

## **The image of shipping – perceptions of pupils in upper secondary schools in Sweden, Norway, and Greece.**

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### **Abstract**

The image of the shipping industry has a vital role for developing maritime transport as the major future, sustainable transport alternative. In particular, it is crucial to understand the image the shipping industry has among young people and the anatomy of the concept in order to be able to effectively promote careers in shipping, to develop shipping as an attractive labour market, and to developing attractive educational programmes.

The focus of this paper is the image of the shipping industry. The paper reports on the findings of a large scale survey of the image of shipping and image related concepts among upper secondary school pupils in Sweden, Norway and Greece. We define and analyse empirically by means of multivariate statistical analysis the anatomy of the image concept. We identify various image dimensions, estimate how young people rate the shipping industry along these dimensions, and estimate the relative importance when young people are planning their future careers. We also model the relationships between image components and various independent variables and between image components and career intentions for various segments of respondents by means of background variables.

The results from this study can be used as a base for describing and explaining the images that young people have of the shipping industry. Such knowledge is fundamental for deriving and developing constructive strategies for promoting careers in shipping, for adapting shipping to the expectations of young people, and for the development of creative and relevant educational programmes. Finally, understanding the image of shipping among young people is important not only for improving shipping's attraction for career purposes. Such understanding may have other uses as well.

**Keywords:** Image, Shipping, Career, Survey, Promotion, Strategy.

## **1. Introduction**

There seems to be a strong consensus among stakeholders that the image of the shipping industry is of growing importance (cf. COM, 2007). The shipping industry must be attractive to investors, freight customers, regulators, and present and future employees. This calls for development and improvement of the image of the industry in relevant directions and in relevant target groups. The future supply of employees having the necessary qualifications is of particular concern to the shipping industry (cf. Bakka, 2007; Grewal and Haugstetter, 2007; Bakka, 2008; Ng *et al.*, 2009).

It is well known that a positive image of an industry tends to attract the attention of young talented people regarding choice of industry for their future career. This has been shown for other industries (Burmam *et al.*, 2008) and has been discussed for the shipping industry (e.g. Dinwoodie, 2000; Barnett, *et al.*, 2006; Mack, 2007).

The development of an image is a process that may start early in an individual's life and develop gradually over a long period of time. Decision makers in the shipping industry or related industries can either adapt to an existing image or try to improve it. Both strategies call for inputs from scientific research regarding fundamental theoretical and empirical aspects of the image that young people hold of the shipping industry. This research should focus the image they have at the time they are confronted with making important educational choices related to their future careers. This is why we in this paper have chosen upper secondary school pupils in their last semester as the target group for our research. The existence of a positive image of shipping in this group is desirable not only for developing strategies for shipping's supply of employees at sea or ashore, but also in a more general sense for strategies related to other areas. Any pupil, regardless of that pupil's present study programme at school, may show up in a future role which directly or indirectly could be important for the maritime sector, e.g. as a pilot, port administrator, educator, journalist, freight customer, public administrator, politician etc. It may therefore be argued that there are important reasons to study the image of shipping also among other pupils than those who are being educated at maritime schools. A positive image of shipping among the former is of strategic value to the shipping industry since they may enter into positions where they are able to influence the maritime sector's supply of various mental, physical, and financial resources, and they may also specialize in maritime educations after having finished upper secondary school. They represent an important potential for the shipping industry.

This paper reports on findings from a major comparative study of the image of shipping among upper secondary school pupils in Sweden, Norway and Greece. Our objectives are the following:

- To develop and define a construct for representing the image of shipping as a career opportunity
- To use this the construct for measuring the image of shipping held by upper secondary school pupils in Sweden, Norway, and Greece
- To estimate the relative importance of different image dimensions as determinants of upper secondary school pupils' stated intentions to work as a seafarer.

This study can be seen as a first step aiming at developing an international image indicator based on scientific research. Such an instrument could give important inputs for strategic decisions at corporate, national, and supranational levels. The study was made in collaboration between the University of Gothenburg in Sweden, Molde University College in Norway, and the University of the Aegean in Greece.

## **2. The image construct**

In surveying varied definitions of image, it is evident that the term image is used to describe both the discursive and imagery modes of information processing - albeit rarely in the same definition (Barnett *et al.*, 2006). The references that are made to the perceptions of individual characteristics, dimensions and attributes of image relate to discursive forms of information processing. On the other hand, the mention of total impressions, auras and feelings, incorporate the role of imagery, or holistic conceptualizations, in describing an image.

Following Kotler and Keller (2006), we define image as the set of beliefs, ideas, and impressions a person holds regarding an object. Image is the result of perception, the process by which an individual selects, organizes, and interprets information inputs to create a meaningful picture of the world. Perception has been studied in experimental psychology for a long time. According to Shiffman (1982), perception involves receiving/seeking stimulation from the external environment by listening, looking, touching, smelling, tasting, and being opposed to forces of gravity and acceleration, e.g. by being pushed and pulled. This means that other activities than looking and listening can contribute to the creation and development of an image.

In order to develop the image of shipping to a measurable construct we start from the assumption that image is a multidimensional concept (cf. Hampton *et al.*, 1987; Newman, 1957; Herzog, 1963; Dichter, 1985; Spector, 1961; Stell and Fisk, 1986). The managerial relevance of the image construct is based on the common notion of links between image and behaviour. Based on this notion, it is reasonable to assume that improved knowledge about conceptual and empirical aspects of its image could help the shipping industry to accomplish long range strategic goals by influencing the behaviour of key target groups. An important

task for scientific image research when developing a construct for shipping management, therefore, must be to identify, describe, and explain dimensions that are true descriptors of the phenomenon of interest and at the same time relevant from a managerial point of view. This calls for considering both general and specific aspects of shipping in order not to end up with results that are too myopic. In this paper we are focusing on both general dimensions of shipping and dimensions related to shipping as a possible career path.

### **3. Literature review**

#### **3.1 The image of shipping**

In 2008, a common campaign run by IMO, ILO, BIMCO, ISC, ICS, INTRTANKO, INTERCARGO and ITF mentioned that the industry should continue to provide support for and endorse campaigns aimed at improving image (recent examples include: Shipping Facts, Poseidon Challenge, Maritime Industry Foundation and its Knowledge Centre, Sea Vision, etc.) and use some key industry figures as examples of career progression. During the consultation on the process of EU Integrated Maritime Policy all stakeholders agree on the importance of better public awareness of the seas and oceans, as this could improve the image of the maritime economy and make citizens more aware of the maritime environment. (COM, 2007)

Several researchers (Grewal and Haugstetter, 2007; Asyali and Zorba, 2009; Gekara, 2009; Gardner *et al.*, 2012) stress the importance of improving the image of shipping and the attractiveness of shipping professions given the need for maintaining the maritime skills base in the future and the competitiveness of the maritime industry. The concept of image and the shipping industry is particularly complex given the serious differences between different sectors of the shipping industry. Cruise lines are part of shipping industry, but their public image is very different to those of tanker companies, or terminal operators or ship management companies.

#### **3.2 Shipping as a profession and career**

Berthon *et al.* (2005) identify five dimensions of employer image. Development value is based on potential recruits' perceptions that an employer provides recognition, self-worth and confidence, career-enhancing experiences and a springboard to future employment. Social value is based on perceptions that an employer provides a working environment that is fun, happy, provides good collegial relationships and a team atmosphere. Interest value is the extent to which the employer provides an exciting work environment, novel work practices and makes use of its employee's creativity to produce high quality, innovative products and services. Economic value is the extent to which recruits think that an employer provides above-average salary, compensation package, job security and promotional opportunities.

Application value is based on a recruit's perception that the employer provides opportunities for employees to apply what they have learned and to teach others in an environment that is both customer orientated and humanitarian.

There are several studies focusing on the perception of shipping as a profession and career, shipping as a field of study and cultural dimensions of shipping. Mack's (2007) study of Norwegian seafarers' career experiences, consisting of literature studies and in-depth conversations with 41 Norwegian seafarers, is one example. She identifies a number of key human elements in seafaring careers as perceived by seafarers, i.e. *Seafaring as a calling* (Love of the sea and nature's elements, Sense of adventure and social status), *Facilitators* (Sense of community, Contract periods, Seamanship), *Hinderers* (The competitive environment of "flagging out", Security and safety, Economic and political environment). The seafarers generally express a declining status and interest for seafarers both within the industry and by the society as a whole. According to the respondents seafaring has become much more "industrialized" than before when it was more characterized as a career associated with "adventure".

