

The intangible concept of good seamanship – A comparison of the ingredients of seafarers' descriptions using a hybrid qualitative-quantitative approach

Asbjørn Lein Aalberg

SINTEF Digital, Norway. E-mail: asbjorn.lein.aalberg@sintef.no

Rolf Johan Bye

SINTEF Digital, Norway. E-mail: rolf.johan.bye@sintef.no

Maritime industry is facing major changes due to macro trends like digitalization, globalization and internationalization, as well as the industry's elevated bureaucratization due implementation of the ISM code and other laws and regulations. These developments have been undergoing for some years and are likely to continue with even higher pace. The maritime industry is a heterogenous industry in terms of operations and vessel types, which leads to the question of how these changes affect the different subgroups of maritime seafarers. Seafarers are traditionally workers with a strong identity, as manifested by the popularity of the term 'good seamanship'. However, research indicate that the notion and interpretation of seamanship is changing. In this study we use a hybrid qualitative-quantitative method to explore differences in what seafarers (N=731) reports as content of good seamanship. The results show that there is a large variation in the semantic content of seamanship, and some notable differences between ages, vessel types and positions on board. In the discussion we make some considerations for practical implications in risk and safety management as well as provide some directions for further research.

Keywords: maritime, seamanship, seafarer, professional identity

1. Introduction

“Good seamanship” is an established term among seafarers. The concept is also used in international and national regulations, legislations and guidelines. Despite this, there is a lack of formal definitions, making the concept somewhat intangible in terms of the semantic content.

Rule 8 in the International Regulations for preventing Collision at Sea (COLREGS), states that: “Any action to avoid collision shall be taken in accordance with the Rules of this Part and shall, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship.” Another example is the “Guidelines for the Preparation of the Cargo Securing Manual” (IMOMSC.1/Circ.1353), and the “Amendments to the Code of Safe Practice for Cargo Stowage and Securing (IMO MSC/Circ.1026), which states that: “The guidance given herein should by no means rule out the principles of good seamanship, neither can it replace experience in stowage and securing practice.” A guideline developed by the Canadian Coast Guard is another example. It states e.g. that: “The rules are not there to replace good judgement and practice of good seamanship. You should not put your

vessel in danger by blindly following the rules. You should consider all factors pertaining navigation (water depth, wind, traffic, current, manoeuvrability of your vessel, etc.) when complying with the rules” (Canadian Coast Guard 2001:113).

If we contemplate up on these few examples, it seems to be the case that the term seamanship may denote different concepts or at least address slightly different aspects of the concept. In the case of IMO MSC/Circ.1026, the concept seems to denote a certain practice, that seem to stem from experience. In the case of COLREGS, the term may be interpreted simply as a certain way of handling a certain situation. The use within the Canadian guideline may be interpreted as a term that denote the ability to continuous evaluate the development of a situation, make appropriate judgment and conduct the adequate actions which is not necessarily in compliance with procedures and regulations.

Gilmore and Black (1975) claim that seamanship is used - within a legal and regulatory context- to denote the totality of tasks that a seafarer is expected to conduct, including the ability to make proper judgement in order to handle changing and unforeseen situations. They claim that “good seamanship” is a solution to the

problem that it would be impossible to make a complete description in formal regulation and laws how to handle all possible situations and choices of action that would be relevant for operating a ship. Good seamanship becomes a term of all these actions, including those trapped into rules.

In a juridical context, in the aftermath of an accident, a maritime inquiry or a court may consider the question of guilt by reference to the notion of good seamanship or lack of good seamanship (Allen 2005:93). In such a context, it is reasonable to assume that good seamanship does not include skills and knowledge. It would be unreasonable to judge a person for lack of knowledge, provided that formal requirements are met. Instead the requirement for good seamanship has been assessed on the basis of an overall assessment of all matters that the court considers relevant to an incident, and whether the individual's behavior differs from what one might expect from a seaman (Allen 2005:93).

Research on how seafarers use the terms informally show that it may carry a variety of meanings (Serck-Hansen 1997, Lamvik 2002, Lamvik & Bye 2004, Knudsen 2009, Antonsen 2009). An empirical study conducted by Antonsen (2009), using free list responses from a sample of Norwegian seafarers, shows that seamanship is used to express conditions related e.g. sociability, loyalty and obligations to fellow seamen, independency, responsibility, reliability and willingness to work. Antonsen found that many of the descriptions were about interaction between seafarers, both during work operation and off duty.

