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Research Article

A Quantitative Analysis of Chennai Supply Chain Companies' Gender-Based Career Barriers

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ABSTRACT

The aim of the study, the logistics and manufacturing sector in Chennai has seen remarkable growth recently. Career advancement and position among leaders are still not equal for men and women, despite all these achievements. This research aims to understand the numbers of career barriers that affect women professionals in Chennai's supply chain industry. Information for the descriptive study was gathered from 300 employees of both genders using questionnaires given either online or offline. A variety of job types and organizational levels was achieved by using stratified random sampling. To test the hypotheses, t-tests and Cronbach's alpha were used while checking the reliability. Data suggests that women routinely see fewer ways to advance, less mentorship available to them, and less support from the organization for striking a balance between work and personal life compared to men in the same roles. How employees saw career progression, professional growth, flexibility at work, and inclusion was strongly affected by gender. With Cronbach's alpha values greater than 0.98, the study confirmed that the variables are internally consistent. The study finds that companies often do not apply their policies as intended, so gender disparities continue to last. Solving these problems is important for fairness between genders as well as for improving a company's success and creativity. It is suggested through the research that supply chain workplaces should implement focused support, inclusive opportunities for leaders, and policies that respect cultural diversity. The research results inform new ways to treat people fairly at work and suggest areas for further research on gender in industry.

Keywords: : Gender inequality, Supply chain management, Career advancement, Mentorship access, Organizational support

1. INTRODUCTION

1.1 Brief Overview of the Global Supply Chain Sector and Its Growth

The global supply chain business has grown rapidly over the last three decades due to a combination of technological advancements, global developments, and consumer demands for speed, customisation, and efficiency [1]. Now, in addition to overseeing transportation and logistics, supply chains also handle production, distributing, controlling inventory, storing products and purchasing things needed [2]. Thanks to operations carried over several countries, companies can reduce expenses, require less time for production and become more competitive. Making the supply chain predictable, responsive and data-focused is now possible because of technologies such as robotics, blockchain, the Internet of Things (IoT) and artificial intelligence (AI) associated with Industry 4.0 [3]. The World Economic Forum and international organizations report that logistics contributes between 8% and 10% of the world's industrialized regions' GDP, while more than that applies to emerging countries too [4].

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During the COVID-19 pandemic, it was clear that resilient and flexible supply networks are important for uninterrupted supply of needed goods [5]. During the crisis, the global supply chain was redesigned to promote sustainability, digital technology and regionalization [6]. For this reason, there is an expanded demand for people trained in analytics for supplies, risk protection and sustainability in sourcing [7]. As the industry changes fast, firms are spending money on their employees' skills, automation technology and increasing their production capacity. Now, because supply chains are more involved and important, they play a leading role in guiding company governance [8].The most technical and managerial positions are typically held by males, notwithstanding the industry's growth and changes. Since the focus on diversity and inclusion is growing in global labor markets, companies are realizing women are being left out of supply chain leadership and it is having a negative effect [9]. Nobody disagrees that gender diversity can lead to new ideas, better thinking and ensure involved individuals get equal opportunities in economic growth [10]. Regardless, gender imbalance in the supply chain industry is still caused by various barriers, so focused actions should be taken to resolve them [11].

1.2 Increasing Participation of Women in Various Professional Fields

Women are transforming the global workforce and choosing where to work more and more these days. Achievements in distinct areas, like healthcare, schools, business, technology and entrepreneurship, represent much of the progress women have made [12]. This shift has been brought about by affirmative action, easier access to college and new attitudes about gender roles among people and policies [13]. According to ILO data, the percentage of women in the world's total workforce has increased to 47% as of 2022.As well as showing woman empowerment, more women being included is needed for the economy to grow inclusively. A wide range of research shows that including people from different backgrounds in a company can lead to better ideas, a more positive work environment and increased profits. Careers previously believed to belong only to men in engineering, corporate leadership, data science and public administration are now being filled by women [14]. Women in top roles on company boards are increasing in numbers because of continuous lobbying and laws supporting their rights.

It's similar in India, although each region adds its own elements to the story. More women from India now work in fields such as public services, education, banking, IT and healthcare, thanks to changes throughout the last 20 years [15]. Greater participation of women in formal work is now possible because of actions such as the "Beti Bachao, Beti Padhao" program, laws setting aside seats for women in politics and a push for girls in STEM [16]. Different businesses have experienced progress on different schedules and some have advanced more quickly than others. Supply chain management and manufacturing remain fields where women are not well represented.Although employing more women is good for society, experts are concerned that they are not always treated fairly and that there are obstacles to them advancing at work [17]. Giving women equal ability to get promoted, become leaders and guide business decisions matters more than merely publishing their job numbers. Looking at the gap between men and women in supply chain management can help us understand and solve the major inequalities [18].

1.3 Persistent Gender Disparities in Leadership and Operational Roles in the Supply Chain Domain

Gender disparities still exist in key roles and roles in the supply chain sector, notwithstanding significant progress made globally in the area of workplace equality [19]. Different views are backed up by results from research and data on the global workforce [20]. The results of a 2022 Gartner poll revealed that women held only 21% of executives jobs in the supply chain world and their presence was still lower at the VP and C-suite levels. Women might be able to find more entry-level work, but once they try to move up, the so-called leaky-pipeline problem still causes real difficulties.

