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ARTICLE



The perception and image of shipping

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Abstract The image of the shipping industry plays a vital role in developing maritime transport as a 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 cultivate shipping as an attractive labour market and to develop attractive educational programmes. The focus of this paper is the image of the shipping industry. This study 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 their relative importance to young people who are planning their future careers. 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 to promote careers in shipping, to adapt shipping to the expectations of young people and to develop creative and relevant educational programmes. Finally, understanding the image of shipping among young people is important not only for the shipping industry, but for other stakeholders as well, such as ship-owners associations, trade associations, labour unions, transport authorities and administrations and policy makers at the national and supra-national level.

Keywords Image of shipping · Career path · Survey · Shipping · Promotion

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1 Introduction

There seems to be a strong consensus among stakeholders that the image of the shipping industry is of growing importance (cf. European Commission 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 among relevant target groups. The future supply of talented 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; Thai et al. 2013).

It is well known that a positive image of an industry tends to attract the attention of young, talented people regarding the choice of industry for their future career. This has been shown for other industries (Burmann et al. 2008; Wallace et al. 2012), and image improvement has been discussed in regard to the shipping industry as a strategy for improving its supply of labour (e.g. Dinwoodie 2000; Barnett et al. 2006; Mack 2007; Thai et al. 2013). Several researchers (Grewal and Haugstetter 2007; Asyali and Zorba 2009; Gekara 2009; Gardner et al. 2001) 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. This has also been stressed by the European Community Shipping Association (ECSA 2010).

Image improvement as a general strategy calls for the development of effective marketing communication programmes. An important first step in the development of such programmes is to assess the current image that the target group holds of the object (e.g. see Kotler and Keller 2006, chapter 17). However, the lack of general, conceptual and empirical treatments in the maritime literature of young peoples' image of shipping as a career opportunity is a mental barrier to constructive analysis, development and discussions of strategies for effective marketing communication processes. The term "image of shipping" is currently used in a variety of contexts and for a variety purposes, often fragmentarily. Such wide use has tended to blur its meanings. It is our intention in this paper to focus in a rigorous way on general conceptual and empirical aspects of young Europeans' image of shipping as a career opportunity.

Decision makers in the shipping industry or related industries can either adapt to an existing image or try to improve it. Both strategies will gain from access to input from scientific research regarding fundamental theoretical and empirical aspects of the image that young people hold of the shipping industry. Such 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 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 the 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 also important reasons to study the image of shipping 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 specialise in maritime education after having completed 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. The objectives of this research are as follows:

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

Stated differently, the intention is to create a conceptual and empirical platform for further research and practical decision making based on scientific research. This study can also be seen as a first step aimed at developing an international image indicator for Europe. Such an instrument could provide important input for strategic decisions at the corporate, national and supranational levels. The study was conducted in collaboration between researchers from 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 various definitions of the term *image*, it is evident that it 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. In contrast, the mention of total impressions, auras and feelings, incorporate the role of imagery or holistic conceptualisations, 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, organises and interprets information input 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 activities other 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). In this

study, we introduce the concept of image structure, which we define as the distribution of identified image dimensions on a larger potential set. The image structure of a person or a group of persons can be represented by a vector of elements representing potential image dimensions where each element is given a value that denotes whether the dimension has been identified or not for the person or group.

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. The focus of this paper is on both dimensions of shipping in general and dimensions related to shipping as a possible career path in particular.

3 Literature review

The literature review serves two purposes. One is to identify attributes and aspects (highlighted in italic) that literature has associated with young peoples' perception of shipping as a profession and career opportunity. The second purpose is to create a context from existing literature for discussing and validating findings of the present study.

3.1 The image of shipping

Berthon et al. (2005) identify five dimensions of employer image. Development value is based on potential recruits' perceptions that an employer provides recognition, selfworth 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 the 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 packages, 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 customerorientated and humanitarian.

Several studies focus 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) and *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 "industrialised" than before when it was more characterised as a career associated with "adventure".

Barnett et al. (2006) confirm similar observations; however, their focus is 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, enjoying the lifestyle, "fast track" promotion and salary and relationship to employer (seafarers holding permanent contracts tend to be more committed than crewing agencies). 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.) and strength of family culture (the importance of family relationships for employment). Thai et al. (2013) observes similar important attributes in their survey of students of nautical studies at Singapore Maritime Academy. The observations from Mack (2007), Barnett et al. (2006) and Thai et al. (2013) indicate some important attributes related to young peoples' perception of shipping as a profession and career opportunity, e.g. social responsibility, career prospects and salary (cf. Vickers and Walsh 1999; Chen et al. 2003), industry importance and influence, place of upbringing, relationship to employer, work/life balance of seafarers, influence from family and friends.

Greece is recognised as an example where family connections are particularly important for employment. However, only one out of five maritime students in a Greek survey (Pallis et al. 2011) said they had parents in the maritime industry. In a study of undergraduate maritime students in Greece and in Hong Kong, Pallis and Ng (2011) report 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 coming 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 several researchers (e.g. Dinwoodie 2000; Chen et al. 2003; Mack 2007; Vickers and Walsh 1999). 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 works by Dinwoodie and Heijveld (1997). None of the undergraduate Greek or Hong Kong students in the study made by Pallis and Ng (2011) had any prior maritime work experience, and only 4 % 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 2011). In the same study, 37 % 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.

3.2 Gender and equality aspects

Similar to Mack (2007) and Barnett et al. (2006), but from an industry perspective, Grewal and Haugstetter (2007) recognise the 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 recognised 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 gender (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 % 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 patriarchal culture, which makes it difficult to obtain the more interesting jobs.

Making the industry more attractive to female employees also has great potential, substantiated by the fact the only a very small proportion (some 2 % 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, such as 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 %) than the male ones (24.1%) 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 two-thirds of the respondents report that they will have good employment opportunities within 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 fleets, tankers are ranked as the 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. (2001) highlight 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 method when developing the image of shipping as a measurable construct. The empirical data source of our inductive method is a cross-sectional sample survey of upper secondary school pupils in Sweden, Norway and Greece. The survey approach involves designing a questionnaire for measuring psychological variables and background variables, collecting the data and analysing the data using multivariate statistical methods. These steps taken together made it possible to simultaneously identify and define the dimensions of the image construct operationally and nominally and to measure it quantitatively in various ways.

4.1 Questionnaire design

The key items of the questionnaire represent image and attitude. The development of key items was done according to the following approach: Based on (1) literature on various relevant attributes of shipping and seafaring, (2) the researchers' own personal contacts with the maritime sector and (3) inputs from a focus group of academic researchers/ lecturers from six different European countries specialising in maritime subjects, a set of attributes were described. This set was considered to have sufficient potential to cover the universe of the relevant general and career-oriented attributes of shipping. These attributes were transformed into a set of items in the questionnaire considered to have sufficient potential to represent the aforementioned universe, and at the same time to be understood by the respondents. Examples of attributes originating and referring to previous research are described in the literature review. Moderate "overflow" in number of items or partial overlap between items, if any, is taken care of by the multivariate method used for analysis. The key 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. Besides the key items, several items measuring personal demographic and behavioural characteristics were included. The approach we have followed for choosing and designing items in questionnaires for construct development is the one that has been recommended in the general methodological literature in social sciences and marketing, for example, by authors such as Spector (1992) and Churchill (1995).

