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Gender Equality Culture

Measuring Attitudes Towards Gender Equality in the Transport Sector

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Abstract

The transport industry is dominated by men. Globally, woman constitute only a few per cent of those working on board ships. Calculating the distribution of gender, wages, and positions provides an insufficient basis from which to address this imbalance; rather, we need to study the attitudes and norms that constitute "gender equality culture". These qualitative aspects emphasize men's and women's life conditions, values, and ideals that affect their opportunities to exert influence in the workplace and society. They influence research and industry and must be highlighted to put gender equality high on the agenda. Experience from safety culture research was used together with a literature review to identify indicators and develop questions for a survey tool to measure and evaluate gender equality culture. This survey has been tested in the maritime sector by 546 employees in the Swedish Maritime Administration responsible for matters such as fairway maintenance, pilotage, and road ferries. The results indicated an overall strong equality culture that nevertheless had some weak areas. Significant differences were found, with men believing to a greater extent than women that the workplace was sufficiently equal and that no one was excluded because of gender. Women believed to a greater extent than men that they had better knowledge of gender equality goals and strategy and they perceived that there was more talk about how to increase gender equality. The results indicated potential to identify strengths and weaknesses as a basis for activities and learning in order to achieve an improved equality culture.

Keywords: attitudes, culture, gender equality, survey, transport

1 Introduction

1.1 Background

The transport industry sector is clearly not gender equal, with only 22% of its workers being women in the EU (EMSA, 2018; Hamilton & Jenkins, 2005; Smidfelt Rosqvist, 2020). In the shipping industry globally, women account for only 2% of workers (IMO, 2022), and women remain heavily underrepresented in engineering and technical roles (MacNeil & Ghosh, 2017). In Sweden, there are approximately 17,000 seafarers, 25% of whom are women (Swedish Transport Agency, 2023). Most of these women work on ferries in services and trades, but on merchant ships, the proportion of women is much smaller. In maritime education, the number of women is increasing, but women work fewer years on board. They often leave in connection with family formation, but the work environment also contributes to their leaving the profession (Transport Analysis, 2021). The isolated environment and the fact that women are usually fewer than men onboard can create a vulnerable situation (Svensson & Bolin, 2019).

Of new transport companies started in Sweden, only 6% are led by women. In Sweden in 2020, 35% of persons who owned cars were women, but only 15% of those prosecuted for traffic offences were women (SCB, 2022). More women as professional drivers could therefore lead to less risk-taking and to a transport system that is better aligned with the needs and preferences of women.

In the transport sector, the gender imbalance has long been recognized but little has changed; actions are beginning to be taken but barriers remain. The Sustainable Mobility for All (SuM4All) Gender Working Group therefore conducted a study and developed a toolkit identifying five key action areas covering all transport modes: gender stereotyping, discriminatory workplace culture, lack of flexible work and childcare provision, the glass ceiling and poor chances of career development, and a lack of all forms of diversity at all levels (SuM4All, 2023). Levin and Faith-Ell (2019) wrote a guide to applying gender equality goals in transport and infrastructure planning. To improve knowledge specifically about and for women, the underrepresentation of women in research and innovation in the transport sector should also be addressed (Hortelano et al., 2021).

Österman and Boström (2022) wrote that seafaring is a masculine-coded occupation with a strong professional culture that values practical experience. Workplace bullying and harassment at sea are serious problems in the maritime industry, and there is a need to address their underlying causes. Managers should be provided with adequate resources, usable tools, and sufficient time for proactive work as part of the safety management system. The gender imbalance has deep historical roots, and there is a need for equal education and recruitment, mentoring initiatives, and goal-setting to close the gap (MacNeil & Ghosh, 2017).

Gender equality can contribute to sustainability, and European ports have accordingly initiated gender equality measures (Barreiro-Gen et al., 2021); the authors recommended making use of women's holistic perspectives and higher engagement to advance sustainability in this context. Di Vaio et al. (2023) studied the link between sustainability technology and responsibility for gender equality in the shipping industry; they found that management should provide training and workshops for women on technology adoption in operational decarbonization processes to support gender equality and technological development. It is also essential to provide gender-neutral opportunities to acquire skills and competences for the highly digitalized future workplace (Narayanan et al., 2023).

