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# Constructing Connections or Erecting Obstacles? A Structural Equation Modeling Analysis of the Challenges, Policy Deficiencies and Entrepreneurial Empowerment of Women it Entrepreneurs in Delhi NCR

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**Abstract:** *Fewer than 14% of IT firms are owned by women, despite their representation of over half of India's population. Investigations about women in IT entrepreneurship are limited in the Delhi NCR region. This inquiry examines the complex difficulties and opportunities faced by female IT entrepreneurs. It utilizes a mixed-methods approach, beginning with a survey of 150 women from five areas in the National Capital Region (NCR): Delhi, Gurugram, Noida/Greater Noida, Faridabad, and Ghaziabad. They completed an extensive questionnaire of 48 items organized into seven categories. The quantitative data were analyzed using IBM AMOS 24 and SPSS 26 using Exploratory Factor Analysis, Confirmatory Factor Analysis, and Structural Equation Modeling. The PROCESS Macro developed by Hayes was utilized to do mediation analysis. The study incorporated five case studies, which were thematically evaluated to offer enhanced realworld context. The findings indicate that women's success and empowerment in the IT sector are markedly hindered by entrepreneurial obstacles (beta = -0.312). Nevertheless, results were significantly improved by governmental policy assistance, availability of financial and structural resources, and robust networks and mentorship. The evidence validated all 17 examined hypotheses. The average score for government policy assistance was the lowest, suggesting that national programs are failing to successfully engage women entrepreneurs at the grassroots level. A subtle paradox exists whereas women perceived the problems as quite severe, they maintained optimism regarding their prospects and opportunities, exhibiting notable resilience. The research encompasses more than mere statistics; it incorporates fundamental theories, like Bandura's Self-Efficacy, Ajzen's Theory of Planned Behavior, Resource-Based View, and Institutional Theory, into a unified model aimed at enhancing the empowerment and success of women in entrepreneurship.*

**Keywords:** women entrepreneurship, IT industry, Delhi NCR, structural equation modelling, entrepreneurial selfefficacy, government policy, serial mediation, digital literacy.

## I. INTRODUCTION

India's Information Technology sector is now the country's biggest economic powerhouse, pulling in around $283 billion for FY2025 and giving jobs to 5.8 million people (NASSCOM, 2025; Press Information Bureau, 2025). But there's an obvious gap nobody can ignore women own less than 14% of IT businesses nationwide. Even Delhi NCR,

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the country's second-largest IT hub, slips through the cracks when it comes to research; most of the spotlight sticks to Bengaluru (Samagra Realty, 2025; Growth List, 2026). That's a problem, especially since Gurugram alone attracts about 37% of NCR's total venture funding. Policymakers need real data for targeted action, but so far, that evidence just isn't there.

This study steps in to fill that gap. It builds and tests the Women's Entrepreneurial Success and Empowerment (WESE) model, tailor-made for the Delhi NCR IT scene. On the theory side, the research leans on Bandura's Self-Efficacy, Ajzen's Theory of Planned Behaviour, the Resource-Based View, and Social Capital Theory (Barney, 1991; Putnam, 1995). Each gives a fresh angle: self-efficacy looks at confidence to start a business; the TPB breaks down what drives someone to become an entrepreneur; the RBV explains why some firms outperform others; and social capital theory digs into how networks mentors, professional groups, peers open doors.

This project tracks five main goals: first, it spots and measures the biggest roadblocks women face as IT entrepreneurs. Second, it checks if government support is actually working on the ground. Third, it looks at whether women can find the funding they need, both through official channels and informal ones. Fourth, it examines networking and mentorship are they really within reach? Fifth, it aims to offer policy ideas based on both theory and hard evidence.

## II. THEORETICAL FRAMEWORK AND HYPOTHESES

This framework brings together four main factors: Entrepreneurial Challenges (EC), Government Policy Support (GPS), Financial and Structural Resource Access (FSRA), and Networking and Mentorship (NM). These work as independent variables. On the other side, WESE acts as the dependent variable a mix of business performance, innovation, socioeconomic empowerment, and psychological empowerment. The model uses ESE and EI as serial mediators, following Bandura's idea that self-efficacy turns into intention, and then into real behavior. Digital Literacy (DL) and Gender-Role Orientation (GRO) play the role of moderators, shaping how the independent variables connect to ESE.