The items related to psychometric measurement were designed as seven-degree semantic differential scales for mainly cognitive aspects and seven-degree Likert-like scales for mainly affective aspects. These are scales that are suggested as suitable for image research (Dickson and Albaum 1977; Kotler and Clark 1987). The questionnaire is shown in Appendix 1. However, it should be noticed that only a subset of the questions in the questionnaire are used in the analyses for the present paper. As can be seen in Appendix 1, all psychometric rating scales are two-pole, balanced, itemised rating scales with a neutral position in the middle. This scale design is generally found to possess good measurement properties and to be suitable for comparative crossnational research (Kumar et al. 1999). One explanation of the latter is that a respondent's rating is mainly a geometrical "exercise" involving placing a mark on a scale between two simple bipolar words or very short phrases. These are easy to translate between languages without changing their meaning. The geometrical element in this "exercise" does not need any translation since it is mainly based on the respondent's perception of visible physical distances. Such perceptions can be assumed to be independent of language. Another explanation of the advantage of our scale design in comparative cross-national research is that the identification of image dimensions using factor analysis is insensitive to systematic positional bias of observations on individual rating scales due to language effects.

A first version of the questionnaire was developed in Swedish and tested in a classroom session at the University of Gothenburg on a group of 26 university students just having finished upper secondary school. The students first completed the questionnaires. Subsequently, 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 among research partners and accepted as a prototype. Thereafter, it was translated from English to Norwegian and Greek by Norwegian and Greek researchers, respectively. All translations were made by researchers who have experience from lecturing in relevant subjects for university students in both English and their national languages. Finally, the Norwegian and Greek versions of the questionnaire were tested in classroom sessions on upper secondary school pupils in Norway and on new university students in Greece.

When coded for statistical analysis the scales are transformed from the integer interval between -3 and +3 to the positive integer interval between 1 and 7 in order to facilitate coding, analysis and presentation of results.

4.2 Target populations

Two target populations were defined for each country, a main target population and a 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 in a country 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 such as "general schools", "general programmes",

"general educations" and for the comparative target population "maritime schools", "maritime programmes", and "maritime educations". Thus, we have one main target population and one comparative target population from each country, six target populations in total. In the following, separate analyses are made for each target population.

Our main focus in this research is to analyse image and image-related variables for the main target populations, since these pupils represent the potential for the maritime industry. The results from the comparative target populations are used mainly for comparison with results from the main target populations. Pupils from the comparative target populations have already chosen the maritime industry for their future career. No attempts will be made to define aggregate target populations consisting of two or more European countries.

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 within target populations; 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, given reasonable sample sizes.

The sample selection was carried out using cluster sampling measuring all pupils in selected clusters. This design, which is based on simple random sampling of clusters, results in epsem sampling of pupils within target populations. The definition of clusters was different in the three countries depending on the school system, the availability of possible selection frames, etc. In Sweden and Norway, classes were chosen as clusters; in Greece, schools were chosen. 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 are independent samples having equal selection probabilities for pupils within target populations, but possibly different selection probabilities for pupils between target populations.

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, typically the main teacher of the class or someone in a similar position. Written guidelines were given to the contact persons. The questionnaires were introduced and distributed to the pupils by the contact person during a class session, filled out during the session and collected again at the end of the session. Although the questionnaire was filled out under supervision, participation from the students was voluntary. The role of the contact person was to create conditions for individual, independent answers from each pupil without influence from

the contact person or the pupils' classmates. There were no terminations by respondents when answering the questionnaires. All collected questionnaires were filled out completely.

This design of the measurement process was chosen firstly in order to improve the measurement properties by minimizing group influences, influence from dominant pupils, and other distorting activities among pupils 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 researchers at each university.

The number of collected valid questionnaires from each of the six target populations is shown in Table 1.

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 who responded in the survey can be regarded as epsem samples without nonresponse in the statistical analysis. Therefore, there is no reason to expect any bias from nonresponse in the survey (e.g. see Kish 1965, ch. 13).

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 from items (questions) 1–6 and 10–26 in the questionnaire 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.

Target population	Sweden (S)	Norway (N)	Greece (G)
Main (general schools)	479	625	594
Comparative (maritime schools)	162	148	90

Table 1 Number of collected valid questionnaires

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 seafarers. 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 minimises 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 expressing the respondents' ratings of the image dimensions in positive–negative terms, summated scales (cf. Hair et al. 1995) were used to represent the dimensions. This makes it possible to express the ratings in the same units of measurement as the items in the questionnaire, which adds to interpretability of the ratings.

4.7 Reliability tests

In order to measure the reliability of the factor analysis method for identifying image dimensions, two tests have been designed and applied to the main target populations. Test number 1 evaluates the measurement reliability of the identified image dimensions by measuring the internal homogeneity of the items that load significantly on the dimensions by means of Coefficient alpha (e.g. see Churchill 1995). Alpha can be calculated only if a scale is based on at least two items. This was possible for 17 out of 21 image dimensions identified for the three countries showing an average value of alpha equal to 0.7 with individual values varying between 0.6 and 0.8.

Test number two evaluates the composite reliability resulting from both measurement and sampling reliability by measuring the consistency of the method when replicated on smaller sample sizes. Five independent random subsamples were selected in five runs from each of the original random samples from the main target populations shown in Table 1 using a SSPS routine for random selection of cases. The size of each subsample was set to 75 % of its "mother" sample. The complete method for identifying image dimensions was applied to each run. Test number two evaluates the ability of the method to identify identical image structures for smaller sample sizes than those used in the main study and for different sample compositions. The methodological consistency in terms of percentage of correctly identified image dimensions in the replications, when using the smaller sample sizes, was 94, 97 and 94 % for Sweden, Norway and Greece respectively.

The results of the two reliability tests are deemed satisfactory remembering the broad aim of this study. A detailed description of the two tests can be found in Appendix 2.

5 Empirical results

5.1 Identified image dimensions: pupils in general schools

5.1.1 All pupils

Table 2 shows the total set of nine dimensions that were extracted and identified in three separate factor analyses of the samples of pupils in general schools, one for each

country. A sound 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 among countries and groups of pupils resulted in the decision to extract seven factors for each country. They are shown in Table 3. 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 patterns of markers are used in factor analysis for substantive interpretation and naming of the dimensions. The letters S, N and G in brackets behind the markers in Table 2 denote countries for which the markers load significantly on the dimensions (the factors).

Table 3 shows identified image structures separately for pupils in general schools in Sweden, Norway and Greece. The letter "X" is used for showing presence of a dimension in a structure. The structures are similar, but not identical. Five out of seven identified dimensions are identically present across countries.

