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EMPIRICAL ANALYZES OF THE CAUSES FOR GENDER INEQUALITIES IN THE MARITIME PROFESSION

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Abstract: Based on the empirical research of a study with 401 respondents from different maritime domains the paper identifies some causes for gender inequalities in the seafaring profession. The study analyzes the physical and social obstacles for integrating female seafarers in the specific maritime environment. The results of the survey confirm that men and women differ in the attitudes they have for the working environment on a ship. The measurement scale used is reflected in the single-factor analysis. The conclusions contribute to the development of additional training courses for maritime universities to be prepared to give their students the necessary knowledge to reduce the gender differences in their future work on a ship.

1.Aim

The purpose of this study is to identify the causes of gender inequalities in the seafaring profession.

2. Methodology

2.1. Survey respondents

The study includes 401 participants who live in Bulgaria with an average age between 20 and 50 and over 50 years. Of these, 297 are men and 104 are women. They are OOW, Masters, Yacht masters, Fishing vessel masters, Pilots, Harbour master office employee, VTS operators, Maritime education and traininglecturers and others (students, deck cadets, trainee etc.).

In order to verify the hypothesis that the arithmetic mean of the main causes of gender inequalities in the seafaring profession for men and women is different, the ANOVA test was carried out.



2.2. Survey design and conduct

The study consists of two scales that analyze the physical and social causes of gender inequalities. The **physical causes** of gender inequalities in seafaring professions are

- additional working hours weekend and holiday work;
- insufficient or no work rest;
- physical overwork, insomnia.

The social causes of gender inequalities in maritime professions are:

• Prejudice created by stereotypes related to the presence of women on board the ship

• Relationships between ship's crew members due to the presence of women and the multicultural environment;

- Attitudes of respondents to working conditions in their pay;
- Career development;
- The risk of sexual harassment of women on board the ship;

• External factors (lack of support to female friends and family, due to childcare responsibilities, lack of training in the maritime university for working on a multi-crew vessel etc). Respondents answered to 7 sociodemographic questions and to 50 questions using the Likert's 5-scale

format.Data was collected throuhout the year 2018. The anonymity of the surveyed persons is preserved.

3.Results

3.1. Physical causes

Researching the **physical causes of gender inequalities**, the following results were obtained:

A statistically significant difference was found, F (1,389) = 13,708, p <0,05 for the answers to question 16 "After their first experience, the female crew still want to stay on the board" for both gender. The majority of women intend to remain on board a ship after their first attempt while men are reluctant to think this will happen. The magnitude of the effect $\eta = 0,18$, which is calculated using the coefficient eta is less than the average or less than typical under interpretation made by Cohen (Cohen, 1988). The posthok test Tuki HDS (Tukey) was applied, which showed that the arithmetic mean value for the male group (M = 2.74) was statistically significantly different from the arithmetic mean values for the female group (M = 2.35).

Differences are observed in the answers of men and women to question 34 "**The female crew members are paid less if they do the same job as men**" -F (1,389) = 13,477, p <0,05. Most men do not think that women are paid less if they do the same work on a ship as they do while the majority of women have the opposite opinion. The magnitude of the effect $\eta = 0,18$, which is calculated using the coefficient eta is less than the average or less than typical under interpretation made by Cohen [1]. A Tukey HDS [2] post-hoc test was used, which showed that the arithmetic mean value for the male group (M = 3, 41) was statistically significantly different from the mean arithmetic values for the female group (M = 2.88).

The statistics made on the answers to question 37 **"Starting from the entry stages, the women are told and advised about the negative aspects of maritime career"** show differences in the opinions of both gender - F (1,389) = 11,791, p <0,05. For the most part, women agree that when they get on a ship, they are informed of the negative aspects of the seafaring profession, while men are not convinced of it. The magnitude of the effect n = 0.17, which is calculated using the coefficient eta, is small or less than the typical according to Cohen's interpretation [1]. A Tukey HDS [2] post-hoc test has been used, that the arithmetic mean for the men group (M = 2.68) was statistically significantly different from the arithmetic mean values for the group of women (M = 2.33).

