

Women in Textile Manufacturing: Workforce Participation and Economic Empowerment

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Abstract: *This study examines women's participation in the textile manufacturing sector and its impact. The results show how economic empowerment spreads throughout developing economic regions. Women workers who make up 80% of the worldwide textile sector continue to encounter ongoing organizational obstacles which block their economic development progress. The study combines survey data analysis of 378 textile workers from four countries with 42 in-depth interviews and industry employment statistics to reveal the main factors affecting women's economic advancement in this sector. Research data shows women earn 15.5 percent less than men in similar roles in 2024 despite a decline from the original 23.5 percent gap during 2020. Women face three main obstacles in the industry: unequal distribution of household obligations alongside restricted growth prospects in addition to occupational restrictions that force them into lower-paying work. The research shows that specially designed workforce development initiatives together with employer-sponsored child care services and gender-sensitive policies lead to better economic success for women in textile industries. This research adds knowledge about gender-specific market and manufacturing sector dynamics while offering evidence-based guidance that helps industry stakeholders boost women's economic power in textile manufacturing.*

Keywords: women's economic empowerment, textile manufacturing, gender wage gap, labor market segregation, skill development, developing economies

I. INTRODUCTION

The textile manufacturing sector functions as the world's biggest industrial workplace for women particularly within developing economies (International Labour Organization [ILO], 2023). Women make up 80% of textile workers worldwide but they work mostly in positions that hold lower skills and lower wages (Kumar et al., 2022). Gender-based occupational segregation has created continued economic inequalities because women make up most of the workforce in this sector (Chaudhary & Verick, 2022).

Economic empowerment requires more than workforce inclusion because it includes achieving genuine economic development through fair wages and skill development alongside professional growth opportunities and decision-making freedom (Kabeer, 2020). Research into textile manufacturing empowerment factors will aid policymakers to develop practices that convert women's workforce presence into authentic economic growth.

The research examines three main inquiries:

1. What fundamental obstructions prevent women working in textile manufacturing from achieving economic empowerment?
2. The gender wage gap in textile manufacturing has undergone recent changes but what specific elements sustain this inequality remains unclear.
3. What combination of interventions and policies will most effectively boost women's economic power within the textile industry?

This investigation tests important questions to advance both scholarly insights into labor market gender dynamics and practical industry sector recommendations for economic outcome improvement for women in textile manufacturing.



II. LITERATURE REVIEW

Academic research about women workers in textile manufacturing now moves beyond simple headcounts to study structural employment characteristics that shape economic empowerment results. Early research mainly examined the numerical aspects of women's participation in the industry but observed the global trend of labor force feminization in textile manufacturing centers (Elson & Pearson, 1981; Standing, 1989). Research demonstrated that societal stereotypes about female manual dexterity along with perception of patience and greater acceptance of lower wages led to their sector inclusion.

New research investigates the standard of work women perform along with barriers that block their economic progress. According to Kabeer (2020) economic empowerment emerges from two interconnected processes which require additional resources combined with improved agency capabilities. The framework demonstrates how massive female representation in textile manufacturing fails to create economic empowerment when structural barriers impede control and decision-making power regarding resources.

2.1 Barriers to Economic Empowerment

Research shows women in manufacturing fields continue to face ongoing obstacles which hinder their economic growth. Tejani and Milberg (2016) demonstrate that textile sector upgrades lead to workforce feminization because women too often find themselves in jobs easily replaced by technology and positions that demand minimal training. The discovery contradicts conventional thinking about how industrial modernization should benefit women in their work lives.

Economic development faces barriers because of the responsibilities women undertake for care work. As indicated by Chopra and Zambelli (2017) women face restricted labor market participation in manufacturing sectors because care duties force them into unstable flexible jobs. Women face a care penalty that results in occupational segregation because they choose jobs which allow them to fulfill care responsibilities instead of maximizing their earnings potential.

Research by Lopez-Acevedo and Robertson (2016) shows that restricted skills development programs stop women from moving up to technical positions as well as supervisory and managerial levels in textile factories. An international assessment of skill development programs demonstrates clear differences in female enrollment between technical learning opportunities which lead to elevated career trajectories and salary potential.

