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Organizational culture and risk perception

Key words

Organizational culture, risk perception, subjective risk, objective risk.

Słowa kluczowe

Kultura organizacyjna, percepcja ryzyka, ryzyko subiektywne, ryzyko obiektywne.

Summary

The paper discusses the relationships between subjective risk perception and individuals' adaptation to high risk working conditions. It is based on a study carried out among personnel on offshore service vessels in the North Sea and Norwegian fishermen. Risk perception, fatality rate and the discrepancy between subjective risk perception and formal risk levels is further on compared. The results of these comparisons are discussed by using the concept of *organizational culture*, and indicate that there is not necessarily a correlation between objective risk and subjective perception. In fact, subjective risk perception may be seen as a reflection of interactional conventions developed among employees dealing with their working conditions.

1. Introduction

The paper compares objective risk identification with subjective risk perception. This comparison is used to discuss the relationship between individuals'

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adaptation to working conditions and individuals' perception of risk. The paper is based on a study among Norwegian fishermen and employees on offshore service vessels on the Norwegian continental shelf.

1.1. Norwegian fishermen and seamen on offshore service vessels

To be involved in fisheries or work on an offshore service vessel is two of the most risk exposed occupations in Norway. A marine career far exceeds an average land based job, as far as accidents and incidents per man-labor year are concerned.

The fishing industry in Norway is huge and complex. From shipping companies with several trawlers operating in deep sea fisheries – with a formal organization on shore, including for example a HES department – to one-man firms operating on smaller vessel in coastal areas. All in all, about 14000 people have full time employment on board fishing vessels in Norway. The fleet may be divided into three categories: vessels which are 90 feet or more and involved in deep-sea fisheries, vessels which are between 35 and 89 feet and operates in more coastal area and, finally, the class of boats that are less than 35 feet, often manned and handled by a single man and operating in coastal fisheries. This paper is based on the risk situation in the latter category, the so-called smack (in Norwegian: *"sjark"*).

The offshore service vessels are a major part of the Norwegian oil industry. The vessels play an important role in the emergency preparedness of the installations. They take care of the transportation of goods to the offshore installations and are used when drilling rigs have to be moved. The vessels are contracted by the oil companies from different shipping companies. In 2002 approximately 4100 seamen, most of them Norwegians, were employed by Norwegian shipping companies. The Norwegians working on the vessels are mainly recruited from the Norwegian merchant fleet and fishing vessels.

1.2. "Objective" and "subjective" risk perception

Attempts to improve safety in any organization are accompanied by identification of "objective" risks that may be reduced or removed. Identification of objective risks may be seen as a certain method based on definitions that certain experts use to perceive risk. As Rundmo [17] points out, this "objective" risk perception has traditionally been carried out by experts such as engineers and statisticians. A generally accepted definition of risk among experts is that risk is the danger that unwanted events may have on human, environment and economical values. Risk is conceptualized as a function of probability and consequence. The probability of any event is based on longitudinal empirical studies of events. The consequences are considered as estimated costs of different kinds of damages such as loss of live, damage of health, environment, direct economi-

cal and material damage etc. The relationship between the magnitude of loss and the probability has been questioned, i.e. what is the relative importance of these two components, according to Drottz-Sjöberg [6] and Brun [3]. Nevertheless, in the standard formal definition, risk is conceptualized as the product of probability and the magnitude of the loss.

The objective risk perception does not necessarily correspond with the "everyday methods" with which individuals perceive risk. Attempts to understand how individuals perceive risks have traditionally been a research question among psychologists, anthropologists and sociologists. Even though the phenomena of individuals' risk perception has been studied for decades, there still are controversies tied to individuals' response to danger, and how risk should be defined, according to Ringstad & Buytendorp [16] and Brun [3]. Some claim that there is no significant difference between the objective and the subjective conceptualization of risk. The objective formal definition is in fact a human construct that reflects the common human way of mentally constructing risks. The differences between experts and laity risk perception is simply that the experts are better informed and apply systematic methods when it comes to the calculation of probability, according to Frisch & Baron [9] and Kaplan & Garrick [13]. Other researchers claim that the subjective "function" of risk involves different components than the formal one. Yates & Stone [20] state that subjective risk construction is linked to the experience of the loss, the significance of the loss and the uncertainty related to it. It has also been argued that the subjective experience of *lack of control* can be significant for the subjective evaluation of the risk related to the actual event, according to Brun [3]. This means that lack of control may have a significant partial effect compared to the magnitude of the loss and the estimation of probability (this argument is used to explain why e.g. people are more afraid of being a passenger in a car compared to driving themselves). Other researchers focus on the possible variation of the outcome of a potential dangerous event. Follo [8] introduce *time* as an important aspect of subjective risk perception. She defines risk as a function of probability and the *magnitude of loss during a certain time lag*. The time separation between the potential event and present time has an impact on the subjective estimation of the magnitude of the loss.