Different opinions between men and women occur on question 40 "I feel the women's staff have to work harder to be accepted as equal by the male counterparts and the supervisors" - F (1,389) = 4,205. The majority of women agree that they have to work more than men to be accepted as equal to them, and a great deal of men are not convinced that this is necessary. The magnitude of the effect n = 0.1, which is calculated using the coefficient eta, is less than the average or less than the

typical according Cohen interpretation [1]. A Tukey HDS [2] post-hoc test showed that the arithmetic mean for the males group (M = 2,7) was statistically significantly different from the arithmetic mean for the female group (M = 2,43).

3.2. Social causes

The research of **the social causes of gender inequalities** showed that there are **prejudices**, created by stereotypes, related to the presence of women on board the ship.

A statistically significant difference was found, F (1,378) = 29,839, p <0,05 between the answers to question 31 **"The successful achievements of a female are usually ignored"** for both gender. Most men believe that women's achievements are not neglected until women think this is happening. The magnitude of the effect n=0.27, which was calculated using the coefficient eta, was average or typical according to Cohen's interpretation [1]. A Tukey HDS post-test [2] was used which showed that the arithmetic mean of men (M = 3.37) was statistically significantly different from the arithmetic values for the female group (M = 2.67).

Differences are observed in the answers of men and women to question 33 "It is difficult for women to find appointments on board ships because the shipowners are biased against women" -F (1,378) = 10,275, p <0,05. Most women think that it is difficult for them to find a job on board because of prejudices about shipowners' stereotypes about women's abilities. Men's opinion on this issue is neutral. They think that only occasionally this can be a problem. The effect of n = 0.16, which is calculated using the coefficient *ema*, is less than the typical Cohen interpretation [1]. Here, HDS [2], which showed that the arithmetic mean for the male group (M = 2.89) was statistically significantly different from the arithmetic mean for the women group (M = 2.48).

The statistics made on the answers to question 47 "Subordinates on ship may sometimes ignore the orders of female crew" showed differences of opinion between the two gender - F (1,378) = 8,583, p <0,05. Women for the most part agree that sometimes men can ignore their orders if they are their superiors. Men think this may happen sometimes and rather disagree. The magnitude of the effect n = 0.15, which is calculated using the coefficient *ema*, is less than the typical Cohen interpretation [1]. A Tukey HDS [2] post-hoc test has been used to show that the arithmetic mean for the males group (M = 3.09) is statistically significantly different from the mean for the female group (M = 2.74).

Regarding the **relationship between the crew members of the ship caused by the presence of women on the ship** and the multicultural environment we got following results:

A statistically significant difference was found, F (1,369) = 9,949, p <0,05 for the answers to question 7 **"Female staff relations with the supervisors / senior staff are efficient and effective"** for both gender. Most women think that their relationships with the senior ones on board the ship are good, while men for the most part have no such impressions. The magnitude of the effect $\eta = 0,16$, which is calculated using the coefficient *ema*, is less than the average or less than the typical Cohen interpretation [1]. A Tukey HDS [2] post-hoc test was used, which showed that the arithmetic mean for the males group (M = 2.85) was statistically significantly different from the arithmetic mean values for the female group (M = 2.45).

Differences were observed in the responses of men and women to question 8 **"Female personnel's relations with the peer staff on board are efficient and effective"** -F (1,369) = 8,905, p <0,05. Most women think that their relationship with colleagues on equal positions is good, while men respond that this is sometimes only true or neutral, this problem does not excite them. The magnitude of the effect n = 0.15, which was calculated using the coefficient *ema* is less than the typical Cohen interpretation [1]. A Tukey HDS [2] post-hoc test was used which showed that the arithmetic mean for male (M = 2.86) was statistically significantly different from the mean for the female group (M = 2.49).

The statistics for answers to question 9 "Female personnel's relations with the junior staff / subordinates are efficient and effective" showed differences of opinion between the two gender - F (1,369) = 10,925, p <0,05. Women for the most part agree that their relationship with the

subordinates of the ship is good, while most men give a neutral answer. The magnitude of the effect n = 0.17, which is calculated using the coefficient *ema*, is less than the typical Cohen interpretation [1]. A Tukey HDS [2] post-test was used to show that the arithmetic mean for the males group (M = 2.81) is statistically significantly different from the arithmetic values for the female group (M = 2.43).

