Original Article

Career Prospects and Constraining Factors for Female Seafarers in National Shipping Companies

Andi Yuyun Pinrapati Wajuanna[1], Musbir[2], Baharuddin Hamzah[3]

[1]*Master of Transportation Studies Program, Graduate School, Hasanuddin University, Makassar, Indonesia.*
[2,3]*Lecturer at the Graduate School, Hasanuddin University, Makassar, Indonesia.*

[1]*Corresponding Author : yuyunpw36@gmail.com*

Abstract - Gender inequality in the national shipping industry is unavoidable, as indicated by the involvement of male dominance (98%). This study aims to analyze the employment opportunities of female seafarers and the aspects that influence them. The method used is a literature study and interviewer, and the quantitative method of the logistic regression model is used. The results showed that there are three main factors that influence the employment opportunities of female seafarers, namely age, marital status and education level. The results of the analysis of female seafarers' employment opportunities in the form of a logistic regression model are g(x) = 7.250 - 0.257x + 0.185D1 - 0.417D2, where X is the age of female seafarers, D1 is marital status (0 = married, 1 = unmarried), and D2 is education (0 = non-diploma, 1 = D-IV sailing). The negative β coefficient value (-0.257) indicates that the age of 17 years to 25 years is the productive age of women who are able to compete with male seafarers, while the positive β value of 0.185 indicates that marital status is influential in constraining female seafarers in the national shipping industry. Marital status is also the main obstacle to women's careers in shipping companies; this is indicated by a negative β value of -0.417. It can be concluded that the employment opportunities of female seafarers still face obstacles that need to be overcome, such as gender equality, raising awareness about the importance of gender inclusion in the shipping sector, other obstacles faced by female seafarers, such as gender stereotypes, limited facilities for women on board. Shipping companies should raise awareness of gender issues and policies to encourage the participation of female seafarers.

Keywords - Women seafarers, Gender, Barriers to National Seafaring Career, IMO, Employment Opportunities.

1. Introduction

Gender equality has been echoed recently in Indonesia's national shipping industry. There has been an increase in the presence of women in the maritime industry involved in the last 30 years. Ryals explained that data from international maritime organizations show that only 2% of women make up the global seafaring workforce [9]. Gender discrimination, stigmatization, and violence still threaten women who work as seafarers. These issues became a serious concern at the 21st Asia Pacific Heads of Maritime Safety Agencies (APHoMSA) meeting, which was held on May 18-20, 2021 [1]. The presence of a female minority and a male majority in the workplace makes seafarers vulnerable to discrimination, stigmatization and violence, and they are susceptible to various forms of workplace bullying [7]. To date, the maritime industry has not been seafarer-friendly. Women who work as seafarers continue to face gender discrimination, stigma and assault [8]. Indonesia, as a maritime country with waters extensive islands and located between two continents and two oceans, is an important country in the Asian region [11]. The gender equality of Indonesian seafarers encourages the Government to improve human resources in the shipping

sector. The need for seafarers globally reaches thousands of people every year, and Indonesia has great potential to supply qualified seafarer labor [4]. The shipping industry data itself, as quoted from the Bisnis.com page, still shows the dominance of the male gender with discriminatory and stereotypical trends [2]. This is related to cultural and social barriers that need to be overcome. The International Maritime Organization (IMO) has explicitly and clearly examined gender equality in the maritime world. The STCW Amendment of 2010 was mentioned in Resolution 14 of the 2010 STCW Amendment to Address the Promotion of Women's Participation in the Maritime Industry. This clearly supports the idea that maritime careers are not influenced by gender. Some shipping companies are still less interested in hiring female seafarers due to technical constraints when they mingle with male seafarers on the same ship, resulting in discriminatory treatment [6]. Organizations such as Women In Maritime (WIMA), under the auspices of the International Maritime Organization (IMO), have provided a platform for women seafarers to actively participate in the maritime industry. There are still many obstacles that need to be overcome, such as the lack of equal employment

opportunities; relevant parties continue to strive to realize gender equality in the maritime industry. Gender mainstreaming is an approach used to apply a gender perspective in the formulation of national development policies and programs. Thus, gender equality in the shipping sector is not only a human rights issue but also a key in advancing Indonesia's maritime industry [5]. Female workers are often superior to men, especially when it comes to providing hospitality services; women are more adaptable, patient, and thorough. However, based on the conclusions of FM 89.2 Utankayu's public discussion with the Department of Culture and Tourism at Hotel Nikko Jakarta Thursday (4/10), female workers still face barriers and negative perceptions such as job protection, single and married female workers, women's dual roles and they work while still supporting the family [10].