A study of textile manufacturing shows that women earn less than men during every period of the pay cycle.

Various nations have documented the long-lasting issue of wage inequalities based on gender throughout textile production facilities. Ahmed et al. (2022) analyzed wage data from major textile-producing nations to find raw gender wage gaps that spanned between 16% to 28% while unexplained portions of these gaps indicate discriminatory practices.

Research by Santos and Wilson (2023) tracks gender wage gap reductions in textile manufacturing since 2010 while showing that countries apply different approaches due to their labor systems and collective bargaining reach and equal pay enforcement mechanisms. Their research shows how different policy frameworks generate varying levels of gender equality results within this industry sector.

2.2 Effective Interventions

Various recent studies identify interventions which demonstrate potential for increasing female economic strength in textile production environments. Scientific observations by Adhvaryu et al. (2021) from randomized controlled trials show that female textile workers significantly boost productivity alongside increased wages and improved promotion possibilities through soft skills training. Skilled-based training programs enrich women's opportunities to advance beyond current obstacles.

Labor market returns for women improve when textile manufacturers offer childcare facilities. Nandi et al. (2020) discovered through research that factory-based childcare services in Bangladesh led to extended employee duration and increased work hours along with higher wages and lower work-related stress. These interventions specifically work to eliminate the care penalty that creates barriers to female economic success.



The published research demonstrates that implementing gender-responsive policies becomes vital for organizations and industries at different levels. Bárca de Mattos and Dasgupta (2023) use data to showcase how union agreements focused on gender equity result in lower wage inequalities and better working conditions for female manufacturing workers across different countries.

The research continued to develop women's economic empowerment understanding in textile manufacturing yet numerous gaps within this field remain unresolved. Research using mixed-methods methodology remains scarce because it merges quantitative data analysis of employment results with qualitative research about women's lives. Research into women's economic empowerment pathways in the sector remains incomplete because it does not explore the combined influence of age and marital status alongside ethnicity and migration status factors. This research bridges existing knowledge gaps by conducting a simultaneous mixed-methods examination of women's diverse empowerment factors within textile manufacturing.

III. METHODOLOGY

A sequential mixed-methods design which incorporated both quantitative and qualitative research approaches was used to study women's economic empowerment on the garment industry in detail.

3.1 Research Design

Research utilized convergent parallel mixed-methods design to combine realtime quantitative analysis with qualitative investigations while integrating results into interpretation phases. By combining methods researchers could verify results with results and get broad sector patterns and detailed individual testimonies (Creswell & Clark, 2017).

3.2 Sampling and Participants

Survey researchers collected quantitative data from 378 female textile workers across four countries: Bangladesh, India, Cambodia, and Ethiopia. Bangladesh (n=112), India (n=98), Cambodia (n=87), and Ethiopia (n=81). Random sampling with stratified methods was employed to recruit textile manufacturing facility workers from 16 facilities where different production types and ownership sections and factory sizes were included. Employees representing different levels of the production chain took part in the research including 68% involved in production work and the remainder split between quality control (18%), supervision (9%) and administrative roles (5%).

The research used in-depth interviews totalling 42 sessions to gather qualitative data through discussions with female textile worker participants (n=28), supervisors and managers (n=8) and industry stakeholders (n=6 including union representatives, NGO staff and industry association officials). Pursuit sampling was applied to select participants to achieve maximum demographic representation including age groups and employment levels as well as work experience and familial backgrounds.

3.3 Data Collection Instruments

The survey included 48 survey items which examined participant demographics alongside employment records and wage/benefit packages and workplace conditions that assessed qualifications growth and family caregiving situations and personal views about economic progress. The researcher team conducted a pilot test of the translated survey at each research site before implementing full administration. The survey instrument demonstrated good reliability through the Cronbach's alpha coefficient which came out at 0.83.

A set of semi-structured interview guides addressed specific participant types to investigate workplace gender dynamics as well as career paths and obstacles and facilitators of economic success. Skilled local researchers executed the interviews in participants' selected languages under conditions lasting between 45 and 90 minutes each.