Lamvik (2002), Lamvik & Bye (2004) and Bye et al. (2015) argue that seamanship sometimes is functioning as mean for social categorization. The term is used in the construction and actualization of identities by establishing a division between "us" - the "proper" seamen - and the others who "lack good seamanship". The others that do not possess good seamanship might be "land lubbers", "brack water sailors", "fishermen", and seafarers from certain nations etc. Knudsen (2009) claim that the term may be used to express a kind of "professional pride", related to valued characteristics and abilities of a professional seafarer. "Good seamanship" is something a professional seafarer possess and represent a kind of quality standard.

The term is sometimes used to express antagonistic attitudes towards to formal SMS and the requirements given by the ISM code (Størkersen et al. 2011). The external SMS system appears as a form of devaluation of the personal characteristics that characterize the profession.

A relatively recent study by Kongsvik et al. (in review) indicates that the concept of

"seamanship" is not considered to be important among young seafarers. According to them, seamanship is something that "old-timers" talk about. The semantic content of the term appears to be more or less irrelevant to younger seafarers. This seems to be especially the case for seafarers with formal expertise in handling and using modern and advanced ship technology and equipment. In this context, seamanship becomes a concept that young seafarer distance themselves from, and by this constitute a new seafarer identity in contrast to the old seafarers.

In relation to safety, the semantic content of the concept of seamanship is important due to several reasons. First, it gives insight into what aspects of work-related behaviour, attitudes and qualities that the seafarer considers as important and valuate. In that sense, seamanship captures an informal "standard" of behaviour that are interesting in terms of safety management and Safety Management Systems. Second, seamanship is used as concept and standard that the seafarers must comply with in regulations and within formal SMS systems. Third, the semantic content may be considered as a reflection of the safety culture among seafarers, and by this representing a kind of indicator of safety culture. This relevance of the concept is valid for most of the definitions of safety culture.

In this study we address the following two research questions:

What is the semantic content of the notion of seamanship according to seafarers?

Are there differences in the semantic content of seamanship between

- a) seafaring professions/departments (e.g. Navigators, engineers, ratings)?
- b) seafarers working within different segment of the industries?
- c) seafarers of different ages?

The first question is the same as asked in previous studies (e.g. Lamvik & Bye 2004, Antonsen 2009, Knudsen 2009, Kongsvik et al. in prep.). Our study is however based on a considerable larger sample of respondents compared to previous studies. Our sample covers also different segments of the seafarer industry.

The second question has not been analysed and discussed thoroughly in previous research. Although, qualitative interview studies indicates that there are differences between old and young seafarers (Kongsvik et al. in review), and that the term are used to establishing a division between seafarers with different nationalities Lamvik 2002, Lamvik & Bye 2004).

2. Method

In this section, we provide descriptions of the survey applied in the study and the analysis procedure.

2.1 Survey

2.1.1 Participants

The sample consists of 701 seafarers working on Norwegian vessels (The Norwegian Ordinary Ship Register - NOR and The Norwegian International Ship Register - NIS). These respondents are extracted from a general safety perception study issued by the Norwegian Maritime Authority (see Aalberg et al., 2020). We selected five vessel categories and made a 30 % randomized sample of these to form our dataset. The sample consists of a variation of ages and roles on board. Fishermen constituted a separate category, without distinguishing between different departments aboard the fishing boats.

Table 1. Age of respondents

Age	N	%
Younger than 26	95	14
26-35 years	167	24
36-45 years	189	27
46-55 years	148	21
Older than 55	102	15
Vessel type		
Overseas shipping	115	16
Offshore vessel	402	57
Aquaculture	45	6,4
Fishing vessel	99	14
Military	40	5,7
Role		
Deck	244	35
Bridge	244	35
Engine	174	25
Fishermen	25	3,6
Missing	14	2

2.1.2 Obtaining semantic data of seamanship

The data used in this analysis is obtained by using *free lists*. This is a systematic method for collecting data regarding human connotation to certain subjects (see e.g. Bernard 2011). A free list means simply that one asks the respondents to name or write down all the objects related to a certain category as they can think of. The method has been developed and used within cognitive anthropology and cross-cultural psychology in order to study cultural domains and comparing possible differences between groups of people.

