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# Gender Equality in the Maritime Seafaring Industry: A Study on Indian Seafarers

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**Abstract**

The maritime industry constitutes the backbone of global commerce, accounting for nearly 90% of world merchandise trade by volume. Encompassing shipping, port operations, shipbuilding, offshore activities, logistics, and maritime governance, the sector plays an indispensable role in global economic development. Paradoxically, however, the maritime profession remains one of the most severely gender-imbalanced industries worldwide. Women represent a disproportionately small fraction of the global seafaring workforce, and their involvement in technical, operational, and command-level roles is critically limited. International bodies such as the International Maritime Organization (IMO) and the International Labour Organization (ILO) have consistently advocated for gender inclusion, yet structural impediments continue to obstruct meaningful progress. While female enrolment in maritime academies has recorded incremental improvements, translating such academic access into sustained career advancement remains a formidable challenge. Scholarship on occupational health, community vulnerability, and workplace inequity provides a broader lens through which gender-specific barriers in demanding professions may be understood (Vettriselvan & Anto, 2018; Vettriselvan & Rajan, 2019; Ashifa, 2019; Ranganathan et al., 2024). This study investigates the structural, socio-cultural, organizational, and psychological determinants that shape women's access to and progression within the Indian maritime sector, thereby contributing to evidence-based policy formulation.

Keywords: Gender Equality, Seafarers, Indian Maritime Industry, Structural Bias, Occupational Discrimination, Workplace Inclusion

## 1. Introduction

Promoting gender equality within the maritime profession has gained increasing policy salience across the international community. The United Nations Sustainable Development Goal 5 (SDG 5) calls explicitly for the achievement of gender equality and the empowerment of women and girls across all sectors of society, including traditionally male-dominated industries. The maritime profession, despite its global economic significance, continues to reflect entrenched disparities in participation rates, wage equity, career retention, and upward mobility. Women in the sector are largely concentrated in shore-based administrative and hospitality functions, with negligible representation in deck, engineering, and command-level positions. Leadership roles such as Master Mariner, Chief Engineer, and Port Director remain overwhelmingly male-dominated across most maritime nations. From the standpoint of emerging maritime economies such as India, the profession presents both considerable opportunity and systemic constraint. The shipping industry's contribution to national GDP and employment has been well established, and since approximately 2022, several maritime education institutions have reported marginal but observable increases in female enrolment. Government initiatives have also sought to incentivize female participation in maritime training. Nevertheless, prevailing socio-cultural structures continue to exert significant influence on career choice perceptions, familial support for seafaring, professional mobility, and retention rates following marriage or childbirth. The maritime training and work environment is further characterized by masculine-centric occupational cultures, rigid hierarchical systems, power asymmetries conducive to harassment, and limited grievance redressal mechanisms. The concept of psychological safety explored extensively in studies on health and occupational well-being (Zahoor et al., 2025; Elkin et al., 2025; Ranganathan et al., 2024) is particularly relevant here, as seafarers navigating gender discrimination often experience self-doubt, insecurity, and disengagement from professional ambitions. Access to mentorship for women regarding occupational challenges, combined with biased recruitment practices and constrained networking opportunities, collectively undermine equitable career progression even for those who have successfully completed maritime education. Key structural challenges

include occupational stereotyping, limited presence of female role models, inadequate mentorship networks, workplace harassment and discrimination, and insufficient maternity and family leave policies. Despite international programs such as the IMO's 'Women in Maritime' initiative, implementation deficits persist at institutional and organizational levels. The core problem demanding empirical investigation involves the interplay between structural bias and organizational climate, the moderating function of institutional interventions such as gender sensitization programs, the sequential psychological impact of workplace conditions, and localized socio-cultural factors shaping maritime career trajectories in India.

