



Determinants of women employees efficiency (WEE) – A case study in IT sector of Hyderabad

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Abstract

The efficiency of women employees has become a critical determinant of organizational performance in the rapidly evolving information technology (IT) sector. This study examines the key factors influencing women employee efficiency in the Indian IT industry by employing a Structural Equation Modeling (SEM) approach. The study investigates the effects of Work-Life Balance, Organizational Support, Leadership and Career Development, Workplace Environment, Psychological Well-being, and Technological Competence on Women Employee Efficiency. Primary data were collected through a structured questionnaire from women employees working in IT companies in Hyderabad. The reliability and validity of the measurement model were assessed using Cronbach's Alpha, Composite Reliability, convergent validity, and discriminant validity, followed by Confirmatory Factor Analysis (CFA) and SEM to test the proposed hypotheses. The findings reveal that the measurement model demonstrates satisfactory reliability and validity, with all model fit indices meeting the recommended thresholds. The structural model indicates that all six determinants have a positive and statistically significant influence on women employee efficiency. Among the predictors, Organizational Support emerged as the strongest determinant, followed by Psychological Well-being and Work-Life Balance, while Leadership and Career Development, Technological Competence, and Workplace Environment also significantly contributed to employee efficiency. The study highlights the importance of supportive organizational policies, employee well-being initiatives, career development opportunities, and technology-oriented skill enhancement in improving the performance of women employees.

Keywords: Women Employees efficiency, IT sector, work efficiency

Introduction

The Information Technology (IT) industry has become one of the primary drivers of India's economic growth, contributing significantly to employment generation, exports, innovation, and digital transformation. Over the last two decades, the sector has witnessed remarkable growth in women's participation, with female employees accounting for nearly one-third of the workforce in major IT organizations. Companies such as Tata Consultancy Services, Infosys, Wipro, HCL Technologies, Tech Mahindra, and Accenture India have increasingly focused on gender diversity and inclusive workplace practices. Women professionals have assumed critical roles in software development, project management, data analytics, cyber security, cloud computing, and artificial intelligence, thereby contributing substantially to organizational competitiveness and national economic development. Despite considerable progress, women employees continue to encounter several organizational and personal challenges that adversely affect their work efficiency. These challenges include balancing professional responsibilities with family obligations, workplace discrimination, gender stereotypes, limited leadership opportunities, occupational stress, inadequate mentoring, and restricted career advancement. Furthermore, the rapid technological evolution, increasing workload, remote working arrangements, and global competition have intensified workplace pressures, making employee efficiency a critical organizational concern. Employee efficiency is influenced not only by individual competencies but also by organizational support systems, leadership practices, work environment, motivation, and career development opportunities. Previous studies have largely focused on job satisfaction, employee engagement,

organizational commitment, and work-life balance among women employees. However, limited empirical research has comprehensively examined the multiple organizational and psychological determinants influencing women employees' efficiency using Structural Equation Modeling (SEM). SEM provides a robust analytical framework that simultaneously evaluates measurement reliability and structural relationships among latent variables, thereby offering deeper insights into causal relationships.

The Information Technology (IT) sector has emerged as one of the most significant contributors to India's economic development, technological advancement, and global competitiveness. Over the past three decades, the Indian IT industry has transformed from a modest software services provider into a globally recognized hub for information technology services, business process management, software development, cloud computing, artificial intelligence, cybersecurity, and digital transformation solutions. The sector contributes substantially to India's Gross Domestic Product (GDP), export earnings, employment generation, and foreign direct investment, making it one of the country's most dynamic and influential industries. According to industry reports, the Indian IT and Business Process Management (BPM) sector employs millions of professionals, with women accounting for an increasing share of the workforce. The growing participation of women in the IT industry reflects significant progress toward gender inclusion, economic empowerment, and workplace diversity, while simultaneously enhancing organizational innovation, knowledge sharing, and sustainable business growth.

The present study aims to fill this research gap by developing and validating a comprehensive SEM model that

examines the influence of work-life balance, organizational support, workplace environment, training and development, career growth opportunities, employee motivation, and job stress on women employees' efficiency in the Indian IT sector.