Barnett, *et al.* (2006) accounts for similar observations, however, focusing on the career path in the maritime industry in an EU context. The main reasons for going to sea according to Barnett, *et al.* (2006) are: *The location of home or place of upbringing, Family influence, Good career prospects, A long-term interest in the sea and Travel* (however, recognized as probably less influential in today's modern age of jet travel than previously; cf. Vickers and Walsh, 1999). The study also identifies the main reasons for staying at sea: *Career ambition to become Master or Chief Engineer, Liking of the lifestyle, "Fast track" promotion and salary, Relationship to employer* (Seafarers holding permanent contracts as compared to a crewing agency tend to be more committed). Furthermore, the study identifies a number of cultural differences between different member states and career paths in the maritime industry: *Geography and location* (the countries related to trade routes, etc.), *Strength of family culture* (the importance of family relationships for employment). Greece is here recognized as an example where family connections is particularly important for employment, although the fact that only one out of five maritime students in a Greek survey (Pallis *et al.* 2011) said they had parents in the maritime industry could offer a reason for questioning how strong this link is. In a study of undergraduate maritime students in Greece and in Hong Kong, Pallis and Ng (2010) reports on a similar proportion of the students coming from "shipping families". The "family culture" aspect may therefore seem to be of a moderate importance when young people who have chosen a maritime educational track are asked about their background. However, the link to a hometown or area with strong maritime traditions seems to be a lot stronger (op.cit), as some two thirds of the more than 400 responding students reported to come from such an area. According to Barnett, *et al.* (2006), *The maritime education and training system* ("vocational" approaches as opposed to more "academic" approaches) is also identified as an attraction. The "love of the sea" is recognized as an important element by

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several researchers (e.g. Dinwoodie, 2000; Chen *et al.* 2003). As an example, two thirds of the undergraduates enrolled in Maritime Business courses interviewed in Dinwoodie (2000) expressed it as important for their interest in the subject. In the same study, about half of the students mentioned job prospects as important, supporting earlier work by Dinwoodie, and Heijveld (1997). None of the undergraduate Greek or Hong Kong students in the study made by Pallis and Ng (2010) had any prior maritime work experience, and only 4 per cent of the postgraduate students had prior work experience from the maritime industry. This illustrates that students pursuing a maritime academic degree very rarely have started their career at sea or in on-shore maritime jobs (Pallis and Ng, 2010). In the same study, 37 per cent of the undergraduate students planned to pursue postgraduate studies related to maritime transport or logistics. Three out of four of the remaining students, not planning for postgraduate degrees, said they wanted a job in the maritime industry after their lower university degree.

### 3.3. Gender and equality aspects

Similar to Mack (2007) and Barnett, *et al.* (2006), but from an industry perspective, Grewal and Haugstetter (2007) recognize work/life balance of seafarers, lifelong learning and flexible career pathways as important elements for the competitiveness of the maritime industry (cf. Ng *et al.*, 2009). The difficulty related to the separation from home and family is also recognized by the study made by Thomas (2012) focusing on women seafarers. This is also confirmed by Pallis *et al.* (2011) in a study of Greek female maritime students. According to Thomas (2012) it is a significant source of stress regardless of genders (cf. Chen *et al.* 2003). However, many women seafarers in the Thomas (2012) study, reported problems related to sexism in the maritime industry in general and onboard ships in particular. This is confirmed by Mitroussi and Papazoglou (2011) in a survey of female employees of maritime companies. Even in countries and regions with a strong tradition for the promotion of equal rights in traditionally gender-dominated workforces (e.g. UK, USA, Scandinavia, and the Netherlands), two thirds of the respondents reported on issues of gender discrimination, according to the same study. This discrimination could take many forms, ranging from not being considered at all for job vacancies to poor opportunities for promotions and generally lower wages. Among the companies involved in this study (Mitroussi and Papazoglou, 2011) only 10 per cent of the management positions were occupied by women. Still, this study, and the study among Greek female maritime students (Pallis *et al.*, 2011) report on highly motivated women who also find the sector to have attractive opportunities. This is even confirmed in a small study among female maritime employees and students in Turkey (Bal and Arslan, 2011), although the Turkish women employees also report on a very patriarchic culture which makes it hard to get into the more interesting jobs. Making the industry more attractive to female employees also has a great potential, substantiated by the fact the only a very small proportion (some 2 per cent according to ITF Seafarer (2013)) of the current workforce in maritime professions are women. In many countries, including countries with a

very strong maritime tradition, like Greece, female students have for a long time only had limited access to maritime training and education (Pallis *et al.*, 2011), but (2009-2010) almost one third of the maritime students are female. The women, who have chosen such an education in Greece, seem to have had a fair degree of support from their parents in their choice of career. This tendency seems to be stronger the higher the incomes of the parents are. The female maritime students in Greece seem to a lesser degree (12,3 per cent) than the male ones (24,1 per cent) to originate from families where the parents have (had) a career in maritime professions. However three quarters of the female maritime students in this survey come from regions with strong maritime traditions and some two thirds of the respondents report that they will have good employment opportunities within maritime professions in their home area. According to the study of Greek female maritime students (Pallis *et al.*, 2011), the primary choice of a workplace seems to be in ocean-going freight shipping, followed by coastal and cruise shipping. Among the ocean-going fleet, tankers are ranked as most desirable, then container and dry bulk vessels. The students seem to find land-based jobs within or outside the maritime business to be significantly less attractive.

Seafaring as a profession provides great professional opportunities both off-shore and ashore (Makkar, 2004). Gardner *et al.* (2012) highlights the need for seafaring expertise and experiences to fill a wide range of jobs in the maritime industry ashore in a UK context. This observation in parallel with the difficulty of separation from home and family for seafarers should provide an opportunity for better career path planning in order to improve the attractiveness of shipping as a profession.

#### **4. Methodology**

We have followed an inductive approach when developing the image of shipping as a measurable construct. This approach involves designing a questionnaire with psychometric scales, collecting the data, and analysing the data using multivariate statistical methods. These steps taken together made it possible to simultaneously develop and define the image construct operationally and nominally, and to measure it quantitatively in various ways.

##### **4.1. Questionnaire design**

The image construct is defined by its dimensions. They have been identified by analysing the quantitative outcomes of the survey. This task involves revealing the number of dimensions and describing their meaning. Based on a literature review on various aspects of shipping and the researchers' own personal contacts with the maritime sector, a set of items were developed. They were considered to have sufficient potential to cover the universe of the most relevant general and career oriented aspects of shipping and at the same time to be understood by the respondents. The items represent the respondents' general opinions about the shipping industry, their beliefs about being a seafarer on board a cargo ship, their beliefs about cargo

ships as a workplace, their opinions about transport by ship, and their thoughts and intentions about their future working lives. The items were designed as seven degree semantic differential scales for mainly cognitive aspects and seven degree Likert-like scales for mainly affective aspects. The questionnaire is shown in Appendix 1. However, it should be noticed that only a subset of the questions are used in the analysis of the present paper.

A Swedish version of the questionnaire was developed by the University of Gothenburg and tested in various ways in a class room session at the University of Gothenburg on a group of 26 university students just having finished upper secondary school. In this test the students first filled out the questionnaires. After that their interpretations of the items as well as the formulation of the items were discussed. This test only led to a few minor modifications of the questionnaire. It was then translated into English and discussed between partners and thereafter translated from English to Norwegian by Molde University College and to Greek by the University of the Aegean.

#### 4.2. Target populations

Two target populations were defined for each country, the main target population and the comparative target population. The main target population is defined as all upper secondary school pupils who are not following a marine programme and who are in their last school year and, if possible, in the second half of their last school year.

All three countries offer maritime programmes at the upper secondary school level, either in separate maritime schools or in schools offering maritime programmes in parallel with other programmes. Pupils in their last school year attending maritime programmes constitute the “Comparative target population” of that country.

When we in the following refer to the pupils/schools associated with the main target population we will use terms like “general schools”, “general programmes”, “general educations” and for the comparative target population “maritime schools”, “maritime programmes”, and “maritime education”.

We thus have one main population and one comparative population from each country.

#### 4.3. Sampling

The study is designed for analysing relationships between variables using multivariate statistical methods. These methods require “epsem” samples (equal probabilities for sample elements) of pupils, otherwise things may become extremely complicated (e.g. see Kish, 1965). Sample designs aiming at estimating population parameters of single variables, may gain in precision from using complicated selection and estimation schemes such as probability proportional to size, stratification, regression estimates etc. However, this is not our main aim,



and epsem selection will give reliable results also for parameter estimation with reasonable sample sizes.

