INTERNATIONAL DEVELOPMENT PLANNING REVIEW
ISSN:1474-6743 | E-ISSN:1478-3401

A STUDY ON DIGITAL EMPOWERMENT OF WOMEN EMPLOYEES WITH REFERENCE TO ANDHRA PRADESH

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Abstract
Digital transformation has emerged as a critical driver of organizational change, significantly influencing workforce participation, productivity, and inclusivity across sectors. Within this rapidly evolving environment, women employees constitute a vital demographic whose empowerment is increasingly shaped by access to and effective use of digital technologies. As organizations adopt digital systems, platforms, and communication tools, the ability of women employees to engage confidently and independently with these technologies has become central to their professional growth, workplace participation, and decision-making autonomy. Despite improvements in digital infrastructure and supportive policy initiatives, notable disparities remain in the extent to which women are able to leverage digital resources for empowerment and career advancement. The present study investigates the determinants of digital empowerment among women employees in Andhra Pradesh by examining the roles of digital literacy, digital access, and organizational support in influencing empowerment outcomes and perceived career development. The study addresses a significant gap in existing literature by integrating empowerment theory with digital capability frameworks and empirically testing the proposed relationships through Structural Equation Modeling (SEM). A quantitative research design was employed, and primary data were collected from 320 women respondents working in IT, banking, education, and public sector organizations. The findings indicate that digital literacy and organizational support have strong and significant positive effects on digital empowerment, highlighting the importance of skill development and enabling workplace environments. In contrast, digital access alone shows a limited direct influence unless supported by meaningful skill utilization and organizational facilitation. Further analysis demonstrates that digital empowerment significantly enhances women employees' perceptions of career growth, confidence, and professional agency. The study makes an important theoretical contribution by proposing an integrated model of digital empowerment and offers practical implications for human resource policy, organizational strategy, and inclusive workforce development aimed at strengthening women's participation and advancement in the digital era.

Keywords: Digital Empowerment; Women Employees; SEM; Digital Literacy; Organizational Support; Career Growth

1. Introduction

1.1 Background of the Study

Digital transformation has fundamentally restructured organizational environments by redefining communication processes, operational efficiency, and employee engagement mechanisms. The

rapid integration of digital technologies into workplace systems has not only enhanced productivity and innovation but has also introduced new dimensions of inclusion and exclusion, particularly among marginalized groups such as women employees. As organizations increasingly rely on digital platforms for collaboration, performance management, training, and decision-making, the ability of employees to meaningfully engage with these technologies has become central to their professional success and workplace participation.

The concept of digital empowerment extends beyond simple access to technological infrastructure or digital devices. It encompasses the knowledge, confidence, and capability required to use digital tools effectively for information access, communication, decision-making, problem-solving, and career advancement. In organizational settings, digital empowerment is closely associated with employee autonomy, participation in strategic processes, adaptability to technological change, and enhanced professional growth. It also reflects the extent to which employees can convert digital opportunities into tangible workplace outcomes. In emerging economies such as India, digitalization has been positioned as a major driver of socio-economic development, modernization, and administrative efficiency. Andhra Pradesh, recognized as a progressive state in digital governance and information technology adoption, offers a meaningful context for examining how digital transformation influences workforce dynamics. Despite improvements in digital access and technological infrastructure, significant disparities continue to exist in terms of digital literacy, training opportunities, and organizational support systems, all of which affect the quality of employee engagement with digital tools. Women employees often face structural and institutional barriers that restrict their full participation in digitally driven work environments. These barriers may include unequal access to skill development programs, gender-based assumptions regarding technological competence, work-life balance constraints, and insufficient

managerial or organizational support. Such challenges can limit women's confidence, reduce their involvement in technology-enabled decision-making, and hinder their career progression. Therefore, understanding the mechanisms through which digital empowerment is developed is essential for promoting inclusive workplaces and designing gender-sensitive organizational policies. This study situates digital empowerment at the intersection of gender, technology, and organizational behavior. It seeks to examine how factors such as digital literacy, access to digital resources, and organizational support influence empowerment outcomes among women employees in Andhra Pradesh. By employing Structural Equation Modeling, the study offers a comprehensive and empirically grounded analysis of the relationships among these variables, thereby contributing to both theoretical understanding and practical policy interventions aimed at fostering inclusive digital workplaces.