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There are many hurdles and some results from workplace structures that make it difficult for employees to balance their personal and professional lives, while other issues result from unconscious bias and traditional beliefs in society [21]. Many supply chain jobs involve long periods at work, constant travel, working shifts and being present in factories, all of which are often thought to be incompatible with the tasks expected of women inside the home [22]. In addition, supply chain leaders usually need operational knowledge which is tough for women who are usually assigned supporting functions. Fewer women are found in the main roles required to get to top leadership due to this.

Many people still find it extremely difficult to thrive in organizational hierarchies since sponsors and mentors are frequently unavailable [23]. Women who are qualified are often excluded from top positions by those who like to promote others who think and work like themselves. In addition, men have much higher access to important forums and projects which are key to leadership [24]. Even though women and men have similar skills, qualifications and targets, the system holds women back from advancing much further in supply chain management.Persisting with these differences leads to challenges for the success of a business, encourages creativity and contributes to gender inequality [25]. A variety in leadership, it has been shown, makes teams work better and solve problems more efficiently, both important for the demanding and fast-changing aspects of modern supply chains [26]. For this reason, the industry has not been able to take advantage of many available opportunities. It is extremely useful to gather specific, measurable information that can drive change and improve policy where industrial, cultural and economic variables are unique, as in India.

1.4 Relevance of the Issue within the Indian Context—Focus on Chennai as a Major Logistics and Manufacturing Hub

Globally, India is a prominent country in supply chain systems and its economy is growing extremely fast. Since manufacturing, e-commerce, pharmaceuticals and automotive industries have grown rapidly, businesses now depend on supply chain management to maintain success and efficiency [27]. The "Detroit of India," as Chennai is known, is very important in this system because it has key ports, busy industrial zones, logistics centers and thriving factories on a local and global scale [28]. Because of its beneficial location and infrastructure, Singapore has become important in supply chain, logistics, transportation and procurement services.However, workers have not been fairly involved as sectors have grown, mostly because of gender disparities [29]. In spite of the city's high level of education and advanced social thinking, women remain seeing little in top supply chain jobs. STEM careers are not always desired by women because of a lack of exposure, worries about safety and typical cultural views. Some problems within an organization, like inflexible work schedules, scarce support systems and fixed ideas about management, often hold back professionally skilled women when they try to advance in their careers.

Since Chennai wants to be a major player in global logistics, barriers to women's careers in the supply chain need urgent attention [30]. Gender equality should be integrated into Chennai's method of growing its industry and the economy [31]. With women playing a part in the supply chain, companies can better handle problems and manage risks essential for surviving in today's changing, unpredictable business world. Diverse thoughts are developed because of this.More and more investors and clients are asking for greater equality in workplaces, mainly in the supply chain. Firms in Chennai must regularly prove that they meet Environmental, Social and Governance standards, making gender diversity an essential aspect. So, efforts to address obstacles due to gender in the workplace are necessary for the economy, the world market and fairness, as well. However, there aren't many thorough studies on how gender problems impact Chennai's supply chain companies. A lot of what is written simply relays experiences or fails to look at things that are specific to a place. This research attempts to remove the gaps women face in supply chain positions in Chennai by providing both ideas and useful fixes for discussion.

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2. LITERATURE REVIEW

In this study, the number of job options for women in Chennai's supply chain business is increasing, they still face several obstacles. Increased understanding of gender diversity has not yet removed barriers to promotions, proper guidance, or work-life balance. According to research, employees can see organizational policies differently, which continues to reflect a gap between men and women. Even while many businesses promote inclusivity, how it is done is usually quite weak. Working on these issues benefits both equality for men and women and increases business performance. To identify important points and shortcomings related to gender issues in Chennai's supply chain, this review looks at existing studies.

2.1 Gender Barriers in Chennai's Supply Chain Companies

Seranmadevi et.al (2025)"discussed the Global warming is affecting the ecological system and business operations, particularly in supply chain management. This study aims to integrate circular economy principles to improve sustainable supply chain management. Four objectives include focusing on the adoption of circular economy principles, identifying barriers, assessing stakeholders' engagement, and evaluating the environmental, economic, and social implications of sustainable practices. A descriptive research study was conducted with 250 respondents from Chennai-based industries. Structural Equation Modeling was used to establish the connection between circular economy adoption, stakeholders' engagement, and sustainable supply chain management outcomes. The hypothesis was confirmed through confirmatory factor analysis and standardized model fit. The study concluded that circular economy principles and their adoption barriers significantly influence stakeholders' engagement and sustainable supply chain management outcomes".

Kumar et.al (2024)"explored the integration of circular economy principles to enhance sustainable supply chain management, addressing the impact of global warming on ecological systems and business operations. The research involved 250 Chennai-based industries and used Structural Equation Modeling to establish the connection between circular economy adoption, stakeholder engagement, and sustainable supply chain management outcomes. The study found that the adoption of circular economy principles and their barriers significantly influence stakeholders' engagement and sustainable supply chain management outcomes".

Shankar et.al (2024)"explored the relationship between technological advancements, gender, and racial inequalities in the Indian IT sector. It highlights the potential for economic growth and skilled workers, but also warns that these advancements can exacerbate existing social inequalities if not strategically addressed. The study examines the impact of automation, AI, and digitalization on the Indian IT workforce, focusing on changing skill demands, job displacement, and new roles. It also addresses the challenges faced by women and marginalized communities, such as gender stereotypes, limited access to education and training, and discriminatory hiring practices. The thesis suggests that government policies, corporate social responsibility initiatives, and social movements can help address these challenges, promoting diversity and inclusion in the Indian IT sector. It concludes by offering recommendations for policymakers, businesses, and educational institutions to mitigate the negative impacts of technological change on gender and racial inequalities".