The sample selection was carried out using cluster sampling measuring all pupils in selected clusters. This design, based on simple random sampling of clusters, results in epsem sampling. The definition of clusters was different in the three countries depending on school system, availability of possible selection frames etc. In Sweden and Norway classes were chosen as clusters and in Greece schools. In Sweden and Norway simple random samples of classes were selected from complete lists of classes from these countries' national agencies for education. In Greece a simple random sample of schools was selected from a list of schools from the Ministry of Education.

The final result of the sampling process is one epsem sample per country and target population. These six epsem samples can be handled as independent samples having different selection probabilities.

#### 4.4. Collecting the data

The same research plan for data collection was followed in Sweden, Norway and Greece. The schools were contacted via the headmaster/headmistress of the school who appointed a contact person for each selected class, normally the main teacher of the class or similar. Guidelines were given to the contact persons. The questionnaires were distributed to the pupils during a class activity, filled out under surveillance of the contact person, and collected at the end of the session. This design of the measurement process was chosen firstly in order to improve the measurement properties by minimizing group influences and other distorting activities when filling out the questionnaires and secondly to improve the response rate. No cultural or language problems were discovered during the data collection. This is also what may be expected when using the types of psychometric scales we have used. The responses were finally coded into Excel files by each university.

The following numbers of valid questionnaires were collected: In Sweden 641 (407 males, 234 females), in Norway 773 (445 males, 328 females), and in Greece 684 (371 males, 313 females).

#### 4.5. On nonresponse

There are two causes for nonresponse in the survey. One is refusal by schools or classes to participate and another is pupils' absence from school on the day when the survey took place. In Sweden 59 % of the selected classes participated, in Norway the response rate in terms of classes was 56 %. In Greece, where schools were selected in the first step, all selected schools participated. There are no reasons to expect any association between the two mentioned causes for nonresponse and the survey variables. In a technical sense these non-respondents

can be considered as eliminated from the survey at random. This means that pupils that responded in the survey can be regarded as epsem samples without nonresponse in the statistical analysis.

#### 4.6. Multivariate statistical analysis

Two main multivariate methods were used in the statistical analysis of the data: exploratory factor analysis (e.g. see Hair *et al.*, 1995) and a special type of multiple linear regression.

Factor analysis was first used to identify the image dimensions as factors and to explain the meaning of the dimensions by means of factor loadings (correlations between factors and variables). Factors were first extracted using principal components and then rotated using the varimax method for factor rotation. By means of known items loading significantly on factors it was possible to interpret and name the factors.

Factor scores of the varimax rotated factors were used in a second analysis to estimate the relative importance of the image dimensions for explaining the respondents' stated intentions to work as a seafarer. This was done by estimating beta coefficients using factor scores as independent variables in a linear regression analysis with measures of career intentions as dependent variables. The advantage of this method is that the image dimensions represented by factor scores are orthogonal, given the factor extraction methods we used. This minimizes the multicollinearity problem of multiple regression (e.g. see Aigner, 1971, p.73; Hair *et al.*, 1995, p.400; or Gujarati and Porter, 2009, p.157).

For certain analyses describing image characteristics quantitatively, summated scales (cf. Hair *et al.*, 1995) were used to represent the dimensions. This is the case where specific interpretability is important or if group sizes are too small for reliable factor analysis to be carried out.

#### 4.7. Research collaboration

The research plan, including the research design, the questionnaire and the sampling plan, was developed by Gothenburg University (GU). GU, Molde University College (Molde), and the University of the AEGEAN (AEGEAN), following the research plan, collected the questionnaire data in their respective countries and coded the data into Excel files. GU made the statistical analyses. The paper was written in a collaborative effort between the partners.

## 5. Image dimensions and their interpretations: main target populations

### 5.1. All pupils

Table 1 shows all the dimensions that were extracted and identified in three separate factor analyses, one for each country. A good discussion about criteria for the number of factors to extract can be found in Hair *et al.* (1995, p.337). Considering their five criteria in the light of our aim of making comparisons between countries and groups of pupils results in a decision to extract seven factors. They are identified for each country as shown in Table 2. The interpretations of the dimensions are based on items in the questionnaire that load significantly on the respective dimensions. These items function as a sample of manifest markers for the latent concepts, the image dimensions. The markers are used for interpreting and naming the dimensions. The letters S, N, and G in brackets behind the markers in Table 1 denote countries for which the markers load significantly on the dimensions (the factors). Technical details of the analyses are shown in Appendix 2.

**Table 1. Image dimensions and their interpretations. Results for pupils in general schools in Sweden (S), Norway (N), and Greece (G)**

Dimension	Interpretation of dimension
1. Reward	-Salary (S,N,G) -Opportunity for experiencing interesting places and countries (S,N,G) -Opportunity for career advancement (S,N,G) -Interesting industry (S) -Social responsibility for employees (N) -Social relations on board (N)
2. Significance of Industry	-For world trade (S,N,G) -For my country's trade (S,N,G) -For jobs in my country (S,N,G) -Social relations (S)
3. Ships as a place of work and living	-Working conditions on board (S,N,G) -Leisure time on board a ship (S,N,G) -Risk of injuries in accidents on board (S) -Easiness of frequent communication with friends and family ashore (S) -Organising family life (N) -Daily tasks on board (N,G) -Social relations (G)
4. Environment	-Climate impact from freight transport by ship compared with train (S,N,G) -Damage to the environment from long distance freight transport by ship compared with train (S,N,G) -Environmental responsibility of industry (S,N) -Cost per ton of long distance freight transport by ship compared with train (S,G)
5. CSR of shipping industry	-Degree of social responsibility for all employees (S,N,G) -Degree of equal opportunities for men and women (S,N,G) -Degree of disputes between employers and employees (S,N) -Environmental behaviour of industry (G)

6. Family	-Easiness/difficulty of organizing family life (S)
7. Career shift	-Easiness/difficulty of shifting career from shipping to careers ashore (S,N)
8. Risk	-Injuries through workplace accidents on board (N,G) -Ships sinking due to accidents (N,G) -Barriers to communicating with friends and family ashore (N,G) -Easiness/difficulty of shifting career from shipping to careers ashore (G)
9. Employer-employee relation	-Disputes between employers and employees (G)

Table 2 shows identified image dimensions separately for Sweden, Norway, and Greece. As can be seen, seven dimensions have been identified for each country. There is a remarkable similarity between the patterns of image dimensions of the three countries. The differences may be explained by

- Differences in structure, organisation, and operation of the shipping industries of the countries
- Differences in knowledge and value systems of the respondents
- Recent relevant events in the countries (e.g. events that may influence the perception of risk)

Absence in Table 2 of a certain dimension for a country does not necessarily mean that the aspects of the dimension are missing in the data of the country. The respondents may associate the aspects in question with other dimensions in weak way in terms of factor loadings. The family dimension and the career shift dimension seem to be examples of this. In the Norwegian case the family aspect seems to be associated with dimension 3 “Ships as a place of work and living”. In the Greek case, the “career shift” dimension” seems to be associated with dimension 9 “Employer-employee relation”. Such phenomena may occur in “visual” interpretations since a give variable (item) may load on more than one factor. However, this does not mean that the factors collectively have lost information when used for statistical analyses.

**Table 2. Image dimensions for Sweden (S), Norway (N), and Greece (G). Results for pupils in general schools (“X” denotes presence of a dimension).**

Dimension	S	N	G
1. Reward	X	X	X
2. Significance of Industry	X	X	X
3. Ships as a place of work and living	X	X	X
4. Environment	X	X	X
5. CSR of shipping industry	X	X	X
6. Family	X		
7. Career shift	X	X	

8. Risk		X	X
9. Employer-employee relation			X

The “employer-employee relation” as a dimension has only been identified for Greece. This may have two explanations. One is media reflections of the turbulence in Greece following the austere financial measures taken. These may have made Greek respondents generally more aware of conflicts in the labour-markets and therefore more sensitive to this question in the questionnaire. The other explanation is the comparatively harmonious relations between employers and unions in the Scandinavian countries.