Some studies have even indicated a lack of correspondence in the way individuals interpretate risks. Douglas & Wildawsky [5] argue that the perception of risk reflects the individuals' social and natural surroundings. They claim that: "*each form of social life has its own typical risk portfolio*" [5:8]. According to Douglas & Wildawsky individual risk perception reflects different social contexts. They claim e.g. that hierarchical social organization generates fear of events that may threaten the existence of the hierarchal organization, such as crime, terror, lack of loyalty etc. An egalitarian individualistic social organization will generate fear of events that may threaten the freedom of the individual.

Risk perception becomes a reflection of the organizational and moral order of a specific community.

Also the work by Adams [1] emphasizes the need to contextualize risk perceptions. Adams makes use of the term "risk thermostat" as an illustration, and describes the responses to risk as balancing acts between a variety of factors, such as propensity to take risks, perceived danger and former experiences with accidents. However, *"the setting of the thermostat varies from one individual to another, from one group to another, from one culture to another"* [1:15].

The relationship between the "form of social life" and risk perception is also indicated in a study of identification of risk among people with different nationality, according to Høivik & Bye [12]. Even though situated in the same working context, there was a difference between the different nationalities when it came to identifying risk.

1.3. "Subjective" risk perception and risk behavior

Even though experts disagree about how individuals perceive risks there is an ongoing discussion about the *relationship between objective risk and subjective risk perception*. There have also been suggested that there may be a *relationship between individuals risk perception and risk behavior*. The relationship between individuals' risk perception and risk behavior is an important factor in formal risk analysis, risk modeling and the working out of measures to minimize risk. Rundmo's [17] study of risk perception and safety on the Norwegian continental shelf shows that there is a correlation between the experience of unsafety, and involvement in accidents and near-misses. An important note is that these findings do not imply that risk perception is a causal factor in accidents. Rundmo´s research shows that personnel involved in offshore activities that already have experienced an accident, feel more unsafe than others. His study shows that people who feel the most unsafe also experience the most job-stress. Rundmo suggest that both accidents and risk perception may be internally independant effect variables. The indicated relationship is explained as due to both accident and risk perception and to be an effect of organizational, social and physical factor such as e.g. job stress and work load. Based on the significant correlation between risk perception and risk behavior Rundmo claim that when people "*feel at risk they also are at risk*" [17:208]. Due to this Rundmo claims that measurement of subjective risk perception in an organization is in fact a good measure of the objective level of safety. If this finding from the research on offshore workers is a generic phenomenon, then subjective risk perception may be a good indicator of the objective safety level in other business sectors as well.

2. Method

The empirical basis of this paper is accident statistics, a survey, interviews and observations. Data gained by using these different methods have then been analyzed using hermeneutic methods.

2.1. Accident statistics

The accident reports used in this study are found in the PUS database at the Norwegian Maritime Directorate (NMD). This database contains reported accidents on Norwegian vessels from 1991 and upwards. In this paper these data are used to compare the numbers of work related accidents among Norwegian fishermen against those of seafarers on offshore vessels. As a secondary data source we have used the Norwegian Shipowners' Association's records of numbers of employees on the different vessels.

Besides the national data of accidents and numbers of employees, this study has also used accidents statistics on the situation in the fisheries developed by Aasjord [21], from SINTEF Fisheries and Aquaculture, and accident reports registered by one major operator of the offshore vessels.

2.2. Survey

Based on the assumption that there is a certain correlation between formal risks and subjective risk perception, a survey was carried out among employees on the offshore service vessels operated by Statoil in an attempt to map the current safety level in the organization. The survey included 35 vessels with about 630 employees. Questionnaires were distributed to the vessels and 487 employees responded. This represents a response rate of 77%.