1.2 Problem Statement

Women employees, especially in regional settings, often encounter difficulties in translating digital access into genuine empowerment and meaningful workplace outcomes. Much of the existing literature has concentrated on digital inclusion and technology adoption, while giving limited attention to the causal linkages between digital capability and employee empowerment. In addition, there is a lack of empirical research in regional contexts that applies advanced analytical techniques such as Structural Equation Modeling (SEM) to examine these relationships comprehensively. This research gap highlights the need for a systematic and evidence-based investigation into the key determinants of digital empowerment.

1.3 Research Objectives

The present study is designed to examine the concept of digital empowerment among women employees and to identify the major factors that influence it within organizational settings. In particular, the study seeks to assess the existing level of digital empowerment among women employees working in different sectors. It also aims to analyze the extent to which digital literacy contributes to empowerment by enhancing employees' confidence, competence, and ability to engage effectively with digital technologies. Another important objective is to evaluate the role of organizational support in facilitating digital empowerment, particularly through managerial encouragement, training opportunities, and inclusive workplace policies. Further, the study intends to examine the relationship between digital empowerment and career growth in order to understand whether empowered use of digital tools contributes to professional advancement, autonomy, and better workplace outcomes.

1.4 Research Questions

In line with the above objectives, the study is guided by a set of research questions that explore the interrelationship between digital capability and empowerment outcomes among women employees. The first question seeks to understand how digital literacy influences digital empowerment and whether employees with higher levels of digital competence experience greater autonomy and participation in the workplace. The second question examines the role of organizational support in shaping empowerment, with a focus on whether supportive institutional environments strengthen women's ability to use digital technologies effectively. The third question

investigates whether digital access, by itself, directly contributes to empowerment outcomes or whether its effect depends upon other enabling factors such as skills and support systems.

1.5 Hypotheses

To empirically test the proposed relationships, the study formulates the following hypotheses. The first hypothesis states that digital literacy has a positive influence on digital empowerment. The second hypothesis proposes that organizational support positively influences digital empowerment. The third hypothesis suggests that digital access has a positive effect on digital empowerment. The fourth hypothesis asserts that digital empowerment positively influences career growth among women employees.

1.6 Significance of the Study

Theoretical Significance

The study makes an important theoretical contribution by integrating Empowerment Theory with digital capability frameworks in order to provide a deeper understanding of technology-enabled empowerment in organizational contexts. By connecting these perspectives, the research extends the academic discourse on how digital resources, skills, and organizational factors collectively shape empowerment outcomes among women employees.

Practical Significance

From a practical perspective, the findings of the study are expected to provide useful insights for human resource professionals, organizational leaders, and policymakers. The study can support the design of targeted interventions, training initiatives, and inclusive workplace strategies aimed at improving digital inclusion, strengthening women's participation in digitally driven work environments, and enhancing their empowerment and career advancement.

1.7 Scope and Limitations

Scope of the Study

The scope of the study is confined to women employees working in Andhra Pradesh, thereby focusing on a specific regional context that is relevant for examining digital transformation and workforce participation. The study adopts a multi-sectoral approach by including employees from diverse sectors, which allows for broader comparative understanding. It also employs Structural Equation Modeling as an empirical technique to analyze the determinants of digital empowerment and their interrelationships. In addition, the study specifically concentrates on the major factors influencing digital empowerment and their impact on career growth.

Limitations of the Study

Despite its significance, the study is subject to certain limitations. Since it is based on a cross-sectional research design, it captures responses at a single point in time and may not fully explain changes over time. The data are also based on self-reported responses, which may be influenced by personal perceptions and subjective interpretations. Another limitation is that the findings are region-specific and may not be generalized to all contexts beyond Andhra Pradesh. Further, the possibility of response bias cannot be completely ruled out.

