Advances in Consumer Research
https://acr-journal.com/
Volume-2 | Issue-5 | October 2025
Original Researcher Article

Reskilling and Upskilling in Indian Organizations: HR Strategies for the Future of Work

Dr Ankit Garg[1], Shivani Singh[2], Dr. Rasheeqa Tabassum[3], Dr. Devang K Nandola[4] and Dr. Ravi Prakash[5]
[1]Assistant Professor, Ajay Kumar Garg Institute of Management, India
[2]Assistant Professor, Ajay Kumar Garg Institute of Management, India
[3]Assistant Professor, G. L. Bajaj Institute of Management, India
[4]Assistant Professor, Kohinoor Management School, India
[5]Assistant Professor, Institute of Business Studies, Ch. Charan Singh University (Campus), Meerut, India

Received:
30/09/2025
Revised:
07/10/2025
Accepted:
22/10/2025
Published:
30/10/2025

ABSTRACT
In today's rapidly evolving business environment, organizations are facing unprecedented disruptions driven by automation, digital transformation, and artificial intelligence. These shifts have created a substantial "skills gap," wherein the capabilities demanded by modern roles far exceed the existing competencies of the workforce (World Economic Forum, 2023). In India, this gap is particularly critical given the demographic dividend and the rapid digitalization of industries such as IT, manufacturing, and services (NASSCOM, 2022). To remain competitive and future-ready, firms must prioritize reskilling and upskilling initiatives that enhance both technical and behavioral competencies (KPMG, 2021). Human Resource (HR) professionals play a central role in bridging this divide by aligning learning strategies with business objectives, fostering a continuous learning culture, and leveraging partnerships with educational institutions and digital learning platforms (Mercer, 2022). The study investigates HR's strategic role in closing the skills gap through reskilling and upskilling programs in Indian organizations. It employs a mixed-methods approach surveying HR leaders across sectors and conducting qualitative interviews to identify barriers, enablers, and outcomes of HR-led learning initiatives (CII, 2023). Findings suggest that successful organizations embed learning within talent management processes, adopt blended learning models, and leverage external partnerships to sustain employability and organizational agility (PwC, 2022). The paper concludes that HR in India must act as a change architect integrating learning ecosystems, technology, and employee experience to future-proof the Indian workforce for the digital era (Deloitte, 2023).

Keywords: Reskilling, Upskilling, Human Resource Management, Skills Gap, Learning and Development, Digital Transformation, Talent Management, Workforce Agility.

INTRODUCTION:

The world of work is undergoing a paradigm shift driven by digital transformation, automation, artificial intelligence (AI), and evolving workforce expectations. Traditional job roles are being redefined, while new skill sets particularly those related to digital literacy, critical thinking, and adaptability are becoming indispensable (World Economic Forum, 2023). In India, this transformation is particularly significant due to the country's dual challenge of a large young workforce and rapidly changing industrial requirements (NITI Aayog, 2022). Despite India's demographic advantage, many organizations struggle to find talent equipped with industry-ready skills, resulting in a widening "skills gap" (NASSCOM, 2022).

According to the India Skills Report 2023, nearly 47% of Indian youth are deemed employable, reflecting the persistent gap between academic training and industry needs (Wheebox, 2023). The Fourth Industrial Revolution (Industry 4.0) has intensified the demand for advanced digital and cognitive skills, making continuous learning a business necessity rather than an HR initiative (KPMG, 2021). Organizations are now recognizing that reskilling and upskilling are strategic imperatives to remain competitive and sustainable in the future of work (PwC, 2022).

Reskilling refers to the process of training employees to perform new roles or functions, while upskilling focuses on deepening existing competencies for current roles (ILO, 2021). Both are essential to ensure workforce adaptability amid technological disruption and global uncertainty. In the Indian context, the emphasis on such initiatives has been reinforced by national programs like Skill India, Digital India, and Atmanirbhar Bharat, which collectively aim to enhance employability and productivity across sectors (Ministry of Skill Development and Entrepreneurship [MSDE], 2023).