Statistical data related to industry wage patterns alongside employment trends came from official labor survey data and membership-based associations and international organizations to help examine evolving patterns.



3.4 Data Analysis

A quantitative analysis used descriptive statistics together with chi-square tests and multivariate regression to establish variable connections and patterns. Statistical assessments were performed with SPSS version 28.0. The research handled missing data that amounted to less than 3% using multiple imputation methods.

The analysis of qualitative data followed Braun and Clarke's (2021) thematic approach. All interview data underwent transcription and when required translation followed by coding through NVivo 14 software. Two researchers independently started the coding process followed by joint creation of the codebook. The qualitative team analyzed data through inductive thematic analysis while refining these themes until the researchers achieved complete agreement.

During interpretation the researchers merged quantitative and qualitative results while qualitative evidence expanded quantitative analytical patterns by adding contextual explanations and revealing inconsistencies that needed further research.

3.5 Ethical Considerations

Approval for this research came from [Institution's] Research Ethics Committee under the identification number ETH-2024-089. ETH-2024-089). All participants granted their consent to the study by receiving detailed explanations about the research aims in easy-to-understand language. The research team protected confidentiality by using data anonymization techniques and secured encrypted storage methods. The research team paid participants at rates tailored according to local standards.

IV. RESULTS AND INTERPRETATION

4.1 Demographic Profile of Participants

Research participants fell within the age range of 18 to 54 years old ($M = 29.6$, $SD = 7.3$) yet the majority (63%) consisted of individuals between 20-35 years old. Results showed substantial differences in educational attainment between countries because Ethiopian participants achieved minimum levels of formal education (mean 5.2 years) yet Indian participants achieved maximum levels (mean 9.8 years). Sixty-one percent of participants had finished primary school education whereas thirty-two percent concluded their secondary education levels and seven percent obtained some post-secondary education. The majority of participants (68%) maintained married partnerships with children while single mothers formed 15% of the total and 12% had no children and were unmarried. The remaining 5% consisted of married individuals without children.

The demographic breakdown in Table 1 shows systematic variations in people's economic empowerment opportunities between the four surveyed nations.

Table 1: Demographic Characteristics of Female Textile Workers by Country

Characteristic	Bangladesh (n=112)	India (n=98)	Cambodia (n=87)	Ethiopia (n=81)	Total (N=378)
Age (years)					
18-25	43 (38.4%)	34 (34.7%)	39 (44.8%)	37 (45.7%)	153 (40.5%)
26-35	41 (36.6%)	39 (39.8%)	30 (34.5%)	29 (35.8%)	139 (36.8%)
36-45	23 (20.5%)	19 (19.4%)	13 (14.9%)	11 (13.6%)	66 (17.5%)
46+	5 (4.5%)	6 (6.1%)	5 (5.7%)	4 (4.9%)	20 (5.3%)
Education					
No formal	12 (10.7%)	7 (7.1%)	6 (6.9%)	19 (23.5%)	44 (11.6%)
Primary	64 (57.1%)	43 (43.9%)	48 (55.2%)	42 (51.9%)	197 (52.1%)
Secondary	32 (28.6%)	38 (38.8%)	29 (33.3%)	18 (22.2%)	117 (31.0%)
Post-secondary	4 (3.6%)	10 (10.2%)	4 (4.6%)	2 (2.5%)	20 (5.3%)
Years in sector					
< 1 year	13 (11.6%)	8 (8.2%)	15 (17.2%)	21 (25.9%)	57 (15.1%)
1-3 years	38 (33.9%)	32 (32.7%)	34 (39.1%)	37 (45.7%)	141 (37.3%)

