



INCREASING WOMEN'S REPRESENTATION IN AUTO TRACTOR MANUFACTURING

Insights from Swaraj, Mahindra & Mahindra

About

Through our Women in India Inc. project, in partnership with the Bill and Melinda Gates Foundation and the Center for Economic Data and Analysis (CEDA), we are spotlighting organisations that have demonstrated excellence in gender representation. This series of case studies focuses on selected private-sector organisations that have recently emerged as positive outliers in their respective sectors. The goal is to document gender-inclusive practices in the workplace by unpacking their gender-inclusive hiring, retention, and advancement practices and policies, inspiring others to adopt similar systematic approaches to bridge the gender gap.

The Udaiti Foundation

The Udaiti Foundation (TUF) is building data-backed evidence to accelerate Women's Economic Empowerment (WEE) in India. Udaiti focuses on improving the availability and accessibility of quality work for women, addressing barriers to women's work and entrepreneurship, and strengthening enablers that can create impact. We aim for every Indian woman to achieve her full economic potential as it will be a critical lever to help India become a \$10 trillion economy in the next decade.

Centre for Economic Data and Analysis

The Centre for Economic Data and Analysis (CEDA) has been set up by the Economics Department of Ashoka University with the primary objective of facilitating informed and data-driven discussion about key socio-economic developments in India. CEDA's in-house data portal hosts data from various administrative and official surveys covering fields including demography, employment, public finance, food prices and high frequency macroeconomic indicators. The data is supplemented with deep-dive analysis covering various dimensions of critical issues relating to the Indian economy. In addition to these, CEDA is currently working on an ambitious project to understand and find ways to overcome the demand-side barriers that are keeping women out of the workforce.

Women in India Inc.

'Women In India Inc.' (WIIn) is a collaboration between CEDA and TUF as a part of a larger CEDA project on women's economic empowerment. With the support of the Bill and Melinda Gates Foundation, CEDA has embarked on a wide-ranging project to understand and find ways to overcome the demand-side barriers that keep women out of the workforce. To achieve this, we at CEDA are taking a three-pronged approach – Inform, Investigate, Intervene – in order to enable women's entry, retention and progression in India's workforce. Visit <https://ceda.ashoka.edu.in/womens-economic-empowerment/> for more details.

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Executive Summary

According to Deloitte's Blue Collar Workforce Trends Report 2023, women's participation in the blue-collar workforce has risen to 8% (1 in 12), up from less than 2% a couple of decades ago. Sectors such as life sciences, automotive, and engineering design are leading the way in gender diversity, driven by factors like high automation levels, the need for skilled talent, and premium pay. The report, which surveyed 104 organizations and over 300 manufacturing units, highlights the positive impact of these trends on gender diversity in traditionally male-dominated industries.^{1, 2}

As recognition of women's contributions to the auto manufacturing sector grows,³ both manufacturing companies and the government have made concerted efforts to create an enabling environment by enhancing infrastructural, policy and legal frameworks to support women's participation. Swaraj, Mahindra & Mahindra, in particular, have been navigating these challenges by introducing targeted initiatives to induct women across various roles on the shop floor. This Case Study explores the Mahindra & Mahindra Swaraj Division (SD) and Swaraj Engines Limited (SEL), a leader in the Tractor and Farm machinery manufacturing industry, and its efforts to improve female labour force participation on the shop floor. The company in its gender diversity journey has encountered several challenges which include:

Key Challenges

1

Restricted Talent Pool and Limited Awareness

The out-migration of women from Punjab (where Swaraj is located) to pursue higher education or in pursuit of alternative employment opportunities,^{4, 5} has significantly reduced the available candidate pool, particularly in technical fields like Diesel Mech., Tractor Mech., Turner, Fitter etc. Additionally, there is low awareness of manufacturing as a viable career option for women.

2

Non-Availability of Women in Technical Education

A key barrier to hiring women in manufacturing is the lack of women candidates in technical education.⁶ Most roles on the shop floor require Industrial Training Institute (ITI) certifications or diplomas, yet very few women opt for technical

1 Deloitte. [Deloitte India Talent Outlook 2023](#). Deloitte India.

2 Business Standard, 2023. [Number of Women in Blue-Collar Jobs Increasing across Manufacturing Sector](#).

3 South Asia Development Updates, World Bank Group. 2024. [Women, Jobs and Growth](#).

4 Hindustan Times, 2018. [70% workforce in Punjab cities is from outside state](#).

5 Singh, Lakhwinder, Sukhwinder Singh, and Deepak Kumar. "Rural-Urban Migration and Its Impact on Socio-Economic Conditions: A Case Study of Migrant Households in Punjab and Haryana." *International Journal of Business and Economic Management Research* 5, no. 10 (2016): 234-249. <https://skirec.org/wp-content/uploads/2017/01/IJBEMR5Oct16-4082-1.pdf>.

6 The Economic Times, 2024. [Challenges in hiring freshers in manufacturing sector](#).

trades. For instance, out of more than 17,000 women (across 49 women ITIs in Punjab) only 400 women have enrolled in technical trades.

3**Family Mindsets and Societal Barriers**

Cultural factors play a significant role, with many women hesitant to work in heavy industry due to preconceived notions about the nature of the work, compounded by family opposition, particularly in financially stable households that discourage women from pursuing industrial jobs. Additionally, there is considerable resistance to women working night shifts stemming from a combination of social norms and concerns about inadequate transportation and safety infrastructure, according to Swaraj.

In light of these challenges, Swaraj has been implementing various targeted initiatives to increase hiring and retention of women across various roles on the shopfloor. Some of these initiatives include:

Targeted Interventions

1**Strategic Partnerships and Outreach Initiatives**

Swaraj has partnered with 15 ITIs, 5 polytechnic colleges, and Advanced Technical Institutes (ATIs), including women-only institutions, to expand their talent pool. They have also launched awareness campaigns and parent counselling sessions, aimed at promoting women-friendly policies such as safety and security arrangements for women working night shifts, a buddy system for new women recruits, and women guards during every shift, etc.

2**Inclusion and Diversity Mindset**

Conscious Inclusion workshops and training sessions are conducted at all levels on the shop floor to strengthen diversity initiatives, fostering a more inclusive work environment for women. Awareness workshops with people managers to embrace diversity in the workplace and identified Inclusion SPOCs for continuing awareness at their department level.

3

Hire, Train & Deploy (HTD)

Customised dexterity modules are designed for non-technical women and those with 10+2 qualifications to equip them with the necessary technical skills. These programs include a two-month on-the-job training (OJT) period, conducted by senior operators, to ensure effective skill development. Post training, female employees are deployed on the shopfloor.

4

Employee Engagement and Recognition

Swaraj actively engages its workforce by providing various forums for appreciation, recognizing and acknowledging the exceptional contributions made by women employees on the shop floor.