The survey was partly based on Rundmo´s [18] definition of subjective risk perception, and his notion of *cognitive* and *affective* components of risk perception. The cognitive component focuses on individuals' probability assessments of being exposed to an accident. This assessment was measured by asking the following two questions: (1) How probable is it that any of the crew members may be exposed for an accident on the vessels where you work?, and (2) How probable is it that you may be exposed for an accident on the vessel where you work? These questions where answered using a scale from 1 (very likely) to 6 (not likely). The affective component of risk perception focuses on the individual's experience of fear and safety. This component was measured by asking the following two questions: (1) In what degree do you feel safe when you think about the risk involved in your work on the vessel?, and (2) In what degree do you worry when you think about the risk involved in your work on the vessel? These questions where answered using a scale from 1 to 6, where 1 was very unsafe/worried and 6 very safe/not worried.

2.3. Interviews and participating observation

Different types of interviews were conducted among both fishermen and personnel on offshore service vessels. The reason for the differentiation was to see if various interview contexts had impact on the informants' statements about risks. The context of the interviews were differentiated by (1) The location of the interviews (on vessel and off vessel), and (2) if there where a single informant or a group taking part in the interview.

All interviews where semi structured in the sense that the interviewers only used pre-determined themes in order to structure the discourse. Altogether 45 informants have been interviewed.

2.4. Analysis

Occupational accidents per number of employees on offshore service vessels were calculated by combining the data from PUS database (recorded occupational accidents) and the Norwegian Shipowners' Association's records (numbers of employees).

The survey data were analyzed if any systematic difference between the different subgroups of the sample was detected by analysis of variance. The subgroups were based on age, profession and years of experience. The interview data were categorized by the different interview contexts and then compared.

The results of these preliminary analyses were then again analysed by the help of a hermeneutic (interpretative) method developed by Geertz [10]. The hermeneutic method implies a systematic look for relationships among diverse phenomena operating in a common context. This means looking for *coherence* between phenomena in an attempt to bring forth plausible explanations.

3. Results

3.1. Formal Risk Supply

Data from the Norwegian Maritime Directorate's database on occupational accidents on Norwegian vessels show that from 1991 to 2003, the total number of occupational accidents on offshore supply vessels was 1097. Together with the Norwegian Shipowners' Association's registration of numbers of employees on the Norwegian offshore service vessels, it is possible to calculate the number of occupational accidents per number of employees (Table 1).

The number of occupational accidents on Norwegian registered offshore service vessels in 2000 where 26 per 1000 employees. The following year the number was 18.8. The analysis of personal injuries in a major Norwegian oil company shows that in 2002 there were 5.2 personal injuries pr. million work hours on the offshore vessels (Table 2). The previous year the number was 6.9.

Table 1. Number of reported injuries, number of employees and number of injuries per 1000 employee on Norwegian vessels in 2001 and 2002
Tabela 1. Liczba raportowanych obrażeń, liczba zatrudnionych i liczba obrażeń na 1000 zatrudnionych na norweskich statkach w roku 2001 i 2002

	2000	2001
Numbers of reported injuries	91	64
Numbers of employees	3500	3400
Number of injuries per 1000 employee	26.000	18.823

The registration of the degree of seriousness shows that there where no serious accidents in 2002 (Table 3). In the year 2001 there were five serious accidents; one of them was mortal. In 2000 there were one mortal accident and one accident causing serious personal injuries.

Table 2. Personal injuries pr. million work hour
Tabela 2. Wskaźnik obrażeń pracowników na milion roboczogodzin

1996	1997	1998	1999	2000	2001	2002
2.9	4.6	4.0	5.7	5.0	6.9	5.2

Table 3. Number of accidents with different degree of seriousness
Tabela 3. Liczba wypadków z różnym stopniem krytyczności

	1996	1997	1998	1999	2000	2001	2002
Mortal accident	1	0	0	0	1	1	0
Serious accident[1]	0	3	0	0	1	4	0
Accident[2]	5	5	13	14	14	18	13
Medical treatment	0	5	1	5	1	2	2

[1] Accident causing permanent damage
[2] Accidents causing absence of work

3.2. Formal Risk Fisheries

The risk situation and reporting practice differ to a certain degree from sector to sector of the industry. The most dangerous type of vessel in the industry, in the sense that these boats have the highest number of fatal accidents in the whole fishing fleet, is the small smack. At the same time this sector, most probably will have the highest frequency of underreporting in the industry. For example in a large survey conducted by RF-Rogaland Research in Norway in 2004 [2], shows that 71% of the accidents is never reported to the Norwegian Maritime Directorate.