The absence in Table 3 of a certain dimension for a country does not necessarily mean that the aspects of the dimension are completely missing in the data of the country. The respondents may associate the aspects in question with other dimensions in a weak way in terms of factor loadings, since a given variable (item) may load on more than one factor.

5.1.2 Generalised nominal definitions of identified image dimensions

As generalised definitions of the image dimensions shown in Tables 2 and 3, 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 and leisure time, communicating with people ashore and organising family life.
- *Environment*: Climate impact and environmental damage from shipping perceived in light of the shipping industry's environmental behaviour and responsibility.
- *CSR*: Corporate social responsibility for all employees; equal opportunities for men and women and for creating positive employer–employee relations
- Family: Easiness/difficulty of organising 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 2) with some very small modifications based on other

Dimension	Markers
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	Image	dimensions	and	their	interpretations
Table 2	mage	unnensions	anu	unen	merpretations

Results for pupils in general schools in Sweden (S), Norway (N) and Greece (G)

observations in the data. The definitions can be seen as generic formulations of the image dimension constructs.

5.1.3 Image structures: males and females

Table 4 shows image structures for males and females in Sweden, Norway and Greece extracted in six separate factor analyses on subsamples from the main target

Dimension	S	Ν	G
1. Reward	Х	Х	Х
2. Significance of industry	Х	Х	Х
3. Ships as a place of work and living	Х	Х	Х
4. Environment	Х	Х	Х
5. CSR of shipping industry	Х	Х	Х
6. Family	Х		
7. Career shift	Х	Х	
8. Risk		Х	Х
9. Employer-employee relation			Х

Table 3 Image structures for Sweden (S), Norway (N) and Greece (G)

Results for pupils in general schools ("X" denotes presence of a dimension)

populations, pupils in general schools. For further use in this paper, it may be interesting to mention that the proportions of females in the samples of pupils from general schools in Sweden, Norway and Greece were 45, 52 and 48 % respectively.

There are some noticeable differences between genders within countries and also among countries. As mentioned previously, the dimension "employer–employee relation", which has only been identified for men according to the table.

Dimension 10, "Reward II", merits a separate explanation. It depends on significant factor loadings for Norwegian females on questions 10 and 11. These loadings represent additional reward not fully included in dimension 1, and it is represented by beliefs that seafarers have opportunities for experiencing interesting places and countries together with career advancement. Dimension 10 has not been identified for other subpopulations.

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

Table 4 Image structures

Comparisons between males (M) and females (F) for pupils in general schools in Sweden, Norway and Greece ("X" denotes presence of a dimension)

5.2 Identified image dimensions: pupils in maritime schools

A fundamental difference between pupils in general schools and pupils in maritime schools 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, it is probable that they are 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 a 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 the samples of pupils in maritime schools in Sweden, Norway and Greece (versus seven dimensions for general schools). Table 5 shows the total set of 11 dimensions extracted from the three countries, the markers used for interpretation of the dimensions and the names given to them.

Compared with the image dimensions extracted from pupils in general schools, two more dimensions appear: "Personal satisfaction from working as a seafarer" and "social conditions on board".

Table 6 shows the extracted image structures for maritime school pupils separately for Sweden, Norway and Greece. As can be seen, eight dimensions have been identified for each country. The image structures of the three countries are quite similar. The differences may be explained by differences among 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 are lacking in the data. They may be associated with other dimensions, which may be logical given all the facts of the country and its shipping industry.

Finally, women are generally expected to be more aware of family aspects than men, but the small proportions of women attending maritime schools in Sweden and Norway will lead to weak female impacts on overall results. The proportions of women in the samples from maritime schools were 12 % for Sweden and 3 % for Norway to be compared with 33 % for Greece. These proportions do not reflect biased sampling. They reflect the fact that the interest among women for specialised maritime educations at maritime schools is still low, particularly in Sweden and Norway. No comparisons between men and women were made for maritime schools due to the small number of women in the samples from these schools.

5.3 Pupils' ratings of the shipping industry's image

It is possible to calculate estimates of the respondents' ratings of the shipping industry along the dimensions that have been identified as reflectors of the images they hold. However, 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 calculated here 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.

Dimension	Markers
1. Reward	 -Salary (S,N,G) -Opportunity for experiencing interesting places and countries (N,G) -Opportunity for career advancement (G) -Interesting industry (G) -Easiness/difficulty of shifting career from shipping to careers ashore (S) -Easiness/difficulty of organizing family life (S)
2. Significance of industry	-For world trade (S,N,G) -For my country's trade (S,N,G) -For jobs in my country (N) -Career advancement (S) -Environmental responsibility of industry (G)
3. Ships as a place of work and living	 -Working conditions on board (S,N,G) -Degree of equal opportunities for men and women (N) -Leisure time on board ships (S,G) -Easiness of frequent communication with friends and family ashore (S) -Daily tasks on board (N) -Social relations on board ships (S) -Career advancement (N) -Environmental responsibility of industry (G) -Interesting industry (N)
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) -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)

Table 5 Image dimensions and their interpretations

Table 5 (continued)	
Dimension	Markers
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)

Results for pupils in maritime schools in Sweden (S), Norway (N) and Greece (G)

5.3.1 General schools

Table 9 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 measures on seven-degree interval scales ranging from 1 to 7, where 7 represents the maximum rating in the positive direction on the scale and 1 the minimum. As for all intervalscaled psychometric measures, meaningful conclusions about strength/size/intensity, etc., based on a single measure cannot normally be made. Conclusions should normally 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. However, due to the way the items are designed in the questionnaire, it is not unreasonable to interpret the rating "4" as a quasi zero point. If this position is taken, conclusions can be made from a single measurement without making comparisons. Given this interpretation of scale values, the image of shipping can hardly be perceived as negative, since ratings >4 are on the positive side, which is the case for the mean ratings in Table 7 and for all individual ratings there except four ratings. The "Total mean rating" at the bottom line of the tables are sample means of individual pupils' non-zero ratings per column in the tables presented in order to give a quick overview of levels.

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

 Table 6
 Image structures extracted from pupils in maritime schools in Sweden, Norway and Greece ("X" denotes presence of a dimension)

A two-sample *t* test applied to all three pairs of countries shows that the total mean ratings (the bottom line of Table 9) are statistically different among countries at all practical significance levels (p < 0.0004). The probability value, *p*, can be defined as the lowest significance level at which a null hypothesis (in this case of no difference between means) can be rejected.

Each column in Table 7 can be regarded as a vector of means. There are no empty cells in the rows representing dimensions 1–5. Therefore, it makes sense to test the equality of the sub-vectors representing dimensions 1–5 across countries using a MANOVA (multivariate analysis of variance) test. This test shows that the sub-vectors of means are statistically different across countries at all practical significance levels (p<0.0004). Including dimensions 6–9 in the analysis supports the conclusion that the vectors are statistically different since these dimensions have not been identified in all countries. Tests of the mean ratings of individual dimensions show that the means of image dimensions 1–5 are all individually different across countries at all practical levels of significance (p<0.0004). The size of the differences can be inferred directly from the corresponding rows for dimensions 1–5 in Table 7.

