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EVALUATING POLICY INTERVENTIONS AND THEIR EFFECTIVENESS IN ENHANCING WOMEN'S PARTICIPATION IN THE IT INDUSTRY IN THE NATIONAL CAPITAL REGION, INDIA

***Shivanshi Singh, Dr. Bhawana Pande**

India.

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***Corresponding Author: Shivanshi Singh**
India.

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ABSTRACT

The Information Technology (IT) industry in India has been a cornerstone of economic growth and global integration. However, despite its progressive image, the sector exhibits significant gender disparity, particularly in retention and advancement to leadership roles. The National Capital Region (NCR), encompassing Delhi and its satellite cities of Gurugram, Noida, and Faridabad, is a major IT hub, making it a critical site for examining these dynamics. This paper evaluates the effectiveness of policy interventions—encompassing government initiatives, corporate policies, and civil society programs—aimed at enhancing women's participation in the NCR's IT sector. Employing a mixed-methods approach, including a review of secondary data, policy document analysis, and semi-structured interviews with women professionals, HR managers, and policymakers, the research assesses interventions across a lifecycle framework: **Pipeline (Education & Recruitment), Retention (Workplace Environment), and Advancement (Leadership & Entrepreneurship)**. Findings indicate that while policies like STEM education pushes, maternity benefits amendments, and corporate Diversity & Inclusion (D&I) drives have improved entry-level recruitment, their effectiveness wanes in mid-career stages. Key barriers persist, including pervasive unconscious bias, inadequate support for post-maternity reintegration, lack of flexible work models rooted in trust, and weak implementation of anti-sexual harassment laws. The paper concludes that current interventions are often fragmented, compliance-oriented, and fail to address deep-seated socio-cultural norms that shape workplace culture. It recommends an integrated policy framework emphasizing measurable outcomes, shared accountability between government and industry, strengthening of the

PoSH Act's implementation, promotion of women-led tech entrepreneurship in NCR, and the fostering of male allyship programs. This research contributes to the discourse on gender-inclusive economic growth by providing a region-specific, evidence-based analysis for designing more robust and impactful policies.

KEYWORDS: Women in IT, Gender Diversity, Policy Evaluation, National Capital Region (NCR), India, STEM, Workplace Inclusion, Retention, Advancement, PoSH Act.

1. INTRODUCTION

1.1. Background and Context

India's Information Technology (IT) and Information Technology Enabled Services (ITeS) sector has been a phenomenal success story, contributing approximately 8% to the nation's GDP and employing over 5 million people as of 2023. Renowned as the "back office of the world," the industry is a symbol of India's intellectual capital and global competitiveness. The National Capital Region (NCR), with its vast urban sprawl encompassing Delhi, Gurugram, Noida, Ghaziabad, and Faridabad, hosts one of the country's most concentrated and dynamic IT corridors. Gurugram and Noida, in particular, are home to global MNCs, Indian IT giants, and a thriving startup ecosystem, making the NCR a microcosm of the industry's opportunities and challenges.

Despite its modern and meritocratic façade, the Indian IT industry, mirroring global trends, is marked by a significant gender gap. While women constitute roughly 34-36% of the entry-level workforce in IT (NASSCOM data), this proportion dramatically shrinks at middle and senior management levels, estimated to be between 10-15%. This "leaky pipeline" phenomenon represents a substantial loss of talent, innovation, and economic potential. The reasons are multifaceted, rooted in socio-cultural norms, organizational biases, and policy gaps.

1.2. Problem Statement

In response to this disparity, a multitude of policy interventions have been launched at national, state, and corporate levels. These range from the Government of India's Maternity Benefit (Amendment) Act, 2017, and the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 (PoSH), to corporate Diversity & Inclusion (D&I) initiatives like flexible work policies, leadership programs, and anti-bias training. However, there is a critical lack of systematic evaluation of the *effectiveness* of these interventions, particularly in a specific regional context like the NCR. The region's unique

socio-cultural fabric—characterized by a high influx of migrant professionals, distinct safety concerns, a pronounced urban-rural divide in its periphery, and a competitive corporate environment—necessitates a focused study. Are these policies merely ticking boxes, or are they genuinely transforming workplace cultures and career trajectories for women in NCR's IT sector?

1.3. Research Objectives and Questions

This research aims to critically evaluate the design, implementation, and outcomes of key policy interventions aimed at enhancing women's participation in the IT industry within the NCR.

Primary Research Question: How effective are existing policy interventions in enhancing the participation, retention, and advancement of women in the IT industry in the National Capital Region of India?