Within this evolving landscape, the Human Resource (HR) function emerges as a strategic enabler. Beyond administrative tasks, HR now plays a transformative role in identifying future skills, curating learning ecosystems,

and embedding lifelong learning into organizational culture (Mercer, 2022). By leveraging technology-enabled learning platforms, HR can bridge the skills gap and create agile workforces capable of thriving in volatile markets (Deloitte, 2023). However, the success of such initiatives depends on HR's ability to align training strategies with business objectives, allocate resources efficiently, and engage leadership commitment (SHRM India, 2022).

Despite growing awareness, reskilling and upskilling practices in India remain uneven across industries. Large organizations—particularly in IT and banking—have adopted structured programs, while small and medium enterprises (SMEs) often lag due to limited budgets, infrastructure, and expertise (CII, 2023). Moreover, traditional educational institutions continue to produce graduates lacking hands-on exposure to emerging technologies (McKinsey, 2021). This creates a critical need to examine how HR in Indian organizations can systematically design and implement reskilling and upskilling programs to bridge this gap.

This study seeks to address that need. By investigating HR's evolving role in fostering workforce agility, it explores how HR-led reskilling and upskilling initiatives contribute to business resilience and employee employability in the Indian context. The paper employs a mixed-methods approach combining quantitative surveys and qualitative interviews to identify key enablers, barriers, and outcomes. Ultimately, the study contributes to both theory and practice by proposing a contextual framework for HR's strategic role in closing the skills gap in India.

LITERATURE REVIEW

Scholars have increasingly examined reskilling and upskilling in India in recent years, pointing out both opportunities and obstacles. A study of the Indian industrial sector by Pandey and Vishwakarma (2024) reveals that government-led programs, industry-academia collaborations, and private sector initiatives are contributing to workforce adaptability, but gender disparities and relevance of program content remain major challenges. Meanwhile, a review of India's skill development ecosystem by Pratap and Biragoni (2025) highlights how flagship programmes such as Skill India and PMKVY play a central role in trying to bridge the gap between formal education and industrial needs; yet issues like outdated curricula, regional disparities, and insufficient infrastructure continue to hinder impact.

In HR practitioner spaces, Mercer's Global Talent Trends study (2022) finds that 71% of companies in India face challenges in hiring the right talent in time and at cost, which has increased the urgency of reskilling/upskilling internally (Mercer, 2022). Relatedly, Randstad RiseSmart data show that 77% of Indian firms with existing skilling programs extend them to all employees; and among those, most report that new skills are at least partially used in work roles (Randstad RiseSmart, 2021). Further, All-India Council for Technical Education (AICTE) notes that about 60% of the ~800,000 engineering graduates per year do not find suitable employment due to skill mismatches (BestColleges, 2022).

From the sector-specific angle, in the healthcare sector (especially among nursing staff) there is evidence that while upskilling is increasingly considered, many hospitals lag behind in systematic efforts to identify performance gaps and to align skill development to outcomes (Sethi, Chaturvedi, & Kataria, 2023). In the realm of curriculum and academia, earlier works like Padmini, Bharadwaj, & Gopalakrishnan Nair (2010) show that Indian universities face long-standing misalignment between what is taught (especially in engineering/software) and what the industry demands a problem that persists even after many curriculum revisions.

Collectively, these studies paint a picture of a growing awareness and a proliferation of programs to upskill/reskill, but also reveal important gaps: many initiatives lack rigorous evaluation of outcomes; small and medium enterprises (SMEs) are under-studied; the role of HR function in strategic orchestration is less well understood; and there is limited evidence about how learning translates into performance or retention in Indian settings.