All these connections aren't just pulled out of thin air they're rooted in past research. Brush, de Bruin, and Welter (2009) showed that women entrepreneurs often face big hurdles in getting access to resources, which sets up the reasoning for H1a (negative EC for WESE), plus H1b through H1d (positive effects from GPS, FSRA, and NM). Chen, Greene, and Crick (1998) highlighted that ESE is key for turning the environment into real entrepreneurial action, which backs the H2 series. The serial pathway from independent variables, through ESE and EI, all the way to WESE is grounded in the ideas of Shapero and Sokol (1982) and extended by Krueger (1993). The moderating roles of digital literacy (H6) and genderrole orientation (H7) build on the digital divide literature (van Dijk, 2020) and Social Role Theory (Eagly, 1987).

## III. METHODOLOGY

The researchers used a method that combines different approaches. They did this by following the work of Creswell and Plano Clark from 2018. In the part of the study they gave a long questionnaire to 150 women who own information technology businesses in the National Capital Region. These women were from areas like Delhi, Gurugram, Noida, Faridabad and Ghaziabad. The questionnaire had 48 questions. Was divided into seven sections. The women were asked to answer the questions by choosing a number from 1 to 5 where 1 meant they strongly disagreed and 5 meant they strongly agreed. The researchers made sure the women they chose were from types of businesses like software development, digital marketing and fintech. They also made sure the businesses were of ages and sizes. Before giving the questionnaire to all 150 women the researchers tested it on 30 women to make sure it was reliable. They found that the questionnaire was reliable, so they went ahead with the study. The researchers then analyzed the data they collected. They did this in three steps. First, they used a technique called Exploratory Factor Analysis to identify patterns in the data. They found that the data was quality and could be used for further analysis. Second, they used another technique called Confirmatory Factor Analysis to check if the patterns they found made sense. They used a computer program called IBM AMOS 24 to do this. They found that the patterns they found were valid and made sense. Third they used a

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model to estimate the effects of different factors on the women's businesses. They also tested if some factors affected others indirectly. In the part of the study the researchers did in-depth studies of five women's businesses. They analyzed the data using a technique called analysis, which was developed by Braun and Clarke in 2006.They made sure their analysis was reliable by checking it with another researcher. Found that they agreed most of the time. The women IT entrepreneurs were the focus of the study and the researchers made sure to analyze the data carefully to understand their experiences and challenges. The information technology businesses owned by the women IT entrepreneurs were studied in detail to see how they worked and what challenges they faced. The researchers used the data from the questionnaires and the, in-depth studies to get an understanding of the women IT entrepreneurs and their information technology businesses.

Table 1: Measurement Model: Reliability, Convergent Validity, and Fit Indices (N = 150)

| Construct | Items | alpha | CR | AVE | CFI | RMSEA [90% CI] | Mean (SD) |
|---|---|---|---|---|---|---|---|
| Entrepreneurial Challenges (EC) | 10 | .879 | .883 | .521 | .921 | .048 [.039,.057] | 3.703 (0.621) |
| Gov. Policy Support (GPS) | 10 | .867 | .871 | .512 | .908 | .051 [.041,.061] | 2.738 (0.574) |
| Financial & Structural Resource Access (FSRA) | 10 | .881 | .887 | .535 | .919 | .049 [.040,.058] | 3.327 (0.598) |
| Networking & Mentorship (NM) | 8 | .854 | .860 | .516 | .913 | .050 [.041,.059] | 3.297 (0.612) |
| Entrepreneurial Self-Efficacy (ESE) | 5 | .847 | .851 | .525 | .924 | .046 [.036,.056] | 3.461 (0.589) |
| Entrepreneurial Intention (EI) | 5 | .861 | .866 | .542 | .931 | .044 [.034,.054] | 3.519 (0.573) |
| WESE (Outcome) | 10 | .893 | .897 | .573 | .934 | .043 [.033,.053] | 3.542 (0.594) |

