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A study on "Gender Diversity and Organizational Performance: A study on Women Labor Force Participation in Manufacturing Industry" (VOLTAS)

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ABSTRACT

The study entails women's participation in the labor force in the manufacturing industry, and identifies and discusses factors that deter entry into, retention in and promotion within this male-dominated industry employed in research. The worldwide picture of increasing recognition of gender equality in employment notwithstanding, women's participation in manufacturing is much lower than men's. This research manuscript identifies major barriers, such as gender bias, inadequate access to skill development, and poor work-life balance provisions, which hinder women's active involvement and long-term engagement in this industry. The study uses qualitative and quantitative data collected through surveys and interviews conducted with women employees, HR managers, and industry leaders across diverse manufacturing firms. The findings show that while some progress has been made with policies targeted for gender diversity, cultural and structural barriers remain that prevent women from accessing valuable resources for leadership roles and career advancement. This study, therefore, highlights the necessity of instituting targeted actions in terms like mentorship programs and flexible work options as well as pay reforms to create an enabling environment for increased participation of women.

Keywords –Women labor force participation, Manufacturing industries, Gender diversity, Workforce equality, Barriers to employment, Work-life balance, Workplace inclusion.

1. Introduction

Background:

Voltas Limited established in 1954 is a listed or public company and part of the leading Indian multinational Tata group which has operations in over 100 countries across 6 continents and has more than a million employees. We are a Trusted brand well known for the quality of our products, extensive range, our reach & sensible pricing, Voltas is India's largest air conditioning company and offers a comprehensive range of cooling & home appliances including air conditioners, coolers, air purifiers, refrigerators, washing machines, water dispensers, water coolers, dishwashers, microwaves, Water heaters, Commercial Refrigerators and AC Stabilizers in its portfolio. We are delighted to have provided comfort and convenience to millions of households across India.

General information about the manufacturing industries

Manufacturing industries are a fundamental component of the global economy, encompassing the transformation of raw materials into finished products through various processes, including labour, machinery, and technology. This sector is incredibly diverse, covering a wide range of areas such as automotive, electronics, textiles, food and beverage, and chemicals, each employing distinct production methods like mass production, batch production, and custom manufacturing. As a major driver of economic growth, manufacturing not only contributes significantly to gross domestic product (GDP) but also creates millions of jobs worldwide, often offering higher wages compared to other sectors. The industry is continually evolving, increasingly adopting advanced technologies such as automation, robotics, and artificial intelligence to enhance efficiency and reduce costs. However, manufacturers face challenges like global competition from low-cost producers, supply chain disruptions, and the pressing need for sustainable practices.

Problem Statement:

The gaps and challenges that concern women in the workforce within the manufacturing industry are highlighted in this work. Even though the area has made strides, there are still some major barriers in specific parts that affect the outcome. Various solutions have been researched in existing research;

however, there are no substantial works to comprehensively address the issue of women's equality and inclusion. The study aims to trace the causes, assess the prevalent frameworks, and proffer practical solutions to these challenges.

Objectives:

- To Analyze the Extent and Trends of Women's Participation
- To Identify Barriers and Challenges Hindering Women's Participation
- To Examine the Influence of Policy and Legal Frameworks
- To Evaluate the Economic Impact of Women's Participation

Hypothesis

Based on our initial research, we propose the following two hypotheses:
1. **Age and Employment Stability Hypothesis**:
Null Hypothesis (H_0): There is no significant relationship between age group and employment tenure in the manufacturing industry.

Alternative Hypothesis (H_1): Older employees (36+) are more likely to have longer employment tenure in the manufacturing industry compared to younger employees (18-25).

Suggested Test: Chi-Square Test for Independence
2. **Education and Employment Type Hypothesis**:
Null Hypothesis (H_0): The level of education has no significant impact on whether an individual has full-time employment.
Alternative Hypothesis (H_1): Individuals with higher education (Bachelor's or Master's) are more likely to have full-time employment compared to those with a Diploma or High School education.
Suggested Test: Chi-Square Test for Independence.