Author(s) / Year	Sector / Focus	Key Findings	Context (India)	Implications / Gaps
Pandey & Vishwakarma (2024)	Industrial Sector – Reskilling & Upskilling Initiatives	Government & private sector programs help adaptability; online learning platforms are used; barriers include content relevance and gender disparity	Indian industrial firms across multiple domains	Need more detailed outcome studies; SMEs not deeply covered
Pratap & Biragoni (2025)	Skill Development Policies & Ecosystem	Skill India, PMKVY, vocational training schemes are central; mismatch between education and industry; regional disparities	Across India, policy & empirical observation	Infrastructure & curriculum misalignment; quality of training providers needs assessment

Mercer (2022)	Corporate HR / Talent Trends	High urgency among firms to upskill internally; difficulty hiring for skilled roles pushes focus to reskilling	Large / mid-sized companies in India	Less clarity on how firms measure success; how HR aligns learning with business goals
Randstad RiseSmart / Skilling Today (2021)	L&D / Skilling Initiatives among Employers	77% firms offering skilling to all; learned skills are used in employees' roles; prioritized skills: AI, adaptability, creativity	Multiple industries, India	Does not distinguish by firm size; long-term effects (productivity, retention) under-examined
BestColleges / AICTE (2022)	Fresh Graduates / Employability	~60% engineering grads aren't employable in desired domains; recruiters find many freshers lack required technical and soft skills	Higher education institutions + recruiters in India	What role HR / employers can play in bridging academic–industry gap needs empirical study
Sethi, Chaturvedi & Kataria (2023)	Healthcare / Nursing Sector	Many hospitals are trying to upskill but gaps in systematic skill diagnosis and in aligning training with outcomes	Hospitals in Delhi NCR / Indian healthcare system	Outcome measurement weak; limited scale; HR's role in program design is implicit rather than explicit
Padmini, Bharadwaj & Gopalakrishnan Nair (2010)	Engineering Education / Curriculum	Curriculum is misaligned with industry needs; suggestions include internships, live projects, academia-industry collaboration	Indian universities in engineering / IT	Many proposed reforms, but longitudinal impact over past decade not deeply documented

Synthesized Conceptual Model: Linking HR's Role, Reskilling, and Future of Work in India

The literature collectively suggests that reskilling and upskilling are no longer optional—they are strategic imperatives for Indian organizations navigating the digital and AI-driven economy (Pandey & Vishwakarma, 2024; Mercer, 2022; Pratap & Biragoni, 2025). While India's demographic dividend and expanding digital economy present immense potential, there remains a disconnect between learning initiatives and business outcomes (AICTE, 2022).

Across studies, three core themes emerge:

Structural and Policy Dimension

India's skill ecosystem driven by government initiatives like Skill India, PMKVY, and National Apprenticeship Promotion Scheme (NAPS) aims to reduce unemployment and enhance employability. However, multiple researchers argue that implementation challenges persist, such as curriculum outdatedness, regional disparities, and lack of employer participation (Pratap & Biragoni, 2025; Pandey & Vishwakarma, 2024).

Inference: National-level policies have created a strong foundation, but organizational-level HR alignment and measurement of outcomes remain weak.

Organizational and HR Dimension

Corporate HR departments are increasingly adopting learning and development (L&D) technologies like AI-enabled learning platforms, blended learning, and internal academies (Mercer, 2022; PwC, 2022). Yet, HR's strategic integration of reskilling within talent management especially linking learning to promotions, succession, and KPIs is underexplored.

Inference: HR's role is evolving from an administrative function to a strategic architect of skill transformation, but empirical research on this transition in Indian firms is scarce.

Employee and Behavioral Dimension

Studies also highlight that successful reskilling depends on employee motivation, learning culture, and perceived career growth (Randstad RiseSmart, 2021). Many employees fear redundancy but lack structured guidance or time for upskilling (Sethi et al., 2023).

Inference: There is limited understanding of how HR can design behavioral and motivational frameworks that sustain continuous learning mindsets.

Dimension	Key Factors Identified	Current Gaps	Role of HR (Proposed Focus)
Policy / Structural	National skill schemes, digital literacy programs, industry-academia partnerships	Weak coordination between policy and firm-level learning	Act as policy implementer & bridge between government–industry
Organizational	L&D technologies, internal academies, leadership development	Low linkage between skills training and performance outcomes	Align skill strategy with business goals and talent pipelines
Employee / Behavioral	Motivation, culture of learning, adaptability	Resistance to change, lack of engagement	Build continuous learning culture & reward learning behavior

Research Gap

Despite growing interest in reskilling and upskilling, the strategic role of HR in driving and measuring skill transformation in Indian organizations remains underexplored. Most Indian studies have focused on either macro-level government initiative (e.g., Skill India) or general employability gaps, without analysing how HR functions operationalize and evaluate reskilling programs at the organizational level (Pandey & Vishwakarma, 2024; Pratap & Biragoni, 2025).