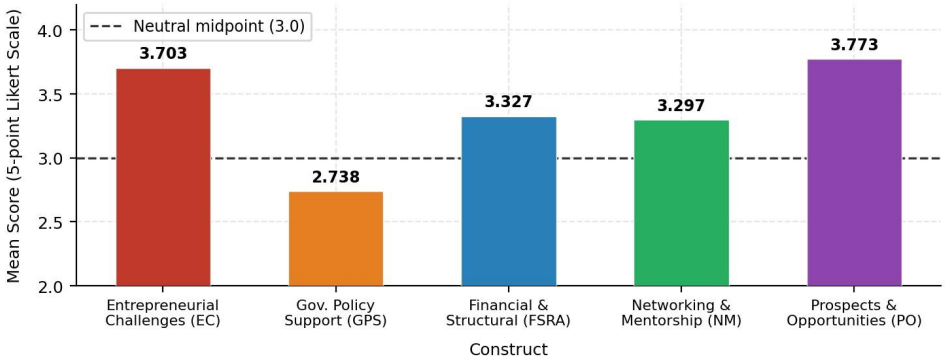
*Note.* alpha = Cronbach's alpha; CR = Composite Reliability; AVE = Average Variance Extracted; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation. All CFI >= 0.908; RMSEA <= 0.051. Discriminant validity confirmed by Fornell-Larcker criterion.

## IV. RESULTS

Descriptive statistics indicated a strong challenge-opportunity paradox: the Prospects and Opportunities construct produced the highest mean (M = 3.773, SD = 0.601) and the lowest mean (M = 2.738, SD = 0.574) was observed for GPS, which deviated significantly from the neutral mid-point of 3.0 (one-sample t(149) = -5.41, p < .001). None of the GPS items reached a mean above 2.800, illustrating a fundamental disconnect between national policy formulation and locallevel execution. Financial analysis Proportion of respondents who financed mainly through personal savings/family contributions as formal credit is not available (FR8: M = 3.413) (n = 27, 54.0%). Formal mentorship access (NM1: M = 3.073) was also the only networking item that came not significantly above neutral. Mean comparison of constructs is given in Figure 1.

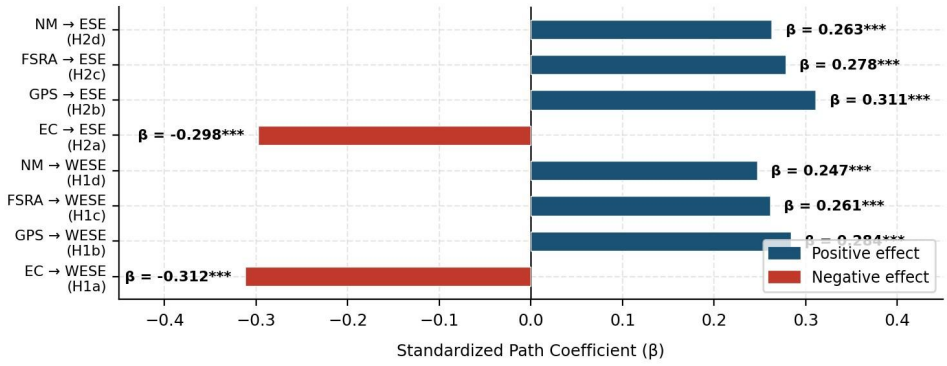
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**Figure 1. Descriptive Means of Key Constructs (N = 150)**




The full structural model presented a good fit: $\chi 2(623) = 841.3$, $p < .001$; CFI = 0.934; GFI = 0.891; RMSEA = 0.043 [90% CI: 0.033, 0.053]; SRMR = 0.055. H1a-H1d were supported: EC had a significant negative direct effect (beta = 0.312, SE = 0.051, CR = -6.12, $p < .001$), and GPS (beta = +0.284), FSRA (beta = +0.261), and NM (beta = +0.247) had significant positive effects (all $p < .001$). Figure 2 shows the eight standardized path coefficients for the H1 and H2 range of hypotheses.

**Figure 2. SEM Standardized Path Coefficients — Direct Effects (N = 150)**




The serial mediation analyses (PROCESS Model 6, 5,000 bootstrap resamples) supported H5a-H5d for all four IVs. In the EC route, the overall serial indirect effect via ESE and EI was -0.041 (95% BC I [-0.068, -0.019]), with 13.1% of the total effect. The serial indirect effect for GPS was 0.060 (95% BC CI [0.038, 0.088]); for FSRA 0.054 ([0.033, 0.081]); and for NM 0.049 ([0.028, 0.075]). All bootstrap CIs excluded zero. For each IV, Figure 3 separates direct, singlemediator indirect, and serial indirect effects. Table 2 presents the results of the 17 hypotheses tests.