2. Literature Review

- **Kabeer, N. (2012). "Empowerment and Women's Work"** This study explores the complex interplay between gender norms and labor market participation, with a particular focus on developing economies. Kabeer emphasizes how societal expectations and discriminatory workplace practices limit women's access to formal employment, especially in industrial sectors such as manufacturing. She suggests that empowerment through education and economic independence is critical to increasing women's labor force participation

- **Jhabvala, R., & Sinha, S. (2002). "Liberalization and the Woman Worker"** The authors highlight the plight of women in informal manufacturing sectors, such as home-based production and small-scale factories. Women's work in these areas often goes unrecognized and unpaid, affecting their economic security and rights. The study concludes that formalizing women's labor in manufacturing could improve their working conditions, wages, and social status.

- **Das, M. B. (2017). "Women Workers in Global Manufacturing"** Das's research examines the gendered nature of global manufacturing work, focusing on women's participation in factories producing garments, electronics, and other export-oriented goods. The study finds that although women are employed in large numbers, they are often concentrated in low-skill, low-wage jobs with limited prospects for advancement. Das advocates for gender-sensitive policies to improve training and employment opportunities for women.

- **Ramaswamy, B. (2014). "The Double Burden: Women's Labor in Indian Manufacturing"** This case study explores women's experiences in India's garment manufacturing sector. Ramaswamy highlights the double burden women face, balancing professional responsibilities and domestic duties. Women's labor force participation is often 30 interrupted by family obligations, limiting their career progression and contributing to high dropout rates from the workforce.

- **OECD (2020). "Women in Manufacturing: Closing the Gender Gap"** The OECD report focuses on gender disparities in manufacturing industries across its member countries. While women's participation has increased in certain areas, significant gaps remain, particularly in terms of wages and leadership opportunities. The report calls for comprehensive strategies, including promoting STEM education for girls, addressing workplace harassment, and creating family-friendly workplace policies.

- **Seguino, S. (2013). "Export-led Growth and Women's Employment"** This study analyzes how export-oriented industrialization has influenced women's employment in developing countries. Seguino finds that while women's labor force participation in manufacturing has increased due to globalization, they are often relegated to low-wage, low-skill jobs with little room for advancement. The study concludes that gender-specific labor policies are needed to ensure that women benefit more equitably from industrial growth.

- **Mitter, S. (2005). "Globalization, ICTs, and Women in Manufacturing"** Mitter explores the role of information and communication technologies (ICTs) in shaping women's labor force participation in manufacturing. The study argues that while technological advancements

have created new employment opportunities for women, they have also reinforced gendered divisions of labor, particularly in tech-driven manufacturing industries where men dominate higher-skilled roles.

- **Chen, M. (2017). "Global Supply Chains and Women's Work"** This study investigates how global supply chains influence women's employment in manufacturing industries, particularly in developing countries. Chen finds that multinational corporations often perpetuate gender inequality by outsourcing labor to countries with weak labor laws and poor enforcement of gender equity policies. The study recommends stronger international labor standards to protect women workers in these industries.

- **UN Women (2020). "The Role of Policy in Promoting Women's Employment in Manufacturing"** This report emphasizes the importance of gender-sensitive labor policies in increasing women's participation in manufacturing. It highlights successful case studies from countries that have implemented such policies, including paid maternity leave, child care support, and equal pay legislation. The report underscores the need for government intervention to create an enabling environment for women's participation in manufacturing.

- **Acker, J. (2006). "Gendered Organizations and Inequality in the Workplace"** Acker introduces the concept of gendered organizations, arguing that industries such as manufacturing are inherently structured to disadvantage women. The study examines recruitment, promotions, and wage parity, revealing how these processes reinforce gender inequalities. Acker suggests that transforming organizational cultures is essential for fostering a more inclusive workforce.

3. Research Methodology

3.1 Research Design

A Mixed-methods research design is chosen to leverage the strengths of both qualitative and quantitative approaches, providing a comprehensive understanding of A Study on women labor force participation in Manufacturing Industry (VOLTAS).