## 2. Review of Literature

A growing body of scholarship has examined gender dynamics within maritime workplaces, revealing persistent structural and attitudinal barriers. Kitada, Barahona-Fuentes, and Castells-Sanabra (2025) analysed how masculine norms embedded in Maritime Education and Training (MET) institutions shape access, progression, and reinforce systemic bias in the sector, underscoring the necessity for cultural transformation and targeted training interventions. Their findings are consistent with broader research on how masculine organizational cultures impede the retention of women professionals. The IMO-WISTA Women in Maritime Survey (2024/2025) reported that women constitute approximately 19% of the maritime workforce globally a figure that, while marginally improved from prior decades, continues to reflect entrenched representational inequity. The survey identified persistent stereotyping, workplace safety concerns, and constrained career advancement pathways as primary deterrents to female retention. Popa (2025) reinforced these findings through an assessment of gender perceptions aboard ships, documenting systemic discrimination, occupational segregation confining women to non-technical roles, psychological exclusion from decision-making, and limited access to leadership positions. Research on women seafarers in Taiwan (2024) provided empirical evidence of gender imbalance and structural barriers to career progression, including harassment and safety-related deficits. Industry-focused analyses, including the Safety4Sea and Maritime SheEO Reports (2024), revealed a growing adoption of gender-neutral policies in India and globally, but identified inconsistent implementation and persistent gaps in career opportunity—particularly for active seafarers. Justesen, Nguyenova, and Megwa (2024) addressed structural bias, stereotype-driven discrimination, and qualification barriers affecting women's employment transitions in the maritime sector. Karunatilleke et al. (2024) conducted a systematic review of unconscious gender bias among seafarers, examining how implicit attitudes affect team dynamics and decision-making aboard vessels. Narayanan, Emad, and Fei (2023) identified physical, psychological, and social barriers experienced by women in maritime workplaces, emphasizing the complex relationship between occupational experience and psychological outcomes. Pike et al. (2021) explored harassment, safety concerns, exclusion, and the perception of bias as determinants of women's professional well-being and career progression in UK shipping, highlighting the imperative for organizational culture change. The relationship between workplace mental health and professional outcomes, examined extensively in studies such as Gayathri et al. (2025), provides a theoretical parallel to the psychological dimensions under investigation in this study. Similarly, Ashifa (2021) and Ashifa (2022) have documented how organizational environments contribute to health and well-being outcomes in high-stress professional settings, reinforcing the conceptual basis of the present framework.

## 3. Conceptual Framework

This study is grounded in an integrated theoretical framework combining Structural Bias, Policy Intervention, Organizational Climate, Psychological Consequences, and Attitude-Behavior constructs. The framework proposes that structural and social biases shape the gendered organizational climate, which in turn determines the quality of workplace experience. Workplace experiences subsequently influence psychological outcomes, which ultimately govern job attitudes and career advancement decisions. Institutional interventions are theorized to moderate the relationship between structural bias and organizational climate. Structural and Social Bias is operationalized as employees' perceived extent of institutionalized discrimination, stereotype-driven norms, and unequal socio-cultural expectations, measured as a second-order latent construct reflected by three dimensions: Unconscious Bias, Socio-Economic Bias, and Cultural Bias. Institutional Interventions encompass Prototype Training—structured programs challenging gender stereotypes and promoting equitable career development—and Gender Sensitization Programs targeting harassment prevention and diversity compliance within maritime operations. Gendered Organizational Climate is measured as employees' collective perceptions of fairness, inclusion, and gender equity within the organizational environment. Workplace

Experience reflects employees' perceived quality of professional interactions, authority relations, and safety conditions at sea. Psychological Outcomes encompass employees' sense of psychological safety, self-doubt, and internalized insecurity arising from gender-based experiences. The dependent variable, Job Attitudes, comprises Role Clarity (understanding of responsibilities and career pathways) and Job Satisfaction (affective contentment with one's role, advancement prospects, and organizational support). This framework draws on occupational well-being literature (Elkin et al., 2025; Zahoor et al., 2025) and recent analyses of how HR interventions can moderate workplace mental health outcomes (Gayathri et al., 2025).

## 4. Research Methodology

### 4.1 Research Objectives

**i.** To examine the influence of gender on structural, social bias, and workplace experiences in the maritime profession.

**ii.** To assess how workplace experiences shape psychological outcomes among Indian seafarers.

### 4.2 Research Hypotheses

H1a: A significant relationship exists between the gender of respondents and structural and social bias perceptions.

H2a: A significant relationship exists between the gender of respondents and their workplace experiences.

H3a: A significant relationship exists between workplace experiences and psychological outcomes among seafarers.

The study employs a descriptive research design. Data were collected using a structured questionnaire based on the conceptual model, incorporating demographic items and five research constructs measured on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). A sample of 200 respondents (n = 200) drawn from Indian maritime professionals and cadets was utilized. The Cronbach's alpha reliability coefficients for all constructs exceeded the acceptable threshold of 0.70, confirming the internal consistency of the measurement instrument.