These efforts have significantly increased women's participation on the shop floor, raising the gender ratio from 1.5% in 2013 to over 10% in 2024. The number of women on the shop floor grew from 48 in March 2013 to 736 by September 2024—a nearly 13-fold improvement. While this progress is impressive, there are still key areas needing further enhancement.

Recommendations and Way Forward

1

Ergonomic Restructuring

Ergonomic modifications should be extended to the oldest manufacturing locations to improve accessibility and comfort for women employees. This can include adjusting the height of workstations to better suit the average height of women and redesigning equipment like lifts, tackles, and torquing tools to accommodate women workers' physical needs.

2

On-Roll Positions for Women

Create more on-roll roles specifically for women, ensuring greater job security and long-term career progression.

3

Leadership Representation

Increase the number of women in managerial and officer roles in the shop

floor, particularly in core manufacturing areas, to enhance gender diversity in leadership.

4

Transportation Support

Expand transportation facilities to cover more routes, making it easier and safer for women employees to commute.

5

Accommodation Assistance

Provide initial accommodation support for women ensuring a smoother transition and retention.

Swaraj's approach to these bottlenecks provides valuable lessons for the auto manufacturing industry and outlines strategies that can help establish a positive model within the manufacturing and related ecosystems, encouraging other companies to explore similar initiatives.

Introduction

Riya, who moved from Himachal Pradesh to Mohali, has been a dedicated member of Swaraj for the past 1.5 years. She values the focused, distraction-free work environment on the shop floor, where she feels secure. Her onboarding was smooth, thanks to a supportive manager who helped her navigate challenges. Regular monthly meetings with Employee Relations (ER) ensure any concerns are promptly addressed. Now a mentor herself, Riya takes pride in assisting other women during their training, fostering a strong sense of community. The buddy scheme, timely recognition, and initial experience working in a women-led line helped her grow, allowing her to become a multi-tasker, working across various departments, including the night shift.

Like Riya, for many women on the shop floor, the journey to break through gender stereotypes and work in a labour-intensive industry has been encouraging. At Swaraj, there is a concerted effort to increase women's participation on the shop floor and expand opportunities for women. Gender diversity and inclusiveness are top priorities, with a strong policy push that cascades down to the factory level. Swaraj is committed to significantly boosting the number of women employees on its shop floors, aiming for each plant to employ 300 women by the financial year 2025. Currently, 736 women are employed on Swaraj's shop floor (>10% of the workforce)

highlighting a unique opportunity to spotlight the company's gender inclusion journey and gain insights into how it is actively enhancing its hiring and retention practices. By broadening the talent pool and leveraging the unique skills and perspectives that women bring to the industry, Swaraj offers valuable lessons in advancing gender diversity and inclusion in a traditionally male-dominated auto manufacturing sector.

Methodology

The Udaiti Foundation (TUF) team has been collaborating with Swaraj over the past year (December 2023 - August 2024), focusing on their plants in Mohali, Punjab. This partnership has provided valuable insights into the role of a leading automotive company in advancing women's participation and promoting gender inclusivity in a part of the country where women traditionally would not be involved in this kind of work.^{7,8} By examining Swaraj's efforts to hire and advance women in the workforce and implement supportive policies, we have attempted to understand how these initiatives contribute to creating a more inclusive workforce and acknowledging women's economic potential. The automotive sector remains predominantly male-dominated.

Under such circumstances, Swaraj is making concerted efforts to significantly increase the gender ratio on the shop floor over the past few years. Over the past three years, the company has successfully tripled the overall representation of women across its SD and SEL plants, while maintaining a gender diversity rate of 22% in its new plant. Given that southern states, such as Tamil Nadu, exhibit higher women's participation in manufacturing⁹ - with Tamil Nadu accounting for 43% of all women working in factories¹⁰ - studying a northern state like Punjab, where women's out-migration, regulatory challenges, and the cultural mindset limit workforce inclusion,¹¹ is essential for identifying and addressing the specific bottlenecks affecting women's participation.

The TUF team employed a combination of primary methods, including warehouse visits and interviews with women workers, shop floor supervisors, and Plant Heads, alongside secondary research methods such as document analysis and desk literature, to develop a comprehensive case study on Swaraj:

7 Kaur, Pardeep and Gian Kaur. "Factors affecting female labour force participation in Punjab: An inter-district analysis." (2012).

8 Singh, S., & Parida, J. K. (2022). Employment and earning differentials among vocationally trained youth: Evidence from field studies in Punjab and Haryana in India. *Millennial Asia*, 13(1), 142-172.

9 Hish, N. "The Impact of Labor Market Policies on Youth Employment: Evidence from the U.S. and Europe." International Monetary Fund Working Paper WP/15/55 (2015). <https://www.imf.org/external/pubs/ft/wp/2015/wp1555.pdf>.

10 Centre for Economic Data & Analysis, 2023. [How many women work in India's factories?](https://skirec.org/wp-content/uploads/2017/01/IJBEMR5Oct16-4082-1.pdf)

11 Srivastava, Pooja Prakash, and Neha Saini. "Challenges for Women Employees in Haryana and Punjab: A Comparative Study." *Journal of Informatics Education and Research* 4, no. 2 (2024): 2102-2107. <https://skirec.org/wp-content/uploads/2017/01/IJBEMR5Oct16-4082-1.pdf>.

1

Shopfloor Visits

The TUF team visited Swaraj's Plants - Swaraj Division and Swaraj Engines Limited in Mohali, Punjab, four times between December 2023 and June 2024. The team observed the plant facility operations - seeing women in action and evaluating the infrastructure facilities (e.g., CCTV cameras, washrooms, POSH and employee benefit notices and information, safety measures for women in shopfloor positions, etc.).

2

Semi-Structured Interviews

The team developed distinct discussion guides for interviewing different stakeholders, including management and shop floor employees

- Four in-depth, semi-structured interviews were conducted with women employees on the shop floor at the Swaraj plant in Mohali. These one-on-one interviews followed a pre-designed discussion guide, with questions focused on understanding their shifts, benefits, educational background, previous work experience, and the hiring process.
- Four virtual interviews were conducted with shop floor supervisors using a pre-designed discussion guide to gain a detailed understanding of their on-ground experiences and perceptions regarding the inclusion of women on the shop floor. The interviews focused on key areas such as the contributions of women to shop floor operations, the benefits of their presence in terms of workplace environment and productivity, and the challenges and advantages perceived by the supervisors.

3

Discussion with Management

Throughout the research and case study development, the TUF team engaged in multiple rounds of discussions with Swaraj management, including their Head-HR, and other key personnel. These discussions were integral to addressing questions, clarifying insights, filling knowledge gaps, and ensuring accurate interpretation of the findings during the data collection and analysis phases.