3.2 Data Collection

Surveys: A secondary data set consists of information gathered from pre-existing sources, such as various reviews, and secondary data sets themselves.

3.3 Sampling Techniques:

The study employed a mixed-method sampling approach, combining stratified sampling for quantitative data and purposive sampling for qualitative data.

3.4 Data Analysis & Interpretation:

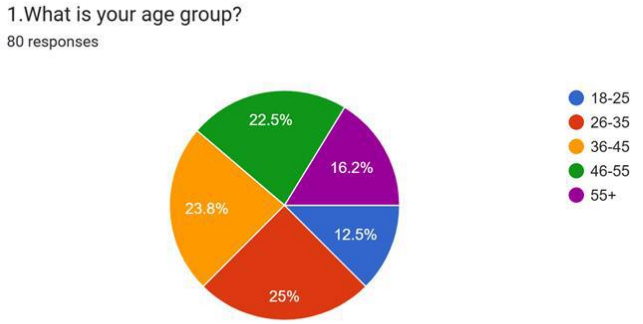
In this Research, researcher tried to analyses and interpret the collected data by using various statistical tools. Following is the Presentation of Data

Analysis & interpretation

It includes independent variable like age, educational qualification, department, experience in present organization and total experience and their opinions about the leadership in the organization and how much company gives pressure on them
a questionnaire has been conducted to know the participation in the women labour in the manufacturing industries

Interpretation:
The details of survey covering the woman worker's participation in the manufacturing industries have been illustrated in a pie chart with a sample size of 80 respondents. It is found that the most common age group, which is 26-35 years old, had a major representation with 25% of respondents and the least representation of the age group 18-25 years was with 12.5%. This shows that women participation according to age group has large population in most adults.

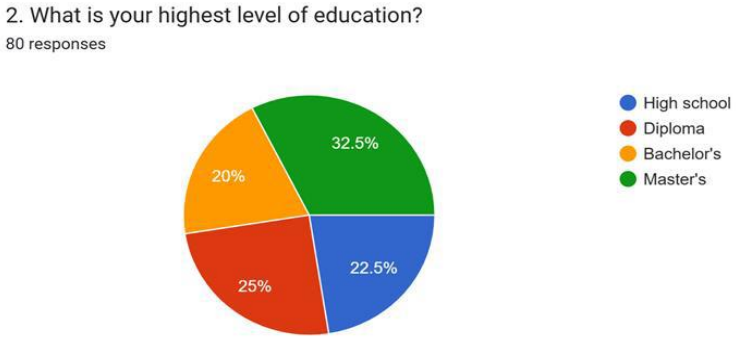
Age group	No of responds	Percentage of Respondents
18-25	10	12.5%
26-35	20	25%
36-45	19	23.8%
46-55	18	22.5%
55+	13	16.2%



Interpretation

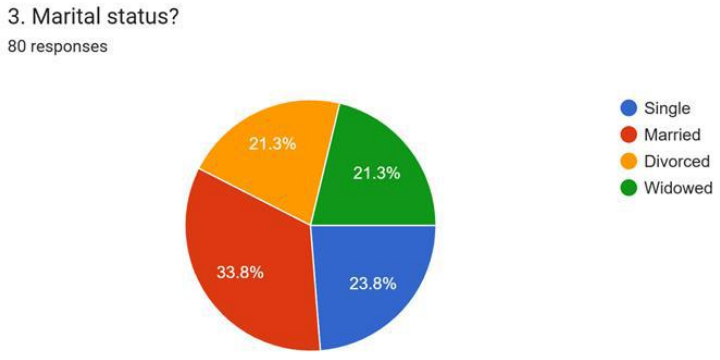
The pie chart illustrates concerning the survey on the participation of the women labour in the manufacturing industries and had 80 respondents. Having Masters also being the highest level of education, most of women participation in the manufacturing having 32.5%. This shows the gradual increase in education among the India for women.