Measures are needed to improve equality by identifying inequalities and redistributing power and resources to achieve relevant goals. It is important to calculate the distribution of gender, wages, and positions, but this does not suffice, we also need to study the attitudes and norms that together constitute "gender equality culture". Norms and attitudes relating to gender equality express themselves in words, choices, intentions, and behaviour (Ajzen, 1991) and can be likened to the culture of safety (Kines et al., 2011; Stave et al., 2021). Just like safety, equality has improved conditions for people in more vulnerable positions and today's fathers who want to be at home with their young children now have the courage to take their paternity leave in Sweden. There is a shortage of labour in the transport sector, whose workplaces ought to become more attractive to women as well as men.

Qualitative gender equality focuses on women's and men's life conditions, values, and ideals that affect their opportunities to exert power and influence in the workplace, society, research, and industry. It highlights aspects that would otherwise be overlooked, presenting structures and routines that reinforce existing norms. It is difficult for people who represent the norms to see their position, and they believe that their situation applies to everyone. A good example that sheds light on structural errors was presented by Caroline Perez in *Invisible Women* (2019) she noted that designers' norms affect the development of new technology, using crash test dummies and voice recognition based only on men.

1.2 From safety Culture to Gender Equality Culture

This study will explore similarities to safety culture and the desire to apply experience from this area in gender equality efforts as part of developing organizational culture (Cooper, 2000). The measurement of safety culture has developed over time and research shows that this culture is governed by several fundamental pillars (Guldenmund, 2010), for example: leaders' safety priorities, managers' commitment, employees' engagement and safety communication (Cox & Flin, 1998), how organizations address gender and safety factors (Ek & Olofsdotter, 2017), and sustainability (Stave et al., 2023).

Every organization has a safety culture, but at various levels and with various standards or degrees. Both qualitative and quantitative methods are needed to gain an overview of the current situation and gather clues as to what is good and what needs to be improved. It is also important to observe what actually takes place in production or meetings. An anonymous survey can be a good data gathering method that makes it easier for people to talk about and evaluate the qualitative aspects of a phenomenon. Antonsen (2009) stated that the issues of safety culture and power are important, as there is a strong focus on consensus and harmony in workplaces. Possible conflicts of interest between managers and employees, economic considerations, and time pressure in relation to safety must be acknowledged.

In this study, the NOSAQ 50 (Kines et al., 2011) survey tool was chosen as a model. It has been translated into numerous languages and is used in many industries, including the maritime industry (Ajslev et al., 2017; Lappalainen, 2017). It measures the safety climate, which could be said to be the measurable part of safety culture (Cox & Flin, 1998). The terms "culture" and "climate" are used interchangeably in this study. The antecedents to and basis of the survey's questions are the following four pillars:

- Safety priority: how safety is valued versus production, and risks not being accepted as part of the work.
- Safety leadership: management's responsibility for, commitment to, and knowledge of safety affect employees' choices and actions as well as their participation and trust in the safety work.

- Safety communication: this encompasses communication structures, learning, reflection, openness, and trust; it concerns whether information channels and systems work and are used effectively.
- Work group's safety engagement and commitment: this encompasses behaviour and values within the work group as well as trust in competence so that safety is not disregarded at work.

Knowledge gained through the work on safety culture constituted a basis and model for the questions asked in the survey. The survey results can be used to identify strengths and weaknesses as a basis for activities and learning.

2 Aim and Methods

2.1 Aim

The aim was to develop a survey tool for measuring and evaluating gender equality culture and, furthermore, to test the questionnaire and evaluate it in the transport sector.

2.2 Methods

Initially, a literature review was conducted, searching for information in online databases regarding the measurement and characterization of gender equality culture. Using these literature findings as a starting point, we proposed questions from which the measurement of gender equality culture could be developed. From safety culture research, an already validated survey, the NOSAQ-50 (Nordic Safety Climate Questionnaire), was used as a model. The new instrument was initially revised based on feedback from a literature review carried out by a group of research colleagues and experts on gender equality.