## 5.2. Generalized nominal definitions of identified image dimensions

As generalized definitions of the image dimensions shown in Table 1 and Table 2 we have formulated the following nominal constitutive definitions:

- Reward: Monetary compensation, job satisfaction, career advancement, and other physical, mental or social benefits associated with working in the shipping industry
- Significance of industry: Perceived significance of shipping for world trade, for trade and jobs of the individual’s country, and for international social relations
- Ships as a place of work and living: Integrated impression of working and living at the same restricted place on a ship involving working conditions, daily tasks, social life, leisure time, communicating with people ashore, and organizing family life.
- Environment: Climate impact and environmental damage from shipping perceived in the light of the shipping industry’s environmental behaviour and responsibility.
- CSR: Corporate social responsibility for all employees, for equal opportunities for men and women, and for creating positive employer-employee relations
- Family: Easiness/difficulty of organizing family life being a seafarer.
- Career shift: Easiness/difficulty of shifting career from shipping to careers ashore (Career lock in).
- Risk: Ships sinking due to accidents, injuries through workplace accidents on board, and social risks associated with being locked in on board far from family and friends.
- Employer-employee relation: Perceived level of disputes between employers and employees.

These definitions are based on the dimensions that have been extracted by factor analysis (shown in Table 1) with some very small modifications based on other observations in the data. The definitions can be seen as generic formulations of the image dimension constructs.

### 5.3. Image dimensions: males and females

Table 3 shows image dimensions for males and females in Sweden, Norway, and Greece extracted in six separate factor analyses on subpopulations of the main target population, pupils in general schools.

**Table 3. Image dimensions. Comparisons between males (M) and females (F) for pupils in general schools in Sweden, Norway, and Greece (“X” denotes presence of a dimension).**

Dimension	Sweden		Norway		Greece	
	M	F	M	F	M	F
1. Reward	X	X	X	X	X	X
2. Significance of Industry	X	X	X	X		X
3. Ships as a place of work and living	X	X	X	X	X	X
4. Environment	X		X	X		X
5. CSR of shipping industry	X	X	X		X	X
6. Family		X		X	X	
7. Career shift	X	X	X		X	X
8. Risk		X	X	X	X	X
9. Employer-employee relation	X				X	
10. Reward II				X		

There are some noticeable differences between genders within countries and also between countries. As mentioned previously, the dimension “employer-employee relation”, which has only been identified for men according to the table, might be affected by general labour-market turbulence.

Dimension 10 “Reward II” deserves a separate explanation. It depends on significant factor loadings for Norwegian females on question number 10 and 11. These items represent beliefs that seafarers have opportunities for experiencing interesting places and countries together with career advancement. This dimension does not appear separately for other subpopulations. This observation for female Norwegian respondents may reflect some of the more “romantic” perceptions of a career at sea, like the ones reported on in the survey of Norwegian sailors (Mack, 2007). Careers on-board cruise-liners may also be more present in the minds of Norwegian pupils due to a traditional strong presence of Norwegian officers on-board such vessels.

## 6. Image dimensions and their interpretations: comparative target populations

A fundamental difference between pupils in general schools and pupils in maritime school is that the latter have already chosen an industry and a career path for their future professional life which they can be assumed to follow with a high probability. Therefore they can be assumed to be much more knowledgeable about shipping in general and the life as a seafarer in particular. This knowledge may be acquired both before and during their education. A logical hypothesis based on this assumption would be that their image of shipping would be spanned by more dimensions and based on deeper knowledge than the image held by pupils in general schools.

This can also be seen in the data. Eight dimensions were extracted for each country by exploratory factor analysis of pupils in maritime schools in Sweden, Norway, and Greece (versus seven dimensions for general schools). Table 4 shows the interpretations of the dimensions and the names given to them, and Table 5 shows how dimensions were distributed among countries.

**Table 4. Image dimensions and their interpretations. Results for pupils in maritime schools in Sweden (S), Norway (N), and Greece (G).**

Dimension	Interpretation of dimension
1. Reward	<ul style="list-style-type: none"> <li>-Salary(S,N,G)</li> <li>-Opportunity for experiencing interesting places and countries(N,G)</li> <li>-Opportunity for career advancement(G)</li> <li>-Interesting industry(G)</li> <li>-Easiness/difficulty of shifting career from shipping to careers ashore(S)</li> <li>-Easiness/difficulty of organizing family life(S)</li> </ul>
2. Significance of Industry	<ul style="list-style-type: none"> <li>-For world trade(S,N,G)</li> <li>-For my country's trade(S,N,G)</li> <li>-For jobs in my country(N,)</li> <li>-Career advancement(S)</li> <li>-Environmental responsibility of industry(G)</li> </ul>
3. Ships as a place of work and living	<ul style="list-style-type: none"> <li>-Working conditions on board(S,N,G)</li> <li>-Degree of equal opportunities for men and women(N)</li> <li>-Leisure time on board ships(S,G)</li> <li>-Easiness of frequent communication with friends and family ashore(S)</li> <li>-Organising family life()</li> <li>-Daily tasks on board(N)</li> <li>-Social relations on board ships(S)</li> <li>-Career advancement(N)</li> <li>-Environmental responsibility of industry(G)</li> <li>-Interesting industry(N)</li> </ul>
4. Environment	<ul style="list-style-type: none"> <li>-Climate impact from freight transport by ship compared with train (S,N,G)</li> <li>-Damage to the environment from long distance freight transport by ship compared with train(S,N,G)</li> <li>-Environmental responsibility of industry(S)</li> </ul>

	-Cost per ton of long distance freight transport by ship compared with train(S,N,G) -Easiness/difficulty of shifting career from shipping to careers ashore(G)
5. CSR of shipping industry	-Degree of social responsibility for all employees(N,G) -Degree of equal opportunities for men and women(S,G) -Degree of disputes between employers and employees(N) -Environmental behaviour of industry(S,N) -Interesting industry(S) -Working condition on board(S) -Easiness of frequent communication with family and friends ashore(G) -Significance for jobs in my country(G)
6. Family	-Social relations on board(G)
7. Career shift	-Easiness/difficulty of shifting career from shipping to careers ashore (N)
8. Risk	-Injuries through workplace accidents on board(S,N,G) -Ships sinking due to accidents(S,N)
9. Employer-employee relation	-Disputes between employers and employees(G,S) -Degree of social responsibility for all employees(S,G) -Daily tasks on board(G)
10. Personal satisfaction from working as a seafarer	-Opportunity for experiencing interesting places and countries(S) -Significance of shipping for jobs in my country(S)
11. Social conditions on board	-Easiness/difficulty of organising family life(N) -Degree of social responsibility for all employees(N) -Social relations on board ships(N) -Leisure time on board ships(N)

Compared with the image dimensions extracted from pupils in general schools, two more dimensions appear. One is “Personal satisfaction from working as a seafarer”, which seems quite logical remembering that these pupils have already expressed a career preference for shipping by their choice of education. The other is “Social conditions on board”, the appearance of which may be explained by their knowledge about the daily life of seafarers learned from education, social networks or their place of living.

Table 5 shows the extracted image dimensions for maritime school pupils separately for Sweden, Norway, and Greece. As can be seen, eight dimensions have been identified for each country. There is a remarkable similarity between the patterns of image dimensions of the three countries. The differences may be explained by differences between countries in terms of shipping industries, economies, labour markets, cultures, traditions, recent events etc. The absence of a dimension for a country does not mean that aspects of this dimension is lacking in the data. They may be included in other dimensions, which may be logical given all the facts of the country and its shipping industry.



**Table 5. Image dimensions extracted from pupils in maritime schools in Sweden, Norway and Greece (“X” denotes presence of a dimension).**

Dimension	Sweden	Norway	Greece
1. Reward	X	X	X
2. Significance of Industry	X	X	X
3. Ships as a place of work and living	X	X	X
4. Environment	X	X	X
5. CSR of shipping industry	X	X	X
6. Family			X
7. Career shift		X	
8. Risk	X	X	X
9. Employer-employee relation	X		X
10. Personal satisfaction from working as a seafarer	X		
11. Social conditions on board		X	

The fact that the “family” dimension does not appear for Scandinavian respondents from maritime schools may be a bit surprising, as the poor possibilities for an ordinary family life has been identified as a key challenge in recruitment campaigns conducted by the Scandinavian shipowners and their associations. There are several potential explanations of this somewhat surprising result. One could be that this problem actually is smaller for Scandinavian sailors in general because a very significant proportion of these are employed in regular local and short distance regional operations such as ferries and feeder services (Sweden) and ferries and offshore activities (Norway). Normally, these seafarers will have more frequent contact with their home environment than the ones employed in short and deep sea traffic. The availability of good internet-based communications offered by Scandinavian shipowners could be another explanation. Finally, women seem to be more aware of family aspects than men, and the sample proportion of women in maritime schools in Sweden and Norway is smaller than 10%, but about 50% in Greece.