Level of education	No of respondents	Percentage of Respondents
High school	18	22.5%
Diploma	20	25%
Bachelor's	16	20%
Masters	26	32.5%



Interpretation: The pie chart illustrates a survey concerning the participation of women laborers in the manufacturing industries, with a sample of 80 respondents. The majority of the participation of women in manufacturing industries by marital status shows 33.8% as married women, while another 21.3% are divorced and widowed working women. This implies that women engaged in the manufacturing industry have additional responsibilities apart from their family duties.

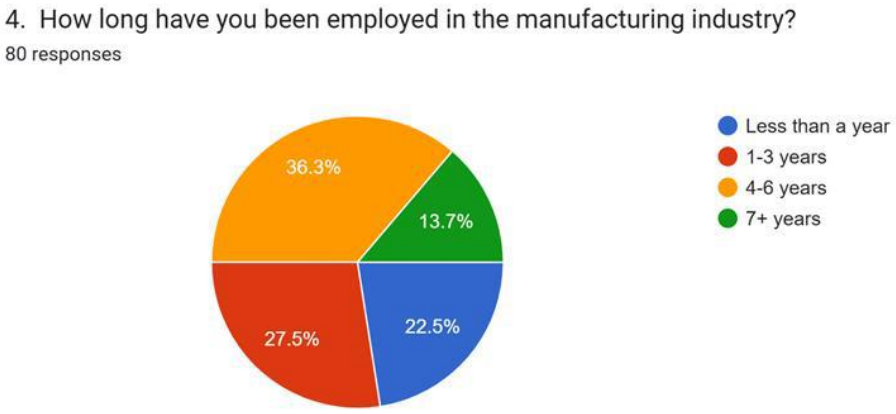
Marital Status	No of respondents	Percentage of respondents
Single	19	23.8%
Married	27	33.8%
Divorced	17	21.3%
Windowed	17	21.3%



Interpretation

The pie charts illustrate what the survey showed regarding women's labor participation in manufacturing industries with 80 respondents. Majority of women participation in the manufacturing industries having experience between 4-6 years with 36.3% of the respondents while 13.7% of the respondents have 7+ experience in the manufacturing industries.

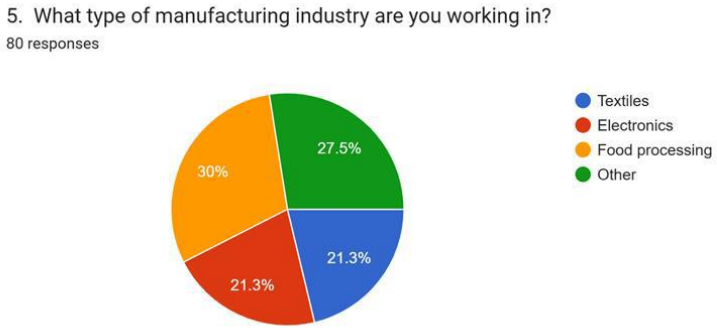
No of years in Manufacturing industries	No of respondents	Percentage of Respondents
Less than a year	18	22.5%
1-3 years	22	27.5%
4-6 Years	29	36.3%
7+ years	11	13.7%



Interpretation

The pie chart demonstrates the questionnaire or survey for women's labor participation in industries with a sample of 80 respondents. The bulk of women's participation working in the food processing industry, while 30 percent of respondents, accounted in textiles and electronics to 21.3%. More women participation towards food processing companies.

Type of Manufacturing Industries	No of Respondents	Percentage of Respondents
Textiles	17	21.3%
Electronics	17	21.3%
Food processing	24	30%
Other	22	27.5%