The questions were formulated as statements concerning the actions of managers and co-workers, to which respondents were asked to react on a four-point scale ranging from "strongly agree" to "strongly disagree". An average score above three meant that the employer had a satisfactory level of gender equality, which could be developed to become excellent.

The Swedish Maritime Administration (SMA), responsible for matters such as fairway maintenance, pilotage, and road ferries, agreed to test the survey tool. A web questionnaire was distributed by a common link included in an e-mail, which provided anonymity. At the time of the study, it was estimated that about 1200 of the total of 1345 SMA employees were on duty. The data collection period lasted about one month in the autumn of 2022; one reminder was sent via email.

2.3 Participants and Response Rate

The population investigated comprised SMA employees. SMA is a governmental agency and enterprise within the transport sector and is responsible for maritime safety and availability. All categories of employees were included in the study, both those working onboard and ashore.

Thirty per cent of the respondents were women, and the overall mean age was 47 years. More than one out of five had been employed for 16 years or longer at SMA, and a similar proportion had been working at SMA for up to two years. About 26% of the respondents were working as leaders/managers.

Answers from 546 persons were included in the analyses, which is equivalent to a response rate of 41%. The response rate was higher among employees in what could be characterized as "support functions", i.e., 51%, versus employees in "core functions", i.e., 38%.

2.4 Statistical Analysis

Besides descriptive statistics and inference tests (i.e., *t*-test, ANOVA, and regression analysis), factor analyses were carried out. The last test aims to investigate the presence of unobserved variables, called factors. To measure the internal consistency of the variables forming factors, Cronbach's alpha was used; the ideal Cronbach's alpha is between 0.70 and 0.95. The significance level for all tests was set to 0.05.

3 Results

3.1 Results of the Literature Review: What Shapes a Gender Equality Culture

Searches of databases and the Internet yielded no empirical studies presenting an instrument that measures gender equality culture similar to those instruments found in the area of safety. However, empirical studies, websites, and workshops were found attesting to the great importance of studying values and norms relating to gender equality.

What factors affect and are indicators of a gender equality culture, i.e., norms of and attitudes towards gender equality? Born et al. (2020) showed that work teams in which men were over-represented had an adverse impact on women's confidence, influence, and expected support from team members, leading some women to decline managerial positions. Powell et al. (2009) studied women engineers who tried to fit into the work group by acting "like one of the guys", as a strategy for coping with gender discrimination. To manage their "out of norm" situation, these women chose to adopt an approach of not supporting gender equality. An investigation of twenty organizations in the highway engineering sector (Road2Science, 2021) showed that there were fewer women high up in the hierarchy. This may be due to women tending to abandon careers in the engineering sector, and to factors such as lack of support and few role models. Certain workplace cultures with weak gender equality can stifle individual development, reinforce gender inequality, and even exacerbate sexual harassment in the workplace (Nordic Council of Ministers, 2020).

As regards leadership, Heilman (2001) posited that the scarcity of women at the upper levels of organizations is a consequence of gender stereotypes and the expectations they produce about both what women are like and how they should behave. This can result in the devaluation of women's performance and success, meaning that being competent does not ensure that a woman will advance to the same organizational level as an equivalently performing man. Carli and Eagly (2001) wrote that if women are ever to achieve a status equivalent to that of men, they will have to participate equally in those contexts in which the most important and far-reaching decisions are made, as this has an impact on what is valued in societies and on how resources are allocated. This was confirmed by Cook and Glass (2014), who showed that diversity among decision makers significantly increases women's likelihood of being promoted to top leadership positions, and that women's tenures as CEOs increased regardless of firm performance. So, if there is already gender balance in decision-making positions, fewer decisions are made in which a person of one gender favours people of the same gender, leading to greater gender equality. According to Ryan and Haslam (2005), women tend to be appointed leaders of large firms in precarious circumstances when the firms are performing badly. In addition, women in politics pay a higher price for their political engagement than do men. It is more difficult for women to reach the top and they are

more vulnerable once they have achieved leadership positions (Säll, 2021). It is therefore imperative to avoid imbalance in recruiting leaders and to actively ensure that women who choose male-dominated occupations are retained and supported (Turnbull, 2013).

