

STRATEGIC HUMAN RESOURCE MANAGEMENT IN INDUSTRY 5.0 WITH REFERENCE TO INDIA

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Abstract

Industry 5.0 marks a significant transition from purely automation-driven industrial systems to organizational models that prioritize human-centricity, resilience, sustainability, and intelligent collaboration between people and advanced technologies. In this emerging context, Strategic Human Resource Management (SHRM) assumes a pivotal role because the success of digital and cyber-physical transformation depends not only on technological deployment but also on workforce preparedness, adaptability, and alignment with long-term organizational strategy. Although scholarly discussion on Industry 5.0 has grown rapidly, empirical studies that connect SHRM with employee adaptability, technological readiness, and organizational performance remain limited, especially in the Indian context where industrial modernization is unfolding unevenly across sectors.

The present study addresses this gap by examining the role of SHRM in enabling Industry 5.0 transformation in India. The study adopts a quantitative research design and draws on primary data collected from 450 employees working in manufacturing and information technology organizations across major Indian cities. A structured questionnaire was used to measure SHRM practices, employee adaptability, technological readiness, and organizational performance. Structural Equation Modeling (SEM) through AMOS was employed to test the proposed conceptual relationships.

The results indicate that SHRM exerts a strong positive influence on employee adaptability ($\beta = 0.71$) and technological readiness ($\beta = 0.66$). Both adaptability ($\beta = 0.60$) and technological readiness ($\beta = 0.62$) significantly enhance organizational performance, while the indirect path confirms that SHRM contributes to performance through these mediating variables. The model demonstrates satisfactory fit and measurement quality, with CFI = 0.958, RMSEA = 0.043, AVE above 0.50, and CR above 0.70. The study contributes to theory by integrating Industry 5.0 principles into SHRM literature and provides practical guidance for organizations seeking to build future-ready, human-centered, and technologically resilient work systems.

Keywords: Strategic Human Resource Management, Industry 5.0, Employee Adaptability, Technological Readiness, Organizational Performance, SEM, India

1. Introduction

1.1 Background of the Study

Industry 5.0 is increasingly recognized as the next stage in industrial evolution, characterized by the integration of intelligent technologies with human creativity, ethical judgment, and sustainable production priorities. While Industry 4.0 concentrated primarily on automation, data exchange, and smart manufacturing, Industry 5.0 re-centers the human worker by emphasizing collaboration between employees and advanced systems such as artificial intelligence, robotics, machine learning, and cyber-physical infrastructure.



This transition has important implications for organizations because the introduction of smart technologies alone does not guarantee performance gains unless workforce systems are designed to support adaptability, continuous learning, and strategic capability development.

Strategic Human Resource Management has therefore emerged as a critical organizational function in Industry 5.0 environments. SHRM goes beyond administrative personnel management by aligning recruitment, training, performance management, rewards, leadership development, and employee engagement with broader strategic objectives. In technology-intensive settings, SHRM becomes essential for building employees' readiness to work with digital systems, interpret technological change positively, and contribute to innovation-oriented organizational cultures. The human-centric orientation of Industry 5.0 also demands that HR systems protect employee well-being while strengthening resilience, collaboration, and future-facing competencies.

In India, these issues are especially relevant because industrial modernization is progressing across manufacturing, information technology, and allied sectors, but organizational readiness

remains uneven. Firms are increasingly investing in smart systems, yet many continue to face challenges relating to skills mismatches, resistance to technological change, insufficient reskilling opportunities, and weak integration between human resource strategy and digital transformation initiatives. Against this backdrop, the present study examines whether SHRM can function as a foundational enabler of Industry 5.0 readiness by improving employee adaptability and technological readiness, which in turn support stronger organizational performance.

1.2 Problem Statement

Despite growing academic and managerial interest in Industry 5.0, much of the available literature remains disproportionately focused on technological architecture, automation capability, and smart production systems. Comparatively less attention has been paid to the strategic human dimension of this transition. In particular, there is inadequate empirical evidence on how SHRM practices shape employee adaptability and technological readiness, and how these variables collectively influence organizational performance. This gap is particularly important in emerging economies such as India, where technology adoption often outpaces structured workforce preparedness. The absence of integrated empirical models limits both theoretical understanding and practical decision-making. Hence, a systematic examination of SHRM in relation to Industry 5.0 outcomes is necessary.