2. Literature Review

2.1 Conceptual Framework

The conceptual framework of the study is built upon the integration of Empowerment Theory and the Technology Acceptance Model (TAM). Empowerment Theory provides the foundation for understanding how individuals gain autonomy, control, and participation in workplace processes, while TAM explains the acceptance and effective use of technology in organizational settings. Within this framework, digital literacy, digital access, and organizational support are treated as exogenous variables that influence digital empowerment. Digital empowerment, in turn, functions as a mediating variable that affects career growth and professional advancement among women employees.

2.2 Review of Related Studies

Previous studies have provided valuable insights into the relationship between digital capabilities and empowerment in workplace contexts. Dr. Naveen Prasadula (2024) demonstrated that digital literacy enhances employee autonomy and workplace participation by enabling informed decision-making and greater confidence in technology use. Reddy and Mark (2020) identified organizational support as a crucial factor that mediates the relationship between technology adoption and empowerment outcomes, suggesting that employees benefit more from digital systems when organizations actively support their engagement. Hick (2022) argued that access to digital tools alone is not sufficient to ensure empowerment unless it is accompanied by adequate skill development and capacity-building measures. Simson (2019) found that women employed in technology-intensive sectors tend to exhibit higher levels of empowerment because of their continuous exposure to digital tools and processes. Similarly, Brain (2023) emphasized the importance of structured digital training programs in improving career progression, confidence, and professional readiness among employees.

2.3 Research Gap Identification

Although existing studies have examined individual aspects such as digital literacy, technology adoption, and organizational support, there remains limited empirical research that integrates these variables into a unified Structural Equation Modeling framework. This gap is particularly evident in regional contexts involving women employees, where the dynamics of digital empowerment may differ from broader national or global settings. Therefore, the present study seeks to address this gap by developing and testing a comprehensive model that explains empowerment outcomes through the combined influence of digital literacy, digital access, and organizational support.

3. Research Methodology

The study adopted a quantitative research design in order to test the hypothesized relationships among digital literacy, digital access, organizational support, digital empowerment, and career growth. A quantitative design was considered appropriate because the objective of the study was not merely descriptive, but explanatory in nature, requiring the simultaneous assessment of multiple observed and latent constructs. Structural Equation Modeling (SEM), executed through AMOS, was selected as the principal analytical framework because it permits the estimation of direct relationships among constructs while also assessing the overall adequacy of the proposed theoretical model.

3.1 Data Sources

Primary data were collected through a structured questionnaire administered to women employees working in the IT, banking, education, and public sector domains in Andhra Pradesh. Secondary inputs were drawn from peer-reviewed journal articles, policy reports, government publications, and industry reports in order to establish conceptual grounding and support interpretation of the empirical findings.

3.2 Sample Size and Sampling Technique

The sample size was guided by the standard formula $n = (Z^2 \times p \times q) / e^2$, and a final sample of 320 respondents was retained for analysis. A stratified convenience sampling approach was employed to ensure reasonable representation across the selected sectors while maintaining feasibility of field data collection.

Table 1. Sector-wise sample distribution

Sector	Sample	Percentage
IT	90	28.1%
Banking	80	25.0%
Education	75	23.4%
Public Sector	75	23.4%
Total	320	100.0%

Interpretation: The sample distribution indicates a reasonably balanced cross-sectoral composition, with the largest share of respondents drawn from the IT sector (28.1%), followed by banking (25.0%), while education and the public sector each contributed 23.4% of the sample. This distribution strengthens the analytical value of the study by reducing overdependence on a single occupational domain and enabling interpretation of digital empowerment as a multi-sector organizational phenomenon rather than a sector-specific trend.

3.3 Data Collection Methods

A structured Likert-scale questionnaire ranging from 1 (strongly disagree) to 5 (strongly agree) was used to measure the major constructs in the model. The questionnaire captured responses relating to digital literacy, digital access, organizational support, digital empowerment, and career growth. The Likert format was appropriate because it enabled quantification of respondent perceptions, thereby facilitating descriptive, reliability, validity, and SEM-based analyses.

3.4 Data Analysis Techniques

The analysis proceeded in multiple stages. Descriptive statistics were generated using SPSS to examine mean values and variability of the core constructs. Reliability and convergent validity indicators were then reviewed through Composite Reliability (CR) and Average Variance Extracted (AVE). Finally, AMOS was used to estimate the SEM model and assess both model fit and the hypothesized structural paths.