Still, fatal accidents among fishermen working alone on board relatively small vessels - 35 feet or less, a so-called smack or *sjark* - can be used as an indication of the formal risk situation in the industry.

By average 10 people died every year in the period between 1990-1999 in or in relation to fishing operations on board this type of vessel. In total this means that 100 people died in this period of time and on board these vessels, a number which represents 52% of all the fatalities in the fishing industry at large. If we then take a stipulated number of man-labor year for one particular year in this decade into consideration, the picture should be clear – to be a fisherman is extremely dangerous. In 1991 about 5650 men (and a few women) had their daily trait on board, and statistically speaking, about 10 of them died while doing it (Table 4).

Table 4. Fatal accidents in fishery – period Jan 1990-De 1999 Type of vessel: Smack *(sjark),* 35 feet or less, 1 person on board*
Tabela 4. Wypadki śmiertelne w rybołówstwie – okres od stycznia 1990 do grudnia 1999 Typ statku: Smack *(sjark)* 35 stóp lub mniej, 1 osoba na pokładzie

Cause of accidents	Number of fatalities
Capsizing	3
Leakage due to rough weather	15
Collision	5
Grounding/stranding	9
Loss due to leakage	5
Fire/ gas accidents	3
Over board accidents	34
Drowning in port	16
Trapped/crushed/strucked	5
Overstrained/illness	5
Total fatal accidents	100
Stipulated Man-labor year 1991	5650

* Source: SINTEF Fisheries and Aquaculture

3.3. Perceived Risk: Supply

The employees on the offshore service vessels operated by the major Norwegian oil company that we studied, see it as medium likely that they will be exposed to an accident (Table 5). They regard it a little more likely that someone of the crew members should have an accident. The measurement of the affective components of risk perception shows that the crew members feel rather safe, and that they do not worry much about the risk elements involved in their work.

Table 5. Measurement of subjective risk perception among employees on offshore service vessels contracted by a major Norwegian oil company
Tabela 5. Miara subiektywnej percepcji ryzyka wśród zatrudnionych na statkach połączeń przybrzeżnych zakontraktowanych przez dużą norweską firmę wydobycia ropy

	Mean
Cognitive component:	
How probable is it that any of the crew members may be exposed for an accident on the vessels where you work?	3.6
How probable is it that you may be exposed for an accident on the vessel where you work?	4.1
Affective component:	
In which degree do you feel safe when you think about the risk involved in your work on the vessel?	4.8
In which degree do you worry when you think about the risk involved in your work on the vessel?	4.4

Systematic differences between the background variables of age, profession and years of experience, were only found among the answers regarding the cognitive component of risk perception (Table 6). The analyses show that the most inexperienced and the youngest employees regard it as more likely that they or any crewmember will be exposed to an accident. When it comes to profession, midshipmen regard it as more likely that they or any crewmember will be exposed to an accident compared to the other professions. Captains and officers assess probability as less than the other profession.

Table 6. Differences in cognitive risk perception between age, profession and years of experience
Tabela 6. Zróżnicowanie w kognitywnej percepcji ryzyka związane z wiekiem, zawodem i czasem doświadczenia

	Mean	SD	p-value
Age			.012
>29	3.7	1.0	
30-49	3.9	1.0	
<50	4.1	1.0	
Profession			.012
Captain	4.5	0.7	
First officer	3.9	1.0	
Machinist	3.8	0.9	
Cook	3.7	1.1	
Seaman	3.9	1.1	
Midshipman	3.3	1.0	
Years of experience			.000
0-5	3.7	0.9	
6-10	3.7	1.1	
11-15	3.9	0.9	
<15	4.0	1.0	