1.3 Research Objectives

The study seeks to achieve the following objectives. First, it aims to analyze the role of Strategic Human Resource Management in Industry 5.0-oriented organizational environments. Second, it seeks to examine the extent to which SHRM influences employee adaptability in technology-driven work settings. Third, the study evaluates the relationship between SHRM and technological readiness, with particular attention to employees' preparedness to engage with advanced systems. Fourth, it investigates the effects of employee adaptability and technological readiness on organizational performance. Finally, the study develops and tests a structural model linking SHRM, adaptability, readiness, and performance using AMOS-based SEM.

1.4 Research Questions

- How does Strategic Human Resource Management influence employee adaptability in Industry 5.0-oriented organizations?
- What relationship exists between SHRM and technological readiness among employees?
- To what extent do adaptability and technological readiness enhance organizational performance?
- Does SHRM indirectly improve performance through workforce adaptability and technological readiness?

1.5 Hypotheses

- H1: SHRM positively influences employee adaptability.
- H2: SHRM positively influences technological readiness.
- H3: Employee adaptability positively influences organizational performance.
- H4: Technological readiness positively influences organizational performance.

- H5: SHRM indirectly influences organizational performance through adaptability and technological readiness.

1.6 Significance of the Study

The study is significant at both theoretical and practical levels. Theoretically, it extends SHRM literature by embedding it within the emerging discourse on Industry 5.0 and by empirically validating the mediating roles of adaptability and technological readiness. Practically, the findings can assist HR leaders, industrial strategists, and policy planners in designing workforce systems that support future-oriented technological transformation without neglecting the human and developmental dimensions of organizational change.

2. Review of Literature

2.1 Conceptual Foundation

The conceptual basis of the study is derived from the Resource-Based View, Dynamic Capabilities Theory, and Human Capital Theory. The Resource-Based View suggests that strategically managed human resources can serve as valuable, rare, and difficult-to-imitate organizational assets. Dynamic Capabilities Theory complements this view by emphasizing the importance of sensing, adapting, and reconfiguring capabilities in response to changing technological and competitive environments. Human Capital Theory further supports the argument that investment in workforce skills, learning, and development strengthens productivity and long-term performance.

Within this integrated framework, SHRM is treated as the principal antecedent because strategic HR systems determine whether employees are prepared to adapt to technological change and whether organizations can translate digital transformation into sustainable performance outcomes. Employee adaptability captures behavioral flexibility, learning orientation, and change-readiness, while technological readiness reflects the ability and willingness of employees to engage productively with advanced systems. Organizational performance is conceptualized as the downstream outcome of these workforce capabilities.

2.2 Review of Literature

Recent studies have highlighted the increasing strategic relevance of HRM in digital and post-digital organizational settings. Steve (2022) argued that strategic HR practices encourage innovation by cultivating continuous learning and skill renewal. Haynes (2023) identified workforce adaptability as an essential determinant of organizational resilience in technology-intensive firms. Lee et al. (2021) reported that technological readiness significantly influences the success of digital transformation initiatives by strengthening competence and operational flexibility. Dr. Naveen Prasadula (2025) found that SHRM influences performance through employee-centered mechanisms such as engagement and capability development. Logie (2024) further suggested that Industry 5.0 in India requires human-centric work systems that balance technology adoption with employee development.

Broader literature also indicates that organizations navigating advanced technological transitions require more than technical infrastructure. They must establish HR architectures that support reskilling, cross-functional collaboration, leadership agility, and a psychologically secure

environment for experimentation and adaptation. However, despite these contributions, existing studies generally examine individual relationships in isolation rather than testing an integrated structural model that connects SHRM, adaptability, readiness, and performance within an Industry 5.0 context.

2.3 Research Gap

The review reveals a clear empirical gap. Although SHRM, adaptability, readiness, and performance have each been examined separately, there is limited evidence integrating these variables within a single SEM framework, particularly in relation to Industry 5.0 and the Indian organizational environment. The present study addresses this gap by offering a unified model that explains how strategic HR practices influence performance through mediating workforce capabilities.