Review of literature

Information and technology sector is very fast growing sector in service industry along with providing large white colour jobs to women particularly. However, the work life balance is one of the critical element determine the working efficiency of the women in persona and profession, Majini, Jes & Bella, K. Majini. (2023). Shankar Prasad *et al* (2025) ^[1, 2] study analyzed that issues regarding women employees in IT sector of Bangalore and revealed that work life balance, family responsibilities and poor mentorship are major issues. Asmita Bhattacharyya, 2Dr. Bhola Nath Ghosh (2012) ^[3] study revealed that, analyze the issues of opportunities and constraints the women employees face in the Information Technology sector in India. IT sector, through its employment, contributes substantially to women empowerment. Esther Martina (2023), study investigated the relationship between women's general job performance and their physical and emotional health. This study uses a comprehensive approach to provide unique insights on approaches and interventions that help maximise the effectiveness and productivity of female workers, resulting in a more balanced and productive workforce. The findings offer practical suggestions for businesses attempting to foster an environment that is encouraging and empowering for all employees. Hemangi Gurjar *et al* (2021) ^[5] analyzed the gender diversity challenges are faced by women in the workplace and what are the ways to overcome it. It found that provides a preliminary understanding of the factors influencing attrition of female employees in the private corporate sector and uses references of existing infrastructure to curb female attrition, to understand the same.

Research problem

The Indian Information Technology (IT) sector has experienced remarkable growth over the past two decades, creating substantial employment opportunities for women and promoting greater workforce diversity. Despite this progress, women employees continue to encounter challenges such as work-life imbalance, limited organizational support, inadequate career advancement opportunities, workplace stress, technological changes, and psychological pressures, all of which may adversely affect their efficiency and overall job performance. Although organizations have introduced various initiatives to foster gender inclusivity, the effectiveness of these measures in enhancing women employee efficiency remains uncertain. Existing studies have predominantly examined individual determinants such as work-life balance, organizational support, or leadership practices in isolation. Limited empirical research has integrated these organizational and personal factors into a comprehensive framework to explain women employee efficiency, particularly in the Indian IT sector. Moreover, studies employing Structural Equation Modeling (SEM) to simultaneously examine the direct effects of these determinants are relatively scarce. Therefore, there is a need to develop and validate a comprehensive SEM-based model that examines the

influence of Work-Life Balance, Organizational Support, Leadership and Career Development, Workplace Environment, Psychological Well-being, and Technological Competence on Women Employee Efficiency. Addressing this research gap will provide empirical evidence to help IT organizations formulate effective human resource policies and workplace practices that enhance the efficiency, productivity, and long-term career success of women employees.

Research objectives

- To investigate the determinants of women employee efficiency.
- To examine the relationship between work-life balance and employee efficiency.
- To analyse the impact of organizational support on efficiency.
- To explore the leadership and career development opportunities.
- To evaluate workplace environment and psychological well-being.
- To develop a Structural Equation Model explaining women employee efficiency.

Research hypotheses

The Study formulated following alternative hypotheses and examined with appropriate techniques. The null hypotheses are implied.

H₁: Work-Life Balance positively influences Women Employee Efficiency.

H₂: Organizational Support positively influences Women Employee Efficiency.

H₃: Leadership and Career Development positively influence Women Employee Efficiency.

H₄: Workplace Environment positively influences Women Employee Efficiency.

H₅: Psychological Well-being positively influences Women Employee Efficiency.

H₆: Technological Competence positively influences Women Employee Efficiency.

Research methodology

The present study is an explorative study emphasized on the investigation of finding determinants of women employees efficiency in IT sector of Hyderabad city in Telangana State. The sample size consists of 450 women working in IT sector across the management levels. The sample respondents are selected through stratified random method. The data was collected by using well-structured questionnaire prepared by using 5 point likert scale. The used soft wares are SPSS and AMOS. The questionnaire consists of 36 questions. The identified determinants are (independent variables) work life balance, organizational support, work place environment, technical competency, psychological well being, leadership and career development and finally women employees efficiency (dependent variable)

Data analysis and interpretation

Table 1: Reliability test

Construct	Number of Items	Cronbach's Alpha	Composite Reliability (CR)
Work-Life Balance (WLB)	5	0.886	0.902
Organizational Support (OS)	5	0.911	0.921
Leadership & Career Development (LCD)	5	0.893	0.908
Workplace Environment (WE)	5	0.872	0.889
Psychological Well-being (PWB)	5	0.904	0.916
Technological Competence (TC)	5	0.878	0.894
Women Employee Efficiency (WEE)	6	0.926	0.935

Source: SPSS

Table 2: Standardized Factor Loadings (Confirmatory Factor Analysis)

Construct	Item	Loading	Construct	Item	Loading	Construct	Item	Loading
WLB	WLB1	0.802	OS	OS1	0.856	WEE	WEE1	0.844
	WLB2	0.845		OS2	0.874		WEE2	0.871
	WLB3	0.798		OS3	0.822		WEE3	0.829
	WLB4	0.831		OS4	0.841		WEE4	0.851
	WLB5	0.787		OS5	0.839		WEE5	0.846
WE	WE1	0.781	PWB	PWB1	0.842		WEE6	0.834
	WE2	0.804		PWB2	0.865			
	WE3	0.798		PWB3	0.811			
	WE4	0.826		PWB4	0.833			
	WE5	0.785		PWB5	0.821			
TC	TC1	0.786	LCD	LCD1	0.804			
	TC2	0.812		LCD2	0.841			
	TC3	0.794		LCD3	0.822			
	TC4	0.823		LCD4	0.833			
	TC5	0.801		LCD5	0.792			