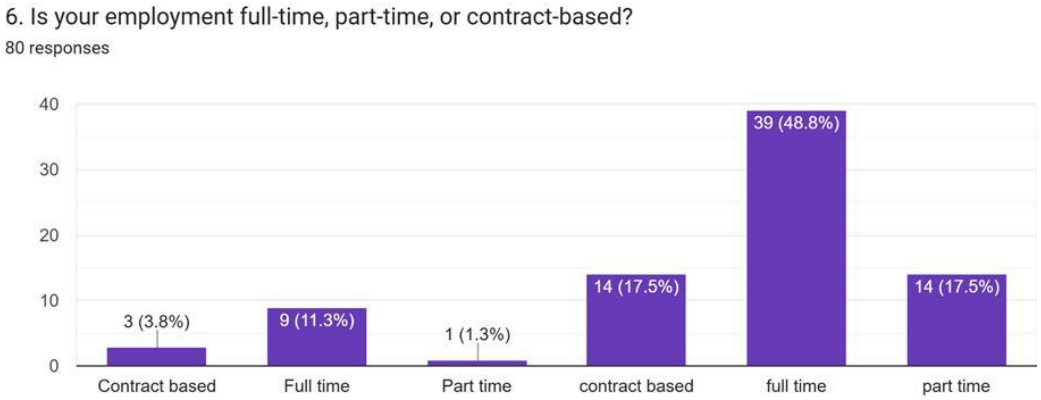


Interpretation

The pie chart illustrates the survey conducted on the participation of women labor in manufacturing industries. 80 respondents were surveyed in total. The majority, 60.1%, of women working in the manufacturing industries were employed full time, while 18.8% were employed part time.

Type of employment	No of respondents	Percentage of respondents

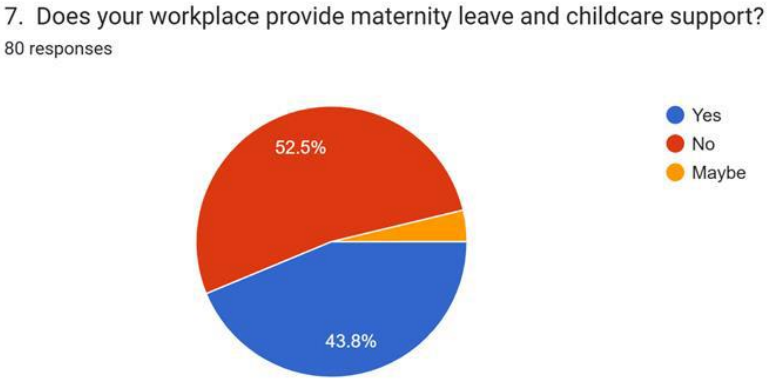
Full time	48	60.1%
Part time	15	18.8%
Contract Based	17	21.3%



Interpretation

The Pie Chart speaks volumes about the Survey organized on the participation of women employees in the manufacturing industries and having 80 respondents. The 52.5 per cent of the sampled women get Maternity Leave and Childcare Support, which depicts how industries give, rather than family support, to women.

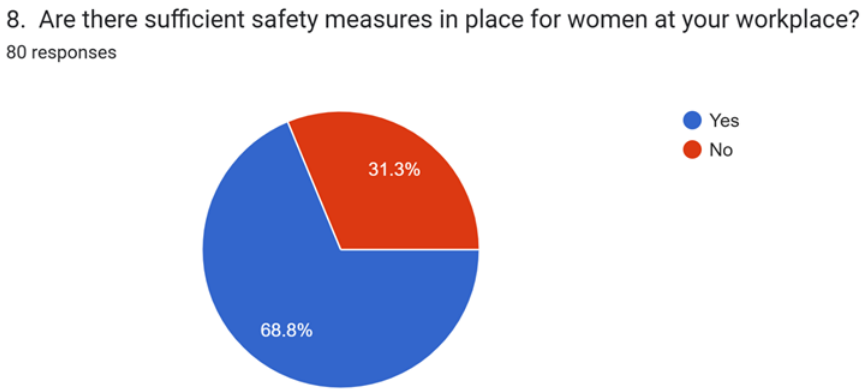
Maternity Leave & Childcare support	No of respondents	Percentage of respondents
Yes	35	43.8%
NO	42	52.5%
Maybe	3	3.7%



Interpretation:

The pie chart illustrates the survey conducted on women laborers in the manufacturing industries with 80 respondents. Majority of women getting satisfactory safety measures with 68.8%, indicating that the place of work is safe for the workers with all safety measures in place.