The interviews and the fieldwork indicate that risk is not a major topic in the daily dialogue among crew members. We have recorded events where safety has been questioned by crew members. In some of these situations fellow crew members have responded by using comments with negative connotations such as “weakling”, “chicken”, ”fraidy cat” etc. There is not a thorough use of prescribed personal safety equipment. In interaction with the researchers jokes have been made concerning the possibility that we may report this unofficial praxis. The employees tell stories about accidents and near-misses to each other, but this is not linked to explicit discussion about safety. Instead they are presented as “stories of entertainment”

Group interviews on the vessels focusing on the potential danger of the work have not resulted in extensive conversations about the risks at work. In these settings the informants tended to focus on their general working conditions compared with the workers on the offshore installations which they claim are better off than them.

In the individual interviews the risks of work has been a more explicit theme. Several informants has stated that the work they do is dangerous, underlined by a more severe version of a story about a specific accident. These stories are often ended with a comment that he so far has been lucky. It has also been a tendency that it has been easier to touch the topic of dangers connected to their work when the interviews have been carried out on land than on the vessel.

3.4. Perceived Risk Fisheries

With the formal risk situation in the fishing industry in mind, it appears to be a mystery that the professionals themselves seemingly do not do whatever they can to protect themselves from potential dangers in the actual work performance, and instead apparently choose to neglect or not admit the actual risk situation on board.

During the interviews and fieldwork in this sector of Norwegian fishing industry, a long range of examples came up in which the people themselves had to admit that for example the safety equipment and instruments on board were not up to date or not actual working. Even people involved in systematic HES work in the industry, had to confess that their physical work environment on board their own vessels had defects which easily could be repaired by themselves or through minor investments.

The interviews also illustrated in another manner the paradoxical character of how people look at safety arrangements in the industry. Safety measurements may be perceived as a threat to the core values, such as freedom and independence, in the work ethos. For example, one fisherman told stories about how some of his colleagues from other vessels, in a joking manner, were shouting “dog” to him, when he chose to make use of a safety line during periods with rough sea.

The interviews also revealed a kind of fatalism when it comes to the use of clothing and personal protective equipment, or lack of such. One of the informants, for example, an aspiring fisherman in the early thirties, had to admit that "if I fall over board, I'll sink". Due to practical reasons, he had chosen clothes which were comfortable in daily use – for example they "breath" well and he will then avoid sweating and eventually starting freezing – but which become very heavy and make it impossible to swim or float when immersed into water.

The large survey conducted by RF-Rogaland Research in Norway, according to Allred et. al. [2], may strengthen the notion of a seemingly ignorance of the actual risk situation in the profession. For example as much as 13% of the informants said they did not know how to swim, 41% reported that they very seldom made use of a life jacket, while 34% claimed that they rarely used a safety line on board during operations (this to prevent fall over board). Also the fact that 69% of the fishermen in the survey claimed that they had sufficient safety training – only 2% stated that safety training definitely was inadequate - can give rise to an idea that the people themselves are playing down the presence of the actual risk situation in the occupation. If so, a relevant question is, why do they do this?

4. Discussion

4.1. Discrepancy between objective and subjective risk perception

The objective risk level on the service vessels and in the small smack fisheries is very high.

The analyses of the risk level of one of the major operators show that there were 5.2 personal injuries pr. million work hours on the offshore vessels in 2002. Between 1996 and 2002 there were 3 mortal accident and 8 serious accidents causing permanent health injuries. The estimation of Vinnem & Vinnem [19] of the future risk level for the period from 1999 to 2008 displays a fatality rate for vessels that is twice as high than for floating installations and nine times higher than fixed installations

According to the statistics from SINTEF Fisheries and Aquaculture, the small smack is probably the most dangerous work place in Norway. The outline showed that during the 1990's, 100 fishermen died due to occupational accidents. This means that statistically speaking, 10 people died every year during the whole decade, and juxtaposed with the number of man-labor years (about 5-6000), the situation is extremely critical.

The subjective risk perception expressed by fishermen and employees on offshore service vessels indicates that the risk level is not very high. The measurement of the affective and the cognitive components of subjective risk perception indicate that the employees do not worry much about the risk, and do not consider it likely themselves to be involved in an accident. This corresponds

with the statements in the interviews. The interviews indicate that when the employees are talking about accident and near-misses, they do not focus on the consequences of the event, but rather on the event itself.