3. Research Methodology

3.1 Research Design

A quantitative research design was adopted because the study seeks to test theory-driven relationships among multiple latent constructs in a structured and statistically rigorous manner. This design is appropriate for examining causal tendencies, assessing construct relationships, and validating the proposed conceptual framework. Structural Equation Modeling was selected as the primary analytical approach because it permits simultaneous evaluation of the measurement model and the structural paths among constructs. SEM is particularly suitable for this study since it accommodates latent variables, mediating effects, and model fit assessment within one integrated procedure.

3.2 Data Sources

The study is based on both primary and secondary data. Primary data were collected through a structured questionnaire administered to employees working in Indian manufacturing and IT sectors. Secondary sources included scholarly journal articles, reports on Industry 5.0, and conceptual studies on SHRM, adaptability, and organizational performance. The combination of primary and secondary data supported both empirical testing and theoretical framing.

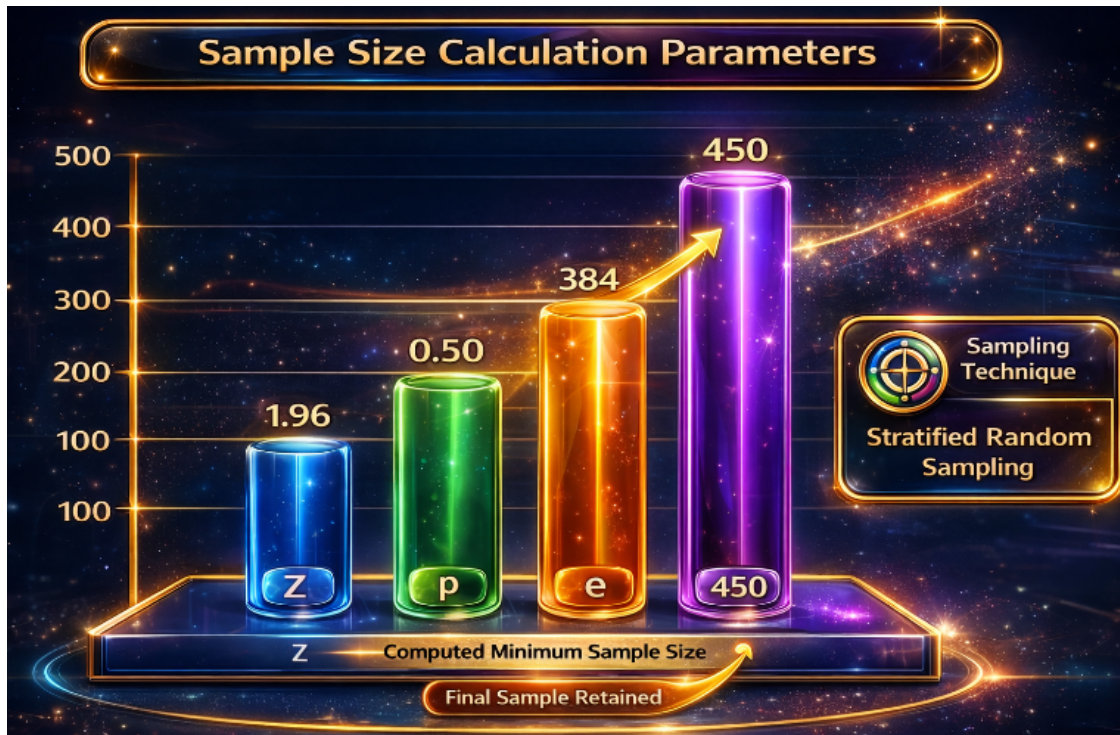
3.3 Sample Size and Sampling Technique

The target population consisted of employees working in manufacturing and information technology organizations in India. Sample adequacy was guided by the standard formula $n = (Z^2 \times p \times q) / e^2$. The computed minimum sample requirement was 384. To improve adequacy and strengthen statistical power, a final sample of 450 valid responses was retained for analysis. Stratified random sampling was used in order to improve representational balance across sectoral categories and reduce the limitations associated with purely convenience-based selection.

Table 1. Sample Size Calculation Parameters

Parameter	Value
Z	1.96
p	0.50

e	0.05
Computed minimum sample size	384
Final sample retained	450
Sampling technique	Stratified random sampling



Interpretation: The final sample of 450 exceeds the calculated minimum requirement of 384, thereby strengthening the adequacy of the dataset for SEM analysis. The use of stratified random sampling improves the representational value of the sample and supports more reliable estimation of the relationships among the study constructs.