Bella et.al (2024)"studied the Labour welfare measures are crucial for the well-being and job satisfaction of women employees in today's diverse workforce. Women contribute their skills and expertise across various industries, but often face unique challenges that affect their job satisfaction. Labour welfare measures focus on creating a conducive work environment that addresses their unique needs, including maternity leave, flexible working arrangements, childcare facilities, gender-sensitive policies, and training programs. These measures aim to promote a work-life balance and remove barriers that may hinder women's professional growth. Implementing these measures can improve employee morale, retention, and productivity among women employees, contributing to the success

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and growth of organizations. Labour welfare measures are essential for promoting gender equality, diversity, and inclusivity in the workplace, benefiting both employees and employers. This study emphasizes the importance of these measures in modern workplaces and encourages organizations to prioritize the well-being of their women employees through comprehensive welfare programs".

2.2 Women in the Supply Chain Industry

Rasool et.al (2025)"investigated the relationship between IT competency, supply chain agility, and supply chain performance in the hospitality industry. Data was collected from 302 full-time hotel and restaurant managers. The results show a positive correlation between IT competency and supply chain performance, with supply chain agility acting as a mediator. Risk management also plays a crucial role in enhancing supply chain outcomes. The study provides valuable insights into the relationship between IT competency and supply chain agility, enriching the academic discourse on supply chain dynamics in the hospitality sector".

Reynolds et.al (2025)"examined the challenges faced by women in supply chain leadership, a traditionally male-dominated field. It reveals cultural and societal biases that undermine women's perceived competence and suitability for leadership roles. These biases influence hiring and promotion decisions, creating significant obstacles for women. Structural and organizational barriers, such as lack of formal diversity policies and flexible working arrangements, further hinder women's career progression. The dual burden of professional and domestic responsibilities also disproportionately affects women, limiting their availability for work-related travel and extended hours. Despite these challenges, the study suggests several pathways to promote gender diversity in supply chain leadership, including organizational commitment, flexible working policies, comprehensive mentorship programs, education and professional development opportunities, and societal and policy-level changes".

Bruzzone et.al (2022)"proposed the innovative approach of Strategic Engineering to Fashion Industry in order to redesign the Supply Chain of Medium Size Enterprises active in high quality Made in Italian women's footwear and how this innovative approach could support enhancements and improvements over multiple target functions. The paper introduces the approach and proposes the framework as example of how combining Modeling and Simulation, Artificial Intelligence and Data Analytics in closed loop with real data it could be possible to support Decision Makers in re-engineering processes and redesigning business models even in Small Medium Size Enterprises devoted to high quality production".

Mujtahid et.al (2020)"discussed the Companies can promote gender equality in supply chains through their actions, business partners, and policy influence. Holistic approaches should be adopted to tackle inequality at every level. A qualitative and quantitative descriptive study was conducted, using data from key informants, secondary data, and literature. The results showed that the Sidoluhur Village Head's professionalism was categorized as Good, with basic knowledge of regulations, management capabilities in human resources, finance, village assets, and public service management, and technical capabilities in village administration, development planning, and budgeting. The study also demonstrated that women roles can be effective in the supply chain process for SMEs as management and effective chain roles".

2.3 Gender Disparities in Career Advancement in Supply Chain Industry

Kumar et.al (2024)"examined supply chain sustainability and compliance with Sustainable Development Goals (SDGs) in agro-based industries. It focuses on environmental, social, and economic aspects. The research uses a qualitative approach, including in-depth interviews and case studies, to identify challenges and propose solutions. The findings reveal obstacles like environmental degradation, labor rights violations, and economic constraints. However, the study also highlights opportunities for progress through innovation, technological integration, and strategic policy reforms.

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Achieving SDG compliance requires collaborative action, capacity development, and coherent policy frameworks. By embracing technology, fostering stakeholder participation, and advocating for supportive policies, the sector can contribute to sustainable development".

Pike et.al (2022)"explored the impact of women's waged work in the garment industry on gender norms and household dynamics in Bangladesh, Cambodia, Kenya, Lesotho, and Vietnam. It examines data on gender dynamics at work and home, finding that while women's empowerment through garment sector employment is limited by low wages, financial insecurity, and gendered expectations, international interventions like the International Labour Organization's Better Work program have expanded women's ability to exert agency over their earnings within the context of household resource allocation, and reduced the negative effects of ongoing financial precarity. The study aims to understand the extent to which these choices translate to household-level empowerment".

Ruel et.al (2021)"examined the impact of gender and expatriation choice on the career progression of 1081 international graduates from a Supply Chain Management program from 2000 to 2017. The analysis reveals that on average, 33.5% of women were recruited in the MSc program, and this percentage has not significantly changed over the years. Gender significantly influences the number of years spent at each level in the career hierarchy and the level reached. Expatriation choice also has significant impacts on career progression. The study reveals that gender has a greater influence on career progression than expatriation choice, highlighting the challenges faced by women in the field of Supply Chain Management".

