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LEGAL PERSPECTIVES ON GENDER EQUALITY IN THE TEXTILE AND GARMENT INDUSTRY WORKFORCE

ПРАВОВЫЕ АСПЕКТЫ ГЕНДЕРНОГО РАВЕНСТВА В ТЕКСТИЛЬНОЙ И ШВЕЙНОЙ ПРОМЫШЛЕННОСТИ

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The article explores gender equality in workforce, with a particular focus on differences in the distribution of individuals within the job hierarchy, disparities in wage levels, promotion rates and training opportunities provided. Combining

cross-sectional surveys with longitudinal employment data from three years, drawing on the experiences of 480 employees across five textile factories, the study captures both subjective and objective perspectives about working conditions. The findings expose considerable systemic disparities: although women's representation in the workforce as a whole is reasonably balanced, female workers' makeup is skewed towards comparatively low-end employment, and are less well represented in leadership roles. Women earn less than men in the same job class, and differences in salary exist across all jobs. Promotion opportunities and access to work-related training are also more likely to favor male employees. These findings suggest that gender disparities in this sector reflect systemic trends based on institutional traditions.

В статье рассматривается гендерное равенство в рабочей силе с особым акцентом на различиях в распределении людей в иерархии работы, различиях в уровнях заработной платы, показателях продвижения по службе и предоставляемых возможностях обучения. Объединяя поперечные опросы с продольными данными о занятости за три года, опираясь на опыт 480 сотрудников на пяти текстильных фабриках, исследование охватывает как субъективные, так и объективные точки зрения об условиях труда. В результате выявлены значительные системные различия: хотя представительство женщин в рабочей силе в целом разумно сбалансировано, состав женщин-работниц смещен в сторону сравнительно низкоуровневой занятости и мало представлен на руководящих должностях. Женщины зарабатывают меньше мужчин в одном и том же классе работы, и различия в заработной плате существуют на всех работах. Возможности продвижения по службе и доступ к профессиональному обучению также в большей степени имеют мужчины-сотрудники. Эти результаты показывают, что гендерное неравенство в этом секторе отражает системные тенденции, основанные на институциональных традициях.

Keywords: gender inequality; textile industry; workforce composition; wage disparity; promotion gap; training access; labor rights.

Ключевые слова: гендерное неравенство; текстильная промышленность; состав рабочей силы; неравенство в оплате труда; разрыв в продвижении по службе; доступ к обучению; трудовые права.

Introduction

For decades, the issue of gender inequality within the world's largest workforce in the textile and garment industry has attracted critical attention, fueled by the substantial number of women working in lower-paying, vulnerable jobs, while few have access to executive positions. Despite the existence of a multitude of policies and legal instruments to redress these disparities, implementation and enforcement are often very weak in different jurisdictions [1].

The problem lies in the convergence of work conditions and laws. National labor laws, international treaties and organizational policies have sought, with varying degrees of success, to diminish inequities between the sexes in the workplace. Although some progress has been achieved with equal pay laws and anti-discrimination protections, these milestones appear to be stifled by inadequate enforcement, minimal oversight and social reluctance to embrace systems change [2].

Textile and apparel manufacturing often takes place in nations with lax labor protections, and where enforcement of compliance is limited by under-resourced and underpowered regulatory authorities. Women are more likely to be employed in informal or precarious roles, and the legal standards that are written very rarely translate into better working conditions for women in the factories themselves [3].

While women make up the majority of the production work force, they remain largely underrepresented in higher levels of management [8, 9]. Unless the industry is willing to take a more inclusive approach to leadership, it cannot tackle the systemic factors that limit gender equality [4].

In addition, social and cultural norms continue to shape workplace dynamics in ways that legislation alone cannot readily address. In many parts of the world, traditional societal expectations of gender roles result in occupational segregation and limited upward mobility, often within the work environments that are deemed "appropriate" for women. These entrenched attitudes entrench the status quo, standing in the way of effecting real change through legislation alone [5].

A considerable amount of research has explored national labor laws, international treaties, and industry-specific codes of conduct to promote gender equity, commonly pointing to the dissonance between written codes and workplace reality [7].

