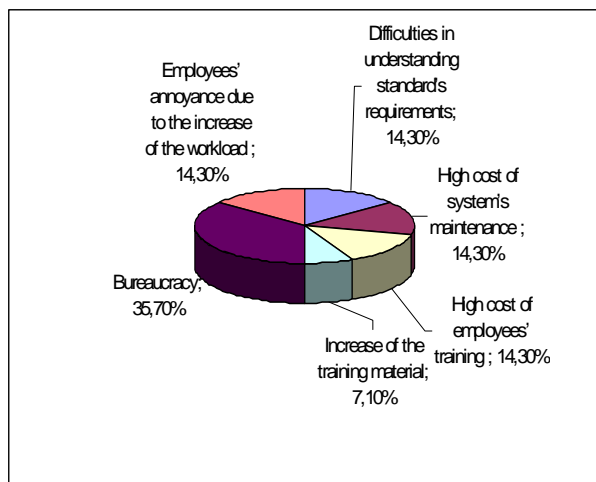


Figure 8. The most important negative elements of the ISO 14001 certification.

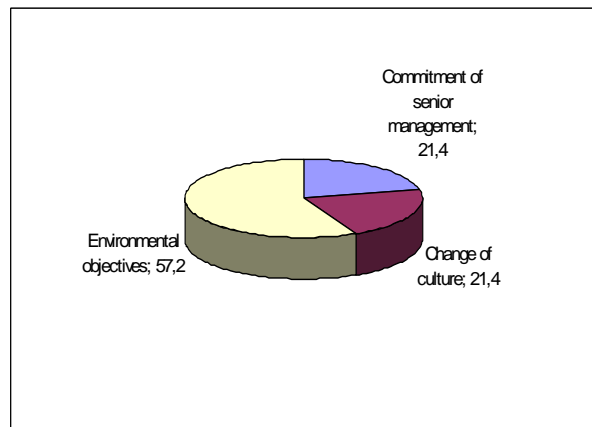


Figure 9. The most important change related to certification

5. Conclusion

This paper examined the environmental management issue in the shipping industry, focusing on the Greek shipping companies and the approach they have taken towards it. Literature review reveals that implementation of EMS and certification according to the ISO 14001 standard is positively related to the

companies approach on their social responsibility and to contextual factors such as the size and the orientation of the companies. It is also related to the previous experience of the companies on the development of certified management systems. In most of the cases the motives of the companies for the certification are not substantially different to the realized benefits. This means that the expectations of the companies that certify their EMS are fulfilled. There are also various difficulties faced by the companies during implementation and certification of the EMS such as the cost, the bureaucracy, the need for training etc., which are related to the specific context of each company.

Results of the analysis show that the approaches adopted by the Greek shipping companies are not substantially different to those identified in the literature. The vast majority of the ISO 14001 certified companies are of large size, certified under the ISO 9001:2000 standard. Certification is perceived as an indication of their social responsibility, which means that is used as a mean for the reinforcement of their strategies. Their motives for the development and certification of their EMS are related to their desire to improve their image, to change their culture, to respond to charterers' expectations and to manage the environmental risks. Although they faced difficulties during implementation of ISO 14001 related to factors such as the bureaucracy, the need for cultural change, the modification of the systems already applied and the employees' incomplete understanding of the standard's requirements, they realize that certification increased the effectiveness of the companies. The most important realized benefits were the improvement of the companies' image, the response to CSR and to charterers' expectations, the cultural change and the cost decreases.

As it was mentioned in the introduction, the external pressures that the shipping companies face to improve their environmental performance are continually increased. The shipping companies should increase their environmental awareness, develop EMS and consider the advantages of ISO 14001 certification. Bansal and Bogner (2002) provide a framework for the firms to decide on the ISO 14001 certification. They propose firms to examine economic pressure from business relationships and legitimacy pressures from stakeholders. In case both pressures are high, firms should act immediately, while in case they are moderate, they should monitor closely. In case that both pressures are low, the choices are the prudent awareness and the elective action. The analysis of the shipping business environment revealed that shipping companies, depending on the market they operate, fall in the first two categories. This means that companies active in the carriage of dangerous cargoes should act immediately because both stakeholders' and economic pressures are high. This of course is an additional explanation of the fact that the vast majority of ISO 14001 certified companies operate either tanker ships or diversified fleets that contained tankers. On the other hand, given that stakeholders pressures tend to be high irrespectively of the transported cargo, shipping companies should

monitor closely the conditions in order to move toward certification any time the pressures increase. Based on these, one could expect that even companies that do not adopt a supportive approach to CSR will move towards the certification of their EMS as a mean of reorientation of their strategies.

The analysis provides results that improve the knowledge on the matter of environmental management in shipping. The fact that the sample consisted of companies that operate either tanker fleets or differentiated fleets that contained tanker ships, allows the generalizability of the conclusions. On the other hand, a limitation of this analysis is that it examines the matter in a single national context, that of Greek shipping industry. Although Greeks operate the biggest fleet in the world, there might be contextual factors that do not apply to other national fleets, which decrease the generalizability of the conclusions. This means that there is a need for research based on sample of shipping companies from different national contexts operating in different industry sectors. There is also a need to expand the sample to include non certified companies. Taking these in mind, this analysis should be considered as a first step towards a synthetic research approach on the matter of environmental management in shipping industry.

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