The fishermen on small smacks also seem to underestimate the risks compared to the objective risk level. One possible way to understand this apparent negligence of danger is to consider it a coping strategy. The situation is as follows: a fisherman, alone on board, perhaps experiencing rough sea, snow and a lack of day light. He can not start worrying about the potential dangerous situations around him; he can not continuously pay attention to all the potential ways these situations may turn bad. He therefore choose to focus upon the operations or "to get the job done", which is a typical phrase among the fishermen themselves. There are examples in Norwegian fisheries of people who failed to close their eyes for the actual risk situation in their occupation, and started to sleep during night in their survival suit. They had eventually to leave this profession.

All together it seems to be a discrepancy between objective risk perception and subjective risk perception. According to Rundmo's research [17], one should not expect such a discrepancy, and the measurement of subjective risk perception is a good indicator of the objective risk level in an organization. This study indicates that these results may not be valid when it comes to small smack fisheries and service vessels on the Norwegian continental shelf. These findings call for an explanation.

4.2. Differences in risk perception between professions, age and years of experience

The survey among employees on service vessels shows that there is indeed a difference in risk perception between different professions on the ship, age and years of experience. These background variables are related to each other. There is a relationship between age and experience on the vessel. The youngest employees have less experience than the older employees. There are relatively more young employees in professions such as seamen and midshipmen than in the professions of captains and first officers. Comparing these differences with analyses of registered personal injuries it seems to be a relation between the subjective risk perception of the different categories of employees and the objective risk level. According to by Kongsvik & Bye [14] young employees on service vessels are more exposed to accidents than more experienced employees. This finding seems to correspond with the research of Rundmo [17]. Rundmo's research indicates that personnel who are more exposed to accidents feel more unsafe than do others. In the case of the employees of the offshore service vessels this relationship may also be formulated in a different manner, i.e. less experienced employees feel relatively more unsafe and are more exposed to accidents than more experienced employees.

4.3. The discrepancy between objective and subjective risk perception as a cultural phenomenon

The reason why the employees and the small smack fishermen express that they do not feel especially unsafe in their job even though the objective risk level is very elevated may be interpreted as a cultural phenomenon. As a phenomenon culture may be conceptualized as something people learn and develop as members of a society, according to Eriksen & Brinkman [7]. As part of human interaction, cultural phenomena is maintained or modified. The maintenance and modifications of cultural phenomena may be seen as a consequence of (a) human interaction, (b) time and (c) existing cultural premises and belonging conventions. As Hannerz [11:15] points out: *"people shape social structures and meanings in their contact with one other, it proposes; and societies and cultures emerge and cohere as results of the accumulation an aggregation of these activities"*. A minimum condition for cultural production is *human contact*.

When measurements of risk perception and statements about risk is interpreted as a cultural phenomenon, this may signify that the employees do not feel at risk and/or express that they do not feel unsafe due to the evolvement of what may be called *cultural conventions*, i.e. a type of relative behaviour dependent of the context where it appears. This interpretation corresponds with the theory of Douglas & Wildawsky [5] and Adams [1]. Following the theory of Douglas & Wildawsky [5] risk perception reflects the individuals' social and natural surroundings.

Many of the employees on the service vessels have a background from fisheries besides the Norwegian merchant fleet. As a consequence one may suppose that there exists some kind of similarity in cultural conventions between fishermen and employees on the offshore service vessels.

The social and natural surroundings of the employees on supply vessels and small smacks share some common characteristics. First of all, both groups face the forces and the dangers of the sea in their everyday work situation. A second noticeable common characteristic is the lack of predictability. The fisherman on a small smack can not control the outcome of his work activities. Fishing is an unpredictive business. The crews on the offshore service vessels are also lacking predictability when it comes to their work operations, according to Kongsvik & Bye [14]. Decisions regarding the activities of the offshore service vessels are taken by the operating oil company and commands may be changed on an hourly basis, according to Bye & Kongsvik [4]. A third characteristic is the relationship between their labor achievement and outcome. The fisherman's catch is directly dependant of his efforts. The captains on the supply vessels express that they have to get the job done to please the operators. They say they think they may loose the contract if they do not fulfill the demands, according to Bye & Kongsvik [4].