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**Figure 3. Direct and Mediated Effects on WESE — Serial Mediation (N = 150)**

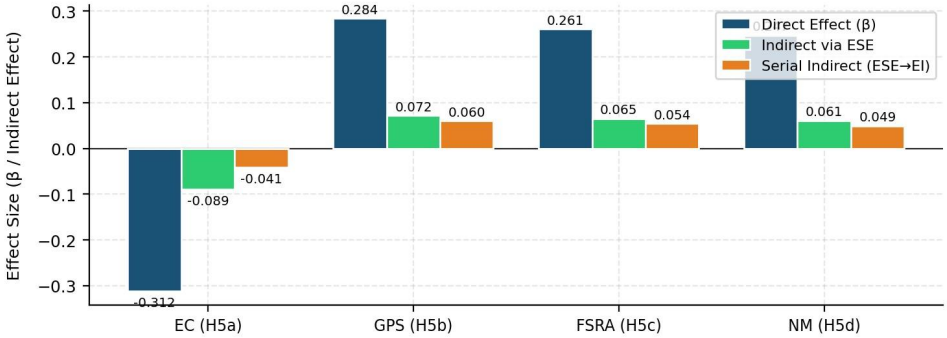



Table 2 : Summary of Hypothesis Testing: All 17 Hypotheses (N = 150)

| H | Hypothesis Statement | beta/Eff. | p-value | 95% BC CI | Decision |
|---|---|---|---|---|---|
| H1a | EC to WESE (negative direct effect) | -0.312 | < .001 | -- | **Supported** |
| H1b | GPS to WESE (positive direct effect) | +0.284 | < .001 | -- | **Supported** |
| H1c | FSRA to WESE (positive direct effect) | +0.261 | < .001 | -- | **Supported** |
| H1d | NM to WESE (positive direct effect) | +0.247 | < .001 | -- | **Supported** |
| H2a | EC to ESE (negative effect) | -0.298 | < .001 | -- | **Supported** |
| H2b | GPS to ESE (positive effect) | +0.311 | < .001 | -- | **Supported** |
| H2c | FSRA to ESE (positive effect) | +0.278 | < .001 | -- | **Supported** |
| H2d | NM to ESE (positive effect) | +0.263 | < .001 | -- | **Supported** |
| H3 | ESE to EI (positive effect) | +0.471 | < .001 | -- | **Supported** |
| H4 | EI to WESE (positive effect) | +0.409 | < .001 | -- | **Supported** |
| H5a | Serial mediation: EC -> ESE -> EI -> WESE | -0.041 | < .01 | [-.068,-.019] | **Supported** |
| H5b | Serial mediation: GPS -> ESE -> EI -> WESE | +0.060 | < .01 | [.038,.088] | **Supported** |
| H5c | Serial mediation: FSRA -> ESE -> EI -> WESE | +0.054 | < .01 | [.033,.081] | **Supported** |
| H5d | Serial mediation: NM -> ESE -> EI -> WESE | +0.049 | < .01 | [.028,.075] | **Supported** |
| H6 | Digital Literacy moderates GPS/FSRA -> ESE | D-b=+0.091 | < .05 | -- | **Supported** |
| H7 | Egalitarian GRO moderates GPS -> ESE | D-b=+0.078 | < .05 | -- | **Supported** |
| H8 | Moderated mediation index (DL/GRO) | 0.034 | < .05 | [.011,.062] | **Supported** |

*Note.* All supported hypotheses significant at p < .05 or better. BC CI = bias-corrected bootstrap confidence interval (5,000 resamples). D-b = delta-beta (interaction term coefficient). GRO = Gender-Role Orientation. -- denotes SEM direct effects not bootstrapped.