The perception that married female seafarers will no longer sail, resulting in companies' reluctance to deal with workplace hazards (including sexual harassment) and choosing not to employ female seafarers (rebublika.co.id). As of March 9, 2018, there were 910,088 seafarers, 1.13% female and 98.87% male, according to INSA data [1]. There are claims that female seafarers are less able to adapt to their environment (both professionally and socially) as a result of the challenges of the work situation on board [6]. The role of women in Indonesia's maritime industry is growing, with more and more women involved in various fields such as shipping company management, maritime law experts, and maritime legal advisors [8]. Data from the Technical Implementation Unit at the Ministry of Transportation's Human Resources Development Agency shows an increasing proportion of female officer students from year to year.
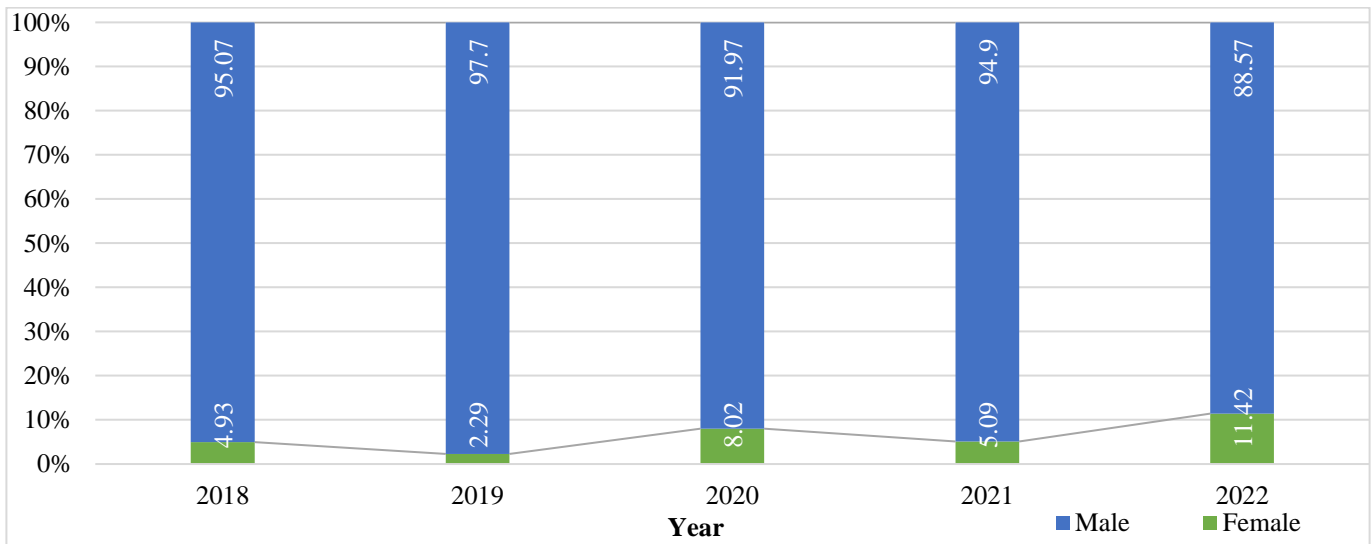