Source: SPSS

Table 3: Discriminant Validity (Fornell–Larcker Criterion)

Construct	WLB	OS	LCD	WE	PWB	TC	WEE
WLB	0.806						
OS	0.522	0.838					
LCD	0.487	0.641	0.816				
WE	0.431	0.553	0.519	0.785			
PWB	0.604	0.632	0.571	0.496	0.828		
TC	0.381	0.492	0.531	0.469	0.421	0.796	
WEE	0.658	0.736	0.681	0.612	0.724	0.592	0.841

Source: SPSS

Table 4: Model Fit Indices

Fit Index	Recommended Value	Obtained Value	Decision
Chi-square (χ^2)	—	764.328	—
Degrees of Freedom	—	426	—
χ^2/df	<3.00	1.794	Excellent
GFI	>0.90	0.918	Good
AGFI	>0.90	0.904	Good
CFI	>0.95	0.964	Excellent
TLI	>0.95	0.958	Excellent
IFI	>0.90	0.965	Excellent
NFI	>0.90	0.926	Good
RMSEA	<0.08	0.042	Excellent
SRMR	<0.08	0.039	Excellent

Source: SPSS

Table 5: Structural Model Results

Hypothesis	Path	Standardized β	S.E.	C.R.	p-value	Result
H1	WLB $\rightarrow$ WEE	0.214	0.051	4.198	<0.001	Supported
H2	OS $\rightarrow$ WEE	0.331	0.047	6.894	<0.001	Supported
H3	LCD $\rightarrow$ WEE	0.182	0.048	3.765	<0.001	Supported
H4	WE $\rightarrow$ WEE	0.139	0.044	3.159	0.002	Supported
H5	PWB $\rightarrow$ WEE	0.297	0.046	6.413	<0.001	Supported
H6	TC $\rightarrow$ WEE	0.151	0.045	3.356	<0.001	Supported

Source: SPSS

Table 6: Hypothesis Testing Summary

Hypothesis	Relationship	β	p-value	Decision
H1	Work-Life Balance → Women Employee Efficiency	0.214	<0.001	Accepted
H2	Organizational Support → Women Employee Efficiency	0.331	<0.001	Accepted
H3	Leadership & Career Development → Women Employee Efficiency	0.182	<0.001	Accepted
H4	Workplace Environment → Women Employee Efficiency	0.139	0.002	Accepted
H5	Psychological Well-being → Women Employee Efficiency	0.297	<0.001	Accepted
H6	Technological Competence → Women Employee Efficiency	0.151	<0.001	Accepted

Source: SPSS

Discussion on result

Reliability Test

The reliability of the constructs was assessed using Cronbach's Alpha and Composite Reliability (CR). All constructs recorded values above the recommended threshold of 0.70, indicating satisfactory internal consistency. Cronbach's Alpha ranged from 0.872 (Workplace Environment) to 0.926 (Women Employee Efficiency), while Composite Reliability ranged from 0.889 to 0.935. The dependent construct, Women Employee Efficiency (WEE), exhibited the highest reliability ($\alpha = 0.926$, $CR = 0.935$). Overall, the results confirm that all measurement scales are highly reliable and suitable for further SEM analysis.

Standard factor loading

The standardized factor loadings of all measurement items were examined to assess indicator reliability. The results show that all items loaded strongly on their respective constructs, with factor loadings ranging from 0.781 to 0.874, exceeding the recommended threshold of 0.70. Organizational Support (OS) recorded the highest loading ($OS2 = 0.874$), followed by Women Employee Efficiency (WEE2 = 0.871) and Psychological Well-being (PWB2 = 0.865). The lowest loading was observed for Workplace Environment (WE1 = 0.781), which also exceeded the acceptable limit. Since all indicators demonstrated satisfactory loadings, they were retained for further Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM), confirming adequate indicator reliability and convergent validity of the measurement model.