4

Desk Literature Review

A thorough desk literature review was conducted alongside shop floor visits and interviews to gather insights from existing initiatives and industry best practices, both within and beyond the automotive sector. The data collected

The data collected was subjected to thematic analysis, focusing on key themes such as hiring, retention, and advancement in manufacturing. This literature review informed the development of Areas of Inquiry, which helped identify knowledge gaps and refine further questions for the company case study.

5

Conversations with other Auto Sector Leaders

Udaiti conducted a few short conversations with stakeholders at other Auto Sector Leaders, such as Tata Motors and L&T Technology Services. This gave us a more holistic view of the landscape, along with challenges and potential solution areas for improving women's representation.

The Auto Manufacturing Sector: Current Trends in Gender Diversity

India's manufacturing sector is poised for growth, with a projected CAGR of over 4% during the forecast period of 2023-2028.¹² Contributing approximately 16-17% to the nation's GDP, the sector is a critical driver of macroeconomic growth and technological advancements, employing nearly 20% of the country's workforce.¹³ Within this landscape, the participation of women, particularly in the Automobile and Auto Components sector, has been gradually increasing. According to an analysis of the companies listed in the National Stock Exchange in FY 2022-23, women now represent 13% of the workforce in the Automobile and Auto components sector (in NSE-listed companies), with 9% at the employee level and 15% at the worker level.¹⁴

The sector has traditionally been male-dominated, but India's manufacturing landscape has undergone a significant transformation with an increasing number of women joining the workforce.^{15, 16} There has been a noticeable shift towards hiring more women, not only on the shop floor

¹² Mordor Intelligence. 2022-2023. [India manufacturing market size & share analysis - growth trends & forecasts.](#)

¹³ Manufacturing Sector in India Industry Report, 2024

¹⁴ Close the Gender Gap, 2023, The Udaiti Foundation. Note: This analysis focuses exclusively on NSE-listed firms.

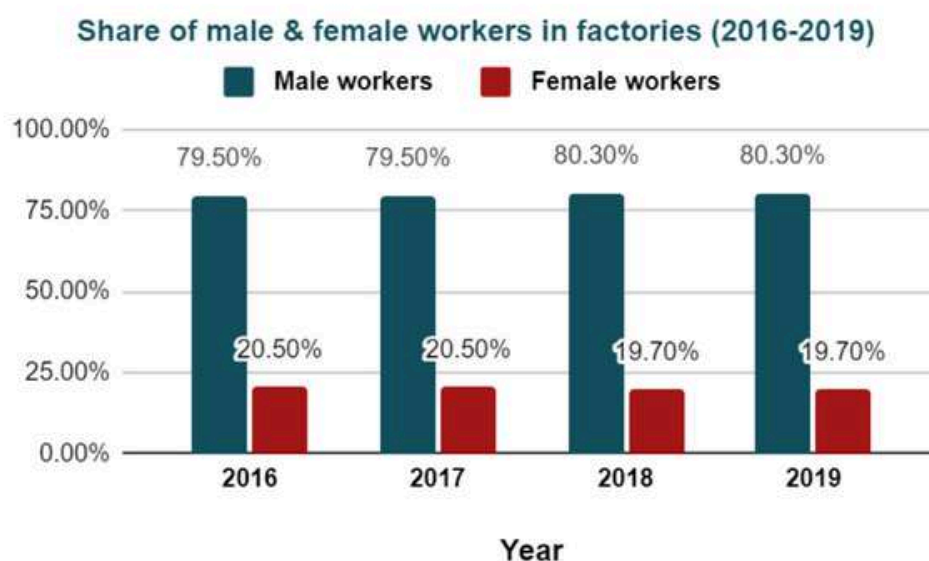
¹⁵ Ministry of Statistics and Programme Implementation (MOSPI). Women and Men in India 2023. Government of India, 2023.

https://www.mospi.gov.in/sites/default/files/reports_and_publication/statistical_publication/Women_Men/mw23/CompetePublication_WM2023.pdf.

¹⁶ Teamlease. [Women's Increasing Role in India's Manufacturing.](#)

activities but also in executive positions. In the "organised"¹⁷ manufacturing sector, participation of women has stagnated at 20% for nearly two decades, as reported in the Annual Survey of Industries (2019-20). According to the report, of the 8 million workers employed in India's formal manufacturing industries in 2019-20, 1.6 million (19.7) were women.

The industry has begun to recognize the importance of gender diversity,¹⁸ but much work remains to be done to close the gap and fully harness the potential of women in driving innovation and growth within the manufacturing sector. According to a study conducted by the Consulate General of Sweden in India, women are underrepresented in India's manufacturing sector. The baseline study based on interviews in 25 companies across sectors highlights how women constitute only about 3% in core engineering roles and 12% in other engineering disciplines. This is in stark contrast to the services sector, where women's employment ranges from 27% to 40%.¹⁹



(Annual Survey of Industries, 2020)

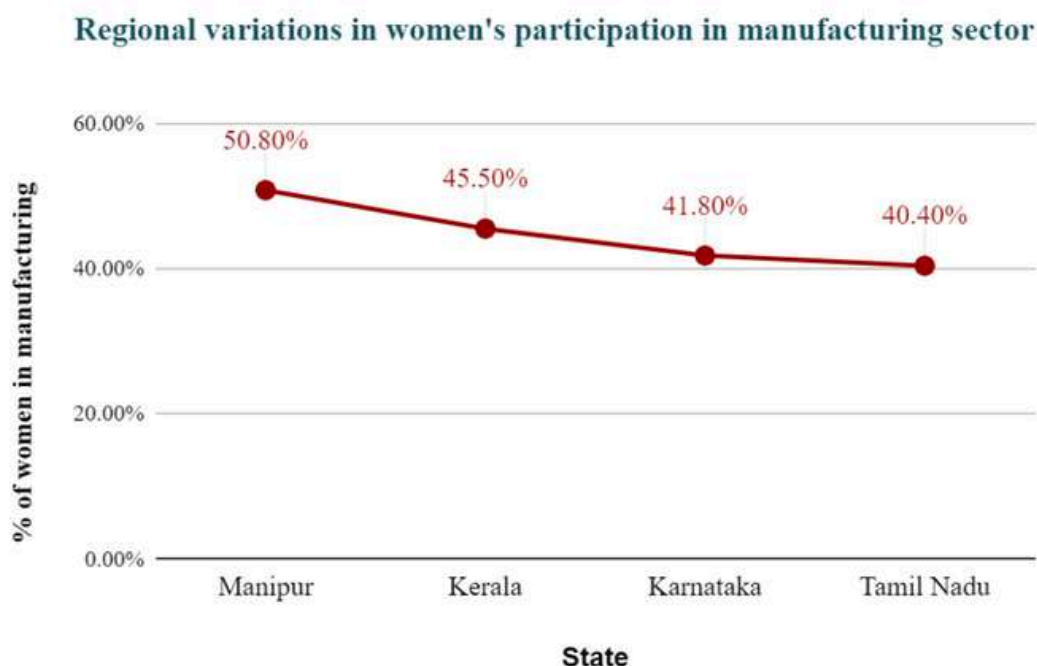
Gender disparities in the manufacturing sector are particularly pronounced across regions, with nearly three-fourths (72%) of all women factory workers concentrated in the Southern region. According to a study conducted by the Centre for Economic Data and Analysis (CEDA), Manipur stands out as the only state with a gender-balanced workforce in manufacturing, where women made up 50.8% of the workforce in 2019-20. Following Manipur, Kerala had a women workforce share of 45.5%, Karnataka 41.8%, and Tamil Nadu 40.4%.²⁰