Fig. 1 Number of graduates of formation training 2018-2022

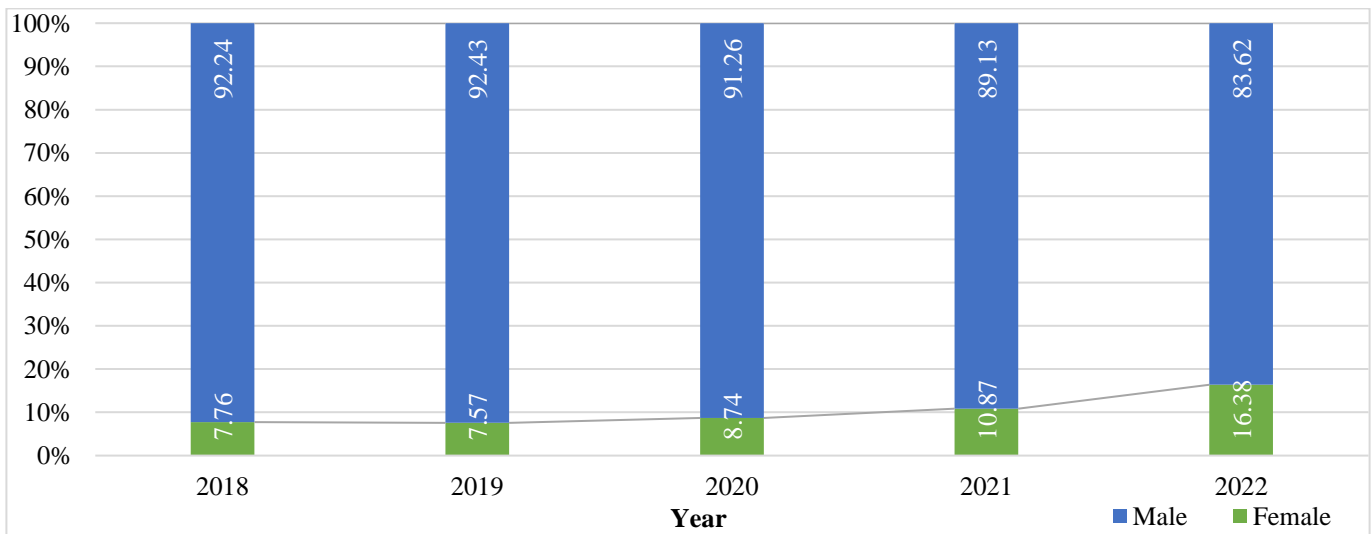*Source: Statistical Data of Transportation HR Development Center, 2022*

Fig. 2 Number of applicants for prospective cadets for formation training 2018-2022

Source: Statistical Data of Transportation HR Development Center, 2022

The applicants and graduates in Figures 1 and 2 reflect the growing interest of women in education and careers in the shipping sector. Women are increasingly active in pioneering careers in Indonesia's maritime industry. Although, there are still many challenges that need to be overcome [8]. A number of female figures in Indonesia have inspired female seafarers, such as Captain Ratna Kartika Sari, Captain Ariani Widodo, and Budi Utami. They are living examples of how women can reach the highest positions in the maritime industry. However, there is still much work to be done to achieve full gender equality in the shipping sector. Gender equality is not only a human rights issue but also an important factor in the development of Indonesia's maritime industry.Other research shows the involvement of women in the shipping industry and gender discrimination in the recruitment of female seafarers. Efforts that can be made to achieve gender equality for female seafarers include encouraging active involvement and optimizing the competence of female seafarers [8].Another similar study showed that female seafarers who wanted to work on ships owned by PT Jasindo Duta Segara in January, February, and March 2017 were 1.9% of a total of 1,212 applications, according to the results and has not hired female seafarers to work on the ship. The company does not yet have a Standard Operating Procedure (SOP) for the recruitment of women, the perception of female seafarers' performance is substandard, and there is a risk of sexual harassment [4].

Based on the description above, the following questions can be formulated
1. What are the prospects for female seafarers in national shipping companies?
2. What factors are the limitations of female seafarers in the National shipping company?

2. Research Methods
This research was conducted at companies engaged in shipping and shipbuilding, focusing on female seafarers. The population of female seafarers based on INSA 2018 data is 910,088 seafarers, 98.87% male seafarers, and 1.13% of them are female seafarers. The research sample size was calculated using the Slovin formula:

$$n = \frac{N}{1 + Ne^2}$$

Description:
n : sample size required
N : population size of 98.87%
e : margin of error10%