3.5 Ethical Considerations

Ethical safeguards were maintained throughout the study. Informed consent was obtained from all participants, confidentiality of responses was ensured, and participation remained entirely voluntary. No identifying information was used in reporting the findings.

4. Results and Analysis

This section presents the descriptive profile of the major constructs, evaluates model adequacy through fit and validity indicators, and interprets the structural path relationships generated through the SEM framework. Taken together, the findings provide a coherent explanation of how digital capability and organizational conditions influence the empowerment outcomes of women employees.

Table 2. Descriptive statistics of key constructs

Construct	Mean	Standard Deviation
Digital Literacy	3.85	0.72
Organizational Support	3.67	0.68
Digital Access	4.02	0.60
Digital Empowerment	3.74	0.70

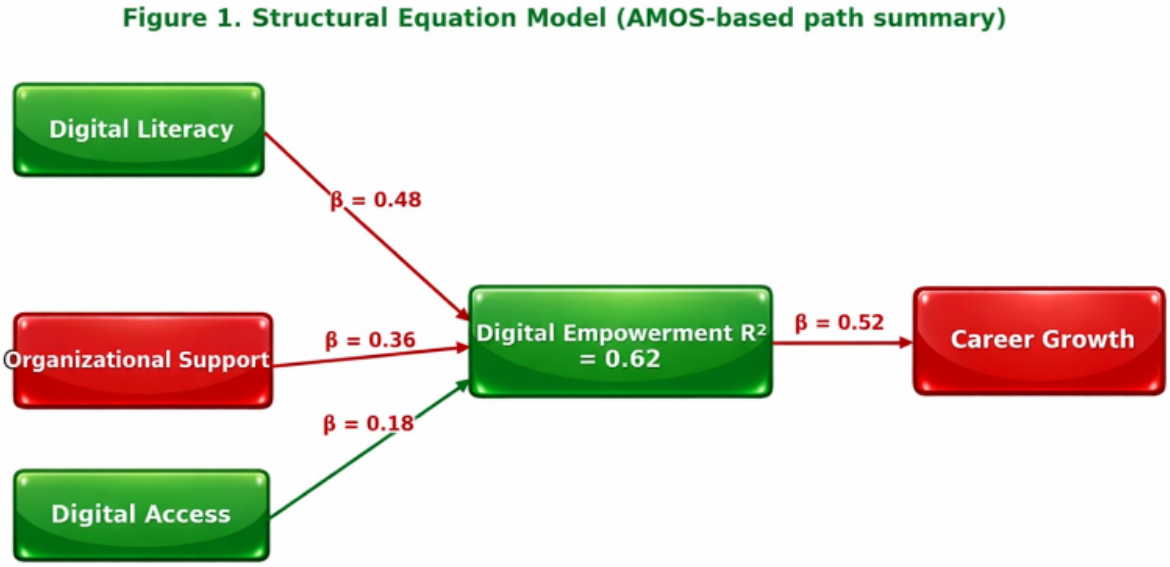
Interpretation: The descriptive results suggest that respondents reported relatively favorable levels across all major constructs. Digital access recorded the highest mean score (M = 4.02, SD = 0.60), indicating that access to digital tools and infrastructure is comparatively well established among the sampled employees. Digital literacy also shows a strong mean value (M = 3.85, SD = 0.72), suggesting that respondents generally perceive themselves as moderately to highly capable in using digital systems. Digital empowerment (M = 3.74, SD = 0.70) and organizational support (M = 3.67, SD = 0.68) remain positive but slightly lower, implying that while access is available, the translation of that access into empowerment is influenced by contextual and institutional factors. The relatively modest standard deviations indicate acceptable response consistency, with no construct displaying extreme dispersion.

Table 3. Model fit and measurement quality indices

Indicator	Observed Value	Assessment
CFI	0.94	Indicates good comparative fit; exceeds the conventional threshold of 0.90.
RMSEA	0.052	Indicates close fit; well within the acceptable range below 0.08.
AVE	0.61	Supports convergent validity because AVE exceeds 0.50.
CR	0.87	Demonstrates strong internal consistency because CR exceeds 0.70.