The local expression of being a "proper seaman", according to Lamvik & Bye [15], may also be seen as a reflection of the adaptation to work operations and their surroundings. Being a "proper seaman" is the description of an individual with the ability to work hard, show personal initiative, and a duty to overcome hard obstacles. "Bad seamanship" implies a lack of these qualities.

It is tempting to suggest that the expressed subjective "underestimation" of risk, compared to objective measures, may be a result of some kind of cultural group "codex" between crew members, i.e. that it is not proper to express fear. Such an explanation may not be sufficient. A significant difference in the social and natural surroundings of the employees on supply vessels and small smacks is, besides the content of their work, that work on supply vessels demands interaction between crew members while the small smack is operated by men on their own. The fishermen on small smacks are solitary practitioners where "group codex" should not be relevant in the context of their work. Based on this it is tempting to interpret the "undercommunication" of risk partly as a kind of adaptation to high risk work. The dangers are inherent in work itself, and risk must be taken as granted if they are to be able to carry out their work at all. A fisherman and an employee on offshore service vessels seem to be aware that he is part of an extraordinary risky occupation. They have on a regular basis experienced serious accidents during their operations or at least know of such incidents from their colleagues on board other vessels. Some figures from the already mentioned RF study, according to Allred et.al. [2], may strengthen this assumption. For example 69% of the fishermen who work and run this type of vessel, agreed on the statement that "as a fisherman, you are very exposed to occupational accidents." Further on, over the last two years 22% of the informants in this survey had experienced near-accidents during their time on board, 10% had due to a variety of reasons fallen over board or into the water, while 13% had been injured by using a knife in different work operations.

4.4. Differences in risk perception between experienced and not experienced employees as a cultural phenomenon

The differences between experienced and less experienced employees on the offshore service vessels in being exposed of accidents may simply be interpreted as a result of differences in working skills. An alternative or additional explanation is that the less experienced employees carry out work that is more exposed for accidents than the more experienced ones. The reason why less experienced employees express that they feel relatively more unsafe than their more experienced colleagues, can be explained due to their own consciousness concerning lack of work skills, and/or that they are more exposed to dangers. An additional interpretation is that the less experienced employees have not fully adopted the cultural convention of perceiving risk. Taking all this additional

interpretations into consideration the differentiated subjective risk perception may not necessarily correlate with the objective perception of risk.

5. Conclusions

This paper compares the risk perception, fatality rate and the discrepancy between subjective risk perception and formal risk levels in two related although still different sectors of the Norwegian industry, offshore service vessels and small fishing vessels in the marine sector.

Both the fishing and the supply vessel can be referred to, when using a formal definition of risk, as high risk working places. Paradoxically it seems that the workers do not, or at least do not express, worried ness or that they feel unsafe. This discrepancy indicates that there is not necessarily a correlation between objective and subjective risk perception, and that the measurement of subjective risk not necessarily is a good indicator of objective risk.

Nevertheless, subjective risk perception may be important in relation to work practice and risk behaviour. The subjective risk perception is seen as contextually dependent cultural conventions. In fact, the paper emphasises the need for understanding subjective risk perception as part of a wider context, and by this develop a better understanding of work practices.

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Kultura organizacyjna i percepcja ryzyka

S t r e s z c z e n i e

W artykule rozpatrywany jest związek pomiędzy subiektywną percepcją ryzyka a zdolnością jednostki do adaptacji do pracy w warunkach wysokiego ryzyka. Rozważania oparto na badaniach przeprowadzonych wśród załóg statków żeglugi przybrzeżnej na Morzu Północnym i wśród norweskich rybaków. Porównuje się percepcję ryzyka, częstość wypadków śmiertelnych, rozbieżność pomiędzy indywidualnym postrzeganiem ryzyka oraz oficjalnymi poziomami ryzyka. Wyniki tych porównań zostały przedyskutowane w oparciu o koncepcję kultury organizacyjnej wskazując, że niekoniecznie musi istnieć korelacja pomiędzy obiektywnym poziomem ryzyka a subiektywnym jego postrzeganiem. W rzeczywistości subiektywna percepcja ryzyka może być postrzegana jako odzwierciedlenie stosunków pomiędzy pracownikami zmagającymi się z ich warunkami pracy.