A sample (n) of 96 female seafarers was obtained. To determine perceptions, the sample used a questionnaire with a Likert scale distributed online to respondents via Google Forms.
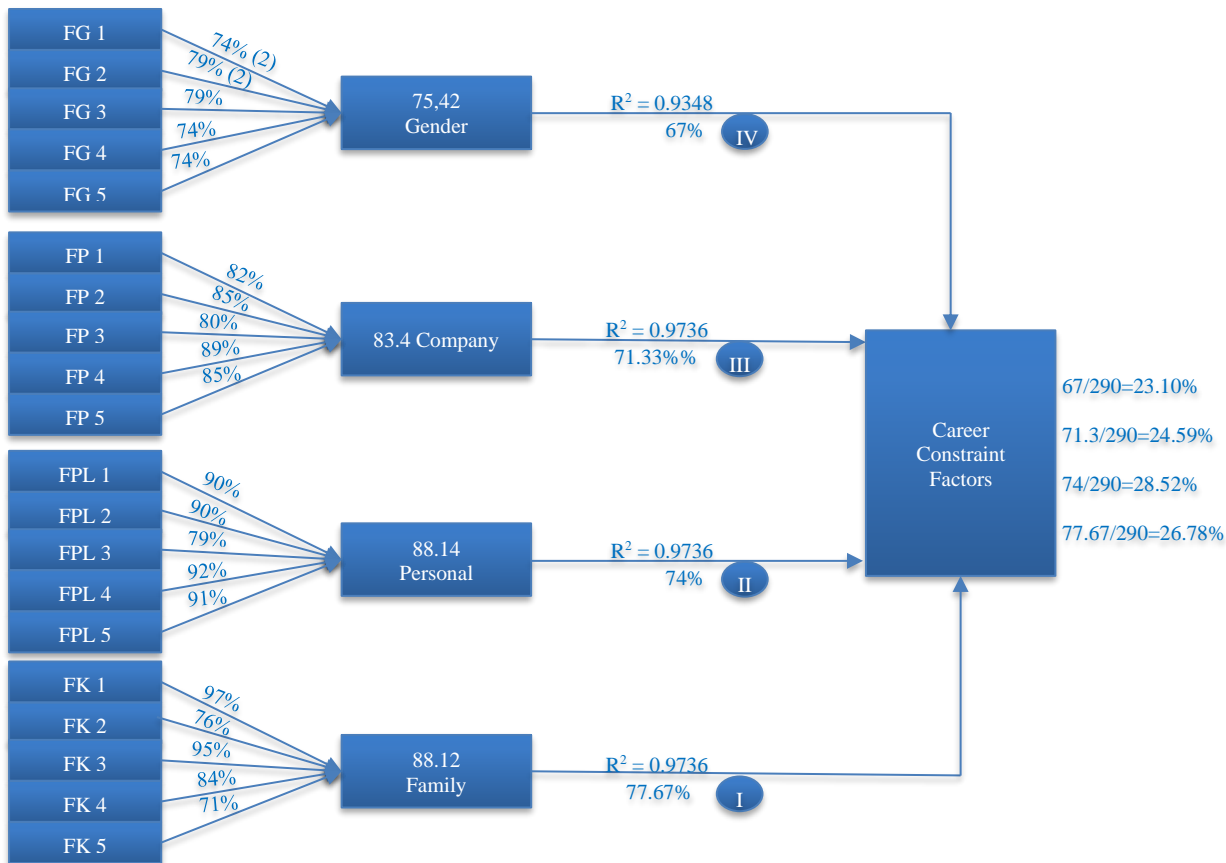

Fig. 3 Reliability test results

The validity test used is the significant correlation coefficient value with a significance level of 0.05. If the t count is greater than the t table then the variable is valid. The test criteria are:

- *H0* is accepted if t count> t table (valid)
- *H0* is accepted if t count < t table (invalid)

2.1. Analysis Methods

Logistic regression was used to explain the prospects of ratios and relationships between independent factors and response variables that are dichotomous or polycotomous. Finding out the limiting factors of female seafarers is based on the answers to the questionnaire results on the dominant factors. The probability function is $f(yt) = \pi(xt) yt (1-\pi(xt))1-yt$, where yt is the response variable value for the tth observation, $\pi(xt)$ is the probability of success, and $1 - \pi(xt)$ is the probability of failure. The Chi-Square model test is used to evaluate the simultaneous or cumulative effect of predictor factors on the response variable under the hypothesis that at least one regression parameter is not equal to zero.

3. Results and Discussion

In factor analysis, using descriptive statistical tests and hypothesis tests are used to analyze what factors cause limited female seafarers in national shipping companies based on the results of observations and questionnaires given to female seafarer respondents.

3.1. Female Seafarer Job Opportunities

The validity test is used to evaluate the reliability of the questionnaire against survey questions, and whether it can explain the subject to be measured is considered valid. The SPSS results used in this validity test are as in Table 1.