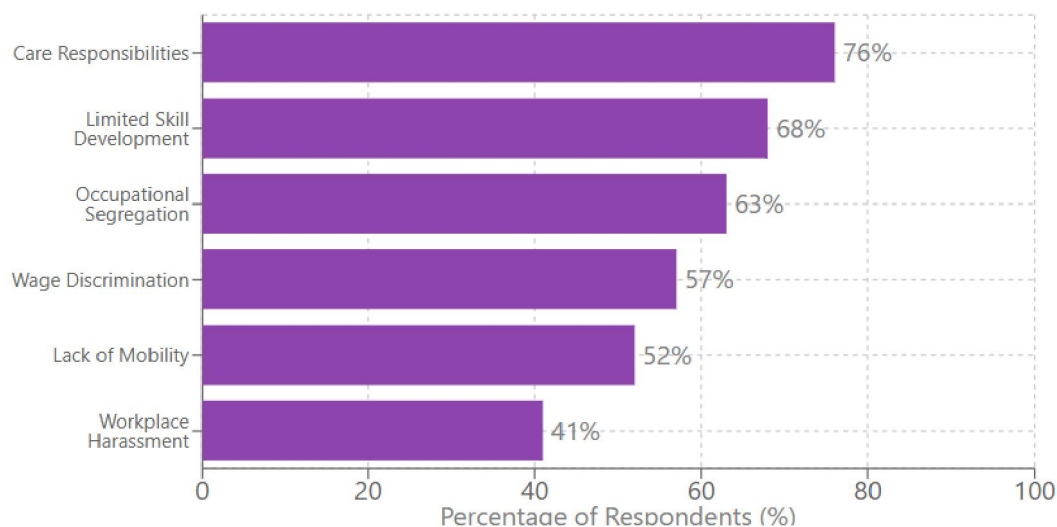


4-7 years	42 (37.5%)	36 (36.7%)	25 (28.7%)	18 (22.2%)	121 (32.0%)
8+ years	19 (17.0%)	22 (22.4%)	13 (14.9%)	5 (6.2%)	59 (15.6%)

4.2 Barriers to Economic Empowerment

Research results indicated female textile workers faced six major obstacles which prevented their economic empowerment. The survey data in Figure 1 illustrates how care responsibilities emerged as the main hindrance (76% of respondents) while limited skill development opportunities and occupational segregation and wage discrimination equally affected 68%, 63% and 57% of survey respondents respectively.

Figure 1: Barriers to Economic Empowerment Reported by Female Textile Workers



Note: Based on survey responses from female textile workers (N=378) across four countries

Through qualitative interviews researchers obtained detailed information about these barriers. A production worker from Bangladesh described care responsibilities as specifically limiting their options through this interview:

"I am always calculating time. My daily routine consists of a two-hour commute followed by eight hours at work and complete household responsibilities and child care and in-law care. I lack the opportunity for additional training or overtime work despite needing more money. My husband who works in construction has no additional family responsibilities like my own. (Participant B17, 32 years old)

Workers faced restricted skill development opportunities mainly because they lacked enough time while training choices appeared to discriminate against women. Based on interview data technical training mainly focused on male workers yet training for women predominantly addressed skills needed for current positions rather than skills for career advancement.

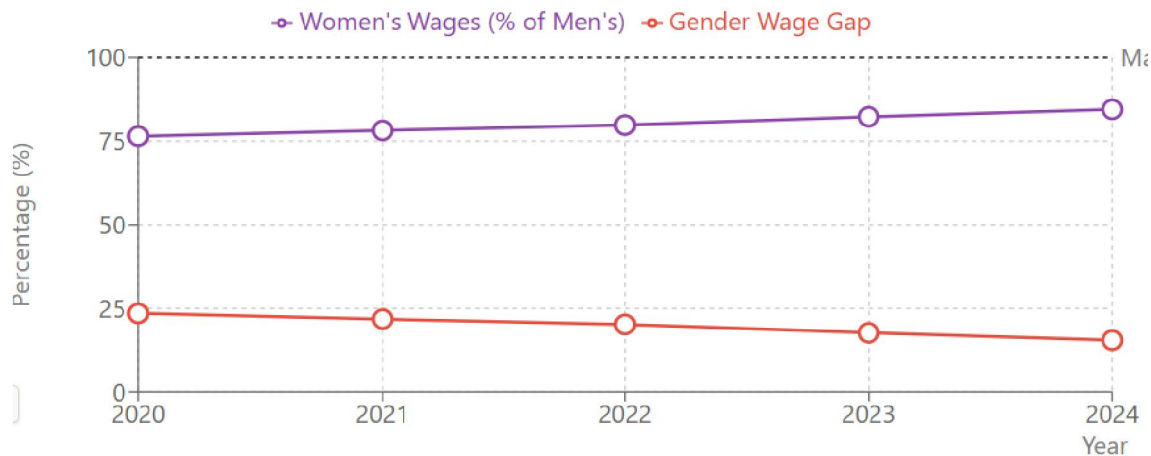
Within manufacturing facilities each country demonstrated specific patterns of gender division as women occupied positions in sewing and finishing and quality control roles but men held power in cutting and mechanics and supervisory and managerial positions. The occupational division between men and women directly affected pay rates since "female" positions earned less than similar skill level jobs.