## **7. Pupils’ ratings of the shipping industry’s image**

It is possible to calculate estimates of the respondents’ ratings of the shipping industry along the seven dimensions that have been identified as reflectors of the images they hold. The extracted factors expressed as factor loadings are not easy to interpret quantitatively for this purpose. A better approach is to use summated scales. These are used as approximations of factors that have been extracted to represent the dimensions. A summated scale for a factor, and thereby for a dimension, is normally calculated as an average of the items that load significantly on the factor. A summated scale is expressed in the same units as the items and therefore easier to interpret than the factor it represents.

### 7.1. General schools

Table 6 shows how pupils in general schools rate the image of shipping in the nine identified dimensions. The ratings shown in the table can be treated as 7-degree interval scales ranging from 1 to 7, where 7 represent the maximum positive rating. The development of summated scales behind the ratings in table 6 is explained in Appendix 3. As for all interval scaled psychometric measures, meaningful conclusions about strength/size/intensity etc. based on a single measure cannot normally be made. All conclusions should be based on comparison between measures, either between measures from the same scale applied to different objects or between measures from different scales applied to the same object. The “Mean rating” at the bottom line of the tables are simple averages of the non- zero ratings per column in the tables presented in order to give a quick overview of levels.

**Table 6. Ratings along image dimensions by pupils in general schools in Sweden, Norway, and Greece (7-degree rating scale ranging from 1 to 7, 7= maximum)**

Dimension	Sweden	Norway	Greece
1. Reward	4,5	5,3	5,7
2. Significance of industry	4,7	5,3	5,5
3. Ships as a place of work and living	3,9	4,2	4,3
4. Environment	4,1	4,5	4,2
5. CSR of shipping industry	4,2	4,5	4,1
6. Family	3,6		
7. Career shift	4,0	4,3	
8. Risk		4,3	3,6
9. Employer-employee relation			3,3
Mean rating	4,1	4,6	4,4

A two sample t test applied to all three pairs of countries shows that the mean ratings (the bottom line of Table 6) are statistically different between countries at all practical significance levels (<0,0002). The image of shipping seems to be more positive in Norway than in Sweden with Greece in between if conclusions are based on the mean ratings. Shipping is relatively speaking a more significant industry (e.g. in terms of fleet size) in Norway and Greece than in Sweden. The higher ratings in these countries on this dimension may therefore be understandable.

**Table 7. Ratings along image dimensions for males (M) and females (F) in general schools in Sweden, Norway, and Greece (7-degree rating scale from 1 to 7, 7= maximum).**

Dimension	Sweden		Norway		Greece	
	M	F	M	F	M	F
1. Reward	4,4	4,1	5,2		5,6	5,7
2. Significance of Industry	4,9	4,8	5,3	5,3		5,4
3. Ships as a place of work and living	3,9	3,7	4,2	4,8	4,2	4,4
4. Environment	4,2	4,8	4,5	4,6		4,1
5. CSR of shipping industry	4,3	4,1	4,4	4,3	4,3	4,1

6. Family				3,7	4,6	
7. Career shift	4,0	4,4	4,4		3,9	3,3
8. Risk			4,6	4,3	3,8	3,5
9. Employer-employee relation	4,0	3,9			3,7	
10. Reward II				5,4		
Mean rating	4,2	4,3	4,7	4,6	4,3	4,4

There are only small differences between males and females per country in terms of level of ratings. However, the dimensions identified seem to be somewhat different between the subpopulations.

## 7.2. Maritime schools

Table 8 shows how secondary school pupils of maritime schools have rated shipping along the image dimensions that were identified for each country. Summated scales have been used to represent the identified dimensions. The ratings shown in Table 8 can be treated as measured by 7-degree interval scales ranging from 1 to 7, where 7 represent the maximum positive rating.

**Table 8. Ratings along image dimensions for maritime school pupils in Sweden, Norway, and Greece (7-degree rating scale from 1 to 7, 7= maximum)**

Dimension	Sweden	Norway	Greece
1. Reward	4,5	5,8	6,3
2. Significance of Industry	5,7	6,3	5,3
3. Ships as a place of work and living	5,2	6,1	4,6
4. Environment	5,1	5,4	4,3
5. CSR of shipping industry	5,5	5,1	4,0
6. Family			4,5
7. Career shift		4,5	
8. Risk	5,1	5,3	3,3
9. Employer-employee relation	4,6		3,5
10. Personal satisfaction from working as a seafarer	5,3		
11. Social conditions on board		5,1	
Mean rating	5,1	5,5	4,5

Two sample t tests show significant differences in mean ratings (bottom line of Table 8) between all three pairs of countries at all practical levels of significance (<0,0002). There are both similarities and differences between countries. Two differences concern how “Reward” and “ships as a place of work and living” are rated by pupils from the three countries. Another difference can be found in the dimension “Risk”, where the score is much lower in Greece compared to Norway and Sweden. The likely explanation seems to be that the risks of injuries through workplace accidents are perceived as high among Greek respondents. This is a factor which might have been influenced by recent media attention to shipping accidents. The data

was collected in spring 2012, a few months after the Costa Concordia accident in Italy. Although the accident got a lot of media attention in Scandinavia as well, one might suspect that the media impact was bigger in Mediterranean countries like Greece.

No comparative ratings for men and women have been calculated for maritime schools due to the low proportion of women participating in these schools in Sweden and Norway.

## **8. The importance of image as a determinant for pupils' choice of career path and their opinion of shipping as an attractive industry to work in**

Pupils' estimated ratings of shipping in various image dimensions were presented in chapter 7. However, they are general ratings of shipping in dimensions expected to represent both general and more specific aspects that can be associated with shipping as a career path and a place of work. These ratings cannot be expected to represent importance of the dimensions for such pupil decisions which demand personal mental commitment and personal mental investment, for example pupils' decisions about choice of career path. The purpose of the present chapter is to analyze how important the identified image dimensions are for upper secondary school pupils' choice of career path and their opinion of shipping as an attractive industry to work in.

### 8.1. Method

It is widely assumed within the maritime sector that improving the image of the shipping industry could improve the attractiveness of the industry as a future career path for young people. It would therefore be interesting to study the relationship between young peoples' image of the shipping industry and their actual choice of career path. However, this would require a complicated, demanding, and costly research design extended over a rather long period of time in order to observe actual behaviour. Using intentions, plans and similar variables as substitutes for actual behaviour has a long history in research in sociology, marketing and consumer behaviour, and this is the approach we have chosen. In the following, we analyse the relationship between upper secondary school pupils' image ratings in various dimensions and

1. Their stated intentions to work as a seafarer (variable  $Y_1$ ),
2. Their perceptions of shipping as an attractive industry to work in (variable  $Y_2$ )

We use the variable  $Y_1 = (Q_{27} + Q_{28})/2$  as "intention to work as a seafarer", where  $Q_{27}$  and  $Q_{28}$  are variables formed from answers to questions 27 and 28 in the questionnaire, and  $Y_2 = Q_7$ , where  $Q_7$  refers to question 7 in the questionnaire (see Appendix 1.). We then regress  $Y_1$  and  $Y_2$  transformed to standardized dependent variables on the image dimensions  $D_1, D_2, \dots, D_n$ , where the  $D$  variables are varimax rotated factor scores (orthogonal) that have

been standardized in a last step. Expressed otherwise, we estimate the  $\beta$  coefficients in the regression model.

$$3. Y = \beta_1 D_1 + \beta_2 D_2 + \dots \beta_n D_n \quad (1)$$

This has been done for various populations and sub-populations of interest. The  $\beta$  coefficients in (1) are known as beta coefficients. The advantage of using beta coefficients in this context is that a beta coefficient reflects the relative impact on Y of the D variable to which the beta coefficient is associated. Beta coefficients can be directly compared within the same estimated model. This means that we have a tool for inferring the relative importance of different image dimensions for upper secondary school pupils' stated intentions to work as a seafarer or their perceptions of shipping as an attractive industry to work in. We interpret model (1) as a causal model in the context of our research design, since it can be argued that it fulfils at least two out of three desirable general requirements for drawing causal conclusions: correlation between Y and the independent variables, and time order of occurrence of variables. The third one, elimination of other possible causal factors, has only been partially analysed (see Churchill, 1995, ch.5).