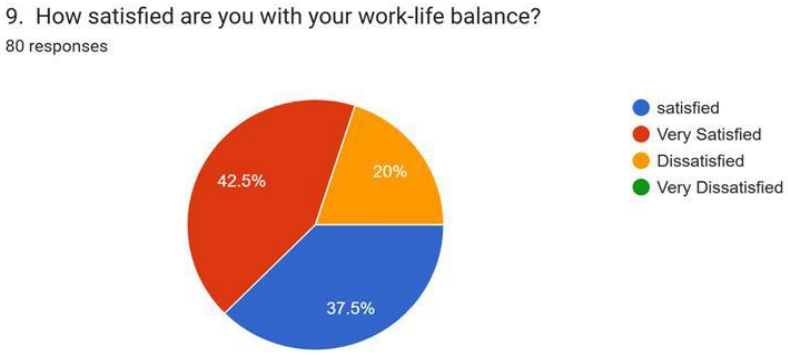
Safety measures	No of respondents	Percentage of respondents
Yes	55	68.8%
NO	25	31.2%



Interpretation:

The survey of women labour participation in the manufacturing industry amounted to a total of 80 respondents, as shown in the pie chart. Majority of women are very satisfied with the 42.5%, while 20% respondents are dissatisfied with their work life.

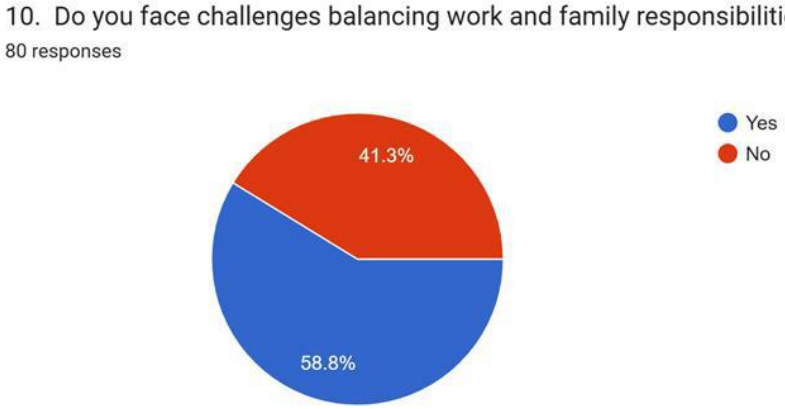
Satisfied with your work life	No of respondents	Percentage of respondents
Satisfied	30	37.5%
Very Satisfied	34	42.5%
Dissatisfied	16	20%
Very Dissatisfied	0	0%



Interpretation:

The Pie Chart Illustrates about a survey of 80 respondents concerning women's Labour participation in Manufacturing Industries. The predominant factor facing women are challenges and family responsibilities at 58.8%. This shows how they mentally affect work in the manufacturing arena.

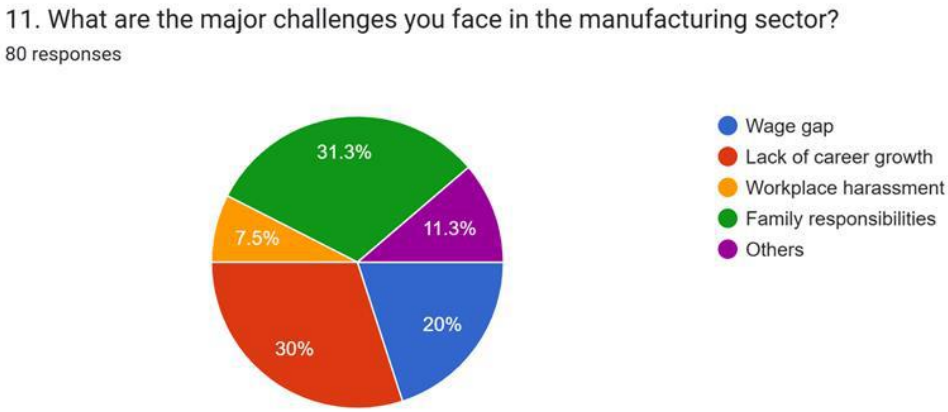
Facing challenges	No of respondents	Percentage of respondents
Yes	35	58.8%
NO	45	41.3%



Interpretation:

The pie chart illustrates a survey, conducted about women participation in the manufacturing industry, comprising 80 respondents. Most women, facing challenges and family responsibilities, with 58.8% indicate the mental anguish it brings in juggling work for the manufacturing industry.