Ruel et.al (2020)"studied the Gender diversity (GD) is crucial for sustainable business development, but research on GD in sustainability management of supply chains (SMSCs) is limited. This study examines the impact of GD on SMSCs using a literature review methodology over three decades. Results show that while some studies have examined GD and SCM, they often focus on women as victims, neglecting their potential as change actors. Sustainability management literature emphasizes the importance of GD and the specific contributions women managers can make to firms' performance. The study proposes a research agenda that combines outcomes from both fields, highlighting the need for further research on the environmental and social impacts of GD on SMSCs".

3. RESEARCH METHODOLOGY

This research methodology describes how a particular research strategy was utilized to examine gender-based prejudice faced by women professionals working in Chennai's supply chain industry. This study uses a descriptive quantitative design to calculate and study employee views, experiences, and organizational practices concerning gender inclusion and equality in a male-dominated industry. The method used is to gather data that can be trusted from several employees who work in purchasing, logistics, warehouse management, and distribution. By using questionnaires that cover both objective and subjective areas of workplace discrimination, the study helps explain how gender affects the supply chain. The next sections discuss the research design, different ways the data were collected, the strategies for choosing what to study, and the tools used for quantitative accuracy.

3.1 Research Design

The present research used a descriptive quantitative approach to identify, investigate, and interpret discrimination against women in the supply chain sector of Chennai. Since this approach helps clearly measure differences, views, and organizational processes, descriptive methods were selected. This style of questionnaire permits the researcher to record the current level of gender inclusion and spot important trends and differences in work life, how people are treated, and the type of support available. The research looks at people who are responsible for procurement, logistics, warehouse management, and distribution operations. Since these domains are led mostly by men, they match up well with research focused on gender. Our population study consists of staff working in medium and

large companies in Chennai's supply chain and logistics sector. The purpose of this study is to find out how male and female professionals face discrimination based on gender in a common workplace.

3.2 Data Collection

The study employed a primary data collection approach, centered on the use of a structured and pre-tested questionnaire designed to capture comprehensive insights into the subjective and objective experiences of employees working in the supply chain sector. The questionnaire looked at how respondents saw career advancement and were included in the organization through a gender view. Contained a variety of question types, such as Likert scales, to explore topics such as the availability of networks and mentorship, the quantity and clarity of promotions, maintaining a healthy work-life balance, the support that employees receive, whether they encounter discrimination, and their opinions on leadership and gender roles in the workplace. A hybrid approach was selected to make sure a large and diverse group of respondents participated. The survey was released by sending Google Forms electronically and by handing out printed copies in a number of partner organizations and industrial parks within Chennai. Because digital access can be difficult for some, this method allowed us to reach more of our staff working in the field. Prior to the main study, a pilot study with 300 respondents was performed to check the clarity, strength and internal connection of the questionnaire. Based on what the pilot team shared, some changes were made to how questions appeared and were worded to ensure fair and reliable data.

3.3 Sampling Method

Using a stratified random selection approach, each firm was chosen based on the many roles in supply chain organizations. People were grouped according to their gender and their position in the company's job structure (entry, mid, or senior). As a result of this design, both genders and all levels of the organization were well represented, making the findings trustworthy and applicable to other workplaces. The team interviewed 300 respondents in total, and they were divided so that 147 were male and 153 were female. Participants were recruited from across the Chennai region and included leading logistics companies, local warehouses, networks in manufacturing distribution, and supply chain consultants. The companies chosen for the study had a large network, a big workforce, and showed a willingness to be included in the study. All participants gave informed consent before participating in my research. Respondents could be confident that what they answered would not be shared and their identities would not be revealed, which made for a secure experience.

3.4 Statistical Tools

In the study, IBM SPSS helped with data analysis, using different statistical methods to understand what the survey said. The data was summarized using frequencies, means, and standard deviations. Significant differences in mentorship access and fairness at work between male and female respondents were revealed with an independent samples t-test. Used Cronbach's alpha to ensure that multi-item scales were reliable. With the help of these tools, I discovered regularities, tested ideas, and added to the gender connections found in the study.

4. RESULTS & DISCUSSION

The findings of the study give important information about what holds back women's advancement in supply chain companies in Chennai. Research on numbers shows that most women in the workforce deal with scarce opportunities to lead, lack of suitable mentors, and cultures that do not support gender equality well. Tests show that these barriers are real and can be shown to influence women's progress at work, their happiness with their jobs, and whether they stay employed. It is clear from the data that inexperienced staff, particularly younger ones who have not been in their jobs for very long, tend to have more difficulty at work. They reveal the important reasons why career development for women is limited in this industry.

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Table 1: Demographic profile

Gender	**Frequency**	**Percent**
Female	153	51.0
Male	147	49.0
Total	300	100.0
Age	**Frequency**	**Percent**
25–34 years	49	16.3
35–44 years	66	22.0
45–54 years	64	21.3
55 years and above	60	20.0
Below 25 years	61	20.3
Total	300	100.0
Education	**Frequency**	**Percent**
Bachelor's Degree	71	23.7
Diploma	50	16.7
High School	58	19.3
Master's Degree	67	22.3
Ph.D. or higher	54	18.0
Total	300	100.0
Job Role	**Frequency**	**Percent**
Distribution	74	24.7
Logistics	83	27.7
Procurement	73	24.3
Warehouse Management	70	23.3
Total	300	100.0
Job Level	**Frequency**	**Percent**
Entry-Level	104	34.7
Middle-Level	97	32.3
Senior-Level	99	33.0
Total	300	100.0
Experience	**Frequency**	**Percent**
1–3 years	60	20.0
4–6 years	58	19.3
7–10 years	65	21.7
Less than 1 year	56	18.7
More than 10 years	61	20.3
Total	300	100.0