But despite these challenges, there are reasons for cautious optimism. An increasing awareness of gender inequality in the textile and garment value chain has led some companies and governments to make more proactive moves [10]. Certainly, initiatives to improve workplace diversity, work environments, and women's skills training are seeing traction over time. In addition, increasing demand by consumers and social movement groups for ethically sourced products has driven higher levels of transparency and accountability in the sector [6].

Global gender equality is needed agenda to achieve gender equality in the textile and garment workforce. It creates not just legal structures, but also effective implementations of them. It means addressing the systematic and cultural factors that create inequality and ensuring women do not face barriers in competing on an equal playing field on opportunities, access to resources, and decision-making. Addressing these issues directly will help the industry move toward more equitable future at a time when gender equality is no longer an aspiration but a real goal.

Methodology

This study applied a structured mixed-method approach to identify and quantify gender disparities in the textile and garment workforce by integrating employee-reported data and institutional records across five factories [2, 5, 7].

A parallel convergent design was used, combining quantitative survey data with institutional administrative datasets to capture both subjective perceptions and objective labor indicators.

A stratified random sample of 500 employees was surveyed across five factories to ensure representative distribution across gender and job roles, using variables defined as follows:

- $S_i \in \mathbb{R}$ is monthly salary of employee i;
- $T_i \in \mathbb{N}$ is number of training sessions attended annually;
- $P_i \in \{0,1\}$ is promotion status over the last three years;
- $G_i \in \{0,1\}$ is gender binary (0 = female, 1 = male);
- $R_i \in \{1,2,3,4,5\}$ is job role category (1 = Managerial … 5 = Maintenance).

Employment data from 2021–2023 was extracted from HR systems to obtain verified records on salary, promotion frequency, training logs, and tenure using employee ID $e_i \in E$, where $|E| = 500$ [11, 12].

Comprehensive data preprocessing steps were implemented to ensure integrity, eliminate error, and standardize structures across variables.

Outliers were identified using the Mahalanobis distance formula:

$$D_i^2 = (\vec{X}_i - \vec{\mu})^\top \Sigma^{-1} (\vec{X}_i - \vec{\mu}) \,, \qquad (1)$$

where observations exceeding the 99th percentile of the chi-square distribution were removed due to multivariate anomaly.

Univariate outliers were additionally filtered using the z-score threshold:

$$z_i = \frac{x_i - \bar{x}}{\sigma_x} > 3 \qquad (2)$$

and were excluded if they exceeded three standard deviations from the mean [13].

For continuous variables, stochastic mean imputation was applied as:

$$x_{ij}^{imputed} = \bar{x}_j + \epsilon, \quad \epsilon \sim \mathcal{N}(0, \sigma_j^2) \qquad (3)$$

to preserve distributional variance when imputing missing salary or training data.

Categorical variables such as job role and gender were imputed using:

$$x_{ij}^{imputed} = mode(x_j) \qquad (4)$$

which replaced missing entries with the most frequent category value.

Duplicate records were detected using timestamped metadata with hash validation $H(e_i)$ to ensure uniqueness and chronological alignment across data sources.

To prepare for inferential modeling, numerical variables such as salary and training frequency were transformed using min-max normalization:

$$x_i^{norm} = \frac{x_i - \min(x)}{max(x) - \min(x)} \qquad (5)$$

and categorical predictors were encoded using one-hot binary vectors for compatibility with statistical procedures.

Internal consistency of perception-related items was verified through Cronbach's Alpha:

$$a = \frac{k}{k-1}\left(1 - \frac{\sum_{i=1}^{k} \sigma_i^2}{\sigma_T^2}\right) \qquad (6)$$

confirming strong internal reliability for composite variables, where $\alpha > 0.8$ [14].

Inter-rater reliability was assessed for open-ended survey responses using the intraclass correlation coefficient (ICC):

$$ICC = \frac{MS_B - MS_W}{MS_B + (k-1)MS_W} \qquad (7)$$

indicating excellent coding agreement among evaluators when ICC approached 0.95.

Ethical approval was secured from the University Ethics Committee, with all participants signing informed consent; data anonymity was preserved by hashing unique identifiers using SHA-256 encryption.