We can conclude that the overall image of shipping seems to be more positive in Norway than in Sweden with Greece in between if conclusions are based on the total mean ratings at the bottom line of Table 9. "Reward" and "Significance of industry" are rated higher than other dimensions in all three countries. These two dimensions are also rated higher in Greece than in Sweden with Norway in between.

There are only small differences between males and females within countries in terms of level of total mean ratings (bottom line of Table 8). Hypotheses of equality of total mean ratings between males and females within countries cannot be rejected.

However, the dimensions identified are somewhat different among the subpopulations. Using a MANOVA (multivariate analysis of variance) test for testing the equality within countries between males and females of the sub-vectors of means representing dimensions that have been identified for both genders shows that these sub-vectors of means are statistically different within countries at all practical significance levels (p<0.0004). Including remaining dimensions in the analysis supports the conclusion

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
Total mean rating	4.1	4.6	4.4

Table 7Mean ratings along image dimensions by pupils in general schools in Sweden, Norway and Greece(seven-degree rating scale ranging from 1 to 7, 7=maximum)

that the vectors are statistically different since these dimensions have not been identified for both genders.

Our major conclusion is that the overall levels of ratings (measured by the total mean ratings) are approximately the same between males and females within countries. However, there are interesting differences between genders regarding how individual dimensions contribute to the overall levels which may have implications for strategy development.

5.3.2 Maritime schools

Table 11 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. As expected, the mean ratings are higher for maritime schools (Table 9) than for general schools (Table 9).

Two-sample *t* tests show significant differences in total mean ratings (bottom line of Table 11) among all three pairs of countries at all practical levels of significance (p < 0.0004).

A MANOVA (multivariate analysis of variance) test shows that the sub-vectors of means consisting of dimensions 1–5 and 8 are statistically different across countries at all practical levels of significance (p<0.0004. Including the remaining dimensions in the analysis supports the conclusion about vector difference.

There are both similarities and differences between countries according to Table 11. 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 with Norway and Sweden. No comparisons have been made between males and females for maritime schools in the three countries due to the small proportions of females following maritime study programmes, which are, of course, reflected in the samples.

Dimension	Sweden		Norway		Greece	
	М	F	М	F	М	F
1. Reward	4.4	4.8	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	3.9	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	4.1	4.4		3.9	3.3
8. Risk		4.4	4.6	4.3	3.8	3.5
9. Employer-employee relation	4.0				3.7	
10. Reward II				5.4		
Total mean rating	4.2	4.3	4.6	4.6	4.3	4.4

Table 8	Mean ratings along image dimensions for males (M) and females (F) in general schools in Sweden,
Norway	and Greece (seven-degree rating scale from 1 to 7, 7=maximum)

5.4 The importance of image as a determinant for pupils' choice of career path

Pupils' estimated ratings of shipping in various image dimensions were presented in Section 5. 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. However, these ratings cannot be expected to represent importance of the dimensions for such pupil decisions that 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 analyse 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 in which to work.

5.4.1 Approach

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 complicated, demanding and costly research designs 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

- Their stated intentions to work as a seafarer (variable Y_1),
- Their perceptions of shipping as an attractive industry in which to work (variable Y_2)

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	
Total mean rating	5.1	5.5	4.5

 Table 9
 Mean ratings along image dimensions for maritime school pupils in Sweden, Norway and Greece (seven-degree rating scale from 1 to 7, 7=maximum)

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 Y1 and Y2 transformed to standardized dependent variables on the image dimensions D_1 , D_2 , ... D_n , where the D variables are Varimax rotated factor scores (orthogonal) that have been standardised in a last step. Expressed otherwise, we estimate the β coefficients in the regression model.

$$Y = \beta_1 \mathbf{D}_1 + \beta_2 \mathbf{D}_2 + \dots \dots \beta_n \mathbf{D}_n \tag{1}$$

This has been done for various populations and sub-populations of interest. The β coefficients in (Eq. 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 in which to work. We interpret model (1) as a causal model in the context of our research design.

Our approach allows us to make inferences about importance without directly questioning the respondent 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 the attractiveness of working in an industry (Y_2) , since the latter does not necessarily attribute any personal commitment to the respondent. The use of Y_2 as a dependent variable in (Eq. 1) is assumed to reveal the importance of different image dimensions for the forming of general opinions among young people about the shipping industry as a labour market and place of work. Below, we have estimated the regression model (1) with Y_1 and Y_2 as dependent variables on data from the various populations and sub-populations. This has only been done for pupils of general schools, since pupils of maritime schools have already made a choice of career path, at least in terms of choice of education.

5.4.2 Empirical results

Tables 10, 11, 12 and 13 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 in which to work. 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 β is equal to zero. The figures within brackets are *p* values of the estimated coefficients (*p* is the lowest significance level at which a hypothesis that the coefficient is equal to zero can be rejected). Freely speaking, the lower a *p* value, the more likely it is that the associated beta coefficient will be statistically different from zero. Only estimates that are statistically different from zero at the 6 % level or lower are shown ($p \le 6$ %). Cells denoted with ZZZZ represent estimates that do not meet the required statistical level of significance (6 % or lower). They are omitted here in order to prevent wrong conclusions due to statistical uncertainty. The significance level 6 % has been chosen here

instead of the more conventional levels 1 or 5 % because it permits showing that the environment dimension is uniformly important for all three countries. The appearance of environmental aspects in the image of young people is regarded as an important observation which is in line with the development in other industries.

The coefficients in the tables can only be meaningfully compared vertically per column (within countries). Horizontal comparisons along rows in the tables will only allow comparison of the internal ranks of given dimensions between countries which may be of minor interest.

Table 10 shows that, for all three countries, two image dimensions are more important than the rest to pupils' stated intentions to work in the shipping industry: "reward" and "ships as a place of work and living". For Greece, a third dimension, "Employer-employee relation", can be included among the most important ones. "CSR of shipping industry" is a moderately important determinant to Norwegian and Greek pupils' career intentions, while this determinant is unimportant to Swedish pupils. In contrast, "family" appears as a moderately important determinant to Swedish pupils' intentions, but not so for Norwegian and Greek pupils. For all these dimensions, the beta coefficients are positive and significantly different from zero at all practical levels of significance for all three countries.

The two most important dimensions for pupils' general opinion of shipping as an attractive industry in which to work (Table 11) are "Reward" and "CSR of shipping industry" for Sweden, "Ships as a place of work and living" and "Reward" for Norway, and "Significance of industry" and "Ships as a place of work and living" in the case of Greece. These dimensions are all significantly different from zero at all practical levels of significance. A difference between intentions and opinions is that "CSR of shipping industry" (Sweden) and "Significance of industry" (Greece) belongs to the two most important dimensions for forming opinion in these countries. They do not have the same importance as determinants of pupils' intentions.