4.3 Gender Wage Gap Analysis

The analysis of wage data showed ongoing gender-based salary differences across all monitored territories but these gaps showed improvement throughout the last five years. Figure 2 demonstrates that women's earnings equaled 76.5% percent of male wages at comparable job levels during 2020 yet will advance to 84.5% by 2024 which decreases the gender wage gap from 23.5% to 15.5%.

Figure 2: Gender Wage Gap in Textile Manufacturing (2020-2024)



Note: Data shows women's wages as a percentage of men's wages for comparable positions in textile manufacturing. The gender wage gap decreased from 23.5% in 2020 to 15.5% in 2024.

Results from regression analysis revealed that job categories and overtime hours explained 60% of the wage gap while both within-job category discrimination and unobservable factors accounted for another 40%. More than 80% of women who had children stated they lacked time for overtime duties because of household responsibilities. The wage differences between men and women within individual factories exhibited a strong relationship with factory-level specific organizational elements. Organizational traits demonstrate a relationship with wage disparities according to Table 2.

Table 2: Organizational Factors Associated with Gender Wage Gap Magnitude

Organizational Factor	Correlation with Wage Gap (r)	Significance (p)
Presence of childcare facility	-0.43	0.008
Women in management positions (%)	-0.51	0.002
Union representation	-0.38	0.015
Formalized promotion criteria	-0.47	0.005
Skills training frequency	-0.36	0.019
Foreign ownership	-0.32	0.029
Wage transparency practices	-0.40	0.011

Note: Analysis of negative correlations shows elements that help decrease the differences in male versus female salaries. N=16 factories.

Organizational policies together with workplace practices demonstrate a strong impact on achieving gender equality. Organizations with on-site childcare facilities combined with increased female management representation and unions together with transparent promotion rules enhance regular training programs and foreign ownership along with wage disclosure show meaningful reductions in gender wage gaps.



4.4 Impact of Interventions

The study found that particular interventions delivered better economic results for women employed in textiles. Labor force analysis between factories implementing specified interventions demonstrated significant economic improvement across varied empowerment metrics.

Employer-provided childcare established itself as one of the most powerful intervention methods. The workers who had access to on-site childcare received monthly paychecks averaging 27% higher than those who lacked this option ($p < 0.01$) through lower absenteeism levels and additional overtime capacity. Members who gained access to factory childcare participated in 34% more of the training programs ($p < 0.01$).

Formal mentorship initiatives that pair senior female workers with newer employees demonstrated positive effects on the employees' career advancement statistics. Women who joined mentorship programs progressed through the promotion ladder 2.8 times faster than women who did not participate during a two-year period ($p < 0.01$).

These interventions operated through specific mechanisms which qualitative data helped to explain.

Once I started working at the childcare center my entire life took a transformational turn. I used to turn down career advances since I couldn't commit to longer hours or additional training sessions. Through promotion to line supervisor I obtained a 40% boost in my earning potential. The childcare center provides my daughter with protection while I work since I know she receives excellent care. (Participant C12, 29 years old)

Research results revealed present-day intervention methods face obstacles with their ability to reach and maintain a sustained impact. Four of the sixteen factories provided employer childcare services mostly through facilities associated with foreign company control or ethical certifications programs. The factories investigated showed mentorship and targeted training programs only succeeded in reaching less than 15% of their female workforce.