3.4 Data Collection Methods

Data were collected using a structured questionnaire with items measured on a five-point Likert scale ranging from strongly disagree to strongly agree. The instrument captured responses relating to SHRM practices, employee adaptability, technological readiness, and organizational performance. The questionnaire format enabled quantification of employee perceptions and facilitated descriptive, reliability, validity, and SEM-based analysis. Prior to full administration, the instrument was reviewed for clarity and construct relevance.

3.5 Data Analysis Techniques

The analysis was conducted in multiple stages. Descriptive statistics were first used to summarize the central tendencies and dispersion of the principal variables. Reliability was evaluated through Cronbach's alpha and composite reliability indicators. Convergent validity was considered through AVE thresholds. Confirmatory Factor Analysis was then used to assess the

adequacy of the measurement model. Finally, AMOS-based Structural Equation Modeling was employed to test the hypothesized direct and indirect relationships among the constructs.

3.6 Ethical Considerations

The study followed standard ethical procedures. Participants were informed about the academic purpose of the research, participation was voluntary, and responses were treated confidentially. No personally identifying information was used in the reporting of findings. The study emphasized consent, privacy, and responsible use of data throughout the process.

4. Results and Analysis

4.1 Data Presentation

Table 2. Construct-wise Descriptive Statistics and Reliability

Construct	Mean	Standard Deviation	Cronbach's Alpha
SHRM	4.15	0.66	0.91
Employee Adaptability	4.08	0.69	0.89
Technological Readiness	4.02	0.71	0.88
Organizational Performance	4.10	0.64	0.90