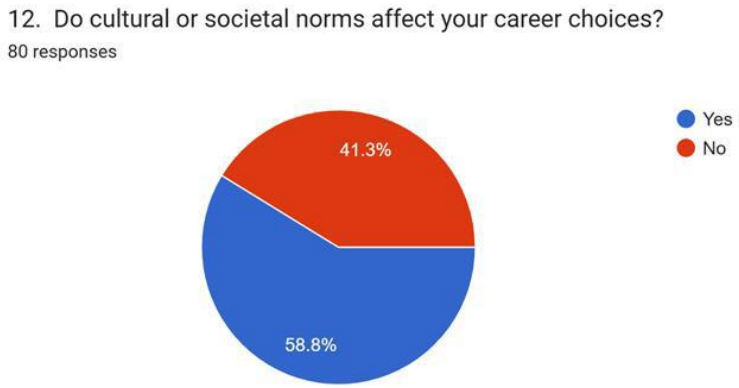
Major challenges	No of respondents	Percentage of respondents
Wage gap	16	20%
Lack of career growth	24	30%
Workplace harassment	6	7.5%
Families Responsibilities	25	31.3%
Other	9	11.3%



Interpretation:

The pie graph demonstrates the survey conducted on women employees in the manufacturing industry, which comprised 80 respondents. Most of the women do cultural and social norms affect; 58.8%.

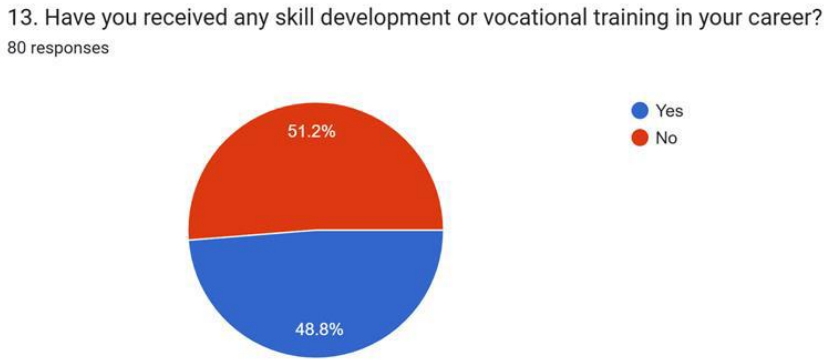
Cultural or Societal norms	No of respondents	Percentage of respondents
Yes	47	58.8%
No	33	41.3%



Interpretation:

The presented pie chart symbolises the survey conducted on women labour participation in the manufacturing industries with the 80 respondents. The majority of the Women received skill development or vocational training, with 51.2% showing they are not getting training in their workplace.

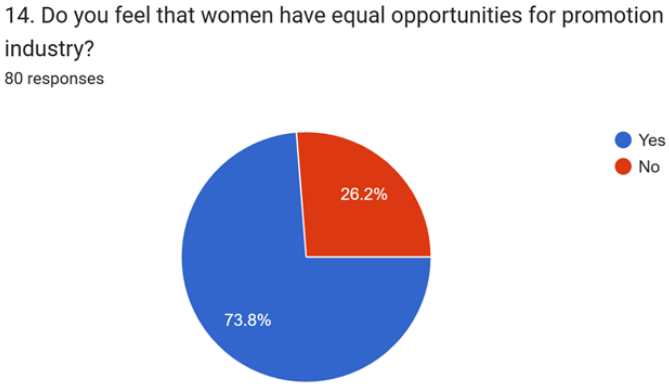
Skill development training	No of respondents	Percentage of respondents
Yes	39	48.8%
No	41	51.2%



Interpretation:

The pie chart describes the survey conducted about the participation of women labour in manufacturing industries, and it consisted of 80 respondents. Majority of the Women, with 73.8%, agreed that they have equal opportunities for promotions and leadership roles in their respective industries.