Inference about importance can be made without direct questioning the respondent about importance in this context which would be a very difficult research task to carry out. The difference between  $Y_1$  and  $Y_2$  is that stating a personal intention ( $Y_1$ ) is more demanding for a respondent than expressing an opinion about how attractive an industry is to work in ( $Y_2$ ), since the latter does not necessarily associate any personal commitment with the respondent. The use of  $Y_2$  as dependent variable in (1) is assumed to reveal the importance of different image dimensions for the forming of general opinion among young people about the shipping industry as a labor market and place of work. It should be said also, that our purpose is only to analyze the relationship between the image dimensions that have been identified in the preceding chapters and  $Y_1$  and  $Y_2$  respectively. Our purpose is not to build models of these two dependent variables with maximal explanative power. Such a purpose would require use of more explanative variables than image variables.

In the following we have estimated the regression model (1) with  $Y_1$  and  $Y_2$  as dependent variables on data for the various populations and sub-populations. This has only been done for pupils of general schools, since pupils of maritime schools already have made a choice of career path, at least in terms of choice of education.

## 8.2. Empirical results

Tables 9-12 show the results of the analyses of the importance of identified image dimensions for pupils' career intentions and their general opinions of the shipping industry as an attractive industry to work in. Results are shown for countries and genders. The tables show estimated beta coefficients and their levels of significance (within brackets) assuming two-tailed tests of

the hypothesis that  $\beta$  is equal to zero. Conclusions about relative impact should only be drawn from significant beta coefficients, which from a practical standpoint could mean, say, significance levels  $<0,10$ . It should also be observed that relative levels of impact/importance of image dimensions can be compared within groups (vertically per column in the tables). Horizontal comparisons along rows in the tables will only allow comparison of the internal ranks of given dimensions between groups which may be of minor interest.

**Table 9. Importance of identified image dimensions for pupils' stated career intentions. Estimates of beta coefficients for general schools (Main target populations) in Sweden, Norway, and Greece. Significance levels within brackets.**

Dimension	Importance for career intentions		
	Sweden	Norway	Greece
1. Reward	0,295 (0,00)	0,208 (0,00)	0,207 (0,00)
2. Significance of Industry	-0,073 (0,10)	0,037 (0,30)	0,122 (0,00)
3. Ships as a place of work and living	0,212 (0,00)	0,439 (0,00)	0,266 (0,00)
4. Environment	0,084 (0,06)	0,089 (0,01)	0,095 (0,01)
5. CSR of shipping industry	-0,001 (0,98)	0,175 (0,00)	0,157 (0,00)
6. Family	0,131 (0,00)		
7. Career shift	-0,082 (0,07)	0,062 (0,08)	
8. Risk		0,174 (0,00)	0,089 (0,02)
9. Employer-employee relation			0,209 (0,00)

Table 9 shows that two image dimensions seem to be more important than the rest for pupils' stated intentions to work in the shipping industry: "Reward" and "Ships as a place of work and living". The same seems to be the case for pupils' general opinion about shipping (Table 10). For both dimensions, the beta coefficients are positive and significantly different from zero at all practical levels for all three countries. However, when it comes to "significance of industry", this dimension does only show significant impact on career intentions for Greek pupils. It can also be seen that "significance of industry" means more for forming general opinion than it means for pupils' stated intentions to work in the shipping industry.

"CSR of shipping industry" is an important determinant for Norwegian and Greek pupils' career intentions, while this determinant is without importance for Swedish pupils. On the other hand, "Family" appears as an important determinant for Swedish pupils, but not so for Norwegian and Greek pupils.

"CSR of shipping industry" is the second most important determinant for Swedish pupils' opinion of shipping as an attractive industry to work in, while the same determinant ranks fourth for Norway and fifth for Greece.

The negative value of "Significance of industry" for Sweden (Table 9) seems to have an interesting explanation. The dimension as such contains variables representing shipping's global significance and variables representing significance for the respondent's own country.

In the Swedish case, from looking at inter-correlations within the “Significance of industry” dimension it can be concluded that national significance of the industry is positively associated with pupils’ career intentions, whereas global significance shows negative association. This observation underlines that image dimensions operationally designed for general purposes may have to be redesigned for specific uses.

**Table 10. Importance of identified image dimensions for pupils’ general opinion about shipping as an attractive industry to work in. Estimated beta coefficients for general schools (Main target populations) in Sweden, Norway, and Greece. Significance levels within brackets.**

Dimension	Importance for general opinion of shipping as an attractive industry to work in		
	Sweden	Norway	Greece
1. Reward	0,376 (0,00)	0,372 (0,00)	0,240 (0,00)
2. Significance of Industry	0,022 (0,60)	0,187 (0,00)	0,356 (0,00)
3. Ships as a place of work and living	0,165 (0,00)	0,402 (0,00)	0,316 (0,00)
4. Environment	0,055 (0,18)	0,090 (0,01)	0,044 (0,20)
5. CSR of shipping industry	0,298 (0,00)	0,182 (0,00)	0,111 (0,00)
6. Family	0,133 (0,00)		
7. Career shift	-0,001 (0,97)	0,147 (0,00)	
8. Risk		0,036 (0,29)	-0,046 (0,18)
9. Employer-employee relation			0,157 (0,00)

Table 11 and Table 12 show the importance of the identified image dimensions for pupils’ intentions and opinions for men and women in Sweden, Norway, and Greece. There are some differences that deserve mentioning. Table 11 shows differences between men and women. For Swedish men, “Reward” and “Ships as a place of work and living” are the most important dimensions (in that order) for career intentions, while for Swedish women, the corresponding ranking is “Reward” and “Environment”. For Norwegian male pupils, “Reward” and “Ships as a place of work and living” have the greatest impact on career intentions, whereas the rank order for Norwegian female pupils is “Ships as a place of work and living” followed by “Family”. Greek male pupils, finally, have “Ships as a place of work and living” as the most important determinant for career intentions followed by “CSR of shipping industry”. Female pupils of Greece have the same rankings as the male pupils.

**Table 11. Importance of identified image dimensions for pupils’ stated career intentions. Estimated beta coefficients for men and women in general schools (Main target populations) in Sweden, Norway, and Greece. Significance levels within brackets.**

Dimension	Importance for career intentions					
	Sweden		Norway		Greece	
	M	F	M	F	M	F
1. Reward	0,453 (0,00)	0,191 (0,01)	0,404 (0,00)		0,248 (0,00)	0,192 (0,00)
2. Significance of Industry	0,015 (0,80)	-0,175 (0,01)	0,046 (0,37)	0,121 (0,02)		0,124 (0,03)

3. Ships as a place of work and living	0,236 (0,00)	0,165 (0,01)	0,332 (0,00)	0,378 (0,00)	0,322 (0,00)	0,260 (0,00)
4. Environment	0,051 (0,38)	0,188 (0,01)	0,090 (0,08)	0,156 (0,00)		-0,021 (0,70)
5. CSR of shipping industry	0,063 (0,28)	-0,103 (0,12)	0,237 (0,00)	0,141 (0,01)	0,266 (0,00)	0,207 (0,00)
6. Family				0,323 (0,00)	0,075 (0,13)	
7. Career shift	-0,041 (0,48)	-0,060 (0,37)	0,051 (0,32)		0,144 (0,00)	0,031 (0,58)
8. Risk		-0,063 (0,35)	0,027 (0,60)	-0,008 (0,87)	0,040 (0,41)	0,118 (0,03)
9. Employer-employee relation	0,005 (0,93)				0,087 (0,08)	
10. Reward II				-0,105 (0,04)		

Comparing men and women in the Swedish case (Table 12) shows that “Reward” is most important as a determinant for pupils’ general opinion of shipping as an attractive industry to work in followed by “CSR of shipping industry” (tie with “Ships as a place of work and living”). The order is the same for both genders. For Norwegian male pupils, “Reward” seems to be the strongest determinant followed by “CSR of shipping industry”, while for Norwegian female pupils the strongest determinant seems to be “Ships as a place of work and living” followed by “Family”. For Greece, finally, male pupils’ most important determinant for forming their general opinion of shipping as an attractive industry to work in is “Ships as a place of work and living” with “Reward” ranked second. For Greek female pupils, the inferred rank is “Significance of industry” followed by “Ships as a place of work and living”.