The table presents demographic and professional characteristics of a sample of 300 individuals. Regarding gender, the distribution is almost equal, with females representing 51.0% (153) and males 49.0% (147). The age groups show a fairly balanced spread, with the largest group being 35–44 years at 22.0% (66), followed closely by those below 25 years (20.3%, 61), 55 years and above (20.0%, 60), 45–54 years (21.3%, 64), and 25–34 years (16.3%, 49). In terms of education, participants mostly hold a Bachelor's Degree (23.7%, 71) or a Master's Degree (22.3%, 67), with others having Diplomas (16.7%, 50), High School education (19.3%, 58), or a Ph.D. or higher qualification (18.0%, 54). When looking at job roles, the majority work in Logistics (27.7%, 83), followed by Distribution (24.7%, 74), Procurement (24.3%, 73), and Warehouse Management (23.3%, 70). Job levels are fairly evenly divided among Entry-Level (34.7%, 104), Middle-Level (32.3%, 97), and Senior-Level (33.0%, 99)

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positions. Lastly, work experience varies, with the largest group having 7–10 years of experience (21.7%, 65), closely followed by those with more than 10 years (20.3%, 61), 1–3 years (20.0%, 60), less than 1 year (18.7%, 56), and 4–6 years (19.3%, 58). Overall, the sample represents a diverse and balanced population across these demographic and occupational categories.