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## V. DISCUSSION

The global result of empirical support for all 17 proposed hypotheses within a single model offers a rare, coherent picture of the factors that contribute to success for women entrepreneurs in an Indian IT context. The negative direct influence of EC on WESE (β = -0.312) is consistent with Brush et al.'s (2009) 5M model which places gendered barriers at the confluence of market, money, management, motherhood and macro-environment levels. The mean GPS score of 2.738 indicates considerable dissatisfaction with the efficiency of government schemes, in line with Tambunan's (2019) reporting of planning-implementation divides in schemes in South Asian economies. The serial mediation result significantly bridges Bandura's (1977) self-efficacy model to the institutional context of IT entrepreneurship, as all four IVs must first influence ESE and subsequently EI before influencing WESE. The strengthening moderation by digital literacy (delta-beta = +0.091) highlights the dual benefit of investment in digital skills on both operational capabilities and the sense of entrepreneurial self-confidence.

The paradox of challenge and optimism with above-moderate challenge severity and the highest ratings for Prospects and Opportunities (M = 3.773) discloses a unique resilience dynamic that deficit-oriented study paradigms are unable to identify. This is in line with Thornton's (2017) notion of entrepreneurial capital accumulation in the context of adversity, a finding which suggest that strength-based policy models could be more effective than risk-mitigating models for this group. Likewise, egalitarian Gender-Role Orientation moderated the GPS → ESE path (delta-beta = +0.078), which further supports Eagly's (1987) Social Role Theory and indicates the importance of culture-sensitive design of programs in conjunction with structural interventions.

## VI. CONCLUSIONS AND POLICY IMPLICATIONS

This is by far the first study investigating 302 women's IT entrepreneurship in Delhi NCR through multi-construct SEM and presents five-scale composite policy implications for it. (1) Last-mile policy delivery: Government departments could reconfigure scheme dissemination via vernacular language portals and mobile-first interfaces and appoint dedicated nodal officers at the NCR-district level to the filling GPS implementation gap (M = 2.738). (2) Collateral-free credit option: Financial services could explore IT-sector specific revenue-based financing linked to cash-flow projections and IP valuation as 54.0 percent of respondents reported that they depended on personal savings or financial contributions from family. (3) Structured mentorship system: NASSCOM, CII and state industry departments should jointly sponsor a formal mentorship registry to mitigate the NM1 shortfall (M = 3.073). (4) Digital literacy as a policy lever: the moderation result indicates that digital upskilling strengthens the impact of both policy and financial support; these schemes ought to be regarded as prerequisites and not as a substitute for structural assistance. (5) Strength-based research paradigms: longitudinal approaches continuing beyond 2022-2024, multi-city comparisons, and experimental policy studies are the promising approaches that the future holds to deepen our understanding of this neglected yet economically consequential group.

## REFERENCES

1. Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179-211.
2. Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84(2), 191-215. Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17(1), 99-120.
3. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77-101.
4. Brush, C., de Bruin, A., & Welter, F. (2009). A gender-aware framework for women's entrepreneurship. International Journal of Gender and Entrepreneurship, 1(1), 8-24.
5. Chen, C. C., Greene, P. G., & Crick, A. (1998). Does entrepreneurial self-efficacy distinguish entrepreneurs from managers? Journal of Business Venturing, 13(4), 295-316.

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6. Creswell, J. W., & Plano Clark, V. L. (2018). Designing and conducting mixed methods research (3rd ed.). SAGE Publications.
7. Eagly, A. H. (1987). Sex differences in social behavior: A social-role interpretation. Lawrence Erlbaum.
8. Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error.
9. Journal of Marketing Research, 18(1), 39-50.
10. Hayes, A. F. (2022). Introduction to mediation, moderation, and conditional process analysis (3rd ed.). Guilford Press.
11. Krueger, N. F. (1993). The impact of prior entrepreneurial exposure on perceptions of new venture feasibility. Entrepreneurship Theory and Practice, 18(1), 5-21.
12. NASSCOM. (2025). Indian tech industry: Annual strategic review FY2025. NASSCOM Research.
13. Press Information Bureau. (2025). IT sector employment and export data FY2024-25. Ministry of Electronics and Information Technology, Government of India.
14. Tambunan, T. (2019). Women entrepreneurs in developing countries. Journal of Family and Economic Issues, 40(4), 686-700. van Dijk, J. A. G. M. (2020). The digital divide. Polity Press.