The free lists are used to analyse and understand the semantic content that a certain group of people relates to a concept, by using descriptive statistics such as e.g. Scree plots and frequency tables.

In this study, free lists are used by inviting participants to digitally type an answer to the following question:

What do you think characterises good seamanship?

2.2 Analysis procedure and methods

2.2.1 Coding and abstraction

We randomly selected a 30 % sample of the responses with each vessel type included in the study. Before the coding started, the vessel type for each response was hidden for the researchers. Thus, as an attempt to diminish bias, no context information (e.g. age, vessel type or role) was available throughout the coding process. Two researchers coded all 701 responses together to avoid interrater reliability issues with separating the coding.

Initial coding was conducted inductively, thus, no categories were formed a priori, but "emerged" from the analysis of the data. The codes were changed iteratively as their convergence and overlap were identified when the coding progressed. After approximately 40-50 % of the observations were coded, a theoretical saturation level was reached, and only a few new categories were formed in the following 50-60%.

A high number of the initial codes had some common underlying theoretical phenomenon, e.g. "Courage", "Proud" and "Calm" seemed to be all aspects of a common theme of personal characteristics, as opposed to e.g. "Housekeeping". This led to the creation of an abstraction level with 9 categories.

2.2.2 Statistical analysis

Simple descriptive statistics as frequency tables were conducted, in order to explore differences between background categories, and see the top aspects coded. Where differences were identified, inferential statistics were conducted using SPSS v24 with chi square analyses along with a significance level of 5 %. Importantly, the chi square statistic does not indicate direction of the results. In the text we provide merely indications of the direction based on the frequencies.

3. Results

3.1 What is the semantic content of the notion of seamanship according to seafarers?

In total, we constructed 39 different categories of semantic content of seamanship based on the free lists. Note that one response might include several codes, i.e. they are not mutually exclusive. We see

from Table 2 that the total number of different initial codes within one category is high within individual characteristics – capabilities, individual characteristics – personality, and social interaction and cooperation.

Table 2. Number of coded categories in each main category (abstraction level 1)

Abstraction level 1	% of responses	No. of codes within category
Safety	66	1
Ind. characteristics/capabilities	38	7
Social interaction and cooperation	35	7
Quality of performance	27	5
Skills & Knowledge	21	2
Ind. characteristics/personality	20	12
Experience	11	1
Common sense	7	1
Framework conditions	4	2
(Intangible)	1	1
Total		39

The initial code with highest frequency were Safety. 66% of the respondent related safety to their description of good seamanship to safety. The descriptions are related to both the ship (ship accidents) and the crew (occupational accidents). 38% included descriptions have been categorized as Individual characteristics/capabilities. This is descriptions of awareness and behaviors. The importance of awareness and diligence (n=98), "respect for the sea" (n=36) when performing operations, as well as being "proactive" (n=70) has been addressed by several of the respondents (28%). Other abilities and behaviours include e.g. being "willing to work", take responsibility, and ensure that you are well rested and fit for work. The following example can be understood as an emphasis on situational awareness and good work ethic: "a good seamanship is staying careful and vigilant at all times, especially about your own actions, is just as essential to good seamanship as hard work".

35% of the description was coded as related to Social interaction and cooperation. This include a variety of description of the how the crewmembers should interact. This category includes descriptions that emphasis cooperation between crew members, mutual loyalty, respect, and support. This category does also include accentuation of conditions that may be denoted as related to phyco-social working environment, such as e.g. comradeship, "to fit in", care for colleagues, friendship, socializing etc. Some of these description does partly reflect or resemble

some of the descriptions coded individual characteristics/personality descriptions described below (categorized as trustworthy, reliable, honest and open, humble and loyal) which could be seen as prerequisites for the preferred interaction patterns on board.

The category Quality of performance includes descriptions that emphasise the importance of work efficiency, compliance to rules, and good maintenance and housekeeping routines. 27% of the respondents addressed conditions related the quality of work. Among these, about 5% emphasised the importance of compliance to formal rules. Following transcript is an example of those descriptions that related good seamanship to compliance: "Following the company procedures, checking and double checking, to be honest and safety first".