Table 1. Test results of respondent characteristics

No.	Description	% Sample
1	**Age**	
	22-24	30.2%
	25-27	44.8%
	28-30	25.0%
2	**Marital Status**	
	Not Married	62.5%
	Married	37.5%
3	**Education**	
	Non Diploma Nautical	7.3%
	Non Diploma of Engineering	6.3%
	D-IV Nautical Shipping	55.1%
	D-IV Nautical Engineering	31.3%
4	**Length of Study**	
	Never Sailed	58.3%
	1-12 Months Sailing	18.8%
	1-3 Years of Sailing	12.5%
	3-5 Years of Sailing	7.3%
	More than 5 years of Sailing	3.1%

Source: Analysis results, 2023

Table 2. Test results

Score / Item	t count factor				
	Gender	Company	Personal	Family	Description
1	0,630	0,692	0,613	0,641	*t tabel = 0.361 t hitung > t tabel*
2	0,648	0,660	0,611	0,638	
3	0,627	0,656	0,657	0,619	
4	0,615	0,624	0,626	0,621	
5	0,617	0,653	0,622	0,632	

Note: The table t value is greater than the t table value. Thus, it can be concluded that the instrument used is valid. t count greater than t table means valid.
Source: Analysis results, 2023

Table 3. Reliability test

Variable	Alpha	Description
Gender Factors	0,612	Reliable
Company Factors	0,670	Reliable
Personal Factors	0,612	Reliable
Family Factors	0,611	Reliable

Source: Analysis result, 2023

Table 4. Logistic regression model test

Variables in the Equation		β	SE.	Wald	df	Sig.	Odd Ratio Exp(β)
Step 1ª	Age	-.257	.116	4.907	1	.027	.773
	Status	.185	.530	.122	1	.727	1.204
	Education	-.417	.755	.306	1	.580	.659
	Constant	7.250	3.149	5.300	1	.021	1408.509
a. Variable(s) entered on step 1: Age, Status, Education.							

Source: Analysis results, 2023

It can be concluded that the instruments used in this study have proven to be valid; the validity test results show that all statement items related to gender factors, company factors, personal factors, and family factors have a calculated t-value greater than the t-table (0.361).

The research reliability test is to prove the picture as the precision and dependability of the information obtained from the questionnaire. In the reliability test, the Cronbach's Alpha value of each variable is calculated. If the Cronbach Alpha score of a variable is higher than 0.60, it is considered reliable. The results of the reliability test for each research variable are in Table 3.

The questionnaire used in this study is reliable, according to the findings of the reliability test presented above, revealing that the research instrument has an Alpha Cronbach score above or greater than 0.6.

3.1.1. Logistic Regression Model

This binary logistic regression analysis aims to analyze the employment opportunities of female seafarers in national shipping companies. The Logistic Regression model of female seafarers' employment prospects is g(x) = 7.250 - 0.257U +

0.185S - 0.417P. Female workers who had never sailed were coded "0", while female workers who had sailed were coded "1". A total of forty female workers have sailed in this case. This means that compared to younger female seafarers, older female seafarers have less of a prospect of working in national maritime companies.

The coefficient of β is negative (-0.257). Unmarried women have prospects that are 1.204 times compared to married female seafarers with the same age and education level. Unmarried women have greater prospects than married women, with a positive value of 0.185 Coefficient β. Compared to women with a non-diploma education at the same age and marital status, female seafarers with a higher education (D-IV in seafaring) have 0.659 times greater prospects. Women with lower education levels who work as non-diploma staff have the same prospects as those with higher education to work in national shipping companies. The negative coefficient β (-0.417) provides more evidence of this.

3.2. Factors Constraining Women Seafarers
Table 5. The t-test results of the Effect of Female Seafarers' Constraint Factors

No.	Constraint factors	t Count
1	**Gender Factors**	35,813
	FG 1 Difficulty at work	31,917
	FG 2 Discrimination on board	39,067
	FG 3 Equal behavior	37,123
	FG 4 Position Promotion	35,415
	FG 5 Implementation injustice	35,542
2	**Company factors**	46,882
	FP 1 Freedom at work	43,403
	FP 2 Due to facilities/services	47,850
	FP 3 Training prospects	43,049
	FP 4 Because of Wages	52,349
	FP 5 HR difficulties are given more attention	47,800
3	**Personal factors**	49,650
	FPL 1 Recognition as a woman sailor	50,726
	FPL 2 Work compliance as a seafarer	50,944
	FPL 3 Honor vs Education	43,576
	FPL 4 Dependent family needs	52,821
	FPL 5 Career male seafarer opportunities	50,181
4	**Family Factors**	47,924
	FK 1 Family support	60,313
	FK 2 Family relationship to career	35,459
	FK 3 Family support means a lot	56,612
	FK 4 Family life	45,123
	FK 5 Worker and family constraints	42,115