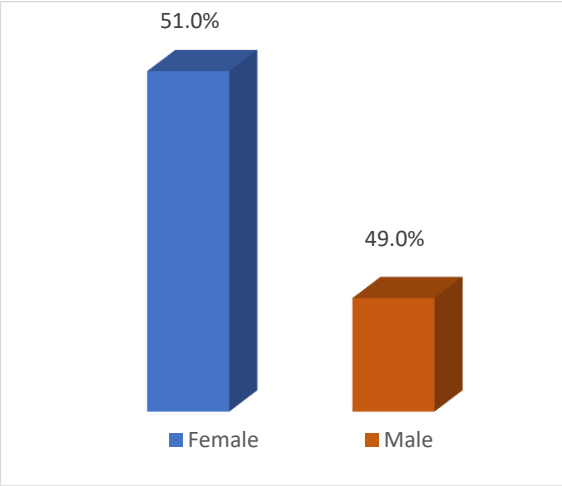

Figure 1: Gender Distribution

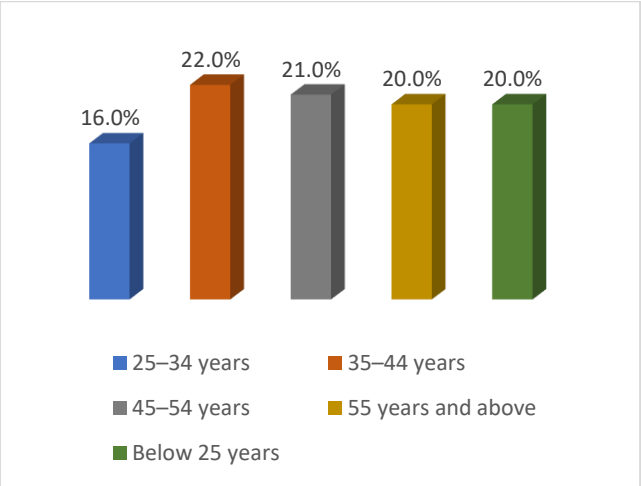

Figure 2: Age Distribution

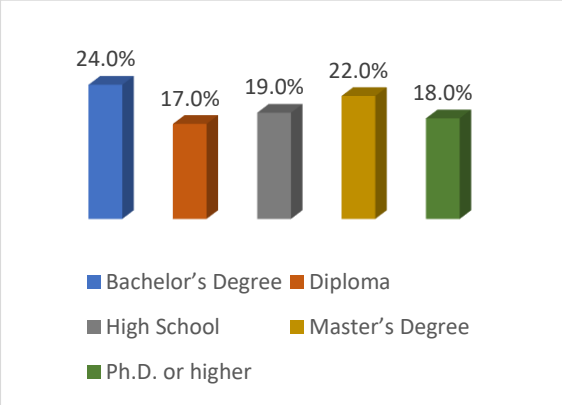

Figure 3: Education Levels

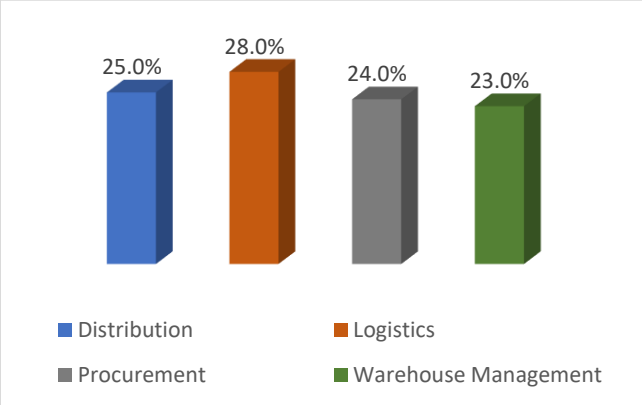

Figure 4: Job Role Distribution

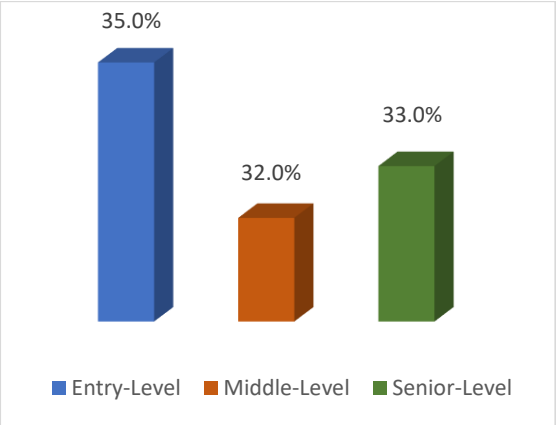

Figure 5: Job Level Distribution

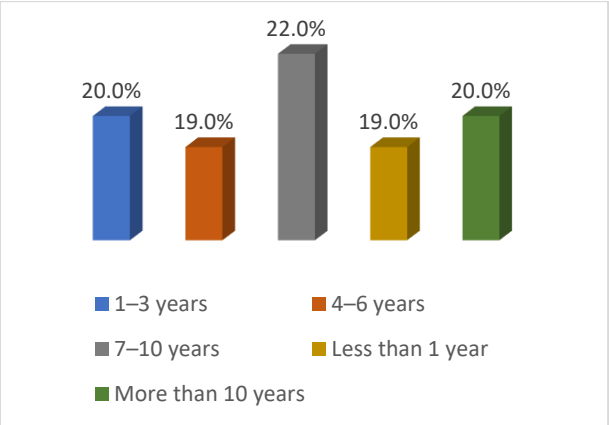

Figure 6: Work Experience Distribution

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Table 2: Reliability Statistics

Scale (Items)	Number of Items	Cronbach's Alpha
Career Progression and Gender Barriers	5	0.989
Organizational Culture and Support	5	0.993
Work-Life Balance and Gender Sensitivity	5	0.995
Career Aspirations and Perceptions	5	0.989

The table presents the internal consistency of four key constructs used in the study, measured using Cronbach's Alpha. Each construct comprises five items. The scale for "Career Progression and Gender Barriers" has a Cronbach's Alpha of 0.989, indicating excellent reliability. Similarly, "Organizational Culture and Support" also demonstrates a very high reliability score of 0.993. The scale for "Work-Life Balance and Gender Sensitivity" shows the highest internal consistency with a Cronbach's Alpha of 0.995. Lastly, "Career Aspirations and Perceptions" reports a reliability coefficient of 0.989. All values exceed the generally accepted threshold of 0.70, suggesting that the items within each scale are highly consistent and reliable for measuring the respective constructs in the study.

Table 3: Descriptive Statistics

Descriptive Statistics					
	N	**Mean**	**Std. Deviation**	**Skewness**	
	Statistic	**Statistic**	**Statistic**	**Statistic**	**Std. Error**
Gender	300	1.51	0.501	-0.04	0.141
Age	300	3.04	1.412	-0.084	0.141
Education	300	3.03	1.374	-0.085	0.141
Job Role	300	2.47	1.098	0.054	0.141
Job Level	300	1.98	0.824	0.031	0.141
Experience	300	3.05	1.407	-0.053	0.141
I have equal opportunities for promotion compared to colleagues of other genders.	300	3.05	1.411	-0.066	0.141
My performance evaluations are conducted fairly and without gender bias.	300	3.08	1.404	-0.093	0.141
Gender influences career advancement in my organization.	300	3.08	1.411	-0.091	0.141
I often feel the need to prove my competence more than others.	300	3.08	1.41	-0.085	0.141
I have been denied promotion or responsibilities due to my gender.	300	3.07	1.411	-0.082	0.141
My organization actively promotes gender diversity and inclusion.	300	3.08	1.396	-0.075	0.141
There is a formal policy for ensuring gender equality in my workplace.	300	3.06	1.42	-0.064	0.141

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I have access to mentorship or coaching opportunities.	300	3.06	1.407	-0.077	0.141
I am encouraged to pursue leadership roles irrespective of gender.	300	3.08	1.408	-0.098	0.141
Training and development opportunities are equally accessible for all.	300	3.08	1.399	-0.068	0.141
My organization supports flexible work arrangements.	300	3.08	1.411	-0.091	0.141
Work-life balance is equally supported for employees of all genders.	300	3.07	1.415	-0.083	0.141
Maternity/paternity leave and benefits are adequate and fairly applied.	300	3.08	1.41	-0.085	0.141
I can openly discuss personal/family concerns with my supervisor.	300	3.08	1.411	-0.079	0.141
Gender-related grievances are addressed seriously and effectively.	300	3.11	1.397	-0.116	0.141
I aspire to attain a senior leadership role in the future.	300	3.07	1.42	-0.076	0.141
I believe my gender may limit my future career opportunities.	300	3.06	1.404	-0.069	0.141
I feel acknowledged and appreciated in my organization.	300	3.04	1.411	-0.057	0.141
I am confident in my ability to progress within my current organization.	300	3.08	1.409	-0.079	0.141
I would recommend my organization as a gender-inclusive workplace.	300	3.09	1.385	-0.088	0.141
Valid N (listwise)	300				