Skills & Knowledge was addressed by 21% of the respondents. Several descriptions emphasised experience, skills and the competence to handle different situations onboard the vessel. Many of these descriptions were focusing on the importance of skills that are relevant for handling nonregularities and unforeseen/unplanned situations.

20% included descriptions that have been categorized as individual characteristics / personality. These descriptions contain a variety of appreciated abilities and character traits. A seafarer that perform good seamanship is courageous, optimistic, solution-oriented and has the ability to improvise and work independently. The seafarer should also keep calm in critical and demanding situations e.g. "not getting stressed at developing situation." Ownership to the vessel and the equipment is also described as an aspect of good seamanship. Further, the seafarer should be proud, trustworthy, reliable, honest and open, as well as humble and loyal towards colleagues and the company.

11% of the respondents have emphasised experience as a characteristic of good seamanship. Experience is actualized as important in when the seafarers are confronted with an array of unforeseen situations. There seems to be a perception that past experiences are used as references to solve similar and new problems/challenges. The following transcript is one example of how experience is highlighted as important: "Good seamanship is established (learned) only through practical experience, which in turn provides the necessary knowledge for good interaction between vessels and natural forces in all different situations."

The notion of Common sense is used by 7% of the informants to define good seamanship. Common sense is described as essential for problem solving, and to ensure that correct response in certain situations. Common sense is in

some descriptions contrasted to procedures and regulations, and presented as a quality that enhance "resilience": "Still be able to use common sense in various situations, even if one is limited to this by regulations both externally and internally. Many here feel that the wrong way is that one trusts to follow the rules blindly". "Seamanship", the importance of common sense and the ability to consider the situation yourself, is used by some to express antipathy towards formalized procedures and management systems: "Seamanship!. It is a term that no longer exists. You are not supposed to think. Everything is written down in some procedure".

Some of the respondents (4%) relates good seamanship to conditions that we have denoted as Framework conditions. Some address working conditions such as salary, catering, the technical quality of the vessel and equipment etc. One respondent writes "High salary, the crew want to work better. Good food to keep everyone happy. High stock and availability in safety equipment, so workers do not keep their gloves for later. Reliable machinery equipment and access to spare parts." Some does also address work pressure and the manning level: "To reduce the pressure above the people, and to increase number of crew members." The importance of the quality of the procedures is expressed in the following statement: "Good procedures and checklists that are followed and common sense".

Four of the respondents in our sample responded in a manner that made it difficult to interpret the semantic content. One example is this tautological description: "Good seamanship is good seamanship. A stupid question."

3.2 Differences between seafarers

3.2.1 Differences between seafaring professions/departments (e.g. Navigators, engineers, ratings)

In Table 3 below, we see the differences in responses between seafarers working on bridge, deck, in the engine, and on small fishing vessels. As indicated by the table, there are significant differences on the categories *Individual characteristics/capabilities* and *Social interaction and cooperation*. We see that, regarding individual capabilities, workers in the engine and on deck to a lesser degree describe 'seamanship' to contain attributes within this category, as opposed to fishermen and seafarers on the bridge. On the other hand, the same work areas report more frequently attributes within *Social interaction and cooperation*, especially compared to fishermen. To conclude, there are in general few significant differences in the

distributions of categories, but there are some notable differences between areas of work.

Table 3. Percentage of responses within main categories by department of work

Category	Bridge	Deck	Engine	Fishers
Common sense	9 %	4 %	5 %	20 %
Experience	13 %	9 %	10 %	12 %
Framework conditions	3 %	3 %	6 %	0 %
Individual char./capabilities*	47 %	32 %	32 %	56 %
Individual char./personality	23 %	19 %	17 %	16 %
Quality of performance	31 %	27 %	22 %	20 %
Safety	36 %	37 %	29 %	32 %
Skills & Knowledge	22 %	20 %	24 %	12 %
Social interaction and cooperation*	28 %	42 %	39 %	0 %

Note. *p < .001 using chi square statistics (χ^2).

3.2.2 Differences between seafarers working within different segment of the industries

Table 3 shows the results for different segments of the industry (deep sea/oversea cargo vessels, offshore service vessels, aquaculture vessels, fishing vessels, military vessels).