**Table 12. Importance of identified image dimensions for pupils’ general opinions about shipping as an attractive industry to work in. Estimated beta coefficients for men and women in general schools (Main target populations) in Sweden, Norway, and Greece.**

Dimension	Importance for general opinion of shipping as an attractive industry to work in					
	Sweden		Norway		Greece	
	M	F	M	F	M	F
1. Reward	0,446 (0,00)	0,285 (0,00)	0,539 (0,00)		0,316 (0,00)	0,205 (0,00)
2. Significance of Industry	0,094 (0,09)	-0,064 (0,33)	0,243 (0,00)	0,222 (0,00)		0,324 (0,00)
3. Ships as a place of work and living	0,150 (0,01)	0,203 (0,00)	0,233 (0,00)	0,395 (0,00)	0,356 (0,00)	0,318 (0,00)
4. Environment	0,087 (0,11)	0,102 (0,12)	0,014 (0,76)	0,197 (0,00)		0,046 (0,37)
5. CSR of shipping industry	0,250 (0,00)	0,203 (0,00)	0,318 (0,00)	0,055 (0,24)	0,044 (0,20)	0,179 (0,00)
6. Family				0,364 (0,00)	-0,046 (0,18)	



7. Career shift	0,034 (0,54)	0,131 (0,05)	0,019 (0,67)		0,157 (0,00)	-0,123 (0,02)
8. Risk		-0,087 (0,18)	-0,047 (0,29)	-0,075 (0,11)	0,24 (0,00)	0,024 (0,63)
9. Employer-employee relation	0,213 (0,00)				0,111 (0,00)	
10. Reward II				0,132 (0,01)		

## 9. Conclusions and discussion

Shipping industry representatives often claim that shipping has an image problem, partly asserting that shipping does not get the kind of media attention it deserves. Our survey among 2098 upper secondary school pupils in Greece, Sweden and Norway shows that young people generally have a quite positive image of the shipping industry, somewhat stronger in Norway than in Sweden and Greece. Gender differences seem to be small both with respect to the general image of shipping and regarding the various image dimensions examined in this paper.

The paper has developed an image construct based on the findings of a large scale survey of the image of shipping and image related concepts among upper secondary school pupils in Sweden, Norway and Greece. The anatomy of the image concept have been analysed by means of multivariate statistical analysis and ten image dimensions have been identified. The composition of image dimensions between countries are remarkable similar.

Empirical analyses show that two image dimensions seem to be more important than the rest when related to stated intentions to work in the shipping industry and to pupils' general opinion about shipping, namely "Reward" and "Ships as a place of work and living".

The reward dimension is more complex and covers more aspects than could be expected. To young people, opportunity for career advancement and opportunity for experiencing interesting places and countries seem to exist at the same level of perception as salary in their reward concept. At a lower and weaker level, interesting work and social relations on board are also aspects that by some pupils are associated with reward. "Ships as a place of work and living" is also a complex dimension associated with both physical and mental aspects of work and leisure time on board a ship (described in Table 1).

Among Greek pupils "Ships as a place of work and living" is the most important dimension for their stated intentions to work in the shipping industry, followed by "Reward". The order is the same for Norwegian pupils, while Swedish pupils rank "Reward" as the most important dimension for their choice, followed by "Ships as a place of work and living". The same order has been revealed for the three countries when it comes to pupils' general opinion about the shipping industry

The results from this study can be used as a base for describing and explaining the images that young people have of the shipping industry. Such knowledge is fundamental for deriving and developing constructive strategies for promoting careers in shipping, for adapting shipping to the expectations of young people, and for the development of creative and relevant educational programmes. The identified image construct with its different dimensions are important for a variety of stakeholders. Companies in the shipping industry, ship-owners associations, trade associations, labour unions, transport authorities and administrations, policy makers at the national and supra-national level are examples of stakeholders that have direct or indirect influence on many of the identified image dimensions where this knowledge may be applied in order to develop and improve the image of shipping.

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## Appendix 1



### Questionnaire about shipping

This questionnaire is part of a research project, “KNOWME”, supported by the EU. In this project we want to find out how young people in some European countries perceive shipping, and what opinions they have about the shipping industry. The results of the project will be used as one of the inputs for EU’s maritime policy in the future. The project is carried out in collaboration between universities in Sweden, Norway, UK, Germany and the Greece.

We would greatly appreciate if you could fill out and return the questionnaire. Your answers will be treated confidentially. If you have any questions, please contact:

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#### Explanations:

Shipping: Commercial use of ships for transport

Shipping Industry: Companies and people operating or owning ships in commercial use for transport

Seafarer: Man or woman employed onboard a ship regardless of position

#### My general opinion about the shipping industry

Answer questions 1 to 9 by placing a check mark in one of the boxes between the words to the left and right of each 7-degree rating scale. The more you strongly agree with the statement given in a question, the further to the right you should place your mark, and the more you strongly disagree, the further to the left you should place your mark. Place your mark in the box in the middle (the “0” box) if you have no opinion at all about a certain question

1. In general, long distance freight transport causes less damage to the environment if done by ship than by train

Strongly disagree        Strongly agree

2. The shipping industry is behaving in an environmentally responsible way

Strongly disagree        Strongly agree

3. The shipping industry takes social responsibility for all employees

Strongly disagree        Strongly agree

4. The shipping industry offers equal opportunities for men and women

Strongly disagree        Strongly agree

5. Shipping appears to be an interesting industry

Strongly disagree        Strongly agree

6. Disputes between employers and employees are uncommon in the shipping industry

Strongly disagree        Strongly agree

7. Shipping seems to be an attractive industry to work in

Strongly disagree        Strongly agree

8. The shipping industry has a good reputation among my friends

Strongly disagree        Strongly agree

9. All in all, my opinion about the shipping industry is positive

Strongly disagree        Strongly agree

#### My beliefs about being a seafarer on board a cargo ship

Answer questions 10 to 26 by placing a check mark in one of the boxes between the words to the left and right of each 7-degree rating scale. The stronger your belief is described by the word to the left, the further to the left you should place your mark, and the stronger your belief is described by the word to the right, the further to the right you should place your mark. Place your mark in the box in the middle (the “0” box) if you have no opinion at all about a certain question.

10. The opportunity for experiencing interesting places and countries as a seafarer is:

Small        Big

11. The opportunity for career advancement as a seafarer is:

Small        Big

1(3)

12. **Organising family life** as a seafarer appears to be:

Difficult        Easy  
-3 -2 -1 0 +1 +2 +3

13. **Shifting career** from being a seafarer to careers ashore is:

Difficult        Easy  
-3 -2 -1 0 +1 +2 +3

14. The **wage level** for seafarers is:

Low        High  
-3 -2 -1 0 +1 +2 +3

**My beliefs about cargo ships as a workplace**

15. The **daily tasks** on board ships are:

Boring        Stimulating  
-3 -2 -1 0 +1 +2 +3

16. **Working conditions** on board ships are:

Bad        Good  
-3 -2 -1 0 +1 +2 +3

17. **Social relations** on board ships are:

Bad        Good  
-3 -2 -1 0 +1 +2 +3

18. **Leisure time** on board ships is:

Boring        Stimulating  
-3 -2 -1 0 +1 +2 +3

19. The **risk of injuries** through workplace accidents on board ships is:

High        Low (which is positive)  
-3 -2 -1 0 +1 +2 +3

20. On board ships, **frequent communication with friends and family ashore** is:

Difficult        Easy  
-3 -2 -1 0 +1 +2 +3

**My opinion about transport by ship**

21. Compared with transport by train, the cost per ton of long distance freight transport by ship is:

High        Low  
-3 -2 -1 0 +1 +2 +3

22. Compared with using train, the climate impact from long distance freight transport by ship is:

Great        Small  
-3 -2 -1 0 +1 +2 +3

23. Compared with other modes (truck, aviation, train), the significance of shipping for world trade is:

Small        Great  
-3 -2 -1 0 +1 +2 +3

24. Compared with other modes (truck, aviation, train), the significance of shipping for Sweden's foreign trade is:

Small        Great  
-3 -2 -1 0 +1 +2 +3

25. Compared with other modes (truck, aviation, train), the significance of shipping for jobs in Sweden is:

Small        Great  
-3 -2 -1 0 +1 +2 +3

26. The risk that ships sink due to accidents at sea is:

High        Low (which is positive)  
-3 -2 -1 0 +1 +2 +3

**About my future working life**

Answer questions 27 to 31 by placing a check mark in one of the boxes between the words to the left and right of each 7-degree rating scale. The more you strongly agree with the statement about your future working life given in a question, the further to the right you should place your mark, and the more you strongly disagree, the further to the left you should place your mark.