Different opinions share the male and female representatives included in the statistical survey on question 32 "When a female crew member made a mistake, feedback and reaction are exaggerated" - F (1,369) = 27,472, p <0,05. The majority of women agree that crew members react exaggeratedly to the mistakes they have made. Men disagree on this issue. The magnitude of the effect n = 0.26, which is calculated using the coefficient *ema*, is average or typical according to Cohen's interpretation [1]. A Tukey HDS [2] post-test was used to show that the arithmetic mean of men (M = 3.11) was statistically significantly different from the arithmetic values for the female group (M = 2.42).

There is a difference in the opinions of men and women on question 39 **"The decisions and ideas of female staff are continuously criticized and questioned"** -F (1,369) = 25,84, p <0,05. Men do not think that women's ideas and decisions are criticized and questioned while women give a neutral answer, they think this happens sometimes. The magnitude of the effect n = 0.26, which is calculated using the coefficient *ema*, is average or typical according to Cohen's interpretation [1]. A Tukey HDS [2] post-test was used to show that the arithmetic mean of men (M = 3.21) was statistically significantly different from the values for the female group (M = 2.58).

A problem in the communication between the both groups showed the statistical results on question 41 **"The female crew members feel lonely and helpless onboard the ship"** - F (1,369) = 8,313, p <0,05. According to women this sometimes happens, rather, they disagree. The magnitude of the effect n = 0.15, which is calculated using the coefficient *ema*, is less than the average or less than the typical Cohen interpretation [1]. A Tukey HDS [2] posthoc test showed that the arithmetic mean value for the males group (M = 3.26) was statistically significantly different from the arithmetic values for the group of women (M = 2.88).

Different is the attitude of men and women on question 49 "I would prefer at least some women to work with me on a ship" - F (1,369) = 19,687, p <0,05. While the majority of women agree, that they would like to have at least one other woman in the crew of the ship, then their men are more careless or rather disagree. The magnitude of the effect n = 0.23 which is calculated using the coefficient *ema* is close to the mean or typical Cohen interpretation [1]. A Tukey HDS [2] post-hoc test was used which showed that the arithmetic mean for the male group (M = 2.8) was statistically significantly different from the arithmetic values for the female group (M = 2.21).

According the career development and perspectives for promotion:

A statistically significant difference was found, F (1,390) = 12,752, p <0,05 for the answers to question 20 "**The male counterparts perceive the female crew members as a threat in competition for better positions**" for both gender. Most women believe that men perceive them as competitors for better positions, while men for the most part do not think so. The magnitude of the effect $\eta = 0,17$, which is calculated using the coefficient *ema*, is less than the average or less than the typical Cohen interpretation [1]. A Tukey HDS post-hoc test [2] was used, which showed that the arithmetic mean value for the male group (M = 3.08) was statistically significantly different from the arithmetic mean values for the female group (M = 2.65).

Differences are observed in the answers of men and women to question 30 "When a woman succeeds in her job male staff will be jealous of her", F (1,390) = 21,949, p <0,05. Most women believe that men are envious of a woman who can prove herself in the profession while men are on the contrary opinion. The magnitude of the effect $\eta = 0.23$, which was calculated using the approximate coefficient *ema* is close to the average or to the typical Cohen interpretation [1]. A Tukey HDS [2] post-hoc test was used which showed that the arithmetic mean for the male group (M = 3.13) was statistically significantly different from the arithmetic values for the female group (M = 2.48).

The statistics on the answers to question 42 "I think the behavior of the male staff discourages the female staff to perform better" showed a difference in the opinions of both - F

(1,390) = 19,169, p <0,05. Women for the most part agree that men discourage them from working better, while most men are on the opposite opinion. The magnitude of the effect $\eta = 0.21$, which is calculated using the coefficient *ema*, is small or less than the typical Cohen interpretation [1]. A Tukey HDS [2] post-hoc test was used to show that the arithmetic mean for the males group (M = 3.17) was statistically significantly different from the arithmetic values for the female group (M = 2.65).