The *Descriptive Statistics* table summarizes the central tendency, dispersion, and distribution shape of demographic variables and key items related to gender barriers and organizational support as perceived by employees in supply chain companies. The sample size for all variables is consistent at 300 respondents. The demographic variables such as Gender (Mean = 1.51, SD = 0.501), Age (Mean = 3.04, SD = 1.412), Education (Mean = 3.03, SD = 1.374), Job Role (Mean = 2.47, SD = 1.098), Job Level (Mean = 1.98, SD = 0.824), and Experience (Mean = 3.05, SD = 1.407) suggest a diverse sample in terms of background and organizational hierarchy. Skewness values for these variables range from -0.085 to 0.054, indicating an approximately normal distribution with minimal skew. The perception-based items related to gender equity and organizational culture show mean values clustered around 3.05 to 3.11, indicating a neutral to slightly positive agreement on statements about equal opportunities, fair evaluations, access to mentorship, support for work-life balance, and promotion of gender diversity. For example, the item *"I would recommend my organization as a gender-inclusive workplace"* has a mean of 3.09, and *"Gender-related grievances are addressed seriously and effectively"* has the highest mean at 3.11. The standard deviations are relatively high (around 1.39 to 1.42), reflecting a wide range of opinions among respondents. All skewness values are close to zero (between -0.116 and 0.054), which implies that the data is symmetrically distributed with no extreme

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skewness. This consistency across items supports the reliability of the data and indicates that respondents' views on gender-related workplace dynamics are evenly spread and not biased toward any extreme. Overall, the data suggests that while there is moderate agreement on the presence of gender-inclusive policies and practices, there is also notable variability in individual experiences and perceptions.

4.2 Hypothesis Testing

H1: There is a significant difference between male and female employees in their perception of career advancement opportunities in Chennai supply chain companies.

Independent Samples Test						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
I have equal opportunities for promotion compared to colleagues of other genders.	Equal variances assumed	0.795	0.373	-2.802	298	0.005
	Equal variances not assumed			-2.800	296.455	0.005
My performance evaluations are conducted fairly and without gender bias.	Equal variances assumed	0.673	0.413	-2.175	298	0.030
	Equal variances not assumed			-2.173	296.457	0.031
Gender influences career advancement in my organization.	Equal variances assumed	1.402	0.237	-2.667	298	0.008
	Equal variances not assumed			-2.665	295.588	0.008
I often feel the need to prove my competence more than others.	Equal variances assumed	1.208	0.273	-2.713	298	0.007
	Equal variances not assumed			-2.710	295.700	0.007
I have been denied promotion or responsibilities due to my gender.	Equal variances assumed	1.312	0.253	-2.500	298	0.013
	Equal variances not assumed			-2.498	295.793	0.013

The Independent Samples t-test results provide strong support for Hypothesis H1, indicating a significant difference between male and female employees in their perception of career advancement

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opportunities within Chennai's supply chain companies. Across all five measured statements—ranging from equal promotion opportunities to perceived denial of responsibilities due to gender—the p-values were found to be below the 0.05 significance threshold, confirming statistical significance. Notably, female employees reported more negative perceptions, suggesting that they are more likely to feel that gender impacts their advancement, requires them to prove competence more often, and leads to unequal treatment in promotions and evaluations. These findings highlight persistent gender-based disparities in workplace experiences, emphasizing the need for more inclusive and equitable career development practices within the sector.Hence, the hypothesis (H1) is accepted, confirming that gender significantly influences employees' perceptions of career advancement opportunities.

H2: Gender significantly influences access to mentorship and professional development opportunities within supply chain organizations.

Independent Samples Test						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
I have access to mentorship or coaching opportunities.	Equal variances assumed	1.315	0.252	-2.510	298	0.013
	Equal variances not assumed			-2.508	295.679	0.013
Training and development opportunities are equally accessible for all.	Equal variances assumed	0.866	0.353	-2.435	298	0.015
	Equal variances not assumed			-2.433	296.004	0.016

The Independent Samples t-test results support Hypothesis H2, which states that gender significantly influences access to mentorship and professional development opportunities within supply chain organizations. The analysis was conducted on two key indicators: access to mentorship or coaching opportunities and the equal accessibility of training and development programs. For both items, the p-values from the t-test for equality of means are 0.013 and 0.015 respectively—both below the 0.05 significance level—indicating statistically significant differences in perception based on gender. These findings suggest that female employees perceive limited access to mentorship and professional growth opportunities compared to their male counterparts. This reflects a gender-based disparity in the availability of developmental resources within the organizational environment. Hence, the hypothesis (H2) is accepted, confirming that gender plays a significant role in influencing access to mentorship and professional development in supply chain companies.

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H3: Work-life balance support and organizational flexibility differ significantly in perception between male and female employees.