When it comes to innovation and creativity, employee willingness and ability to innovate is six times higher in workplaces with a strong gender equality culture than in those that are less gender equal (Shook & Sweet, 2019). Haas and Whang (2007) studied company culture, finding that if parental leave for fathers was encouraged, the firm was more gender equal. Gender equality culture was discussed at a workshop within the EU project TInnGo (Woodcock et al., 2020), which identified communication, language, networks, and recruiting as key factors that influence the equality culture. Mentorship and role models are needed for women in the transport sector, and gender equality should be integrated in relevant academic programmes, to make them more attractive to women. The workshop participants also emphasized the need for norm criticism.

Norms and attitudes are reflected in language, so we need to become more aware and observant of the language used and how we communicate. Milles (2008) has written a guidebook to gender-equal writing and speech. Jackson (2012) showed that interaction, mode of speech, and body language are all affected by power and gender. In the field of technology development, the data that provide information for machine learning have an impact. If the data are laden with stereotypical concepts of gender, the resulting application of the technology will perpetuate male norms. Gender balance in machine learning is therefore critical to prevent algorithms from perpetuating gender ideologies that disadvantage women (Leavy, 2018).

Power is linked to five domination techniques, as identified by Berit Ås in the 1970s: 1) making invisible, 2) ridicule and belittling, 3) withholding information, 4) double bind, meaning that no matter how one acts, the leader will find something to criticise, and 5) heaping blame/shaming; two additional techniques were later added: 6) objectifying and 7) force/threat of force (Krönegård, 2018). In her study of workplaces, Ahlström et al. (2019) found that gender mattered for how people were treated, but that this also spilled over to men who wanted to live gender-equal lives. Women made higher demands, expected more of themselves, and experienced objectification. Gender equality culture is linked to power, with some having more power, in terms of scope, resources, and interpretation precedence, at the expense of others who have less; for example, in Sweden only 2% of venture capital goes to women business founders (Ahlström et al., 2019).

Equality culture does not primarily refer to the wording of a policy describing what we should do, but instead has to do with what people (e.g., management, employees, and customers) actually do and express in relation to gender equality. A positive gender equality culture is achieved in the same way as is a positive safety culture: through deliberate, determined, and long-term work. Such a culture must also be constantly maintained. A policy reinforces the culture, but there is need for a tool for measuring gender equality culture. The above studies point to underlying and influential tentative indicators that could form the basis of an instrument for measuring gender equality culture. Such a tool could be used to identify the strengths and weaknesses of gender equality culture as a basis for activities and learning.

3.2 Results of the Survey

3.2.1 Respondent View of Management and Employers

Initially, the survey questions were formulated as statements concerning gender equality issues at the workplace, targeting the executive management, the respondent's immediate manager, and the employees as a group. Table 1 presents the mean values for the three sets of

statements, totalling 22 in all. Negative statements were reversed to facilitate comparison among questions, meaning that high values are also sought in these questions. (Table 1 also presents the results of a factor analysis; see section 3.3).

Table 1. Mean value for each statement on a four-point scale (1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, and 4 = strongly agree) and results of a factor analysis