¹⁷ Units i.e. factories with 10 or more workers that use power or those with 20 or more workers operating without the use of power

¹⁸ The Secretariat. 2024. "[Women Power on the Shopfloor Rising as Firms Recognise Their Unique Competencies.](#)"

¹⁹ Consulate General of Sweden in India, 2018

²⁰ Centre for Economic Data & Analysis, 2023. "[How many women work in India's factories?](#)"



In the Indian context, several factors hinder women's workforce participation, including gaps in educational attainment, restrictive social norms, institutional frameworks, and income levels, among other social, economic, and policy-related challenges. In the manufacturing sector, these obstacles are further exacerbated by issues such as physical safety concerns, infrastructural deficiencies, legal and regulatory barriers, shift work challenges, and conscious or unconscious biases in recruitment and promotion.²¹ Additionally, women face lower access to digital technology and participate less in science, technology, engineering, and mathematics (STEM) fields than men, resulting in a less gender-balanced talent pool.²²

An analysis by the Centre for Economic Data and Analysis (CEDA), based on data from the Centre for Monitoring Indian Economy (CMIE), reveals that the manufacturing sector in India provided 27.3 million jobs in 2020-21, accounting for nearly 25% of all organised sector jobs, even amidst COVID-induced disruptions and job losses.²³ The critical role of manufacturing in driving employment and economic growth is underscored by the government's "Make in India" initiative launched in 2014, which aimed to create 100 million manufacturing jobs by 2022. While these targets remain unmet, the manufacturing sector holds immense potential for employment generation, particularly for women. This is evident in the focused efforts of large automotive manufacturers, who have prioritised the hiring and retention of women on their factory floors.²⁴

21 Mugenyi C., Nduta N., Ajema C., Afifu C., Wanjohi J., Bomett M., Mutuku C., & Yegon E. (2020). *Women in Manufacturing: Mainstreaming Gender and Inclusion*. Nairobi, Kenya: International Center for Research on Women (ICRW) and Kenya Association of Manufacturers (KAM).

22 *The future of Women at Work*, McKinsey Global Institute, 2019

23 Centre for Economic Data and Analysis (CEDA). *CEDA-CMIE Bulletin Booklet.* Ashoka University, 2024. <https://ceda.ashoka.edu.in/ceda-cmie-bulletin-booklet/>.

24 The Economic Times. 2022. *More women enter auto manufacturing as Tata Motors, Hero, MG accelerate gender diversity drive*.

Building a Diverse Workforce: Women's Participation on Swaraj Shopfloor

In India, operating heavy-duty machinery and performing tasks on the factory shop floor have traditionally been seen as challenging for women. This perception is rooted in societal norms and reinforced by restrictive policies, such as the Factories Act of 1948, which historically prohibited women from working in factories during night shifts. Additionally, one of the biggest deterrents preventing women from joining the manufacturing shopfloor is the physically demanding nature of work. The situation is further bleak in most northwestern states including Punjab, where deeply ingrained gender norms and societal attitudes toward women working contribute to keeping women out of the workforce.^{25,26} Involving heavy lifting and increased physical labour on the shop floor, manufacturing has been traditionally seen as a male bastion.²⁷ Gender stereotypes, irregular shifts, infrastructural lack and the compliance landscape in India have kept women out of the automotive sector for a long time.²⁸



25 Jean Dreze and Amartya Sen, *India: Economic Development and Social Opportunity*, Oxford University, Press, Delhi, 1995.

26 Baruah, Ashapurna & Singh, Indervir. "Employment of Women in Rural Punjab: Status and Challenges." *Economic and Political Weekly* 55, no. 26-27 (2020): 18-21. <https://www.epw.in/journal/2020/26-27/review-rural-affairs/employment-women-rural-punjab.html>.

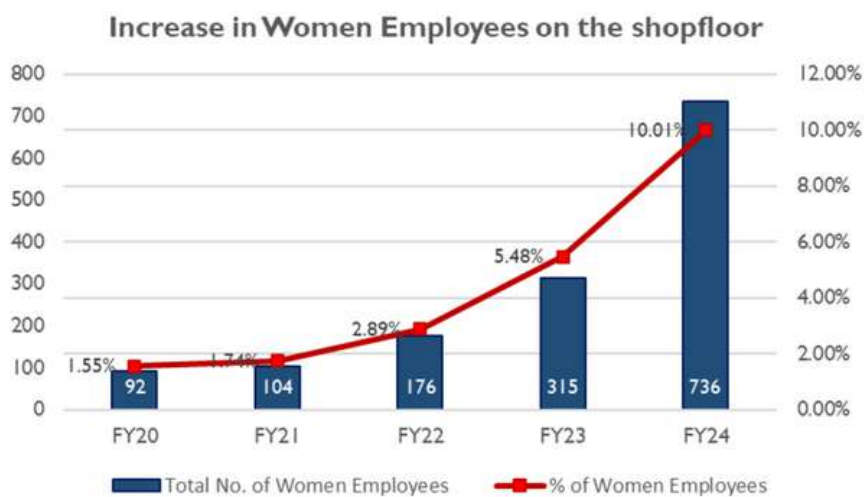
27 Business Standard, 2024. [Automation paves way for women in originally male-dominated mfg sector.](#)

28 The Economic Times, 2023. [Gender Gap in Manufacturing: The Current Status and how companies can bridge it.](#)

Against this backdrop, automotive companies like Swaraj, have been making focused efforts to increase women's representation on the shop floor across their various plants, with an increased intent to engage with a gender-diverse workforce. As a result of these efforts, the overall gender ratio on the shopfloor has increased from 1.5% to >10.01% between 2013-2024.