The proportion of respondents addressing aspects categorised as Individual characteristics/capabilities, Skills & Knowledge and Social interaction and cooperation showed significant differences between segments of the industry. Specifically, for individual capabilities we see that vessels sailing overseas, and to some degree fishing vessels, show higher frequency than the other segments of the industry. The notion of seamanship as related to skills and/or knowledge is particularly present among respondents from military vessels, and more rarely among fishing vessels. Lastly, there was a significant difference across segments of industry in the number of descriptions that relates to social interaction and cooperation. Offshore vessels score higher on this, as opposed to especially fishermen, but also the other categories in general.

To conclude, there are in general few significant differences in the distributions of categories, but there are some notable differences between vessel types.

Table 4. Percentage of responses within main categories by segment of industry

Cat	Overs.	Offsh.	Aquac.	Fishing	Military
Common sense	4 %	6 %	9 %	11 %	8 %
Exp.e Fram.	16 %	10 %	7 %	9 %	13 %
cond.	6 %	3 %	7 %	4 %	3 %
Ind. Cap.*	50 %	34 %	38 %	43 %	28 %
Ind. Pers	16 %	19 %	33 %	18 %	28 %
Quality*	30 %	23 %	40 %	28 %	38 %
Safety	34 %	34 %	40 %	32 %	35 %
Skills&K*	25 %	20 %	13 %	17 %	43 %
Social*	27 %	41 %	31 %	23 %	30 %

Note. *p < .001 using chi square statistics (χ^2).

3.2.3 Differences seafarers of different ages

We see from Table 5 that there were significant differences in the free text responses connected to *Individual characteristics/capabilities* and *Safety* and *Social interaction and cooperation*. As for the percentage of responses connected to individual capabilities, we see that younger workers seem to note these aspects more seldom than older workers. On the other hand, younger workers more often report safety explicitly when asked about ingredients of seamanship. Similarly, we see that younger workers tend to a higher degree note social and collaborative aspects higher than older workers.

Table 5. Percentage of responses within main categories by age of respondent

Cat	0-26	27-35	36-45	46-55	56-100
Common sense	5 %	5 %	10 %	7 %	5 %
Exp.e Fram. cond.	8 %	7 %	11 %	13 %	17 %
Ind. Cap.	2 %	5 %	4 %	3 %	3 %
Ind. Pers*	21 %	40 %	36 %	43 %	45 %
Quality	18 %	22 %	19 %	21 %	21 %
Safety*	21 %	28 %	26 %	24 %	35 %
Skills&K	45 %	38 %	30 %	34 %	25 %
Social*	20 %	25 %	20 %	20 %	24 %
Social*	55 %	37 %	30 %	31 %	28 %

Note. *p < .001 using chi square statistics (χ^2).

4. Discussion

4.1 The semantic content of seamanship

This study shows, as previous studies, that good seamanship is a comprehensive concept that includes a variety of conditions. Thematically, respondents describe seamanship as involving everything from individual capacities, personality, social interaction to framework conditions. In line with Antonsen's free list

analysis (Antonsen 2009), many of the respondents in our sample associate good seamanship with conditions that are related social interaction, sociability and cooperation.

Our findings shows that seamanship is only partly attributed strictly to individuals' capabilities, personality, knowledge, skills, experience, quality of performance, common sense). As many as 35% attribute seamanship to collective phenomena, and the mutual adaptation between the seafarers.

A key finding is that there is diversity in what the respondents emphasize when describing good seamanship. None of the categories of descriptions was described more than 66% of the total number of respondents. For example, only 21% emphasize matters related to skills and knowledge.

Although 66% of the description are about safety, many statements do not make such a direct link. Conditions such as work ethic, pride, willingness to work, sociability, trustworthiness etc, are not necessarily related safety but to regular daily tasks in general, social relationships on board and professional identity (i.e. what the respondents mean characterise "us" as good professional seafarer).

Considering "good seamanship" as an expression of professional identity, the seafarer is faced with rather challenging informal expectations. In short, the seafarer is expected to be independent, take initiative and be a team player as well as sociable.