Descriptive Factor = 96 t table = 1.98525 (t) table > (t) Count means it can be agreed that the cause is significant.
Source: Analysis result, 2023

3.2.1. Gender Factors
Interviews with a sample of female seafarers suggested that there is gender discrimination on board, with female seafarers not given normal duties as their male counterparts. The side effect of discrimination for female seafarers is an obstacle to gaining experience in working on board. One of the common problems faced by female seafarers on board ships is sexual harassment, causing some female seafarers to be traumatized so that shipping companies are reluctant to accept female seafarers because of the associated risks. Based on the hypothesis test in Table 5, it can be concluded that the gender factor is 35.813 > 1.98525, where the t count is greater than the t table (1.98525); for gender sub-factors FG1 to FG5, it can be concluded that gender factors have an influence on causing limited job prospects for female seafarers in national shipping companies.

3.2.2. Company Factors
Despite the progress made by the International Maritime Organization (IMO) as an international organization over the past decade, women are being accepted into some shipping companies. However, there are some shipping companies that still accept female seafarers. It was revealed from the results of interviews with the Company that it once accepted female seafarers but now no longer accepts them due to incidents of sexual harassment on board, so the company offloads female seafarers; it is not sustainable. Female seafarers working on board do not have provisions for maternity leave and childcare. Female seafarers need fellow female seafarers for comfort on board. Therefore, companies tend not to accept female seafarers due to the unavailability of special room facilities for female seafarers on board. Another result revealed was the seafarer's wife's demand to the shipping company not to accept her husband having an affair with a female seafarer on board, and this had the effect of defaming the company for the case, resulting in a minimum of female seafarers due to risk factors. Based on the hypothesis test in Table 5, it is concluded that the company factor is 46.882 > 1.98525 where the t count is greater than the t table (1.98525); for sub-factors FP1 to FP5 have a calculated value above the table value, it can be concluded that the company factor has a significant influence on the cause of limited employment opportunities for female seafarers in national shipping companies.

3.2.3. Personal Factors
Personal factors based on the results of Table 5 analysis influence a seafarer woman's decision to pursue a career as a seafarer. These may include personal interests, aptitudes, motivations, and future visions held by the individual in relation to working at sea. Personal factors provide deep insights into why some women choose a career in seafaring, how to overcome challenges, and what can help achieve a prospective career in the seafaring industry. Based on the hypothesis test in Table 5, it can be concluded that personal factors are 35.813 > 1.98525, where the t count is greater than

the t table (1.98525) for personal sub-factors FPL1 to FPL5. t count is greater than the t table, meaning that personal factors have a significant influence as a factor causing limited employment opportunities for female seafarers in national shipping companies.

3.2.4. Family Factors

Family factors include the dynamics, support and considerations that come from one's family environment. Support and approval from family, especially parents and spouses, can play an important role in a woman's decision to become a seafarer. A supportive family can provide much-needed emotional and practical encouragement. Female seafarers often have a greater role in taking care of family responsibilities, including caring for children and other family members. The decision to become a female seafarer can affect family dynamics and requires careful planning. Family factors can also affect the mental and emotional well-being of a seafaring woman. Separation from family and children can trigger mental health. Based on the hypothesis test in Table 5, it can be concluded that the family factor is 47.924> 1.98525 where t count is greater than t table (1.98525), for family sub-factors FK1 to FK5 have a t value greater than t table, meaning that family factors have a significant influence as a factor that can cause limited employment opportunities for female seafarers in national shipping companies.

4. Conclusion and Recommendation

The constraining factors for female seafarers working in National Shipping companies are family factors, especially family support factors. Personnel factors, especially those related to family responsibilities and criteria achievement satisfaction, and empathic influence, especially factors related to income equality and human resource facilities. Gender factors are related to discrimination and equality of work, as well as behavior factors.