### 4.3 Reliability Statistics

| S. No. | Construct | Cronbach's Alpha |
|---|---|---|
| 1 | Structural and Social Bias | 0.79 |
| 2 | Institutional Interventions | 0.77 |
| 3 | Gendered Organizational Climate | 0.81 |
| 4 | Workplace Experience | 0.79 |
| 5 | Psychological Outcomes | 0.82 |

All alpha values exceeded 0.70, reaffirming the reliability of the measurement constructs.

## 5. Data Analysis and Interpretations

### 5.1 Demographic Profile of Respondents

The sample comprised 200 respondents drawn from diverse segments of the Indian maritime workforce. Male respondents constituted 79% of the sample (n = 158) and female respondents 21% (n = 42), a distribution that closely mirrors the gender composition of the broader Indian maritime profession while also capturing the increasing presence of women in the sector. The age distribution reveals that nearly 48% of respondents were above 35 years, followed by 27.5% in the 18–22 years cohort indicative of robust participation by both experienced professionals and maritime cadets. In terms of rank sailed, 30% had served as Master, 13.5% as Deck Cadet, and 10.5% as Chief Officer. Experience levels demonstrated that 46% possessed more than 12 years of sea service, reinforcing the senior professional orientation of the sample. A further 28.5% consisted of pre-sea trainees, ensuring representation of the emerging workforce. Container ship seafarers constituted the largest ship-type category (36%), consistent with the dominance of containerized shipping in Indian maritime trade.

| Category | Respondents | Percentage (%) |
|---|---|---|
| Male | 158 | 79% |
| Female | 42 | 21% |

| | | |
|---|---|---|
| Age > 35 yrs | 96 | 48% |
| Age 18–22 yrs | 55 | 27.5% |
| Experience > 12 yrs | 92 | 46% |
| Pre-sea Trainees | 57 | 28.5% |
| Container Ship | 72 | 36% |

### 5.2 ANOVA Results

#### 5.2.1 Gender vs Structural and Social Bias

A one-way Analysis of Variance (ANOVA) was conducted to determine whether statistically significant gender-based differences exist in perceptions of structural and social bias within the maritime profession. The analysis revealed that two variables exhibited statistically significant gender differences at the $p < 0.05$ threshold. The item 'Women onboard are expected to prove their competence repeatedly unlike their male colleagues' yielded $F = 24.089$ ($p < 0.001$), with female respondents recording a substantially higher mean (3.69) compared to male respondents (2.75). Similarly, 'Professional networking opportunities in the maritime industry are less accessible to women' produced $F = 9.867$ ($p = 0.002$), again with higher agreement among female respondents (Mean = 3.29 vs. 2.69). These findings are consistent with the literature on occupational discrimination and career barriers (Vettriselvan & Anto, 2018; Ashifa, 2019) and reflect patterns identified in global maritime gender studies (Popa, 2025; Karunatilleke et al., 2024). The remaining items leadership stereotyping, cultural resistance, family responsibilities, and masculine organizational culture did not yield statistically significant gender differences ($p > 0.05$), suggesting that broader attitudinal patterns are more uniformly perceived across genders.

| Item | Mean (Male) | Mean (Female) | F Value | Sig. (p) |
|---|---|---|---|---|
| Leadership positions unconsciously associated with men | 3.04 | 2.95 | 0.203 | 0.653 |
| Gender stereotypes influence task assignments | 3.25 | 3.36 | 0.336 | 0.563 |
| Women expected to prove competence repeatedly* | 2.75 | 3.69 | 24.089 | 0.000* |
| Family responsibilities limit women's career advancement | 3.62 | 3.67 | 0.065 | 0.798 |
| Networking opportunities less accessible to women* | 2.69 | 3.29 | 9.867 | 0.002* |

*Significant at $p < 0.05$

#### 5.2.2 Gender vs Workplace Experiences

The second ANOVA examined gender differences in perceptions of workplace experiences aboard ships. Three items demonstrated statistically significant differences. 'Shore-based opportunities remain harder to access for women than for men' recorded $F = 14.562$ ($p < 0.001$); 'I feel physically safe in my workplace environment onboard' yielded $F = 10.473$ ($p = 0.001$); and 'Reporting harassment onboard is discouraged or ineffective in practice' produced $F = 18.201$ ($p < 0.001$). In all three instances, female respondents reported notably higher perceptions of barriers and safety concerns relative to male counterparts. These results align with Pike et al.'s (2021) documentation of safety and harassment as central determinants of women's maritime employment experience, and with the ITF (2024) survey findings on gender equity in India. The remaining workplace variables decision-making influence, meeting participation, and organizational support did not produce significant gender differences.