Opportunities for leadership	No of respondents	Percentage of respondents
Yes	59	73.8%
No	21	26.2%



4. KEY FINDINGS:

The researcher has sought to indicate the major finding related to Job Satisfaction level and the handling of pressure concerning the responsibilities of family, that may have been made easier or ameliorated by maternity and childcare support, among other benefits. It also encompasses results obtained from comparative analysis of the performance level of male and female workers, and ultimately interpretation of the data gained from production supervisors interviewed.

1. **Demographic Trends**
   - The bulk of (71.3%) the manufacturing workforce is aged 26-45, suggesting that women participate much more during the peak working age.
   - The underrepresentation of women in younger groups (18-25) and older groups (55+) indicates barriers to entry or retention in these segments.
2. *Education and Employment*
   - This is a clear sign that women are becoming more highly educated in manufacturing, as 32.5% of the respondents hold a Master's degree.
   - The education, however, did not help 51.2% to access skill development training that otherwise would have benefited them in moving up the career ladder.
3. *Work-Life Challenges*
   - 58.8% of women find work-life balance a challenge, among which family duties are the primary challenge cited by 31.3%.
   - 52.5% considered the lack of either maternity leave or childcare support as workplace policies gaps.
4. *Industry-Specific Participation*
   - Food processing accommodates the highest number of women (30%), followed closely by textiles and electronics (21.3% each), reflecting industry preferences.
   - Full-time work constitutes the content of over 60.1% of women workers, while part-time jobs and flexible arrangements remain few and far between.

5. *Workplace Environment*
    - 68.8% felt that their working environment offered adequate safety measures, while 31.2% felt unsafe, indicating a gap in safety standards.
    - 73.8% felt they had equal opportunities for promotion; however, 30% claimed "lack of career growth" is one of their major challenges..

6. *Cultural Barriers*

- 58.8% acknowledge that career choice was influenced by societal norms, reinforcing lingering stereotypes.

Final Insights & Outlook

1. **Progress and Gaps**

    - Even though women are slowly gaining ground, especially among educated cohorts, retention remains very limited, with only 13.7% of women having over 7 years of work experience.
    - The industry concentration (like food processing) seems to indicate that there are cultural or physical barriers to entry in industries regarded as "male" like automotive and heavy engineering.

2. **Unmet Policy and Organizational Requirements**
    - Without sponsorship, maternity leave and childcare options are opportunities for career advancement.
    - Very few women participate in skill development programs, limiting their chances for further promotion.

3. Opportunities for Improvement*Opportunities for Improvement*

- *Flexible Work Models*: Introduce part-time roles and remote work options.
- *Gender-Sensitive Policies*: Mandate paid maternity leave, onsite childcare, and anti-harassment measures.
- *Training Initiatives*: Partner with vocational institutes to bridge skill gaps and promote STEM education for women.

Conclusion:

Gender integration is evidently being affected by the steady infusion of women into manufacturing and the surrounding system failure: cultural norms, lack of family support, and limited opportunities for career advancement. Organizations must pay special attention to the implementation of inclusive policies, while governments promote and enforce labor laws equitably. The future competitiveness of the manufacturing sector will be based on how effectively gender diversity is used as a strategic resource.

Future Scope

- **Research Expansion:** Increase the sample size and geographic representation for capturing region-specific differences.
- **Longitudinal Studies:** Career paths should be traced in order to identify possible triggers of attrition and factors contributing to success.
- **Technology Integration**
    - Studies should investigate the means by which automation as well as Industry 4.0 can be harnessed toward creating equitable opportunities for women.
- **Final Note**: To extend measures that empower women entering the manufacturing industry - not only is this social imperative but also an economic necessity. The future will require these three folds: policy reform, corporate accountability, and cultural shifts to realize sustainable gender parity.