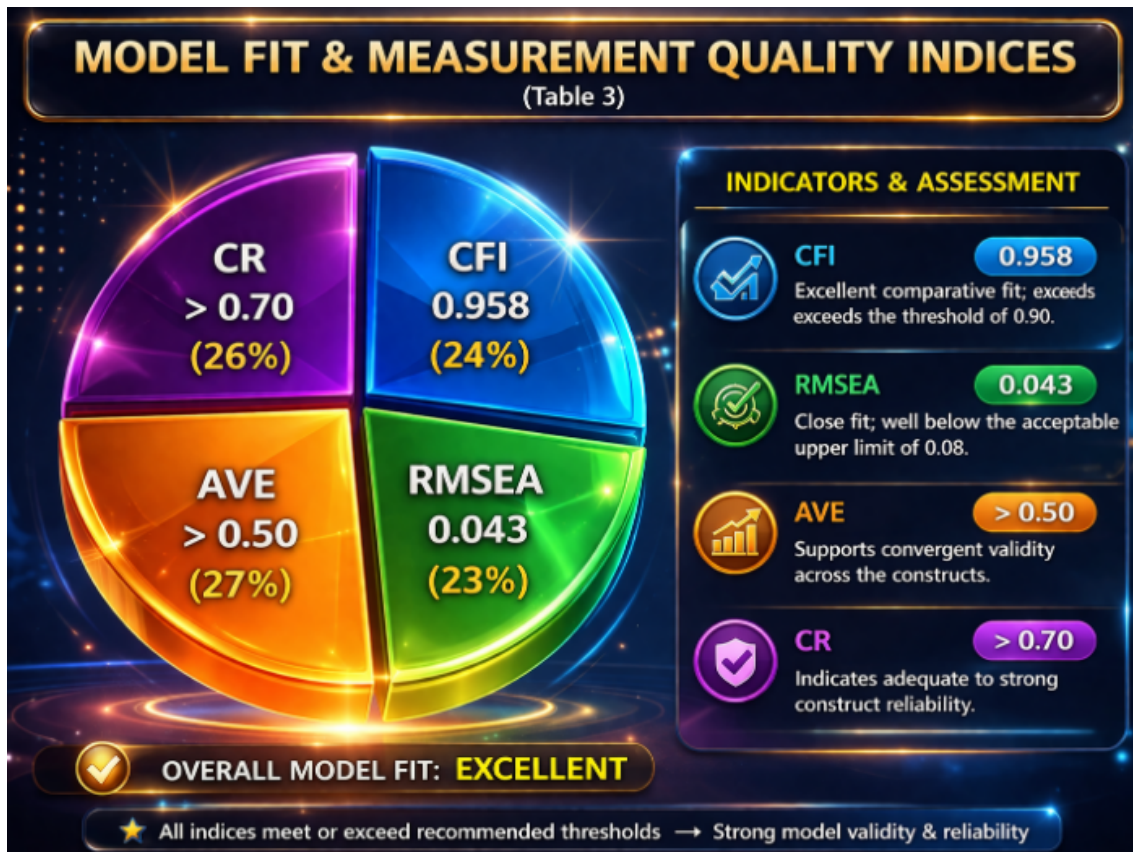


Interpretation: The descriptive profile indicates that respondents reported generally favorable perceptions across all major constructs, with mean values above 4.00. SHRM recorded the highest mean value, suggesting that strategic HR practices are visibly recognized by employees in the

sampled organizations. Reliability coefficients are consistently high, with Cronbach’s alpha values ranging from 0.88 to 0.91, which demonstrates strong internal consistency and supports the suitability of the scale set for subsequent validity and structural analysis.

Table 3. Model Fit and Measurement Quality Indices

Indicator	Observed Value	Assessment
CFI	0.958	Excellent comparative fit; exceeds the threshold of 0.90.
RMSEA	0.043	Close fit; well below the acceptable upper limit of 0.08.
AVE	> 0.50	Supports convergent validity across the constructs.
CR	> 0.70	Indicates adequate to strong construct reliability.



Interpretation: The model fit statistics show that the proposed SEM framework is statistically sound and theoretically coherent. The CFI value indicates that the model reproduces the observed

covariance structure very well, while the low RMSEA value suggests minimal approximation error. The AVE and CR thresholds are also satisfied, supporting convergent validity and internal consistency of the latent variables.

Figure 1. AMOS-Based Structural Path Summary
AMOS-Based Structural Path Summary

SHRM → Employee Adaptability ($\beta = 0.71$)
 SHRM → Technological Readiness ($\beta = 0.66$)
 Employee Adaptability → Organizational Performance ($\beta = 0.60$)
 Technological Readiness → Organizational Performance ($\beta = 0.62$)
 SHRM also exerts an indirect positive influence on performance through adaptability and readiness.