The differences between men and women included in the statistical survey on question 46 **"Women working at sea have less chance to be promoted to higher position than men"** F(1,390) = 24,671, p <0,05. Most women think they have less chance of being promoted than men. The men included in the study disagreed on this issue. The magnitude of the effect n = 0.24, which is calculated using the coefficient *ema*, is average or typical according to Cohen's interpretation [1]. A Tukey HDS [2] post-test was used to show that the arithmetic mean of men (M = 3.18) was statistically significantly different from the arithmetic values for the female group (M = 2.57).

Researching the **Risk for sexual harassment on female staff onboard:**

There is no statistically significant difference between the both men and women on question 27 "Women in maritime are likely to experience some form of sexual harassment." Men and women for the most part report that women in maritime professions are likely to experience some form of sexual harassment. The arithmetic mean for men (M = 2.65) is close to the arithmetic mean for women (M = 2.67).

According influence from **External factors** (lack of support for women by friends and family, due to childcare responsibilities, lack of training in the maritime university for working on a multi-crew ship etc.).

A statistically significant difference was found, F (1,384) = 9,815, p <0,05 for the answers to question 15 "Both women are encouraged by the family to get a maritime education (for both on board and onshore assignments)" for both gender. Most women believe that their family encouraged them to choose a seafaring profession, while men for the most part responded that this was partly true. The magnitude of the effect $\eta = 0.16$, which was calculated using the coefficient *ema* is less than the average or less than the typical Cohen interpretation [1]. A Tukey HDS [2] posthoc test was used, which showed that the arithmetic mean for the males group (M = 2.93) was statistically significantly different from the arithmetic mean values for the female group (M = 2.57).

Differences were observed in the responses of men and women to question 18 "I would encourage other women to work in the maritime sector" -F (1,384) = 23,497, p <0,05. Most women would encourage other women to work in the maritime sector, while men would in part do so. The magnitude of the effect n = 0.24, which is calculated using the coefficient *ema*, is average or typical according to Cohen's interpretation [1]. A Tukey HDS [2] post-test was used to show that the arithmetic mean of men (M = 2.94) was statistically significantly different from the arithmetic values for the female group (M = 2.28).

The statistics to question 43 "Female professionals could perform better if they were given a prior education on working in a male dominated workplace" showed differences of opinion between the both - F (1,384) = 5,494, p <0,05. For the most part, women agree that they would do better at their ship's workplace if they have received pre-school education to work in a mendominated environment while men are not convinced of it. The effect of n = 0.12, which is calculated using the coefficient *ema*, is less than the typical Cohen interpretation [1]. A Tukey HDS [2] post-hoc test was used which showed that the arithmetic mean of the male group (M = 2.77) is statistically significantly different from the mean for the group of women (M = 2.49).

4. Conclusions

The ANOVA statistical analysis of the causes of gender inequalities in seafaring professions has shown that there are differences in attitudes between men and women on various questions of the conducted survey.

Many women experience difficulties in their realization in seafaring professions, which are not appreciated by the men who participated in the survey. For a very small part of the problems concerning the equality of women in the seafaring profession, the respondents are in the opposite opinion. Majority of men give a neutral answer to those specific aspect, which leads to the conclusion that they do underestimate the challenges faced by women who have chosen the seafaring profession.

Every person perceives and experiences differently his/her gender identity. However, the presented study is an attempt to study the collective response of representatives of the Bulgarian seafaring professions of both gender. The results of the survey confirm that men and women differ in the attitudes they have for the working environment on a ship. The measurement scale used is reflected in the single-factor analysis.

Teaching students and cadets to work in a male-dominated environment would have a significant impact on the formation and development of the gender roles of the future maritime specialists.

It is of great importance that lecturers in maritime universities are prepared to give their students the necessary knowledge to reduce the gender differences in their future work on a ship.

The naval and maritime universities are the institutions in which maritime specialists are educated to take over the management position onboard. It is necessary to include subjects in the curriculum to give them knowledge of gender differences and to contribute to the openness to gender diversity on a ship and all its related manifestations and aspects.

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