Statement	***Mean***	***Factor 1***	***Factor 2***	***Factor 3***
1. *Executive management encourages the employees here to work towards increased gender equality.*	3.01	**0.737**	0.265	0.152
2. *Executive management is working actively to increase gender equality in the company/organization.*	2.92	**0.751**	0.275	0.101
3. *Executive management involves the employees here in decisions regarding gender equality.*	2.51	**0.737**	0.178	0.279
4. *Executive management would prioritize problems of gender equality if they were reported.*	3.13	**0.773**	0.234	–0.015
5. *My manager encourages employees to work towards increased gender equality.*	2.99	**0.795**	0.163	0.201
6. *My manager is working actively to increase gender equality in the company/organization.*	2.87	**0.794**	0.204	0.191
7. *My manager involves the employees in decisions regarding gender equality.*	2.67	**0.798**	0.142	0.263
8. *My manager would prioritize problems of gender equality if they were reported.*	**3.27**	**0.764**	0.187	–0.016
9. *We who work here support each other if someone is being discriminated against.*	3.16	0.250	**0.681**	0.156
10. *We who work here object if someone uses offensive language against or about any gender.*	3.07	0.153	**0.697**	0.354
11. *We who work here often talk about how we can increase gender equality.*	**2.24**	0.313	0.354	**0.632**
12. *We who work here believe the workplace is sufficiently gender equal.*	2.82	0.273	**0.516**	–0.239
13. *We who work here prioritize improving gender equality.*	2.44	0.335	0.397	**0.554**
14. *We who work here pay attention to norms and values related to gender equality.*	2.89	0.280	**0.623**	0.381
15. *We who work here often do jobs without thinking about the implications for gender equality. (reversed scale)*	**2.07**	0.025	–0.059	**0.682**
16. *We who work here do not exclude anyone based on their gender.*	**3.68**	0.213	**0.668**	–0.257
17. *We who work here know the company's gender equality goals and policy.*	2.83	**0.351**	0.336	0.277
18. *It is hard for us who work here to affect gender equality. (reversed scale)*	2.43	**0.427**	0.129	0.420
19. *We who work here report any harassment based on gender to our employer.*	3.13	0.239	**0.670**	0.144
20. *We who work here use language/slang in conversation that can be insulting. (reversed scale)*	2.93	0.014	**0.537**	0.373
21. *We who work here have the courage to be critical if the work is not gender equal.*	3.01	0.226	**0.660**	0.129
22. *We who work here are allowed to speak up and our views are respected.*	3.21	**0.600**	0.386	–0.069

The mean of 19 of the 22 statements was above the middle value (2.5); 13 of the mean values did not reach three, while nine did. The respondents disagreed most strongly with statement number 15, "We who work here often do jobs without thinking about the implications for gender equality (reversed scale)", and number 11, "We who work here often talk about how we can increase gender equality". The highest mean score was for statement number 16, "We who work here do not exclude anyone based on their gender", and number 8, "My manager would prioritize problems of gender equality if they were reported".

3.2.2 Significant Differences between Men and Women

To explore differences, respondent gender was tested against the 22 statements. For five of the statements, significant differences were found between men and women (see Table 2).

Table 2. Significant gender differences in responses according to t*-tests. Mean values and standard deviations (SD) on a four-point scale (1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, and 4 = strongly agree)*

	Women			Men			
	Mean	***n***	**SD**	**Mean**	***n***	**SD**	***p*-value**
11. We who work here often talk about how we can increase gender equality.	2.38	154	0.89	2.20	362	0.79	0.028
12. We who work here believe the workplace is sufficiently gender equal.	2.60	154	0.84	2.90	362	0.85	<0.001
16. We who work here do not exclude anyone based on their gender.	3.58	152	0.65	3.72	353	0.54	0.022
17. We who work here know the company's gender equality goals and policy.	2.95	150	0.76	2.79	348	0.86	0.033
20. We who work here use language/slang in conversation that can be insulting. (reversed scale)	3.10	149	0.81	2.86	348	0.89	0.005

Compared with the male respondents, women believed to a greater extent that they had better knowledge of the goals and strategy for gender equality and they perceived that there was more talk about how to increase gender equality. Men, on the other hand, more often than women thought that the workplace was sufficiently gender equal and to a lesser extent believed that anyone was excluded based on gender and that slang was used.

3.2.3 Significant Differences between Managers/Work Leaders and Others

As expected, managers and supervisors had a more positive view than did other employee groups concerning all eight statements about how managers/work leaders dealt with gender equality issues (statement nos. 1–8 in Table 1). There were also significant differences concerning 11 of the other statements about the group: for statement numbers 9–11, 13 and 14, 16, and 18–22, managers/supervisors had higher scores than did employees.