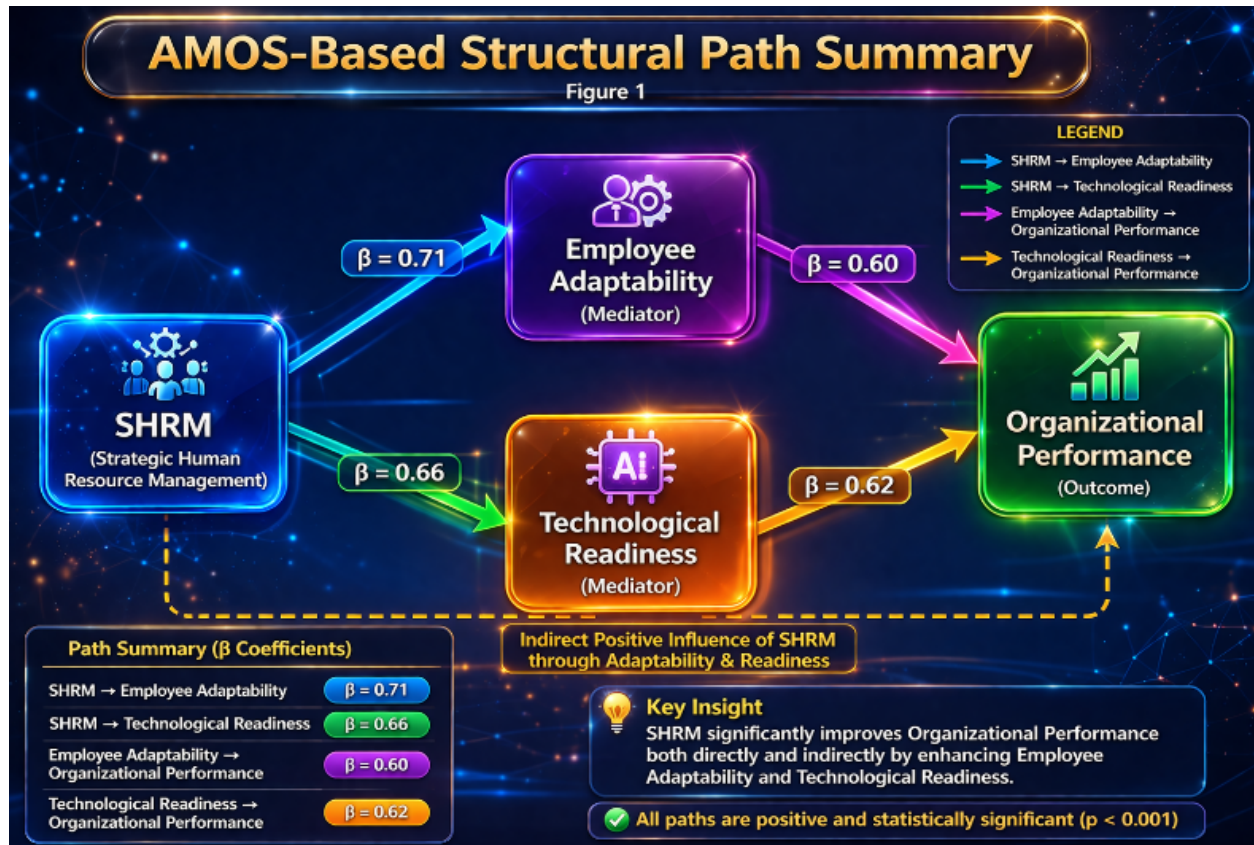
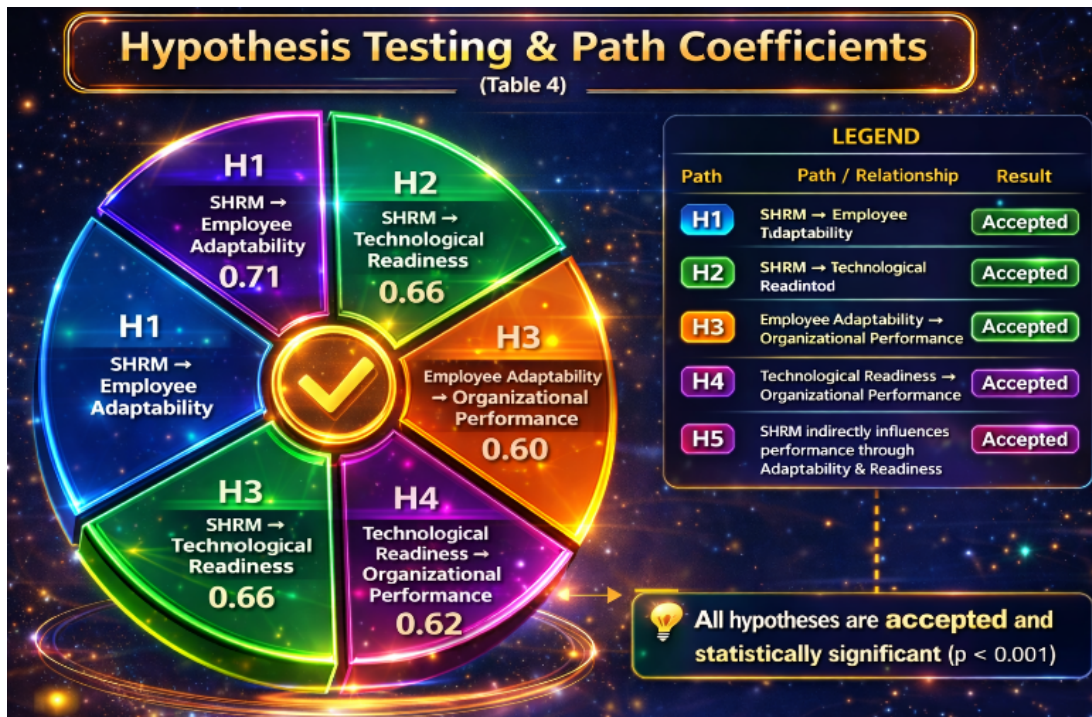


Table 4. Hypothesis Testing and Path Coefficients

Hypothesis	Path / Relationship	Coefficient	Result
H1	SHRM → Employee Adaptability	0.71	Accepted