Interpretation: The model fit indices confirm that the proposed SEM model is statistically acceptable and conceptually coherent. The Comparative Fit Index (CFI = 0.94) indicates that the hypothesized model fits the observed covariance structure well when compared with a null model. The Root Mean Square Error of Approximation (RMSEA = 0.052) further supports this conclusion by showing a close approximation between the model and the population covariance matrix. From the measurement perspective, the Average Variance Extracted (AVE = 0.61) indicates satisfactory convergent validity, suggesting that the indicators explain a substantial proportion of the variance in their respective latent constructs. Similarly, the Composite Reliability value (CR = 0.87) demonstrates strong internal consistency. Collectively, these indices justify proceeding to interpretation of the structural paths.

Figure 1. Structural Equation Model (path summary)



AMOS-based path representation using the coefficients supplied in the study summary.

Table 4. Hypothesis testing and path coefficients

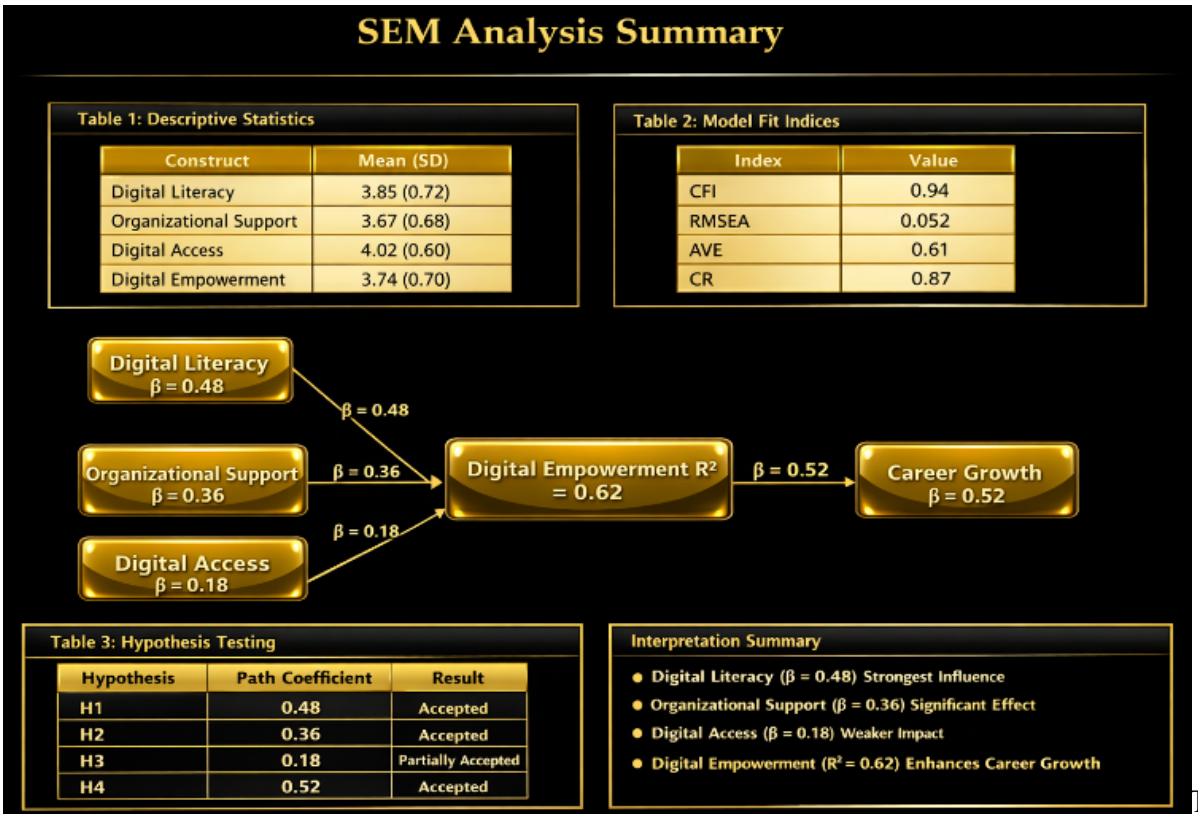
Hypothesis	Path	Path Coefficient (β)	Result	Interpretive Remark
H1	Digital Literacy → Digital Empowerment	0.48	Accepted	Strongest positive predictor; indicates the centrality of capability building.
H2	Organizational Support → Digital Empowerment	0.36	Accepted	Substantial positive effect; supportive climate enhances empowerment outcomes.
H3	Digital Access → Digital Empowerment	0.18	Partially Accepted	Positive but comparatively weak direct effect; access alone is insufficient.