3.3 Evaluation of the Questionnaire

Factor analysis was performed to validate the questionnaire and examine whether the items captured underlying cornerstones of gender equality culture. This analysis found an underlying structure of variables, i.e., factors. Table 1 presents these factors in the three right-most columns. This analysis identified the following three factors:

- Factor 1: This factor could be said to capture **leadership and management commitment to gender equality**. It includes all eight statements about how this issue was perceived to be handled by the management and managers (nos. 1–8) as well as statement number 22 (Cronbach's alpha = 0.93).
- Factor 2: This factor could be said to capture the **employees' engagement and prioritization, i.e., how they deal with issues about gender equality**. It includes seven statements (nos. 9, 10, 12, 14, 16, and 19–21; Cronbach's alpha = 0.84).
- Factor 3: This factor could be said to capture the **employees' problems with communication, i.e., whether gender equality is an issue that the respondents reflect on and talk about**. It includes the three statements (nos. 11, 13, and 15) having the lowest mean values (Cronbach's alpha = 0.63).

Finally, a stepwise regression analysis was performed (see Table 3). As the dependent variable, statement number 12, "We who work here believe the workplace is sufficiently gender equal", was chosen. The independent variables included indexes based on the three factors from the factor analysis (mean values were obtained), gender, age, manager/non-manager, and employment in a support versus core function. The adjusted R^2 reached 24%, i.e., 24% of the variation in the dependent variable was explained by the independent variables.

Table 3. Outcome of a stepwise regression analysis

	Unstandardized coefficients		***Standardized coefficients***		
Variable	***B***	**Std. error**	***B***	***t***	***p*-value**
Constant	0.624	0.209		2.987	0.003
Factor 1	0.315	0.064	0.246	4.909	<0.001
Factor 2	0.647	0.083	0.405	7.829	<0.001
Factor 3	–0.258	0.069	–0.184	–3.758	<0.001
Dummy variable, Female = 1, 0 otherwise	–0.271	0.077	–0.145	–3.532	<0.001
Dummy variable, Support function = 1, 0 otherwise	–0.210	0.088	–0.102	–2.387	0.017
Dummy variable, Manager = 1, 0 otherwise	–0.172	0.077	–0.089	–2.221	0.027

The most important factor was number 2, which captured the engagement of the employees as a group. If this variable increased by one unit, holding everything else constant, the value of the dependent variable increased by 0.65. A positive view of how the management and managers handle the gender equality issue (factor 1) also contributed to a higher level of agreement with the statement that the workplace is sufficiently gender equal. Factor 3 showed that the more the employees discussed gender equality and had the issue in mind, the less gender equal they found the workplace.

4 Conclusion

In general, the results indicate a good level of gender equality, as the overall responses to many questions were above 3.0 on the four-point scale used, with the average value being 2.5. There were clear differences in responses between women and men, in that the men were more satisfied with the level of gender equality and the women believed to a greater extent that gender equality was important.

Managers showed greater satisfaction with the work done to promote gender equality than did people working at a lower organizational level. This suggests that there may be reasons to connect and listen more at all levels in the organization, and to involve employees more in gender equality work. Likewise, spending time talking about the issue and moving it higher on the agenda are essential. Support and advice on how to proceed are needed here, and increased participation is important regarding the decisions that affect gender equality.

The factor analyses indicated relatively good validity. Statement number 15, "We who work here often do jobs without thinking about the implications for gender equality", turned out to be difficult to interpret, which is why we recommend that it be removed. Although other negative statements were also difficult to interpret, we believe they should remain. Likewise,

we believe that the lack of a "don't know" or "not applicable" should be retained, but that clearer instructions are needed.

In the regression analysis, it emerged that leadership and employee commitment increased the experience that the organization was gender equal. On the other hand, conversation, reflection, and group priorities were negatively associated with the view that the workplace was sufficiently gender equal. Increased activity could lead to improved knowledge and awareness, leading to higher expectations of what is sufficiently equal.

The survey should also be seen as a tool and basis for discussion and dialogue about equality issues. We also recommend administering the survey again after a year, to see whether there have been any changes. New tests of the questionnaire's validity and usability should also be conducted to improve its precision.

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