Table 1: Total Number and % share of Women Employees across SD & SEL shopfloor between FY2020-FY2024

Year	Total Number of Employees	Total No. of Women Employees	% of Women Employees
FY20	5935	92	1.55%
FY21	5989	104	1.74%
FY22	6093	176	2.89%
FY23	5747	315	5.48%
FY24	7352	736	10.01%



Swaraj Division, originally Punjab Tractors Ltd. and acquired by Mahindra & Mahindra in 2007, was one of the pioneers in the automotive manufacturing sector in bringing women into shop

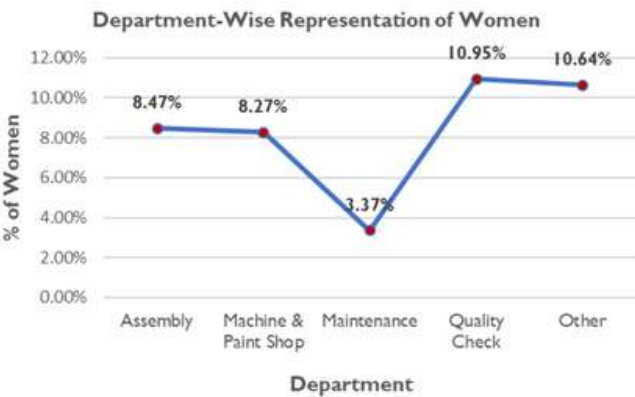
floor roles. This initiative began in 2012, with the company aiming to increase female labour force participation by hiring the first women employees in the Assembly and Machine Shop. Swaraj Division started this effort in 2012, and Swaraj Engines Limited launched a similar initiative in 2022. In both cases, the overall gender ratio on the shop floor was improved, on average increasing from 3% to >9% in Swaraj.

Gender Representation by Department

The distribution of women employees across different departments at Swaraj shows a strategic effort to integrate more women into various roles, reflecting the company's commitment to improving gender diversity on the shop floor. In departments such as Assembly, Machine Shop, Paint Shop, and Quality Assurance, women have a notable presence, although the majority belong to the floating workforce. This indicates a growing trend of opportunities for women in on-roll positions within the company. For example, the Assembly Department currently has the highest proportion of women, holding 20% of on-roll positions. Looking ahead, there is significant potential for long-term growth and association in these roles.

The Quality department stands out with a relatively higher proportion of women in permanent roles, reflecting a greater inclusion of women in technical and quality assurance functions. On the other hand, departments like Maintenance and Others have a lower representation of women, particularly in permanent positions, suggesting the need for focused interventions in traditionally male-dominated areas. A significant development in increasing women's participation on the Swaraj shop floor has been their deployment in the foundry department. Foundry work demands considerable physical strength, as it often involves lifting heavy objects and requires workers to walk or stand for extended periods. Physical coordination is also crucial to ensure both personal safety and the safety of colleagues. Currently, 32 women are deployed in the foundry, marking a notable step toward gender diversity in this traditionally male-dominated role.

Overall, the data shows significant progress in employing women, but it also highlights areas for further enhancement, particularly in increasing permanent positions and expanding the representation of women in technical and maintenance roles.



Gender Representation by Department

At Mahindra, an analysis of payout data shows a slight difference in median earnings between male and female employees. Women's median CTC is 1.74% lower than men's, primarily due to differences in average length of service: 6 years for women compared to 9 years for men. The overall median CTC across the company shows minimal disparity.

Swaraj's Gender Diversity Journey: Current Bottlenecks

Technological advancements, including the integration of automation and robotics, have played a significant role in increasing women's participation on Swaraj's shop floor. To address evolving skill requirements, the company has focused on training and retaining both new and existing workers, with a strong emphasis on on-the-job training. While Swaraj has made strides in creating more equitable pathways into manufacturing employment, there are still notable bottlenecks that hinder the achievement of a fully inclusive shop floor workforce.

Lack of Skilled Employees Mapped to Industry Needs

A key challenge for Swaraj in hiring more women is the skills mismatch between potential employees and industry needs. Traditionally, manufacturing apprenticeships have been limited, focusing on existing workers moving into technical roles rather than serving as a primary route to skilled jobs. Unlike construction, where apprenticeships are common, manufacturing relies on on-the-job training,²⁹ which has resulted in a shortage of women with the necessary technical skills, creating a significant barrier to increasing participation of women in the sector.³⁰

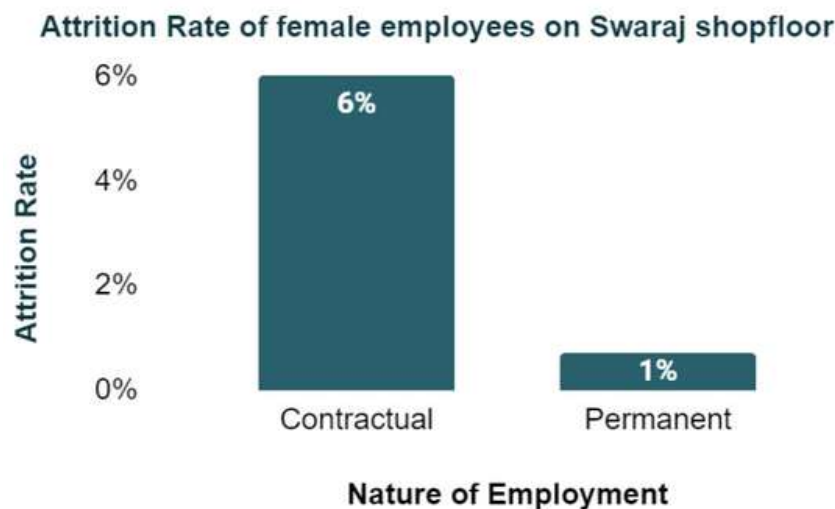
²⁹ Institute for Women's Policy Research, 2023. [Advancing Women in Manufacturing: Perspectives from Women on the Shopfloor](#)

³⁰ Deloitte. Diversity in Manufacturing: Driving Innovation Through a Diverse Workforce. Deloitte Insights.

1. Swaraj's recruitment strategy primarily targets candidates with ITI or diploma qualifications in technical fields, which poses a challenge in attracting women, as they are less likely to pursue these technical courses. Despite having over 17,000 women across 49 women ITIs in Punjab, only 400 are enrolled in technical trades such as draughtsman, diesel mechanic, and machinist.
2. Employees from non-technical trades, such as Computer Operator and Program Assistant (COPA), often require additional time to adjust despite receiving training, compared to those with a technical background. Moreover, individuals with diplomas or ITI certifications in technical fields frequently prefer less labour-intensive industries like pharmaceuticals or FMCG, which complicates the recruitment and retention of skilled workers in manufacturing.

Attrition

At Swaraj, the attrition rate is 6% among contractual women employees, compared to just 1% for permanent women employees. One of the primary factors contributing to the high attrition rate, particularly among contractual employees, is the lack of permanent positions within the company. This is also reflected in the average employment duration, with permanent employees staying for 4 years on average, while contractual employees remain for only 1 year.