Tables 12 and 13 show the importance of the identified image dimensions for pupils' intentions and opinions for males and females in Sweden, Norway and Greece. There

Dimension	Importance for ca	reer intentions	
	Sweden	Norway	Greece
1. Reward	0.295 (0.00)	0.208 (0.00)	0.207 (0.00)
2. Significance of industry	ZZZZ (0.10)	ZZZZ (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	ZZZZ (0.98)	0.175 (0.00)	0.157 (0.00)
6. Family	0.131 (0.00)		
7. Career shift	ZZZZ (0.07)	ZZZZ (0.08)	
8. Risk		0.174 (0.00)	0.089 (0.02)
9. Employer-employee relation			0.209 (0.00)

Table 10 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 (p levels within brackets)

Dimension	Importance for general opinion of shipping as an attractive industry in which to work				
	Sweden	Norway	Greece		
1. Reward	0.376 (0.00)	0.372 (0.00)	0.240 (0.00)		
2. Significance of industry	ZZZZ (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	ZZZZ (0.18)	0.090 (0.01)	ZZZZ (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	ZZZZ (0.97)	0.147 (0.00)			
8. Risk		ZZZZ (0.29)	ZZZZ (0.18)		
9. Employer-employee relation			0.157 (0.00)		

 Table 11 Importance of identified image dimensions for pupils' general opinion about shipping as an attractive industry in which to work

Estimated beta coefficients for general schools (main target populations) in Sweden, Norway and Greece (*p* levels within brackets)

are some differences that deserve mentioning. Table 14 shows differences between males and females. For Swedish males, "reward" and "ships as a place of work and living" are the most important dimensions (in that order) for career intentions while, for Swedish females, 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". Finally, Greek male pupils indicate "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.

Comparing males and females in the Swedish case (Table 13) shows that "reward" is most important as a determinant for pupils' general opinion of shipping as an attractive industry in which to work 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". Finally, for Greece, male pupils' most important determinant for forming their general opinion of shipping as an attractive industry in which to work 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".

6 Summary and discussion

The inductive study reported in this paper has developed a measurable image construct for representing the image of shipping as a career opportunity held by upper secondary

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Dimension	Importance for car	eer intentions				
	Sweden		Norway		Greece	
	М	ц	M	Ч	Μ	щ
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	ZZZZ (0.80)	0.175 (0.01)	ZZZZ (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	ZZZZ (0.38)	0.188(0.01)	ZZZZ (0.08)	0.156(0.00)		ZZZZ (0.70)
5. CSR of shipping industry	ZZZZ (0.28)	ZZZZ (0.12)	0.237~(0.00)	0.141(0.01)	0.266 (0.00)	0.207 (0.00)
6. Family				0.323(0.00)	ZZZZ (0,13)	
7. Career shift	ZZZZ (0.48)	ZZZZ (0.37)	ZZZZ (0.32)		0.144 (0.00)	ZZZZ (0.58)
8. Risk		ZZZZ (0.35)	ZZZZ (0.60)	ZZZZ (0.87)	ZZZZ (0.41)	0.118 (0.03)
9. Employer-employee relation	ZZZZ (0.93)				ZZZZ (0.08)	
10. Reward II				0.105(0.04)		
Estimated beta coefficients for males and fe	males in general schools	s (main target population	ns) in Sweden, Norway	and Greece (p levels w	ithin brackets)	

Dimension	Importance for ger	neral opinion of shippin	g as an attractive indust	try in which to work		
	Sweden		Norway		Greece	
	М	F	М	ц	Μ	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	ZZZZ (0.09)	ZZZZ (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	ZZZZ (0.11)	ZZZZ (0.12)	ZZZZ (0.76)	0.197 (0.00)		ZZZZ (0.37)
5. CSR of shipping industry	0.250 (0.00)	0.203 (0.00)	0.318 (0.00)	ZZZZ (0.24)	ZZZZ (0.20)	0.179 (0.00)
6. Family				0.364~(0.00)	ZZZZ (0.18)	
7. Career shift	ZZZZ (0.54)	0.131 (0.05)	ZZZZ (0.67)		0.157~(0.00)	0.123 (0.02)
8. Risk		ZZZZ (0.18)	ZZZZ (0.29)	ZZZZ (0.11)	0.24 (0.00)	ZZZZ (0.63)
9. Employer-employee relation	0.213 (0.00)				0.111 (0.00)	
10. Reward II				0.132(0.01)		

school pupils in Sweden, Norway and Greece. Our empirical results are based on a sample of 2,098 pupils. The anatomy of the image construct has been identified and analysed by means of multivariate statistical methods. The study develops three key aspects of image: (1) the structure of the image construct represented by its empirically identified image dimensions, (2) the pupils' ratings of the image dimensions on negative-positive rating scales and (3) estimates of the relative importance that different image dimensions have as determinants of pupils' stated intentions to work as seafarers. The present section summarises and discusses the main results and compares them with relevant literature.

6.1 Image structures

6.1.1 Pupils in general schools

A set of nine image dimensions have been identified and defined in "section 5.1 to 5.2" of this paper as a sufficient set for representing the image of shipping as a career opportunity for pupils in general schools (defined here as pupils who are not following a marine study programme). The image structures of pupils in Sweden, Norway and Greece are found to be similar, but not identical. A subset of seven dimensions has been identified for each country as can be seen in Table 14. Five of these dimensions are identical across countries.

The differences in image structures between countries may be explained by differences between the shipping industries of the countries, differences between labour market conditions, differences in knowledge and value systems of the respondents (e.g. Pallis et al. 2011 and aspects of different family values in different countries), and recent relevant events affecting the countries.

The absence of a certain dimension for a country does not necessarily mean that aspects associated with this dimension are not reflected in the country's image structure. The respondents may associate these aspects with other dimensions. The family dimension and the career shift dimension are found to be examples of this (cf. Dinwoodie 2000; Pallis et al. 2011).

Dimension	S	Ν	G
1. Reward	Х	Х	Х
2. Significance of industry	Х	Х	Х
3. Ships as a place of work and living	Х	Х	Х
4. Environment	Х	Х	Х
5. CSR of shipping industry	Х	Х	Х
6. Family	Х		
7. Career shift	Х	Х	
8. Risk		Х	Х
9. Employer-employee relation			Х

Table 14 Image structures for Sweden (S), Norway (N) and Greece (G)

Results for pupils in general schools ("X" denotes presence of a dimension)

In the Norwegian case, family aspects are associated with "Ships as a place of work and living" and with "Risk". These associations probably reflect that offshore and cruising activities are important and visible parts of the Norwegian maritime sector that are perceived to offer special circumstances for family life. Similar observations were made by Mack's (2007) study involving Norwegian seafarers. In the Greek case, family aspects are associated with "Employer–employee relation" and "CSR of shipping industry", and aspects of shifting from careers at sea to careers ashore are associated with dimension 9, "Employer–employee relation", and dimension 8, "Risk". These observations are similar to what has been observed in previous studies involving Greek respondents, e.g. Pallis and Ng 2011; Ng et al. 2011).