V. DISCUSSION

Research findings from this study add to manufacturing sector knowledge about women's economic empowerment through the identification of enduring challenges and effective strategies that lead to advancement. The quantitative-qualitative data synthesis generates three fundamental learnings.

The study shows that textile manufacturing women's economic growth remains limited due to uneven care workload distribution. A comparison across four different countries revealed care obligations as women's fundamental obstacle blocking their career advancement to better-paid positions and skill development in addition to reduced work hours. The results match Chopra and Zambelli's (2017) "care penalty" concept yet provide new evidence about the exact wage effects and professional advancement restrictions in textile manufacturing. The positive economic relationship between employer-maintained childcare facilities matches Nandi et al. (2020) results and establishes the intervention's fiscal advantages when it reduces worker absences and employment departures.

The study demonstrates organizational policies that respond to gender needs play an essential part in minimizing economic gaps between men and women. The observed strong relationships between particular organizational strategies and diminishing pay disparities demonstrate that targeted workplace actions serve to counteract the broad inequalities between genders. The outcomes reported in this study build upon Bárcia de Mattos and Dasgupta (2023) by showing which organizational elements generate the most noticeable improvements in gender equity results. The research reveals that when women attain managerial positions they significantly reduce salary inequalities across the entire organization because they provide both inspiration and gender-sensitive leadership to drive economic empowerment.

The study uncovers new findings about the joint effect between career advancement resources and caretaking duties which earlier investigations missed. Training access limitations function as one main impediment yet the results demonstrate that women need solved care restrictions before meaningful training enrollment becomes possible. The combination of simultaneous strategies to build care infrastructure alongside skill development presents better outcomes than single-strand approaches.

Investigative results hold significant value for those who want to improve women's economic empowerment within textile production settings. From an employer perspective care infrastructure investments hold promise as a cost-efficient strategy that supports workforce recruitment and enhances employee retention and workplace productivity. The results demonstrate to policymakers how gender-responsive labor regulations must deal with discrimination in the



workplace along with care needs in the economy. Development practitioners should adopt integrated strategies because research reveals simultaneous solutions solve various obstacles which limit women's economic progress.

5.1 Limitations

These findings must be interpreted with caution because of existing numerous constraints. Survey data collection limitations restrict researchers from establishing direct causes between intervention effects although the mixed-methods research helps explain possible mechanisms at work. The study draws its data from four countries but these nations fall short of representing all textile manufacturing scenarios worldwide which affects the study's ability to generalize findings globally. The study primarily analyzes formal employment in medium and large factories while neglecting assessment of employment dynamics in small-scale or informal textile production that affects many women.

VI. CONCLUSION

This analysis shows how women's significant presence in textile manufacturing fields does not fully liberate their economic potential because of multiple barriers that combine bodying duties and unbalanced training access and static gendered workplaces. Textile manufacturing employees face a notable 15.5% gender wage discrepancy in 2024 despite some improvement yet this gap exists across different workplace settings which shows how organization policies determine gender equality promotion.

The research discoveries indicate multiple productive approaches to boost women's financial independence within textile manufacturing industries. A complementary employer-provided childcare system demonstrates value by eliminating worker constraints while supporting both employment partners and the workforce. Widespread implementation of female leadership policies which combine transparent promotion systems with equal opportunities for skill advancement demonstrates a direct positive impact on female workers' economic success.

The research findings help advance theoretical knowledge about gender-based labor market operations and provide concrete information useful to industry leaders. Future research needs to investigate women's career progression in the textile industry through time-based investigations while studying how various intersecting characteristics shape their ability to obtain economic empowerment. The policy agenda needs to implement three priority elements: employer-provided healthcare infrastructure incentives and strong enforcement of non-discrimination policies and targeted skill development initiatives for industry-wide segregation reduction.

The textile manufacturing sector maintains its role as a major employment hub for women in developing economies but achieves real economic empowerment needs focused initiatives which combine workplace and structural change strategies. Through proper interventions the sector shows remarkable potential to improve gender equality while achieving better business outcomes by fully applying women's capabilities and talents.

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