Other contributing factors to the attrition of women employees include relocation, often due to family obligations or spousal transfers, the pursuit of better financial opportunities in more secure or higher-paying positions, and personal responsibilities such as marriage or childcare,

which can limit their availability and willingness to continue in demanding roles.

Regulatory Landscape and Policy Compliance

Labour laws have traditionally restricted women from working night shifts due to safety concerns and societal norms, resulting in stringent regulations across various statutes. Key legal frameworks, such as the Sexual Harassment of Women at Workplace Act (2013), the Factories Act (1948), and state-specific Shops and Establishments Acts, closely regulate women's night work. In Punjab, regulatory rules require a night shift to include at least 10 workers, with a minimum of 25 women or two-thirds of the total workforce, whichever is lower. The approach involves transitioning both current employees and new hires to a rotational schedule across three shifts. This compliance landscape poses challenges for Swaraj, particularly because:

1. **Variation in the Production Plan** often results in the partial operation of the C-shift, making it difficult to deploy women consistently. With production schedules fluctuating, maintaining the minimum required number of women workers during night shifts becomes a logistical challenge.
2. **Family restrictions** regarding working night shifts are also a key reason that further hinders women workers. Cultural and societal norms, particularly concerns around safety and the stigma associated with women working late hours often lead to families discouraging women from taking on night shift roles.

Out-Migration of Women

According to a study titled '*A Study on Overseas Migration from Rural Punjab: Trends, Causes, and Consequences*',³¹ more women from Punjab have been migrating overseas in recent years. Between 1991 and 2015, male migrants significantly outnumbered women migrants. However, since 2016, the trend has reversed, with women migrants (65%) outnumbering men (35%) as the flow of Punjabi migrants to foreign countries has continued. The research also indicates that a higher percentage of women migrants (64.37%) travelled on student visas, compared to male migrants (33.73%). The study attributes this shift primarily to low income and the lack of employment opportunities, with 72% of respondents citing these as the main reasons for out-migration. Consequently, there is a shortage of local women seeking employment in the region.

31. Sharma, S., Guleria, A. and Kaur, M. (2023). *A Study on Overseas Migration from Rural Punjab: Trends, Causes and Consequences*. Department of Economics and Sociology, Punjab Agricultural University, Ludhiana-141004

Currently, 90% of the women employed in the Swaraj factories are migrant workers from states like Himachal Pradesh, Uttarakhand, Bihar, Uttar Pradesh, Rajasthan, and Haryana.

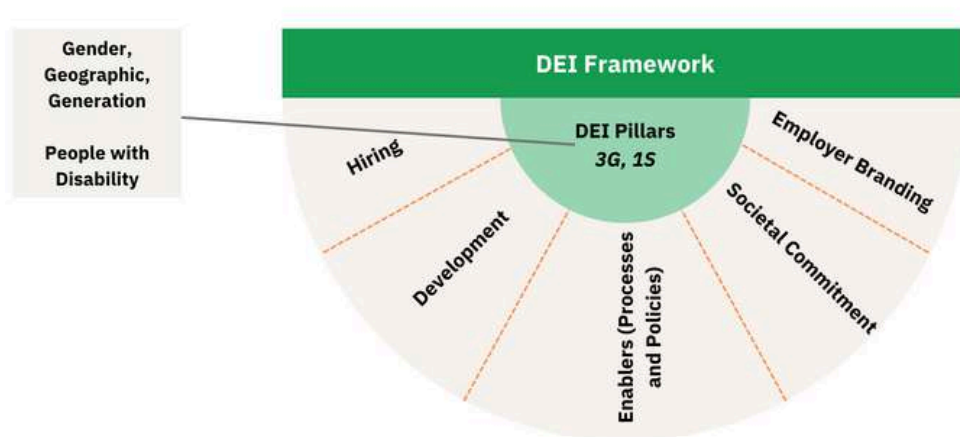
Strategies for Enhancing Gender Inclusion: Initiatives on the shopfloor

Manufacturing plants are increasingly focusing on hiring women due to several compelling factors. Shopfloor supervisors highlight that women significantly enhance productivity and agility in the workplace. Their attributes—such as precision, dexterity, sustained focus, strong work ethic, and loyalty—contribute to improved operational efficiency. Women also exhibit lower attrition and absenteeism rates compared to their male counterparts. For instance, while attrition rates among blue-collar male workers in manufacturing average 5-6% per month, blue-collar female workers' attrition is 40% lower, ranging from 3% to 3.6%.³²

In addition to these benefits, women demonstrate strong learning abilities and effectively operate remote machines that handle heavy lifting, making them well-suited for assembly line roles. This alignment with industry needs is reflected in the experiences of the leadership team at Swaraj's SD and SEL divisions, where women employees are recognized for their proficiency in handling parts, meticulous attention to detail, and task ownership.

The responsibility for establishing gender diversity goals at Swaraj is primarily guided by the Group Vision and Diversity & Inclusion (D&I) policy, which serves as the overall framework. The CEO and the Human Resources (HR) Head play a crucial role in determining specific numerical targets across hiring and retention, aligning these goals with the objectives set by the Head of Manufacturing. This structured approach ensures that gender diversity initiatives are integrated across the organisational hierarchy, with clear accountability for their implementation.

³² The Economic Times, 2024. [Companies shopping for workers floored by women.](#)



Swaraj's DEI (Diversity, Equity, and Inclusion) framework, which underpins the initiatives at Swaraj, is structured around two primary pillars: 3G and 1S. The 3G pillar addresses Gender, Geography, and Generational diversity, while the 1S pillar focuses on individuals with disabilities. This framework directs the deployment of various initiatives across five key areas: Hiring, Development, Enablers (Policies and Processes), Societal Commitment, and Employer Branding. Interventions are strategically aligned with these pillars to ensure a thorough and effective execution of Swaraj's DEI goals.

Hiring

To promote inclusivity in recruitment, companies can engage with diverse talent pools by partnering with vocational institutes, community organisations, and nonprofits serving underrepresented groups. Toward this end, Swaraj has been making efforts to diversify their hiring practices to widen their talent pool and make it more inclusive:

1

Partnerships and Focused Hiring

- Swaraj has forged partnerships with around 12 Industrial Training Institutes (ITIs), 5 polytechnic colleges, and Advanced Technical Institutes (ATIs), including several that are women-only.
- Swaraj has significantly boosted its recruitment of women employees through a combination of targeted initiatives. These include focused drives at educational institutions, participation in government-organized job fairs, and awareness campaigns. As a result, the number of women employees on the shop floor increased by over 300% between FY22 and FY24.