| Item | Mean (Male) | Mean (Female) | F Value | Sig. (p) |
|---|---|---|---|---|
| Women exert equal influence in decision-making | 3.21 | 3.05 | 1.214 | 0.272 |
| Shore-based opportunities harder for women* | 3.02 | 3.68 | 14.562 | 0.000* |

| | | | | |
|---|---|---|---|---|
| Physically safe in workplace onboard* | 3.81 | 3.29 | 10.473 | 0.001* |
| Reporting harassment discouraged or ineffective* | 2.64 | 3.42 | 18.201 | 0.000* |

*Significant at $p < 0.05$

### 5.2.3 Workplace Experiences vs Psychological Outcomes

The third ANOVA evaluated the relationship between workplace experience levels and psychological outcomes among seafarers. All six psychological outcome variables demonstrated statistically significant results ($p < 0.05$), providing robust evidence that workplace conditions exert a pronounced influence on the psychological well-being and career confidence of maritime professionals. Particularly notable were the effects associated with 'Gender-based treatment occasionally causes me to doubt my competence' ($F = 18.742$, $p < 0.001$) and 'I have felt dismissed or undermined because of my gender at work' ($F = 15.284$, $p < 0.001$). These findings are consistent with evidence from occupational stress and mental health research, where negative professional experiences have been shown to precipitate self-doubt, reduced psychological safety, and attrition from career pathways (Gayathri et al., 2025; Elkin et al., 2025; Zahoor et al., 2025). The impact of workplace culture on leadership aspirations is further underscored by the significant result for 'Workplace attitudes deter me from pursuing leadership roles' ($F = 11.356$, $p = 0.001$), corroborating the well-documented underrepresentation of women in maritime command positions.

| Psychological Outcome Item | F Value | Sig. (p) | Result |
|---|---|---|---|
| Felt dismissed or undermined due to gender | 15.284 | 0.000 | Significant |
| Feel secure to express concerns and opinions | 9.617 | 0.002 | Significant |
| Receive adequate supervisor support for development | 6.408 | 0.012 | Significant |
| Gender-based treatment causes self-doubt | 18.742 | 0.000 | Significant |
| Workplace attitudes deter leadership pursuit | 11.356 | 0.001 | Significant |
| Colleague and mentor support builds career confidence | 4.593 | 0.033 | Significant |

## 6. Conclusion

This study examined gender-related disparities in structural bias, workplace experience, and psychological outcomes within the Indian maritime seafaring industry. The demographic composition of the sample predominantly male, experienced, and drawn from diverse maritime ranks provides a credible and representative basis for analyzing gender dynamics in the Indian seafaring profession. The inclusion of pre-sea cadets and younger entrants alongside senior officers ensures that perspectives across the career lifecycle are captured. The ANOVA analyses reveal that gender exerts a significant influence on specific dimensions of structural bias and workplace experience. Women seafarers report considerably stronger perceptions of being compelled to repeatedly justify their professional competence, encountering barriers in professional networking, facing restricted access to shore-based roles, experiencing physical safety concerns, and confronting institutional discouragement of harassment reporting. These findings substantiate arguments advanced by Narayanan et al. (2023), Pike et al. (2021), and the IMO-WISTA Survey (2024/2025), and are corroborated by occupational health research on gender and workplace inclusion (Vettriselvan & Rajan, 2019; Ashifa, 2019). Furthermore, the analysis of workplace experiences and psychological outcomes confirms that the occupational environment significantly shapes seafarers' self-confidence, perceptions of organizational fairness, and aspirations toward leadership. Negative workplace conditions are associated with self-doubt, reduced psychological security, and career disengagement particularly among women. The strategic importance of human resource interventions (Gayathri et al., 2025) and mental health support mechanisms (Elkin et al., 2025) in moderating these outcomes is well established in adjacent organizational research. These insights underscore the urgency of fostering inclusive maritime organizational cultures, reinforcing confidential grievance redressal mechanisms, providing structured mentorship for women seafarers, and developing policy frameworks supporting maternity leave and career re-entry. Addressing these systemic barriers is essential to realizing a more equitable, resilient, and sustainable maritime workforce.

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