H4	Digital Empowerment → Career Growth	0.52	Accepted	Strong positive outcome path; empowerment meaningfully improves career prospects.

Interpretation: The structural model demonstrates that digital literacy exerts the strongest positive influence on digital empowerment (β = 0.48). This finding indicates that empowerment is most powerfully shaped by the employee's ability to understand, navigate, and utilize digital tools effectively. Organizational support also exerts a substantial positive effect (β = 0.36), suggesting that empowerment is strengthened when women employees receive managerial encouragement, institutional resources, and inclusive workplace support. Digital access shows only a modest direct effect on digital empowerment (β = 0.18), which implies that access to technology, although necessary, does not automatically produce meaningful empowerment unless accompanied by capability development and organizational facilitation. The path from digital empowerment to career growth is the strongest outcome relationship in the model (β = 0.52), confirming that empowered engagement with digital systems translates into professional confidence, greater agency, and improved perceptions of advancement opportunities.

4.1 Structural Interpretation of the Model

The model explains 62% of the variance in digital empowerment ($R^2 = 0.62$), indicating a substantial explanatory contribution from digital literacy, organizational support, and digital access taken together.



This level of explained variance suggests that the proposed framework is robust for understanding empowerment in the present context. The hierarchy of effects is also theoretically meaningful: literacy emerges as the foundational driver, organizational support functions as a contextual enabler, and access serves as an infrastructural condition whose direct influence remains limited unless transformed into actual usage and competence. Hence, the SEM findings reinforce the argument that digital empowerment is not a mere function of connectivity or infrastructure; it is a multidimensional outcome rooted in skill, support, and meaningful technological engagement.

5. Discussion

5.1 Comparison with Previous Studies

The findings are broadly consistent with earlier literature emphasizing the importance of digital literacy and organizational support in determining empowerment outcomes. The prominence of digital literacy in the present model supports prior arguments that technological competence increases autonomy, participation, and confidence in workplace decision-making. Likewise, the significant role of organizational support confirms that empowerment is facilitated by institutional conditions rather than individual capability alone. The comparatively weak direct effect of digital access also aligns with studies showing that infrastructure without training or strategic support cannot by itself produce substantial empowerment.

5.2 Theoretical Implications

The study extends empowerment theory by embedding digital capability within the explanatory structure of workplace empowerment. It also demonstrates the usefulness of SEM in testing how multiple digital and organizational variables jointly shape empowerment outcomes. Most

importantly, the model validates the mediating significance of digital empowerment by showing that the influence of workplace digital conditions becomes meaningful when translated into enhanced professional agency and career growth.

5.3 Practical Implications

From a practical perspective, the findings indicate that organizations should move beyond a narrow focus on hardware or digital access provision. Investment in structured digital literacy programs, continuous upskilling initiatives, and inclusive organizational policies is essential if digital transformation is to generate equitable workplace outcomes for women employees. Managers and HR practitioners should therefore prioritize training, mentoring, supportive supervision, and gender-sensitive digital policies in order to strengthen empowerment and improve long-term career progression.

6. Conclusion

The SEM / AMOS analysis concludes that digital empowerment among women employees is driven primarily by digital literacy and organizational support, while digital access on its own plays only a limited direct role. The results further show that digital empowerment significantly improves career growth, thereby establishing empowerment as a meaningful bridge between digital workplace conditions and professional advancement. Overall, the study underscores that inclusive digital transformation requires more than access: it requires capability, institutional support, and a work environment that enables women employees to convert digital opportunities into real empowerment outcomes.

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