2

Counselling Parents

The manufacturing sector has traditionally been viewed as a male bastion, often discouraging women from pursuing careers due to perceptions of heavy workloads and limited opportunities. To overcome this, Swaraj is making concentrated efforts to change these narratives amongst the communities. They actively counsel parents to foster a supportive mindset toward women working in manufacturing which has helped families gain greater confidence in the safety and security arrangements of the company encouraging more women to participate on the shop floor.

3

Organizing Shopfloor Visits

Swaraj enhances its recruitment efforts by arranging interactive sessions where women students from ITIs and polytechnics visit the shop floors. During these visits, they engage with current women employees, gaining valuable insights into the nature of the work and the welfare policies, which encourages more women to consider careers in manufacturing.

4

Optimizing Shopfloor Roles

Dexterity tables and simulation modules have been implemented to enhance women's hand-eye coordination and provide them with a practical understanding of real work environments. According to Swaraj, these initiatives not only develop their skills but also facilitate their smooth transition into manufacturing roles. As a result, Women have been strategically deployed in roles that leverage their exceptional hand-eye coordination, such as kitting and storage. They are also prominently involved in managing critical production areas, including the CODE assembly, Conrod Line, and Headline.

Development Initiatives

Targeted reskilling and upskilling are essential for accelerating gender diversity and inclusion in manufacturing. While hiring more women is crucial, it must be complemented by robust training and upskilling to meet business needs. Implementing skill set evaluation programs aligned with operational areas will help companies design effective on-the-job training, ensuring women acquire the necessary skills for success and retention.³³

³³ International Centre for Research on Women. [Women in Manufacturing: Skilling, Reskilling, and Upskilling Women to Bridge the Manufacturing Workforce Gender Gap](#)

Some of the key initiatives undertaken by Swaraj in this regard include:

1

Induction

Customised dexterity modules are tailored specifically for women, emphasising technical skills. These modules include a two-month on-the-job training (OJT) program led by senior operators on the shop floor. Dexterity tables further strengthen hand-eye coordination, and various Simulation modules help them understand the real work environment. This initiative not only develops their skills but also eases their deployment in manufacturing roles.

2

Mandatory Programs

Extensive training sessions on conscious inclusion and unconscious bias are conducted for all employee levels. Additionally, 100% employee coverage includes essential topics such as Prevention of Sexual Harassment (POSH), Anti-Bribery and Anti-Corruption (ABAC), Code of Conduct (COC), Safety, Mahindra's RISE 2.0 program, and the 5S framework.

3

Skill Development

Technical training also encompasses Quality Circles, measuring instruments, machining skills, 5s, Kaizen and value stream mapping (VSM). Women employees with a 10+2 educational background have enrolled in short-term and ITI technical courses, such as Diesel Mechanic and Computer Numerical Control (CNC) Machining, for certification.

Key Enablers

*Oxfam India's India Discrimination Report (2022)*³⁴ reveals that gender-based discrimination accounts for 98% of the employment gap between salaried men and women in urban areas. This underscores the need for employers to provide support that extends beyond the factory floor. Safety measures and childcare services should not be viewed as workplace perks but as essential steps toward genuinely fostering a diverse workforce. In line with this, Swaraj is actively implementing key initiatives to create an inclusive workplace for women.

³⁴ Oxfam India. [India Discrimination Report 2022](#).

1

Onboarding Support

Swaraj has implemented a buddy system to support the onboarding of new recruits on the shop floor. Designated buddies help women acclimate to their roles and address any concerns, while also showcasing success stories from women buddies. This initiative aims to reduce unplanned absenteeism, improve retention, and create a supportive workplace environment. Additionally, WhatsApp groups have been established to build support networks for women employees.

2

Safety & Security

- Transportation for women is available for pick-up & drop-off, at nominal charges across all shifts (A, B, and C), with dedicated buses equipped with cameras, microphones, and GPS for tracking. Emergency contacts, including security and ER representatives, are clearly displayed, and an SOS number is saved in all women employees' mobile contact lists for immediate assistance.
- The company prioritizes safety by providing all employees with uniforms and safety shoes, along with specialized Personal Protective Equipment (PPE) kits that include safety helmets and gloves. Additionally, pad-care vending machines are installed for the comfort of women.
- Women security guards are assigned to frisk women employees during both entry and exit to ensure safety and comfort.

3

Health & Well-Being

- Swaraj promotes women's health and well-being by conducting regular health check-ups, and anaemia screenings, and offering dietary guidance alongside medical consultations for iron and calcium deficiencies.
 - The company collaborates with medical institutes to provide sessions with specialists such as psychologists, oncologists, and gynaecologists, ensuring comprehensive healthcare support for women.
 - A nutritionist has been introduced to address specific nutritional needs, focusing on weight management, especially for underweight employees, while pre-natal and post-natal counselling is offered at the factory as needed. Canteen facilities are available across all shifts with tailored dietary arrangements for women workers.
 - Women assistants are present during every shift in various roles, including
-

Time Office/ER, Security, Occupational Health Centre (OHC), and as Shopfloor Officers, to offer immediate assistance.

4

Ergonomic Restructuring

- The Industrial Engineering (IE) team & the Manufacturing Engineering (ME) team at Swaraj conducts thorough ergonomic assessments across the factory, which is divided into different zones- red, orange, yellow, and green levels based on ergonomic conditions and are gradually improved in a phased manner. As part of Swaraj's continuous improvement efforts, the company has upgraded from Vertical Machining Centre (VMC) machines to advanced Mazak Makino machines with full computer numeric control. Swaraj is also replacing manual tools, such as DC tools, with advanced technologies and has discontinued the use of hammers on the shop floor to reduce manual effort
- The company introduced robotics, raised workstations, and redesigned tools and lifts to accommodate machinery traditionally designed for male physique. Women were initially placed in sub-assemblies to acclimate them before transitioning into the main assembly line and more demanding departments like the Foundry, where currently 32 women are deployed in core manufacturing processes.
- An internal feedback mechanism allows employees to suggest modifications, leading to improvements such as the addition of gravity mechanisms in the kitting area on the conrod line. This adjustment helps equipment automatically fall into trolleys, reducing manual effort and increasing efficiency.
- The re-layout and introduction of new machinery are integral to Swaraj's continuous improvement initiatives. The use of hammers on the shop floor has also been discontinued as part of this modernization effort.

5

Engagements and Rewards:

- Swaraj has implemented initiatives to increase the participation of women by establishing an employee referral program that offers women employees incentives for referring women candidates at the worker level.
- Structured initiatives to include women in all engagement forums encompass monthly sessions with the Plant Head and ERs, involvement in the Works Committee Volunteer (WCV) group participation in Quality Circles

and Kaizens on the shop floor, wellness sessions, and monthly connections with institutes like ITIs and Polytechnics, as well as theme-based events such as Founder's Day, Sports Day, Family Day, and International Women's Day.