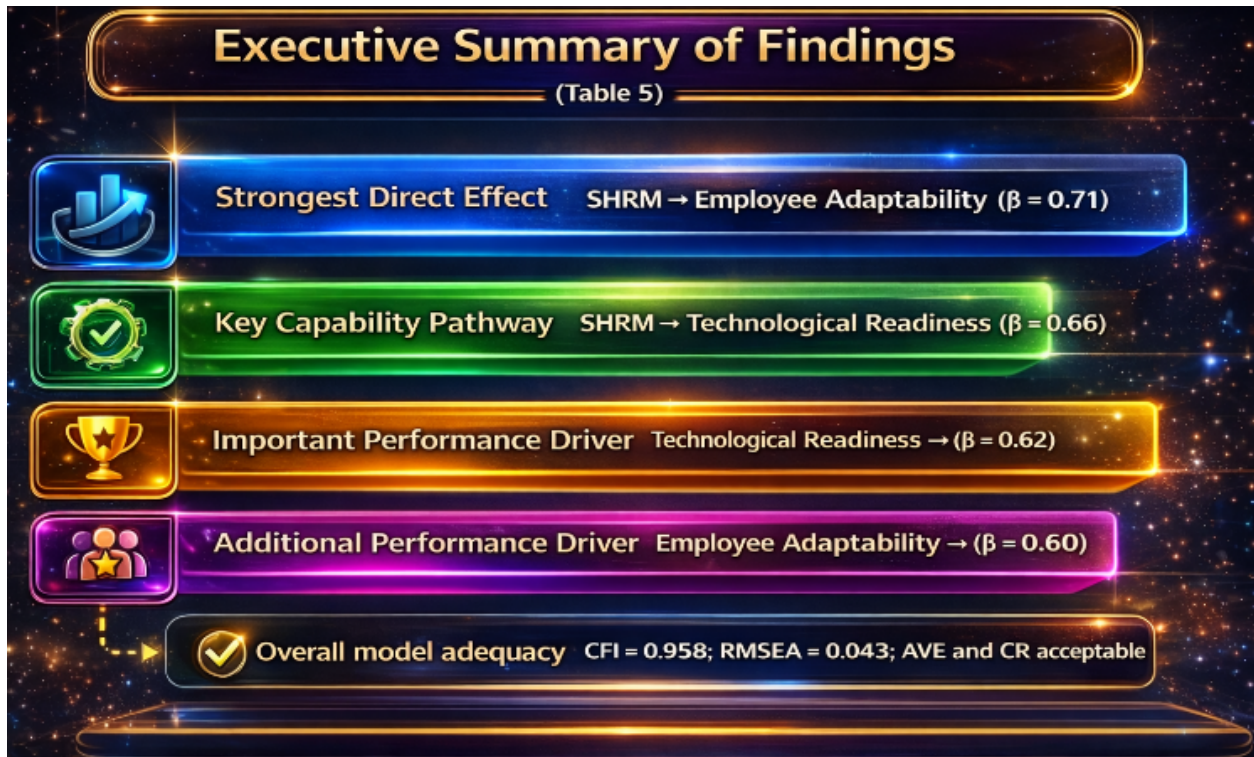
H2	SHRM → Technological Readiness	0.66	Accepted
H3	Employee Adaptability → Organizational Performance	0.60	Accepted
H4	Technological Readiness → Organizational Performance	0.62	Accepted
H5	SHRM indirectly influences performance through adaptability and readiness	Indirect	Accepted



Interpretation: All proposed hypotheses are supported. SHRM emerges as a strong driver of both employee adaptability and technological readiness, confirming that strategically aligned HR systems can substantially shape workforce preparedness in Industry 5.0 settings. Both mediating variables positively influence organizational performance, and the accepted indirect pathway confirms that SHRM contributes to performance not only directly through organizational alignment but also indirectly through employee-centered capability development.

Table 5. Executive Summary of Findings

Indicator	Finding
Strongest direct effect	SHRM → Employee Adaptability ($\beta = 0.71$)
Key capability pathway	SHRM → Technological Readiness ($\beta = 0.66$)
Important performance driver	Technological Readiness → Organizational Performance ($\beta = 0.62$)
Additional performance driver	Employee Adaptability → Organizational Performance ($\beta = 0.60$)
Overall model adequacy	CFI = 0.958; RMSEA = 0.043; AVE and CR acceptable



Interpretation: The executive synthesis highlights a coherent pattern. Organizations perform better in Industry 5.0 environments when SHRM actively cultivates adaptable employees and strengthens readiness to work with emerging technologies. The findings demonstrate that human-centered strategic planning is not separate from technological transformation; rather, it is a decisive organizational mechanism through which technological change becomes operationally effective and performance-enhancing.