The "Employer–employee relation" as an image dimension has only been identified for Greece. This may have two explanations. One explanation is the media's reflections of the turbulence in Greece following the austere financial measures taken shortly before our study was made. These measures may have made Greek respondents generally more aware of conflicts in the labour markets and therefore more sensitive to questions in the questionnaire that have potential of capturing these aspects. The other explanation is the comparatively harmonious relations that exist between employers and unions in the labour markets of the Scandinavian countries, which may contribute to making this dimension insignificant in the minds of Scandinavian pupils.

The image structures identified for genders in upper secondary general schools contain seven dimensions for both males and females. Intra-country differences of image structures between genders are small. For Sweden, six out of seven image dimensions are identical for males and females. The only difference is that the female perception of aspects of labour market relations is associated with the risk dimension whereas the male perception is associated with "employer–employee relations". For Norway, six out of seven dimensions are identical for males and females. A difference is that the female image structure contains the "Family" dimension while males seem to associate such aspects with the "Career shift" dimension (cf. Thomas 2012). Another difference lies in the meaning of the "Reward" dimension to Norwegian females. Compared with the rewards expected by Norwegian males, females also associate additional reward from a career in shipping with opportunities for experiencing interesting places and countries together with career advancement.

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 seafarers (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.

For Greece respondents, finally, five out of seven dimensions are identical between genders. The female image structure includes "Environment" and "Significance of industry". These are not identified in the corresponding male image structure, which instead contains "Family" and "Employer–employee relations".

Cross-country comparison of image structures between genders reveals both similarities and differences. "Reward", "Ships as a place of work and living" and "CSR of shipping industry" have been identified as significant dimensions for both genders across all three countries. The opposite can be said about "Employer–employee relations". This dimension seems to represent a one gender issue, since it only shows up in image structures for males (for Norway indirectly so) across all three countries. Men seem to be more affected by general labour market turbulence.

Our main conclusion is that intra-country differences between image structures for genders are small while cross-country comparisons give a slightly more heterogeneous picture. Male respondents seem to be comparatively more aware of conditions and conflicts in the labour market.

6.1.2 Pupils in maritime schools

A set of 11 image dimensions have been identified for pupils in maritime schools as can be seen from Table 8. These are the same as the nine dimensions shown in Table 14 for general schools plus two more. 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 (cf. Thai et al. 2013; Mitroussi and Papazoglou 2011).

Cross-country comparison of image structures shows that dimensions 1-5 and 8 shown in Table 16 for general schools are also identified in the structures for maritime schools for all three countries. One difference between countries merits comments-the fact that the "Family" dimension does not appear for Scandinavian respondents from maritime schools. This 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 seafarers in general because a very significant proportion of them are employed in regular local and short distance regional operations such as ferries and feeder services (Sweden) and ferries and offshore activities (Norway). Normally, they 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 ship owners together with the rapidly increasing use of social media by young people could be another explanation.

6.2 Image ratings

The image dimensions have been rated on seven-degree interval scales ranging from -3 to +3. Before statistical analysis, the scales were transformed to scales ranging from 1 to 7. Here, 7 represents the maximum rating on the scale, 1 the minimum and 4 a point of indifference that can be perceived as a quasi zero point. These ratings express the degree to which the image dimensions are perceived as positive or negative.

6.2.1 General schools

Our survey shows that young people have a quite positive (>4) overall image of the shipping industry when "overall image" is defined as the average of the mean

ratings of all identified dimensions within an image structure. The overall image is somewhat stronger in Norway than in Sweden with Greece in between. Shipping is, relatively speaking, a more significant industry (e.g. in terms of fleet size and economic importance) in Norway and Greece than in Sweden. The higher ratings in these countries on this dimension may therefore be understandable.

The distribution of ratings within image structures is different between countries. "Reward" and "Significance of industry" rate higher than other dimensions in all three countries. "Reward" is given the highest rating in the Greek and Norwegian image structures, whereas in Sweden "Significance of industry" has the highest rating. "Employer–employee relation" is rated low by Greek pupils and so is "Family" by Greek and Swedish pupils.

Comparing genders, our major conclusion is that the overall images are approximately the same between males and females within countries (cf. Thomas 2012). However, there are significant intra-country differences between genders regarding how ratings are distributed within image structures. Taking individual examples, it is noticeable that "Reward" is rated more positively by females than by males in all three countries, whereas "CSR of shipping industry" is rated more positively by males than by females in all countries. Such differences may have implications for strategy development.

6.2.2 Maritime schools

The overall image is rated higher by pupils attending maritime study programmes than by pupils following other programmes. The overall image held by pupils in maritime schools is stronger in Norway than in Greece with Sweden in between. The distribution of ratings within image structures is different across countries. Examples of this for individual dimensions is "Reward", which is rated high in Greece and Norway, but rather low in Sweden, and "CSR" and "Risk", which are rated in more positive terms in Sweden and Norway than in Greece. The likely explanation seems to be that the risks of injuries through workplace accidents are perceived to be high among Greek respondents. This is a factor which might have been influenced by recent media attention to shipping accidents. The data were 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 more significant in Mediterranean countries like Greece.

6.3 Relative importance of image dimensions as determinants of pupils' intentions to work as seafarers

"Reward" and "Ships as a place of work and living" are found to be the two most important image dimensions for Swedish and Norwegian pupils' intentions to work as seafarers. For Greek pupils, "Ships as a place of work and living" comes first followed by "Employer–employee relation" and "Reward" at almost the same level. These results demonstrate the importance of "Ships as a place of work and living" and "Reward" as the most important determinants of pupils' intentions to work as seafarers for all three countries. An interesting finding is the concern derived from Greek pupils about employer-employee relations as an important issue affecting their stated intentions to choose maritime careers.

For genders' stated intentions to work as seafarers, "Reward" is the most important dimension for both genders in Swedish schools, followed by "Ships as a place of work and living" (males) and "Environment" (females). For Norwegian males, "Reward" is found to be the most important dimension with "Ships as a place of work and living" as second, while for Norwegian females "Ships as a place of work and living" comes first followed by "Family" as the second most important. For Greece, finally, "Ships as a place of work and living" was found to be the most important dimension for both genders followed by "CSR of shipping industry". An interesting observation is that dimensions representing "soft values" such as "Environment" and "Family" seem to be more important for women than for men when they reveal their intentions to work as seafarers. Similar observations are made by Thomas (2012), Pallis et al. (2011) and Bal and Arslan (2011).

We have also measured and analysed the importance of different image dimensions for pupils' general opinions about shipping as an attractive industry in which to work. This is an attitude measure which reflects the general attractiveness of the industry as a labour market as seen by the respondents without explicitly relating it to the respondents' own choice of career. An interesting finding is the importance Swedish pupils attach to "CSR of shipping industry" as a factor influencing their opinion about the shipping industry as an attractive industry in which to work. Summing up, the results of the analysis of attitudes support our findings about the relative importance of different image dimensions for pupils' intentions to work as seafarers if based on the common notion of links between attitude and behaviour. Moreover, pupils' attitudes to the shipping industry are of general interest in the context of image improvement and career marketing.