This research provides recommendations, suggesting the need for educational programs and awareness campaigns to increase family support for the careers of women seafarers. This can be achieved through collaboration with communities and non-governmental organizations that focus on empowering women. Additionally, shipping companies must eliminate all forms of gender discrimination to ensure that female seafarers have equal opportunities to participate in maritime activities at both national and international levels. Women seafarers should be equipped with the knowledge and skills to handle and report SASH (Sexual Assault and Sexual Harassment) incidents. Therefore, national shipping companies must implement comprehensive education programs on bullying, sexual harassment, and sexual assault.

Author Contributions

Conceptualization: Andi Yuyun Pinrapati Wajuanna
Data curation: Andi Yuyun Pinrapati Wajuanna
Formal analysis: Andi Yuyun Pinrapati Wajuanna, Musbir
Funding acquisition: Andi Yuyun Pinrapati Wajuanna
Research: Andi Yuyun Pinrapati Wajuanna
Methodology: Andi Yuyun Pinrapati Wajuanna, Musbir, and Baharuddin Hamzah.
Project administration: Andi Yuyun Pinrapati Wajuanna
Resource: Andi Yuyun Pinrapati Wajuanna
Supervision: Andi Yuyun Pinrapati Wajuanna, Musbir, and Baharuddin Hamzah
Validation: Andi Yuyun Pinrapati Wajuanna
Writing–original draft: Andi Yuyun Pinrapati Wajuanna a
Writing–reviewing & editing: Andi Yuyun Pinrapati Wajuanna, Musbir, and Baharuddin Hamzah

Funding

References

[1] The Role of Women in the Maritime World and Shipping Safety, Jakarta. Ministry of Transportation of the Republic, 2021. [Online]. Available: https://dephub.go.id/post/read/peran-perempuan-di-dunia-maritim-dan-keselamatan-pelayaran

[2] Sri Mas Sari, The World Needs 65,748 Sailors, This is the Minister of Transportation's Message for Sailor Schools, Economy, 2019. [Online]. Available: https://ekonomi.bisnis.com/read/20190905/98/1145106/dunia-butuh-65.748-pelaut-ini-pesan-menhub-untuk-sekolah-pelaut

[3] Kepala Badan Pusat Statistik, "Sea Transportation Statistics 2021," *Jakarta BPS RI*, pp. 1-156, 2021. [Google Scholar] [Publisher Link]

[4] Ebi Machfud. "*Analysis of Job Opportunities for Female Seamen on Board Ship at PT. Jasindo Duta Segara*," Diploma Thesis, Semarang Nautical Science Polytechnic, 2018. [Google Scholar] [Publisher Link]

[5] Ida Ayu Sri Eka Prawerthi, "Legal Basis of the Position of Women Seamen from the Perspective of Gender Equality IN Indonesia," *Kerta Dyatmika*, vol. 19, no. 2, pp. 23-38, 2022. [CrossRef] [Google Scholar] [Publisher Link]

[6] Akhmad Ndori et al., "Exploration of the Adaptation Ability of Male and Female Seafarers in Life on Board the Ship," *Journal of Maritime Science and Technology*, vol. 22, no. 2, pp. 127-140, 2022. [CrossRef] [Google Scholar] [Publisher Link]

[7] Laura Carballo Piñeiro, and Momoko Kitada, "Sexual Harassment and Women Seafarers: The Role of Laws and Policies to Ensure Occupational Safety & Health," *Marine Policy*, vol. 117, pp. 1-9, 2020. [CrossRef] [Google Scholar] [Publisher Link]

[8] Kristiyanti Mariana, and Rahmasari Lisda, "*Gender Discrimination in the World of Sailing*," Universitas Maritim AMNI, 2021. [Publisher Link]

[9] Jessica Ryals, "*Gender Equality is a Maritime Issue: Examining Structural and Social Barriers to Closing the Gender Gap in the Maritime Industry*," State University of New York Maritime CoBllege, Master's Thesis, pp. 1-75, 2023. [Google Scholar] [Publisher Link]

[10] Suwarti Suwarti, "Public Perception of Women's Performance in Tourism (Case Study in Semarang City)," *Gemawisata: Tourism Scientific Journal*, vol. 16, no. 3, pp. 189-201, 2020. [Google Scholar] [Publisher Link]

[11] Upton, M. A. (1991). Factors influencing the role of women in Indonesia Fisheries devoplement.