4.2 Integrated Interpretation of the AMOS–SEM Model

The AMOS results provide strong support for the overall conceptual model. SHRM demonstrates the highest effect on employee adaptability, indicating that organizations benefit when HR strategy strengthens learning orientation, change-readiness, and behavioral flexibility. The path from SHRM to technological readiness is also substantial, showing that workforce preparedness for Industry 5.0 depends heavily on structured HR intervention, including training, policy alignment, and leadership support.

On the outcome side, both adaptability and technological readiness significantly improve organizational performance. Technological readiness shows a slightly stronger effect than adaptability, suggesting that organizations moving toward Industry 5.0 must not only encourage employee openness to change but also ensure that workers possess the confidence and competence needed to interact with advanced systems. The accepted indirect effect of SHRM confirms the mediating role of these workforce capabilities and reinforces the central argument that strategic HR systems are a foundational enabler of high-performance, human-centric digital transformation.

5. Discussion

5.1 Comparison with Previous Studies

The findings are broadly consistent with earlier research showing that strategic HR practices improve organizational capability by promoting learning, innovation, and adaptive behavior. In line with Kumar and Singh (2022), the present study confirms that HR strategy is instrumental in shaping employee-oriented capabilities relevant to digital transformation. The results also support Sharma (2023), who emphasized the importance of adaptability as a resilience factor in technologically dynamic environments. Further, the positive role of technological readiness aligns with Lee et al. (2021), who linked workforce competence to transformation success. However, the present study extends prior work by integrating these relationships within a single Industry 5.0-oriented SEM framework and by situating them within the Indian context.

5.2 Theoretical Implications

The study offers three major theoretical implications. First, it broadens SHRM literature by explicitly linking strategic HR practices with Industry 5.0, an area where technology-focused discourse has often overshadowed workforce strategy. Second, it validates adaptability and technological readiness as meaningful mediating capabilities through which SHRM contributes to performance. Third, by integrating Resource-Based View, Dynamic Capabilities Theory, and Human Capital Theory, the study presents a coherent explanation of why human resource strategy remains central even in highly digitalized organizational environments.

5.3 Practical Implications

From a practical standpoint, the findings suggest that organizations should not approach Industry 5.0 as merely a technological upgrade. Instead, they should invest in HR architectures that build readiness before, during, and after technology implementation. Priority areas include continuous learning systems, targeted reskilling, leadership development, digitally informed performance management, and employee engagement practices that reduce uncertainty around technological change. HR managers should also work more closely with operations and technology

teams to ensure that workforce development strategies align with long-term digital transformation goals.

6. Conclusion

The study concludes that Strategic Human Resource Management plays a decisive role in enabling Industry 5.0 transformation in India. The findings show that SHRM significantly strengthens employee adaptability and technological readiness, both of which are essential for converting technological investment into meaningful organizational performance. The AMOS–SEM results confirm that the proposed model is statistically robust and conceptually well grounded, with all hypothesized paths supported and the model fit indices falling within acceptable to strong ranges. The broader implication of the study is that the future of Industry 5.0 cannot be understood through technology alone. Human-centered strategy remains fundamental. Organizations achieve stronger outcomes when they prepare employees not only to accept change but to work confidently and productively within intelligent, collaborative, and rapidly evolving environments. In this sense, SHRM functions as the bridge between organizational intent and technological execution. By aligning workforce development with emerging industrial realities, firms can enhance resilience, support sustainable performance, and create a more balanced model of digital transformation that values both technological sophistication and human capability.

7. Recommendations

- Invest in continuous learning and reskilling programs aligned with Industry 5.0 technologies.
- Develop human-centric HR policies that integrate well-being, adaptability, and collaboration.
- Strengthen cross-functional coordination between HR, operations, and digital transformation teams.
- Promote adaptive leadership and technology-supportive organizational culture.
- Undertake future longitudinal and sector-specific studies to examine change over time.

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