7 Conclusions

The inductive study reported in this paper has (1) developed and defined a multidimensional construct for representing the image of shipping as a career opportunity for upper secondary school pupils, (2) used the construct for measuring and comparing the image of shipping as a career opportunity held by upper secondary school pupils in Sweden, Norway and Greece and (3) estimated the relative importance of different image dimensions as determinants of pupils' stated intentions to work as seafarers and their opinions about shipping as an attractive industry for work. These three contributions are direct fulfilments of the objectives of our study. A fourth contribution is represented by the approach we have developed for realising the objectives. Since the results have been presented and discussed in the sections above, the concluding remarks in the present section will deal with the viability of our research approach and the potential use of the knowledge it has created.

The research approach consists of two main components, a cross-sectional sample survey and multivariate statistical analyses of the survey data. The sample survey used a questionnaire with bipolar psychometric rating scales. It was administered to probability samples of upper secondary school pupils in Sweden, Norway and Greece during the second half of their last year in school. The use of these scales can be recommended for image research in general and for crosscountry comparative research in particular as explained in the paper. The data collections were organised by researchers from universities in Sweden, Norway and Greece following the same standardised procedure in all three countries in order to facilitate comparability of results across countries. All in all, the inductive approach we have used worked well in all respects.

The knowledge which has been created in this study can be regarded as a conceptual and empirical platform for further research and applied decision making related to the image of shipping as a career opportunity. The conceptual part of this platform as described above consists of a transparent set of well-defined and tested concepts and a research methodology that wholly or partially can be replicated or developed further in research in other contexts (countries, target groups, etc.).

For management and decision making in practice, the platform can give support for describing and explaining the image that young people hold of the shipping industry. Such knowledge is fundamental as one of several inputs for deriving and developing constructive strategies for improving the image of shipping from a career choice perspective among young people at the national, regional or European level; for promoting careers in shipping; for tailoring marketing communication programmes; for specific recruitment activities; for adapting shipping and ships to the expectations of young people regarding living conditions and personal communication possibilities; and for creative development of attractive and relevant educational programmes. Common to these strategic activities is that they can be assumed to gain from knowledge about the dimensional structure of the image construct, the meaning of its dimensions, the ratings of them and the importance they have for young peoples' choice of career. This will be true both for strategy planning ex ante and for strategy follow up and evaluation ex post. In such cases, it may be relevant to consider one or several of the following concepts in terms of our paper for an affected image dimension, here called dimension *j*: The rating R_i of dimension j, its improvement potential $(7-R_i)$, and its importance W_i . If a strategy aims at image improvement, it could be relevant to regard $(7-R_i) \times W_i$ as a measure of the impact potential of dimension *j*. If influence on two or more image dimensions is expected from a strategy, an analogical measure of the type $\sum (7 R_i \gg W_i$ represents an impact potential if the summation extends over all affected image dimensions. Such impact measures or equivalent impact analyses using these concepts in less formal ways can be used for strategy development and for comparing alternative strategies. How to do this will, of course, depend on the nature of the strategy, the conditions of the problem owner and the context in which the strategic problem exists. However, further development of implementation aspects is beyond the intended scope of the present paper.

Acknowledgements This research was carried out within the EU FP7 project KNOWME. 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 among the partners.

Appendix 1







SCHOOL OF BUSINESS, ECONOMICS AND LAW

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:

Rickard Bergqvist	tel. 031-786 5241	e-mail: rickard.bergqvist@handels.gu.se
Arne Jensen	tel. 031-786 1484	e-mail: arne.jensen@handels.gu.se
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 7degree 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 da	mage t	o the	envir	onm	ent if done	
	by shi	p than b	y train	1				
St	trongly						Strongly	
di	isagree	-3 -2	-1 0	+1	+2 +	-3	agree	

2.	The shi enviroi	ipping i menta	ndustry llv resp	y is beh onsible	aving i wav	n an
1	Strongly		ΪΩĹ		٦Ď	Strongly
ć	lisagree	-3 -2	-1 0	+1 +	2 +3	agree

3. The shipping industry takes social responsibility for all employees

Strongly disagree agree

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

					-8
5. Shippi	ng app	ears to	be an ir	terestii	ng industry
Strongly	ΠĹ				Strongly
disagree	-3 -2	-1 () +1 +	2 +3	agree

agree 7. Shipping seems to be an attractive industry to work in Strongly disagree agree

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

8.	The sh	ipping	indust	ry has	a good	reputation
	among	my fri	ends			
S	trongly		וחו			Strongly

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

Strongly

Strongly

agree

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

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

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 7degree 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





1(3)

The perception and image of shipping

Organising family life as a seafarer appears to be: Difficult	14. The <u>wage level</u> for seafarers is: Low \square_{-3} \square_{-2} \square_{-1} \square_{-3} \square_{+1} \square_{+2} \square_{+3} High							
13. <u>Shifting career</u> from being a seafarer to careers ashore is: Difficult Easy								
-3 -2 -1 0 -1 +2 +3 My beliefs about cargo ships as a workplace								
17 The definition is and this area in the first of the fi								
Boring \bigcirc	Boring \bigcirc -3 -2 -1 0 +1 +2 +3							
16. Working conditions on board ships are:	19. The risk of injuries through workplace accidents							
	on board ships is:							
Bad -3 -2 -1 0 $+1$ -2 $+3$ GOOd	High \square							
17. Social relations on board ships are:	20. On board ships, frequent communication with							
Bad 🗌 📄 📄 📄 📄 📄 Good	friends and family ashore is:							
-3 -2 -1 0 -1 +2 +3	Difficult \square							
My opinion about tr	ansport by ship							
21. Compared with transport by train, the cost per	24 Compared with other modes (truck aviation							
ton of long distance freight transport by ship is:	train) the significance of shipping for Sweden's							
High 🔲 🔲 🔲 🔲 🔲 🔲 Low	foreign trade is:							
-3 -2 -1 0 +1 +2 +3	Small \square \square \square \square \square \square \square Great							
22. Compared with using train, the climate impact	-3 -2 -1 0 +1 +2 +3							
Trom long distance freight transport by ship is:	25. Compared with other modes (truck, aviation,							
	train), the significance of shipping for <u>jobs in</u>							
23 Compared with other modes (truck aviation	Sweden is:							
train), the significance of shipping for world	Small 🗌 🔲 🔲 🔲 🔲 Great							
trade is:	-3 -2 -1 0 +1 +2 +3							
Small 🗌 🔲 🔲 🔲 🔲 🗍 Great	26. The risk that ships sink due to accidents at sea is							
-3 -2 -1 0 +1 +2 +3	High							
	-3 -2 -1 0 $+1$ $+2$ $+3$ is positive)							
About my future	working life							
Answer questions 27 to 31 by placing a check mark in one of the degree rating scale. The more you strongly agree with the statem further to the right you should place your mark, and the more you	boxes between the words to the left and right of each 7- ent about your future working life given in a question, the a 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	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 -3 -2 -1 0 $+1$ $+2$ $+3$ agree	disagree -3 -2 -1 0 $+1$ $+2$ $+3$ agree							
28. I intend to go in for a career as a seafarer	30. My family has proposed that I should work in							
Strongly	the shipping industry							
disagree $\overline{-3}$ -2 $\overline{-1}$ 0 $+1$ $+2$ $+3$ agree	Strongly Strongly disagree -3 -2 -1 0 +1 +2 +3 agree							
	31. I have friends who have proposed that I should							
	work in the shipping industry							
	Strongly \Box \Box \Box \Box \Box \Box \Box Strongly disagree -3 -2 -1 0 +1 +2 +3 agree							