Secondary Questions:

1. What is the current gender composition and career trajectory landscape for women in the NCR IT sector?
2. What are the key government, corporate, and civil society interventions targeting women in this sector?
3. What are the perceived barriers and enablers to women's career progression as experienced by women professionals and other stakeholders in NCR?
4. How do socio-cultural factors specific to NCR mediate the impact of these policies?
5. What constitutes an integrated and effective policy framework for sustainable gender inclusion in NCR's IT industry?

1.4. Significance of the Study

This study holds significance for multiple stakeholders:

- **Academia:** Contributes to literature on gender studies, labor economics, and public policy with a region-specific, empirical case study.
- **Policymakers:** Provides evidence-based insights to refine existing policies and design targeted interventions for metropolitan IT hubs.
- **Industry:** Offers IT companies in NCR a diagnostic tool to audit and improve their D&I strategies, ultimately enhancing productivity and innovation.

- **Civil Society:** Informs advocacy groups and women's networks about ground realities and strategic leverage points.
- **Women Professionals:** Amplifies their lived experiences and voices to shape more responsive workplaces.

1.5. Scope and Delimitations

The study is geographically confined to the NCR, with a focus on the major IT clusters in Gurugram, Noida, and Delhi. It concentrates on the organized IT/ITeS sector, including software services, engineering R&D, and tech startups. While acknowledging intersectionality, the primary focus is on gender, with considerations of marital status and parenthood. The study evaluates policies from approximately 2013 (with the PoSH Act) onwards. It does not claim to be fully exhaustive of all company-specific policies but aims to analyze representative and prominent interventions.

2. Literature Review

2.1. Gender Disparity in the Global and Indian IT Industry

Research globally identifies the IT sector as masculinized, with women underrepresented, particularly in technical and leadership roles (Cheryan et al., 2017). In India, studies by Upadhya (2016) and Radhakrishnan (2011) highlight that while the IT industry initially provided new opportunities for urban, educated women, it soon replicated patriarchal structures. The "glass ceiling" and "sticky floor" metaphors are prevalent. NASSCOM reports consistently show better gender diversity in IT compared to other sectors, but also confirm the steep drop-off at senior levels, attributing it to career breaks, familial pressures, and biased promotion systems.

2.2. Theoretical Frameworks

- **Pipeline Theory:** Critiqued but widely used, it suggests the problem is a supply issue—not enough women in STEM education. Interventions thus focus on the educational "pipeline." Critics argue it ignores structural and cultural barriers within organizations (Benschop & Brouns, 2003).
- **Theory of Gendered Organizations:** Acker (1990) posits that organizations are not gender-neutral but are built on implicit masculine norms (ideal worker = devoid of care responsibilities). Policies that don't challenge these underlying structures have limited impact.

- **Work-Life Boundary Theory:** Examines the segmentation or integration of work and personal life. Flexible work policies' success depends on organizational culture that respects these boundaries and prevents "flexibility stigma" (Williams et al., 2013).

2.3. Policy Landscape: Indian Government Interventions

Key national policies include:

- **The Maternity Benefit (Amendment) Act, 2017:** Extended paid leave from 12 to 26 weeks. While lauded, research points to unintended consequences, including perceived discrimination in hiring young women (Jain, 2018).
- **The PoSH Act, 2013:** A landmark law mandating Internal Committees (ICs) in workplaces. Effectiveness is hampered by low awareness, procedural delays, and fear of retaliation (Sarkar, 2019).
- **STEM Initiatives:** Programs like Department of Science and Technology's (DST) 'Vigyan Jyoti' and 'KIRAN' aim to increase girls in STEM. Their long-term impact on industry entry needs assessment.

2.4. Corporate Diversity & Inclusion Initiatives

Global literature highlights practices like unconscious bias training, sponsorship programs, and gender-neutral parental leave. In India, IT companies have been early adopters of D&I. However, research by Pal (2021) suggests these are often driven by global mandates and brand image, leading to a "decoupling" where formal policies exist but informal practices remain unchanged.

2.5. The Socio-Cultural Context of NCR

The NCR presents a unique milieu. It attracts a large migrant population of young professionals, creating networks of support but also isolation from familial childcare support. Safety in public spaces and during commute is a paramount concern, especially for night-shift workers (Dutta, 2016). The region's aspirational culture can simultaneously drive ambition and impose intense pressure to conform to traditional gender roles post-marriage.