27. I could imagine working as a seafarer for a period some time in the beginning of my working life

Strongly disagree        Strongly agree  
-3 -2 -1 0 +1 +2 +3

28. I intend to go in for a career as a seafarer

Strongly disagree        Strongly agree  
-3 -2 -1 0 +1 +2 +3

29. It is not impossible that I will work occasionally as a seafarer for short periods as a complement to another main occupation

Strongly disagree        Strongly agree  
-3 -2 -1 0 +1 +2 +3

30. My family has proposed that I should work in the shipping industry

Strongly disagree        Strongly agree  
-3 -2 -1 0 +1 +2 +3

31. I have friends who have proposed that I should work in the shipping industry

Strongly disagree        Strongly agree  
-3 -2 -1 0 +1 +2 +3

**About my background**

32. Gender: Male  Female

33. Age: \_\_\_\_\_ Years

34. Have any of your parents been working (please mark your answer with an x in one box on each row below):

- |   |                             |   |   |
|---|-----------------------------|---|---|
| In the shipping industry:   | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than two years | <input type="checkbox"/> Yes, two years or more |
| In the port industry:   | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than two years | <input type="checkbox"/> Yes, two years or more |
| On a fishing vessel:  | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than two years | <input type="checkbox"/> Yes, two years or more |
| In a fishing port:  | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than two years | <input type="checkbox"/> Yes, two years or more |
| In another transport or logistics industry:<br>(other than those mentioned above) | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than two years | <input type="checkbox"/> Yes, two years or more |

35. Do you have brothers, sisters or grandparents that have been working (please mark your answer with an x in one box on each row below):

- |  |                             |   |   |                                     |
|--|-----------------------------|---|---|-------------------------------------|
| In the shipping industry:  | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than two years | <input type="checkbox"/> Yes, two years or more | <input type="checkbox"/> Don't know |
| In the port industry:  | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than two years | <input type="checkbox"/> Yes, two years or more | <input type="checkbox"/> Don't know |
| On a fishing vessel:   | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than two years | <input type="checkbox"/> Yes, two years or more | <input type="checkbox"/> Don't know |
| In a fishing port:   | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than two years | <input type="checkbox"/> Yes, two years or more | <input type="checkbox"/> Don't know |
| In another transport or logistics industry<br>(other than those mentioned above) | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than two years | <input type="checkbox"/> Yes, two years or more | <input type="checkbox"/> Don't know |

36. Do you have friends that have been working (please mark your answer with an x in one box on each row below):

- |   |                             |  |  |                                     |
|---|-----------------------------|--|--|-------------------------------------|
| In the shipping industry:   | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than 3 months | <input type="checkbox"/> Yes, 3 months or more | <input type="checkbox"/> Don't know |
| In the port industry:   | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than 3 months | <input type="checkbox"/> Yes, 3 months or more | <input type="checkbox"/> Don't know |
| On a fishing vessel:  | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than 3 months | <input type="checkbox"/> Yes, 3 months or more | <input type="checkbox"/> Don't know |
| In a fishing port:  | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than 3 months | <input type="checkbox"/> Yes, 3 months or more | <input type="checkbox"/> Don't know |
| In another transport or logistics industry:<br>(other than those mentioned above) | <input type="checkbox"/> No | <input type="checkbox"/> Yes, less than 3 months | <input type="checkbox"/> Yes, 3 months or more | <input type="checkbox"/> Don't know |

37. Have you lived in a coastal area before the age of 12?

- Yes, less than two years  Yes, two years or more
- If yes, where did you live in a coastal area:
- City/town with shipping
  - Coastal area without shipping
  - On an island
  - Other, namely: \_\_\_\_\_

38. Have you lived in a coastal area when aged 12 or older?

- Yes, less than two years  Yes, two years or more
- If yes, where did you live in a coastal area:
- City/town with shipping
  - Coastal area without shipping
  - On an island
  - Other, namely: \_\_\_\_\_

39. What experience do you have of boating as a sport or leisure activity?

- Very great experience
- Rather great experience
- Rather small experience
- No experience

40. To what extent have you been thinking about your choice of profession?

- To a very great extent
- To a rather great extent
- To a neither great nor small extent
- To a rather small extent
- To a very small extent

41. What secondary school programme are you attending?

Name of programme: \_\_\_\_\_

In what study area would you place your programme (Please answer by putting an x in one of the boxes) :

- Natural science
- Business administration, economics and trade
- Social science
- Technology, industry, construction and similar
- Health care, child and recreation
- Arts, media, communication
- Hotel, restaurant, food
- Shipping and maritime activities
- Other: \_\_\_\_\_

Thanks for filling out the questionnaire!



## Appendix 2

The Bartlett test of sphericity and the measure of sampling adequacy (MSA) have been used for determining the appropriateness of factor analysis. As can be seen from Table A2.1, the Bartlett test is significant at all levels and the MSA measure has satisfactory values ( $\geq 0,70$ ).

Regarding the number of factors to extract, the following criteria are suggested in the literature (e.g., see Haire *et al.* 1995): Latent root criterion, a priori criterion, percentage of variance criterion, and the scree test criterion. The decision to extract seven factors for pupils in general schools and eight factors for pupils in maritime schools rest on the following considerations: In comparative studies it is desirable to extract the same number of factors for all groups in order to facilitate comparison (a priori criterion). According to the latent root criterion, factors having eigenvalues equal to one, or approximately so, are significant. Using this criterion resulted in the extraction of seven factors for some groups and six for others. The percentage of variance criterion, when applied in social sciences, can be considered satisfactory if extracted factors account for close to 60% or more of the total variance. These three criteria taken together support the decision to extract seven factors for general schools and eight for maritime schools. This is also supported by the scree test criterion. Table A2.1 gives some quantitative explanations for general schools.

**Table A2.1. Indicators for factor analysis. Pupils in general schools**

Group	Extracted factors if eigenvalue set to 1	% of variance extracted	Bartlett's test. Sign. Level.	MSA
Sweden, all pupils	7	58,0	0,000	0,80
Sweden, men	6	61,0	0,000	0,78
Sweden, women	7	58,4	0,000	0,70
Norway, all pupils	6	59,4	0,000	0,87
Norway, men	6	61,0	0,000	0,86
Norway, women	6	61,0	0,000	0,85
Greece, all pupils	6	53,4	0,000	0,80
Greece, men	6	56,0	0,000	0,80
Greece, women	7	55,0	0,000	0,71

### **Appendix 3**

Summated scales were defined for various groups of pupils and dimensions. A summated scale used as a proxy variable for a factor has been calculated as an average of items having factor loadings  $>0,50$  on the factor. Correlations between factors and summated scales were used to check the validity of summated scales as approximations of factors. Appendix 3 shows this procedure for pupils in general schools in Sweden, Norway, and Greece. Similar procedures (not shown due to lack of space) have been followed for other summated scales used in this paper. In the following, we use “qj” to denote question number j in the questionnaire (see Appendix 1):

#### Sweden, all pupils, general schools:

Reward:  $(q5+q10+q11+q14+q15)/5$

Significance of Industry:  $(q17+q23+q24+q25)/4$

Ships as a place of work and living :  $(q16+q18+q19+q20)/4$

Environment:  $(q1+q2+q21+q22)/4$

CSR of shipping industry:  $(q3+q4+q6)/3$

Family: q12

Career shift: q13

#### Norway, all pupils, general schools:

Reward:  $(q3+q10+q11+q14+q17)/5$

Ships as a place of work and living:  $(q12+q15+q16+q18)/4$

Significance of Industry:  $(q23+q24+q25)/3$

Environment:  $(q1+q2+q22)/3$

CSR of shipping industry:  $(q3+q4+q6)/3$

Risk:  $(q19+q20+q26)/3$

Career shift: q13

#### Greece, all pupils, general schools:

Reward:  $(q10+q11+q14)/3$

Ships as a place of work and living:  $(15+q16+q17+q18)/4$

Significance of Industry:  $(q23+q24+q25)/3$

Environment:  $(q1+q21+q22)/3$

CSR of shipping industry:  $(q2+q3+q4)/3$

Risk:  $(q13+q19+q20+q26)/4$

Employer-employee relation: q6

Table A3.1 shows the correlations between factors and summated scales (see above) for each of the identified image dimensions for Sweden, Norway, and Greece. With a few exceptions,

the summated scales seem to be good approximations of the factors used to identify the dimensions

**Table A3.1. Correlations between factors and summated scales for image dimensions identified for pupils in general schools in Sweden (S), Norway (N), and Greece (G).**

Dimension	S	N	G
1. Reward	0,90	0,86	0,84
2. Significance of Industry	0,92	0,93	0,95
3. Ships as a place of work and living	0,89	0,86	0,94
4. Environment	0,93	0,94	0,86
5. CSR of shipping industry	0,86	0,80	0,94
6. Family	0,74		
7. Career shift	0,79	0,86	
8. Risk		0,88	0,94
9. Employer-employee relation			0,70