Independent Samples Test						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
My organization supports flexible work arrangements.	Equal variances assumed	1.938	0.165	-2.922	298	0.004
	Equal variances not assumed			-2.919	294.906	0.004
Work-life balance is equally supported for employees of all genders.	Equal variances assumed	1.528	0.217	-2.537	298	0.012
	Equal variances not assumed			-2.534	295.559	0.012
Maternity/paternity leave and benefits are adequate and fairly applied.	Equal variances assumed	1.208	0.273	-2.713	298	0.007
	Equal variances not assumed			-2.710	295.700	0.007
I can openly discuss personal/family concerns with my supervisor.	Equal variances assumed	0.669	0.414	-2.415	298	0.016
	Equal variances not assumed			-2.414	296.396	0.016
Gender-related grievances are addressed seriously and effectively.	Equal variances assumed	1.125	0.290	-2.602	298	0.010
	Equal variances not assumed			-2.599	295.649	0.010

The Independent Samples t-test results provide strong evidence in support of Hypothesis H3, which posits that work-life balance support and organizational flexibility are perceived differently by male and female employees. Five key items were analyzed: support for flexible work arrangements, gender-equal work-life balance support, fairness in maternity/paternity benefits, openness in discussing personal concerns with supervisors, and the handling of gender-related grievances. In all cases, the p-values were below the 0.05 significance level, ranging from 0.004 to 0.016, indicating statistically significant differences in perception between genders. These results suggest that female employees are more likely to perceive shortcomings in work-life balance support and flexibility compared to their male counterparts. Such disparities reflect ongoing gender-based challenges in organizational policies and culture related to balancing professional and personal responsibilities. Therefore, the hypothesis

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(H3) is accepted, confirming that gender significantly influences perceptions of work-life balance and organizational flexibility in supply chain companies.

H4: Organizational policies and culture around gender inclusivity are perceived differently by male and female employees.

Independent Samples Test						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
My organization actively promotes gender diversity and inclusion.	Equal variances assumed	1.281	0.259	-2.525	298	0.012
	Equal variances not assumed			-2.522	295.618	0.012
There is a formal policy for ensuring gender equality in my workplace.	Equal variances assumed	1.158	0.283	-2.781	298	0.006
	Equal variances not assumed			-2.779	295.924	0.006
I am encouraged to pursue leadership roles irrespective of gender.	Equal variances assumed	1.050	0.306	-2.418	298	0.016
	Equal variances not assumed			-2.416	296.018	0.016

The Independent Samples t-test results support Hypothesis H4, which suggests that organizational policies and culture around gender inclusivity are perceived differently by male and female employees. The analysis focused on three key statements: whether the organization actively promotes gender diversity and inclusion, the presence of formal gender equality policies, and encouragement to pursue leadership roles regardless of gender. For all three items, the p-values were below the 0.05 significance level (0.012, 0.006, and 0.016 respectively), indicating statistically significant differences in perceptions between male and female respondents. This implies that female employees perceive less support and inclusivity in organizational culture and policies compared to male employees. Therefore, the hypothesis (H4) is accepted, confirming that gender significantly influences perceptions of organizational gender inclusivity policies and culture in supply chain companies.

Table 4: Summary of Hypothesis Testing Results for Gender-Based Perception Differences in Chennai Supply Chain Companies

Hypothesis	Description	Result	Reason
H1	There is a significant difference between male and female employees in their perception of career advancement opportunities.	**Accepted**	All p-values < 0.05, indicating significant differences by gender.
H2	Gender significantly influences access to mentorship and professional development opportunities within supply chain organizations.	**Accepted**	Both p-values < 0.05, showing gender differences in access.

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H3	Work-life balance support and organizational flexibility differ significantly in perception between male and female employees.	**Accepted**	All p-values < 0.05, confirming significant gender-based perception differences.
H4	Organizational policies and culture around gender inclusivity are perceived differently by male and female employees.	**Accepted**	All p-values < 0.05, confirming perception differences by gender.

4.3 Discussion

This study highlights that continual barriers prevent women working in Chennai's supply chain companies from succeeding in their jobs. Even though awareness of gender equality is increasing, female workers still face big obstacles, mainly when it comes to getting mentorship and leadership training. Such disparities mirror problems within companies' cultures, which may unintentionally help men advance while holding back women's advancement. Likewise, the data makes it clear that many women think their organization does not truly support work-life balance, making it harder to handle duties at work and at home together. It appears that companies with gender diversity policies do not always live up to those goals in daily activities. The belief of not being truly welcome creates discomfort among women and could result in staffing loss and wasting the skills of top female candidates. To solve these problems, organizations need to move past basic diversity efforts, support equity through changes in evaluation processes and strong mentoring and sponsoring for women, and adopt work policies that are backed by all managers. Taking steps to make the workplace inclusive and equal supports both the progress of women and the successful and competitive growth of an organization in the supply chain industry.

CONCLUSION

The study gives valuable information on the career barriers that women in Chennai's fast-growing supply chain industry have to deal with. Although progress is being made, the study proves that women still meet many obstacles when it comes to growing in their job, getting advice from mentors, and maintaining a healthy work-life balance. The findings indicate that male and female employees hold different perceptions about the organization's support for leadership skills, policy enforcement, and access to developmental support. The fact that the scales used are highly consistent increases the reliability of what was found. Based on the study, many companies report having gender diversity efforts in place, yet those efforts do not reach meaningful results. Such differences set back women in their careers and prevent supply chain businesses from fully realizing their creative and adaptive abilities. As Chennai aims to become a leading logistics center, resolving these challenges helps to build inclusive and effective workplaces. The study advises businesses to go beyond mere symbolic steps and choose specific actions such as mentoring, allowing employees to work flexibly, leadership programs tailored to both genders, and applying official policies. They contribute to fairness in society and are necessary for a company's ability to flourish sustainably. This work could be developed further by including research that follows people over time, analyzes stories, or compares different sectors or regions. Gender-based hurdles should be continually challenged so the supply chain sector can open new paths for diversity and growth.

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