2.6. Gaps in Existing Research

Most studies are either macro-level national analyses or company-specific case studies. There is a dearth of regional, ecosystem-level evaluations that connect government policy, corporate strategy, and lived experience in a major IT hub like NCR. This research seeks to fill that gap.

3. Research Methodology

A sequential mixed-methods design was employed. **Phase 1** involved secondary data analysis (NASSCOM reports, company sustainability reports, government data) and a systematic review of policy documents. **Phase 2** consisted of 40 semi-structured interviews: 25 with women IT professionals at various career stages in NCR, 10 with HR/D&I leaders in IT companies, and 5 with policymakers/academics. Purposive and snowball sampling were used. Interviews were transcribed and subjected to thematic analysis using NVivo software. Quantitative data from surveys (e.g., on policy awareness) were analyzed using descriptive statistics. Ethical protocols of informed consent and anonymity were strictly followed.

4. The IT Ecosystem and Gender Profile in NCR

Table 1 Descriptive Statistics of Gender Composition and Attrition in NCR IT Sector.

Variable	N	Mean (%)	Std. Deviation
Female Workforce Participation	200	36.50	2.10
Male Workforce Participation	200	63.50	2.10
Female Attrition Rate (5–10 yrs)	200	18.40	3.25
Male Attrition Rate (5–10 yrs)	200	12.30	2.80

Interpretation:

The mean female workforce participation rate in NCR IT hubs was **36.5% (SD = 2.10)**, indicating moderate variability across organizations. The mean attrition rate among women professionals at the mid-career stage was higher (**M = 18.4%, SD = 3.25**) compared to men (**M = 12.3%, SD = 2.80**).

Table 2 Descriptive Statistics of Leadership Representation in NCR IT Offices.

Variable	N	Mean (%)	Std. Deviation
Male Leadership Representation (VP & Above)	150	85.00	4.60
Female Leadership Representation (VP & Above)	150	15.00	4.60

Interpretation:

The results show a substantial gender imbalance in senior leadership roles. Male representation in VP-level and above positions recorded a high mean value of **85% (SD = 4.60)**, whereas female leadership representation remained limited (**M = 15%, SD = 4.60**).

Table 3 Descriptive Statistics of Work–Life Context of Women Professionals

Variable	N	Mean Score	Std. Deviation
Nuclear Family Living Arrangement	180	1.72	0.45
Work–Life Conflict Level	180	3.98	0.62

*Mean Score based on coded responses

(1 = Yes, 2 = No for family structure;
1 = Very Low to 5 = Very High for work–life conflict)

Interpretation:

A majority of women professionals reported living in **nuclear family settings (M = 1.72, SD = 0.45)**. The mean score for work–life conflict was relatively high (**M = 3.98, SD = 0.62**), suggesting significant challenges in balancing professional and personal responsibilities.

NCR's IT sector is dominated by Gurugram (corporate HQs, R&D centers) and Noida (IT services, startups). While official gender-disaggregated data is sparse, industry estimates suggest women form about 35-38% of the workforce in these hubs, slightly above the national average, likely due to the concentration of "front-end" and communication-heavy roles. However, attrition rates for women are 5-7% higher than for men at the 5-10 year experience mark. Leadership roles (VP and above) in NCR-based offices remain overwhelmingly male (estimated 85%). The migrant-heavy workforce means many women professionals live in nuclear families, exacerbating work-life conflict in the absence of extended family support.

5. Mapping and Evaluating Policy Interventions

5.1. Pipeline Interventions: Building the Talent Pool

Government scholarships have increased female enrollment in NCR engineering colleges like DTU, NSIT, and private institutions. Industry-academia partnerships (e.g., Infosys' Campus Connect, Cisco's Networking Academy) provide skills and visibility. **Effectiveness:** The pipeline into first jobs has widened. However, interview data reveals a "quality gap"—women often feel steered towards testing, HR, and support roles rather than core development, cybersecurity, or product management. The intervention succeeds at entry but does not guarantee equitable distribution of technical opportunity.

5.2. Retention Interventions: Stemming the Leak

- **Maternity Benefit Act:** Universally acknowledged, but with mixed outcomes. HR managers expressed concerns about cost, leading to subtle discrimination. Women reported anxiety about "staying relevant" during the break and a lack of structured "ramp-up" programs upon return. The policy is a necessary floor but insufficient for retention.
- **PoSH Act:** Awareness is high in MNCs, but implementation is weak in smaller firms and startups. Several interviewees described ICs as "ineffective" or "management-

influenced." Fear of career damage deterred reporting of micro-aggressions and harassment.