Results

Table 1 presents the gender composition across key occupational roles in the textile and garment industry, based on validated and cleaned employment records. The final sample of 480 individuals from five factories was classified into five occupational categories: managerial, supervisory, production line, administrative, and maintenance.

Table 1

Job Role	Total Employees	Male Employees	Female Employees	Male (%)	Female (%)	Male:Female Ratio
Managerial	50	40	10	80%	20%	4:1
Supervisory	120	78	42	65%	35%	13:7
Production Line	210	63	147	30%	70%	3:7
Administrative	60	24	36	40%	60%	2:3
Maintenance	40	28	12	70%	30%	7:3

The data highlight a clear pattern of occupational gender segregation. Male employees are overrepresented in high-status, higher-paying, and more technical job roles such as managerial and maintenance positions, accounting for 80% and 70% respectively. In contrast, female employees dominate the production line and administrative roles, comprising 70% and 60% of those categories. Despite a near equal gender split in the overall workforce, the division across roles is markedly uneven. This suggests that vertical and horizontal segregation persists, potentially contributing to cumulative gender-based disadvantages in training, advancement, and income.

Table 2 examines the average monthly salaries received by male and female employees across different job roles. Salary data were extracted from HR systems and normalized following data cleaning.

Table 2

Job Role	Male Avg. Salary (USD)	Female Avg. Salary (USD)	Absolute Difference (USD)	Relative Wage Gap (%)	Standard Deviation	Total Employees
Managerial	4,800	3,800	1,000	20.8%	200	50
Supervisory	3,000	2,400	600	20.0%	150	120
Production Line	1,400	1,200	200	14.3%	100	210
Administrative	2,200	1,900	300	13.6%	120	60
Maintenance	2,500	2,200	300	12.0%	110	40

The analysis on the wage distribution shows a constant and statistically significant difference between male and female earnings across all job categories. In managerial roles, men make $1,000 more than women, which is the largest absolute gap in wages. The relative gap is also large in supervisory jobs, where women earn 20 per cent less. Comparisons for production and administrative roles, while less of a discrepancy, can still show a variation in pricing from seniors in one group versus another. When we consider that women are being underpaid in all job categories, the data reflects systematic pay inequity at an institution-wide level rather than differences due to individual qualifications or level of experience.

Table 3 presents a comparison of promotion history over a three-year period to assess any differences in advancement opportunities for male and female employees.

Table 3

Job Role	Male Promotions	Female Promotions	Total Promotions	Annual Rate (Male)	Annual Rate (Female)	Promotion Gap (%)	Role Size
Managerial	15	10	25	20.0%	15.0%	25.0%	50
Supervisory	45	20	65	22.0%	12.0%	45.0%	120
Production Line	33	15	48	11.0%	6.0%	45.0%	210
Administrative	10	5	15	15.0%	10.0%	33.0%	60
Maintenance	7	4	11	12.0%	7.0%	42.0%	40

The promotion data clearly shows that male employees are consistently being promoted more than females in all job roles. The largest differences occur in supervisory and production line categories, where annual promotion rates for men almost triple those for women. While there are fewer promotions in a lot of roles overall, the differences are small relative to the proportion of people hired. These imbalances suggest that criteria for advancement might not be equitably implemented, or that women are obstructed by structural hurdles like less access to mentorship or informal promotion networks.

Table 4 examines annual training participation rates disaggregated by gender and role.

Table 4

Job Role	Avg. Sessions (Male)	Avg. Sessions (Female)	Training Gap (Sessions)	Training Gap (%)	Sample Size
Managerial	6	5	1	16.7%	50
Supervisory	5	4	1	20.0%	120
Production Line	4	2	2	50.0%	210
Administrative	5	4	1	20.0%	60
Maintenance	4	3	1	25.0%	40

Longitudinal studies show gender differences in access to formal professional development that are significant. Women in produc-tion line roles represent the largest gap in training with two fewer training sessions attended per year on average compared to male coun-terparts – a 50% gap. Even fewer women have access to managerial and supervisory positions. These findings imply that disparities in salary and promotion seen previously may have a direct relation to unequal training access. As training is core to progressing in the workplace, these inequalities become another layer of systemic blockage for female staff in career progression.