4.2 Differences between departments on board

The chi square test shows significant differences between different departments related to the categories of Individual characteristics/capabilities and Social interaction and cooperation. Officers on the bridge and fishermen on small fishing boat seems to emphasize Individual characteristics/capabilities more than the ratings and those working in the engine room. This difference may be related to the character of the tasks associated with the different positions. If we look closer at the statements classified as individual characteristics/capabilities, many are mainly about awareness, diligence and the capability of being proactive. A plausible explanation is that these are capabilities that are very important when navigating and operating the ships or the fishing vessels. In addition, it is reasonable to believe that officers in command appreciate that their crew e.g. takes responsibility, are fit for work and willing to work.

Ratings (42%) and engine room operators (39%) tend to emphasize conditions related to Social interaction and cooperation. A plausible interpretation is that these aspects are partly

reflecting the need of cooperation and interaction between the crew members when conducting their work.

There might be the same aspects explaining the differences seen in age, vessel type and work area, which should be investigated further in multivariate analyses.

4.3 Differences between vessel types

Our analysis also shows that there are differences between seafarers working on different vessel types with regard which the descriptions of hallmark associated with good seamanship.

Deep sea seafarers tend to emphasise individual capabilities (50%) more than those working within other sectors of the industry. Offshore service vessels tend to emphasise Social interaction and cooperation (41 %) relatively more than the other groups, and seafarers working with aquaculture (fish farming) industry seems to emphasise the quality of the work. We find it difficult to interpret these results. One might explain the emphasis on social interaction and cooperation among seafarers on offshore service vessels with the high degree of integration in the operations between the crew on offshore installation as well as among the crew on the vessels. Anchor handling operations is especial critical operation with is dependent on a high degree of coordination between different actors. One can also speculate on whether the emphasis on condition related to quality of work among seafarers working within aquaculture, reflects the general attention towards quality within the fish farming industry. However, regardless of possible explanations, the observed differences show that the semantic content of good seamanship seems not to be the same within different segment of the seafaring industry.

4.4 Differences between age groups

There are differences between seafarers of different age related to the emphasis on conditions related to individual capabilities and social interaction and cooperation. These findings support the argument of Kongsvik et al. (in prep) that the semantic content of good seamanship is in transition. However, age of seafarers are often related to positions on board (ratings and officers), and our analysis do not control for this. Multivariate analyses could help clarify the relationships.

4.5 Practical implication

Our findings indicate that there is little consensus on what good seamanship means, and that it may have different meanings in different contexts. The varying semantic content may be problematic

since good seamanship is used as a concept in regulations and within formal SMS systems. Rules that requires good seamanship is problematic, since the interpretation of this rules may vary and legitimise different practices. The somewhat comprehensive and diverse semantic content may contribute to a kind of "semiotic confusion". However, studying the semantic content of seamanship may give insight into what the seafarers regard as appreciated and important aspects of their profession. The semantic content may work as an indicator for perceptions, attitudes, and practices among seafarer. The "plasticity" of the term creates also a potential (and possibly a need for) for using the term as a tool for changing perceptions, attitudes and practices, by the using the term in relation to e.g. safety communication and training.

5. Conclusion & further study

This study has shown that the semantic content of good seamanship, when used by seafarer themselves, is rather comprehensive. The concept includes a variety of conditions associated with the individual seafarer, collective interactions and the working environment. Further, the semantic content may vary according to the age of the seafarer, departments (officers, ratings, engine) and segments of the shipping industry vessel types and activity).

We claim that the ambiguity of the concept makes it problematic when used, as it is today, as a term in regulations and management systems. However, we believe that the use of the concept may be important in the context of safety education and training, since the term also appears to be an expression of professional identity and by this conveying what is expected of a seafarer. The findings regarding the semantic content of the good seamanship resembles previous studies. A strength of our study is to provide a novel method where we combine the richness of a free text (qualitative) inquiry, with the generalizability of quantitative measures. A limit is a possible influence of common method bias, and a somewhat low number of respondents within some categories.

Further studies should seek to obtain a higher number of coded responses to heighten the statistical power of the study as well as exploring potential differences between other vessel types. There are also interesting opportunities related to investigating the interrelations between the categories presented, e.g. through multivariate statistical techniques. Exploration of natural language processing methods could also be feasible for such inquiry.

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