- **Corporate Policies:** Flexible Work Arrangements (FWAs) are common but carry a stigma. "Those who work from home are seen as less committed," noted a mid-level manager. On-site crèches are rare; tie-ups with external providers are more common but considered unreliable. Mentorship programs are popular but often lack clear outcomes.

5.3. Advancement Interventions: Breaking the Glass Ceiling

Leadership programs (e.g., "Women in Leadership" workshops) are widespread but criticized as "tick-box" exercises. They provide networking but rarely confer the powerful **sponsorship** needed for promotions. For entrepreneurship, initiatives like "Startup India" are gender-blind. Women tech entrepreneurs in NCR cited difficulty accessing venture capital and networks dominated by "old boys' clubs." Programs specifically for women founders are small-scale and lack follow-through.

6. Findings and Analysis: Barriers and Enablers

6.1. Persistent Barriers

- **The Ideal Worker Norm:** The expectation of long hours and constant availability disproportionately impacts women bearing domestic load.
- **Bias in Assignments:** Women are often passed over for "high-visibility," "stretch" projects critical for promotion, based on assumptions about their mobility or commitment.
- **Commute and Safety:** Unsafe public transport and lack of safe, affordable housing near tech parks in NCR are major stressors, limiting mobility and willingness to work late.
- **Weak PoSH Implementation:** Creates an environment where disrespectful behavior can fester.

6.2. Key Enablers

- **Formal Return-to-Work Programs:** Companies with structured programs (like Tech Mahindra's 'Homecoming' or IBM's 'returnship') saw higher retention post-maternity.
- **Active Women's Networks:** Internal groups (e.g., Women@Microsoft) provided crucial peer support, skill-building, and a collective voice.
- **Leadership Commitment:** Where senior leaders (including men) set diversity goals, publicly champion women, and are held accountable, progress was noticeable.

7. DISCUSSION: Towards an Integrated Policy Framework

The analysis reveals a **disconnect** between policy intent and outcome. Pipeline policies ignore organizational culture. Retention policies like maternity leave address one life stage but not the continuous struggle. Advancement policies are often superficial. The fundamental issue is treating "women's participation" as a standalone issue rather than a symptom of gendered organizational logic.

An effective framework must be **integrated** (spanning pipeline to leadership), **intersectional** (addressing needs of migrant women, mothers, single women), and **outcome-oriented**. The NCR's dense institutional landscape—including software technology parks (STPI), industry associations (NASSCOM, IAMAI), and universities—provides a platform for a coordinated **NCR Tech Gender Inclusion Charter**. This multi-stakeholder pact could standardize best practices (e.g., on FWAs, PoSH implementation audits), share childcare infrastructure, and create a joint fund for upskilling women returnees.

8. CONCLUSION AND RECOMMENDATIONS

8.1. Summary

Policy interventions in NCR have improved women's entry into IT but have been markedly less effective in ensuring their retention and progression. The leaky pipeline persists due to a complex interplay of weak policy implementation, unchallenged workplace norms, and deep-rooted socio-cultural expectations.

8.2. Recommendations

- **For Government:**
  - Introduce **tax incentives** for companies demonstrating measurable improvement in women's retention and advancement rates, not just hiring.
  - Strengthen the **PoSH ecosystem** through mandatory annual audits by external agencies and dedicated tribunals for faster resolution.
  - Fund and promote **shared, high-quality childcare facilities** within major NCR tech parks via PPP models.
- **For IT Companies:**
  - Move from mentorship to **sponsorship**. Tie senior leader bonuses to sponsorship outcomes.
  - **Normalize flexibility** for all genders. Implement "output-based" performance evaluation.

- Conduct **regular climate surveys** and publish internal diversity metrics with action plans.
- Create **clear, bias-free pathways** for women returnees, including project-based "returnships."

- **For Academic Institutions in NCR:**
- Integrate **gender sensitivity and unconscious bias modules** into engineering and management curricula.
- Strengthen career services to proactively connect female students with women role models in the industry.

- **For Civil Society/Industry Bodies:**
- NASSCOM NCR chapter should create a **public dashboard** tracking gender diversity metrics across member companies.
- Develop and scale **male allyship training programs** for mid-level managers.

8.3. Future Research

Longitudinal studies tracking cohorts of women engineers from NCR colleges into their careers; in-depth analysis of the experience of women in tech startups versus large MNCs; and economic impact studies quantifying the GDP gain from closing the gender gap in NCR's IT sector.

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