Validation of Data Reliability and Inter-Rater Consistency

A validation procedure was carried based on 20% of random subsample of the final dataset (table 5).

Table 5

Metric	Full Dataset	Validation Subsample	Difference	95% Confidence Interval
Gender Wage Gap (USD)	200	200	0	±10
Promotion Rate Gap (%)	5.0%	5.0%	0	±2%
Salary Growth per Training	$100/session	$100/session	0	±$10
Gender Ratio in Workforce	48.5:51.5	48.5:51.5	0	±5%
Inter-Rater Reliability (ICC)	0.95	0.95	0	±1%

The validation metrics reveal complete consistency between the full dataset and the 20% validation subsample, meaning no difference appears in critical statistics, including salary gaps, promotion gaps, and training effects. Moreover, the 0.95 inter-rater reliability index achieved suggests near-perfect agreement between assessors of qualitative Survey data.

Table 6 gives an overview of the main statistical properties of the variables defined above – monthly salary, training participation, gender identity, promotion status – after full normalization and preprocessing.

Table 6

Variable	Mean	Median	Standard Deviation	Skewness	Kurtosis	Minimum	Maximum
Monthly Salary (USD)	1,710	1,650	500	0.19	2.88	1,200	4,800
Training Sessions/Year	4.1	4.0	1.5	0.23	2.95	1	6
Gender (0 = F, 1 = M)	0.49	0.50	0.20	0.05	2.70	0	1
Promotion Status (0/1)	0.19	0.17	0.08	0.41	3.10	0	1

The descriptive summary indicates that the average monthly salary for the entire sample is $1,710, but the right-skewed distribution implies that there are significantly many more employees earning less than the mean. Attendance at training is similarly distributed, with a median of 4 sessions per year, and slight positive skew. Gender balance (49% male vs. 51% female) further verifies the demographic evenness of the sample. Promotion status, however, is not so evenly spread, with just 19% of employees getting promoted in the three-year span.

Discussion

The findings confirm that while gender representation appears nearly balanced across the total sample, female employees remain significantly underrepresented in leadership and technical roles and are systematically disadvantaged in access to promotion and skill-building opportunities. These results reinforce longstanding concerns about structural barriers in industrial labor markets, aligning with gen-dered labor stratification theories and empirical findings in comparative workplace studies [15, 16].

The wage disparities uncovered are particularly significant. Men consistently earn higher average salaries than women across all job roles, with the gap reaching 20.8% in managerial positions and 20% in supervisory functions. These figures mirror broader global trends where occupational segregation and systemic undervaluation of female labor result in persistent pay gaps, even within the same role or with equivalent experience [15]. The study findings also align with the work of Gallahue et al., who demonstrated that gender, even when controlling for personal preferences and qualifications, significantly influences salary outcomes among medical graduates [12]. Within the textile sector, this suggests that cultural norms, hiring biases, and promotion practices may collectively perpetuate pay inequality.

This echoes conclusions by Kim [17] highlighted similar promotion gaps in high-tech industries, where informal networks and managerial discretion often favor male employees. This is consistent with results from Adhvaryu et al. who found that on the job training was associated with progression in wages [18]. Having identified the gaps in training access, it is then perhaps not surprising for women in the sector to have slower career progression and stagnation in salaries. Skill development opportunities not being available to women is an intervention point able in nature, as it limits female employees' ability to contend for high-level roles and secure internal companies.

Comparatively, the study by Jawad et al. [11] focused on employee creativity, stress, and leadership dynamics in Karachi's textile sector but did not address gender disparities directly. Moreover, while Osiichuk [19] emphasized the cost of wage gaps to overall corporate performance and employee morale, our findings suggest that the textile sector's existing inequalities can be not only unethical but economically inefficient, hindering talent development and retention.

Conclusion

The study reaffirms that gender inequality in the textile and garment industry remains deeply embedded across hierarchical roles and organizational processes. The systematic disadvantage faced by women in terms of salary, training, and promotion calls for targeted legal interventions and enforcement of gender-sensitive workplace policies.

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