2(3)

	About my background						
32.	Gender: Male Female						
33.	Age: Years						
34.	Have any of your parents been working (please in the shipping industry: [] In the port industry: [] On a fishing vessel: [] In a fishing port: [] In another transport or logisties industry: [] (other than those mentioned above) []	ac mark your answer with an x in one box on each row below): No Yes, less than two years Yes, two years or more No Yes, less than two years Yes, two years or more 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: No In the port industry: No On a fishing vessel: No In a fishing port: No In another transport or logistics industry No Yet	es, less than two years Yes, two years or more Don't know es, less than two years Yes, two years or more Don't know es, less than two years Yes, two years or more Don't know yes, less than two years Yes, two years or more Don't know yes, less than two years Yes, two years or more Don't know es, less than two years Yes, two years or more Don't know es, less than two years Yes, two years or more Don't know					
36	(other than those mentioned above)	(please mark your answer with an x in one box on each row					
50.	below):	(hease mark your answer with an x in <u>one</u> box on each row					
	In the shipping industry: No Yet In the port industry: No Yet On a fishing vessel: No Yet In a fishing port: No Yet In a fishing port: No Yet In a other transport or logistics industry: No (other than those mentioned above) Yet	ess, less than 3 months Yes, 3 months or more Don't know ess, less than 3 months Yes, 3 months or more Don't know ess, less than 3 months Yes, 3 months or more Don't know yes, 2 months or more Don't know Yes, 3 months or more Don't know ess, less than 3 months Yes, 3 months or more Don't know ess, less than 3 months Yes, 3 months or more Don't know					
37.	Have you lived in a coastal area before the age	e of					
	12? Yes, less than two years Yes, two years or mo If yes, where did you live in a coastal area: City/town with shipping Coastal area without shipping On an island Other, namely:	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 very small extent To a very small extent					
38.	Have you lived in a coastal area when aged 12	or 41. What secondary school programme are you					
	older? Yes, less than two years If yes, where did you live in a coastal area: City/town with shipping Coastal area without shipping On an island Other, namely;	attending? Name of programme: In what study area would you place your programme (Please answer by putting an x in <u>one</u> of the boxes) : Natural science					
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	 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!

3(3)

Appendix 2

Reliability tests

The method ending up with the identification and definition of the image dimensions shown in Tables 2 and 3 is quite complex. It involves questionnaire design, sampling, data collection and statistical analysis. In order to measure aspects of reliability of important elements of this procedure, two tests have been designed and applied to the main target populations. Test number one evaluates the measurement reliability of the items in the questionnaire that have been selected as measurement instruments (scales) for identifying and interpreting the image dimensions. These are items that load significantly on factors in the factor analyses. Coefficient alpha (e.g. see Churchill 1995) is a common measure for evaluating the quality of measure. Alpha can be calculated only if the identification of a dimension is based on at least two items. Table 4 shows coefficient alpha for the identified image dimensions for Sweden, Norway and Greece. The values are deemed satisfactory remembering the broad aim of this study. They could be increased by further item development based on the experience from this study (Table 15).

In order to analyse how sensitive the method for identification and interpretation of image dimensions is for sample characteristics (size and composition), the following test was carried out.

In test number 2 for evaluating the reliability of the method for identification and interpretation of image dimensions, five independent random subsamples were selected in five runs from each of the original random samples from the main target populations of Sweden, Norway and Greece (shown in Table 1). The subsamples were selected using a SSPS routine for random selection of cases. The size of each subsample was set to 75 % of its "mother" sample. The complete method for identifying image dimensions was then applied to each run. Test number two evaluates the ability of the method to deliver consistent results for smaller sample sizes (75 %) and for different sample

Dimension	S	Ν	G
1. Reward	0.7	0.7	0.7
2. Significance of industry	0.7	0.8	0.7
3. Ships as a place of work and living	0.7	0.7	0.7
4. Environment	0.6	0.6	0.6
5. CSR of shipping industry	0.7	0.7	0.6
6. Family	Х		
7. Career shift	Х	Х	
8. Risk		0.6	0.6
9. Employer-employee relation			Х

Table 15 Coefficient alpha for items used as a scale for identifying image dimensions for Sweden (S), Norway (N) and Greece (G) (G)

Results for pupils in general schools ("X" denotes that a dimension is based on one item)

Dimension	Sweden		Norway		Greece	
	IDF	REP	IDF	REP	IDF	REP
1. Reward	Х	5	Х	5	Х	5
2. Significance of industry	Х	5	Х	5	Х	5
3. Ships as a place of work and living	Х	5	Х	4	Х	5
4. Environment	Х	5	Х	5	Х	5
5. CSR of shipping industry	Х	5	Х	5	Х	5
6. Family	Х	4		1		1
7. Career shift	Х	4	Х	5		1
8. Risk		2	Х	5	Х	5
9. Employer-employee relation					Х	3
Consistency	94 %		97 %		94 %	

 Table 16
 Results of test number two for pupils in general schools in Sweden, Norway and Greece ("X" in the IDF column shows that the dimension has been identified in the main study

REP represents the number of times the dimension was identified in the five runs of test number 2)

compositions—another aspect of reliability. The results of test number two are shown in Table 5. The reliability in terms of overall consistency is shown at the bottom line of the table. It is defined here as "observed identifications of image dimensions in test number two" divided by "expected identifications according to the main study (Table 3)". The conclusion is that the method delivers 100 % consistent results for dimension 1–5 for Sweden and Greece and for dimensions 1, 2, 4, 5, 7 and 8 for Norway. There are no signs that the small deviations from 100 % consistency for Sweden (dimensions 6 and 7), Norway (dimension 3) and Greece (dimension 9) observed in the test should present problems for equivalent studies based on samples of the same size as our main study. The deviations can probably be explained by a combination of pupils' limited knowledge about real conditions for seafarers and the specific conditions for the maritime industry in the three countries. These two causes lead to higher variances in the data for these items. However, the observed deviations can give some hints for future design of surveys (Table 16).

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