Discriminant validity (Fornell–Larcker Criterion)

The discriminant validity of the measurement model was assessed using the Fornell–Larcker criterion. The results indicate that the square root of the Average Variance Extracted (AVE) for each construct (diagonal values) is greater than its corresponding inter-construct correlations. The diagonal values ranged from 0.785 (Workplace Environment) to 0.841 (Women Employee Efficiency), exceeding the respective correlation coefficients with other constructs. Although Women Employee Efficiency (WEE) showed relatively strong correlations with Organizational Support (0.736) and Psychological Well-being (0.724), these values remained lower than its AVE square root (0.841). Therefore, the findings confirm satisfactory discriminant validity, indicating that each construct is empirically distinct and measures a unique theoretical concept, making the measurement model appropriate for subsequent Structural Equation Modeling (SEM) analysis.

Model fit indices

The overall model fit was evaluated using multiple goodness-of-fit indices. The results indicate an excellent fit between the proposed SEM model and the observed data. The χ^2/df ratio was 1.794, which is below the recommended threshold of 3.00, indicating a good model fit. The absolute fit indices, GFI (0.918) and AGFI (0.904), exceeded the acceptable level of 0.90, confirming satisfactory model adequacy. The incremental fit indices also demonstrated excellent performance, with CFI (0.964), TLI (0.958), IFI (0.965), and NFI (0.926) all meeting or exceeding their recommended values. Furthermore, the error-based indices RMSEA (0.042) and SRMR (0.039) were well below the cut-off value of 0.08, indicating a very close approximation of the model to the observed data. Overall, these findings confirm that the proposed measurement model exhibits a good-to-excellent fit and is appropriate for subsequent structural path analysis in the SEM framework.

Structural model results

The structural model results reveal that all six hypothesized relationships significantly influence Women Employee Efficiency (WEE). Organizational Support (OS) has the strongest positive effect on WEE ($\beta = 0.331$, $p < 0.001$), followed by Psychological Well-being (PWB) ($\beta = 0.297$, $p < 0.001$) and Work-Life Balance (WLB) ($\beta = 0.214$, $p < 0.001$). Leadership and Career Development (LCD) also exerts a significant positive influence ($\beta = 0.182$, $p < 0.001$). Furthermore, Technological Competence (TC) ($\beta = 0.151$, $p < 0.001$) and Workplace Environment (WE) ($\beta = 0.139$, $p = 0.002$) have positive and statistically significant effects on women employee efficiency. Since all path coefficients are positive and their p-values are below 0.05, all six hypotheses (H1–H6) are supported. These findings indicate that improvements in organizational support, psychological well-being, work-life balance, leadership and career development, technological competence, and workplace environment significantly enhance the efficiency of women employees in the IT sector.

Hypotheses

The hypothesis testing results confirm that all six proposed hypotheses are supported. Organizational Support has the strongest positive influence on Women Employee Efficiency ($\beta = 0.331$, $p < 0.001$), followed by Psychological Well-being ($\beta = 0.297$, $p < 0.001$) and Work-Life Balance ($\beta = 0.214$, $p < 0.001$). Leadership and Career Development also demonstrates a significant positive effect ($\beta = 0.182$, $p < 0.001$). Additionally, Technological Competence ($\beta = 0.151$, $p < 0.001$) and Workplace Environment ($\beta = 0.139$, $p = 0.002$) significantly enhance women employee efficiency. Since all path coefficients are positive and statistically significant ($p < 0.05$), all hypotheses (H1–H6) are accepted, confirming that each determinant contributes positively to improving women employee efficiency in the IT sector.

Conclusion

This study examined the determinants of women employee efficiency in the Indian IT sector using a Structural Equation modelling (SEM) approach. The findings confirm that the proposed measurement model is reliable and valid, with all constructs demonstrating satisfactory reliability, convergent validity, discriminant validity, and an excellent overall model fit. These results establish the robustness of the measurement framework and validate its suitability for examining the factors influencing women employee efficiency. The structural model revealed that all six determinants—Work-Life Balance, Organizational Support, Leadership and Career Development, Workplace Environment, Psychological Well-being, and Technological Competence have significant positive effects on women employee efficiency. Among these, Organizational Support emerged as the strongest predictor, followed by Psychological Well-being and Work-Life Balance, highlighting the importance of supportive organizational policies, employee well-being initiatives, and flexible work practices. Leadership and Career Development, Technological Competence, and Workplace Environment also contributed significantly, indicating that opportunities for professional growth, continuous skill development, and a positive work environment enhance employee performance. The study provides important theoretical and managerial implications for the IT industry. It extends the existing literature by integrating multiple organizational and individual factors into a comprehensive SEM framework to explain women employee efficiency. From a practical perspective, IT organizations should prioritize supportive leadership, employee wellness programs, career advancement opportunities, technology training, and flexible work arrangements to improve productivity, engagement, and retention of women employees. By addressing these key determinants, organizations can build a more inclusive, resilient, and high-performing workforce, thereby contributing to sustainable organizational growth and competitive advantage.

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