- Regular communication and collaboration with the Employee Relations (ER) Head and Plant Head address concerns promptly, supported by Minutes of Meeting (MOM) for timely follow-up. Additionally, the implementation of a Rewards and Recognition (R&R) program, featuring initiatives such as "Performer of the Month," 5S practices, Kaizens, quality circles, and quizzes, has significantly improved hiring and retention numbers among women employees on the shop floor.

6

Employee Feedback Mechanisms

Employee feedback is actively gathered through multiple channels, including monthly, bi-monthly, or quarterly meetings between women shop floor employees and the Plant Head, as well as the Plant ER heads. Additionally, cross-sectional diverse interactions between 6-7 women employees and the Plant HR ER Head, along with focus group discussions, are organised to collect feedback on infrastructure, policies, and safety and security.

Key Enablers

As part of Swaraj's societal commitment under its DEI framework, structured initiatives are in place to promote technical education and encourage greater participation of women in the workforce. These initiatives include monthly interactions with ITI and polytechnic colleges in Punjab, Himachal Pradesh, Haryana, Uttarakhand, Uttar Pradesh, Rajasthan and Madhya Pradesh. Through career counselling sessions and engagement with students, Swaraj actively encourages enrollment in technical education, aiming to break traditional gender barriers and foster a pipeline of skilled women ready to join the manufacturing sector. These efforts reflect the company's broader commitment to nurturing talent and advancing gender diversity in traditionally male-dominated industries.

Employer Branding

Swaraj enhances its employer branding to attract more women participants by building connections with ITI and polytechnic students through sessions led by women employees who share their experiences. The company actively promotes its policies, best practices, and hiring initiatives at various ITIs and polytechnics. Swaraj also utilises social media and print media coverage to increase visibility and engagement. Sponsorship and participation in DEI (Diversity, Equity, and Inclusion) events further bolster its commitment to recruiting and supporting women in the workforce.

Recommendations

Over the course of our engagement with Swaraj, the Udaiti team identified a few key areas that could be enhanced through concentrated efforts by organisations in the Auto Manufacturing sector. These recommendations are highlighted below.

Diverse Hiring Strategy

- A comprehensive hiring strategy could be supported by providing essential skills training to students who are undergoing ITI/diploma courses before onboarding at companies takes place.
- There is merit in looking to increase the number of women in manager/leader roles across the sector. Evidence shows that organisations with more women in leadership tend to have a higher representation of women overall; Udaiti's WISER report finds that companies with women leaders have 48% of women in the organisation as compared to 32% when there are male leaders.³⁵
- Auto organisations can look to hire through sourcing agencies. For example, Qness Corp already works with a Tata Motors Plant in Pant Nagar, and a Vistron plant in Tamil Nadu, and provides end-to-end support, including pipeline development, taking care of documentation, and connecting women workers and employees with safe working women hostels, transportation, and safety.

³⁵ The Udaiti Foundation, ACT Grants, LEAD at Krea, Women in India's Startup Ecosystem Report, 2023

Mobilisation and Advocacy

- A multi-faceted, comprehensive advocacy strategy should be implemented to build support for career opportunities in factories, with the goal of creating a solid foundation for future recruitment and operational success.
- The strategy should involve conducting grassroots advocacy. Efforts should include visiting schools, educational institutions, and Industrial Training Institutes (ITIs) and using local groups (*mahila mandals* and Self Help Groups (SHGs)) to mobilise women candidates & raise awareness about the opportunities available.
- The strategy should extend to families and communities, emphasising the potential benefits of women joining the workforce from a livelihood perspective, as well as a medium-long-term aspirational perspective. Swaraj assuages families through the organisation of factory visits which can help demonstrate the actual working conditions and highlight their commitment to the safety of their employees, and this is a practice that other organisations can adopt.

Enablers

- Organisations can conduct assessments to identify areas and departments where women excel. As Swaraj has been doing, organisations can focus on improving ergonomics in these areas to create a more attractive work environment for women employees.
- It is crucial to look at improving transport facilities for women workers and employees and therefore increase their mobility. Similarly, providing accommodation facility support to women joining organisations from other cities can increase safety, and make joining more attractive.

Training and Organisational Development

- Organisations in the auto sector should develop their own gender action plans, starting with public commitments and disclosure of specific gender targets.
 - Organisations could take ergonomic improvement one step further, and consider modifying specific departments by recognizing the strengths of women in particular roles and their contributions to productivity and error rates. This data can also inform decisions about deploying women in targeted divisions.
 - Offering cross-training opportunities that facilitate upward mobility within the organisation as well enhance avenues for permanent employment could improve the integration of women into more technical roles.
-

Way Forward

Swaraj's journey towards improving gender diversity on the shopfloor reflects both the challenges and potential of advancing women's participation in a traditionally male-dominated sector such as automotive manufacturing. Historically, manufacturing, especially in India has been closed off to women due to societal norms, physical demands, and regulatory constraints, as noted by global reports like the International Labour Organization (ILO).³⁶ These challenges were particularly evident in the automotive industry where women's participation remained minimal.

However, Swaraj has embraced a progressive approach, more than tripling women's representation on the shopfloor between FY22 to FY25. Through strategic partnerships with women-only Industrial Training Institutes (ITIs), targeted recruitment drives, and ergonomic restructuring, Swaraj has actively addressed barriers to women's entry into manufacturing. The deployment of women in demanding roles, such as in the foundry department, underscores their commitment to dismantling gender stereotypes in heavy-duty sectors. Despite the focused interventions and achievements by Swaraj towards gender diversity and inclusion, there is still scope for improvement in areas with challenges across the manufacturing industries. Challenges like the scarcity of permanent roles for women, resistance to night shifts stemming from a combination of social norms, regulatory landscape and safety infrastructure,³⁷ and the lack of skilled women candidates in technical trades persist. By focusing on these areas and continuing to foster an inclusive environment, Swaraj has the potential to set a higher benchmark for gender diversity and inclusion not just in the automotive sector but across India's manufacturing landscape.



³⁶ International Labour Organization, 2022. [Employment, Automation and Their Gender Dimensions](#).

³⁷ Jayachandran, Seema. Social Norms as a Barrier to Women's Employment in Developing Countries. National Bureau of Economic Research, Working Paper No. 27449, June 2020. https://www.nber.org/system/files/working_papers/w27449/w27449.pdf.

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Names of team members who have worked on this research report include:

The Udaiti Foundation

1. Angad Bagai
2. Khushi Boken
3. Gayatri Misra
4. Roshni Mukherji

Centre for Economic and Data Analysis

1. Dr. Ashwini Deshpande
2. Akshi Chawla
3. Dr. Kanika Mahajan
4. Dr. Anisha Sharma

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