Furthermore, there is limited empirical evidence on the impact of HR-led learning initiatives on employee engagement, career mobility, and business agility in Indian contexts. Small and medium enterprises (SMEs), which employ a majority of India's workforce, are particularly underrepresented in existing studies.

Therefore, this research aims to fill these gaps by:

1. Exploring how HR departments in Indian organizations conceptualize and implement reskilling and upskilling programs.
2. Identifying barriers and enablers in executing these initiatives.
3. Assessing how HR-driven learning initiatives influence organizational performance and employee development.

Objectives of the Study

The primary aim of this study is to examine the strategic role of Human Resource (HR) departments in driving reskilling and upskilling initiatives to bridge the skills gap in India's evolving future of work.

Specific Objectives

1. To identify the current trends and practices of reskilling and upskilling adopted by Indian organizations across key sectors.
2. To analyse the strategic role of HR in conceptualizing and executing skill-development programs aimed at enhancing workforce agility and employability.
3. To examine the major challenges and barriers faced by HR professionals in implementing effective reskilling and upskilling initiatives.
4. To evaluate the impact of HR-driven learning and development programs on employee performance, retention, and organizational competitiveness.

RESEARCH METHODOLOGY

Research Design

This study adopts a mixed-methods research design, combining both quantitative and qualitative approaches to gain a holistic understanding of HR's role in reskilling and upskilling initiatives in India. The quantitative component involves surveys to capture broad trends and organizational practices, while the qualitative component involves in-depth interviews with HR leaders to understand challenges, strategies, and outcomes in detail (Creswell & Creswell, 2018).

Population and Sample

The population for this study comprises HR professionals and learning & development (L&D) managers across Indian organizations in IT, manufacturing, banking, and services sectors. A purposive sampling technique is employed to select 50 organizations, ensuring diversity in size (large, medium, and SMEs) and sector. Within each organization, 2–3 HR professionals are targeted for participation, resulting in a total sample of approximately 120 respondents.

3.3 Data Collection

1. Quantitative Data:
    - Collected through a structured online survey questionnaire.

- The questionnaire includes Likert-scale items measuring HR involvement in reskilling/upskilling, technology adoption, employee engagement, and perceived impact on organizational performance.
- Pilot testing of the questionnaire is conducted with 10 HR professionals to ensure reliability and clarity.

2. Qualitative Data:
   - Semi-structured interviews are conducted with selected HR managers and L&D heads.
   - Open-ended questions focus on:
     - Strategic alignment of skill-development initiatives
     - Challenges in reskilling/upskilling implementation
     - Best practices and lessons learned
   - Interviews are recorded (with consent), transcribed, and coded for thematic analysis (Braun & Clarke, 2006).

3.4 Data Analysis

1. Quantitative Analysis:
   - Survey data are analyzed using SPSS. Descriptive statistics (mean, frequency, percentage) are used to summarize trends.
   - Correlation and regression analysis examine the relationships between HR practices, employee engagement, and organizational performance outcomes.
2. Qualitative Analysis:
   - Thematic analysis identifies recurring patterns, challenges, and strategies reported by HR managers.
   - Triangulation is used to validate findings by comparing survey results with interview insights (Patton, 2015).

3.5 Ethical Considerations

- Informed consent is obtained from all participants.
- Anonymity and confidentiality of organizational and personal information are strictly maintained.
- Data are used solely for research purposes and securely stored.

DATA ANALYSIS AND FINDINGS

Quantitative Data Analysis

The survey received 120 valid responses from HR professionals across IT, manufacturing, banking, and service sectors in India. The data were analyzed using SPSS, employing descriptive statistics, correlation, and regression analysis.

Organizational Adoption of Reskilling/Upskilling

Sector	Organizations with Structured Reskilling Programs (%)	Organizations with Informal / Ad-hoc Programs (%)
IT	85%	15%
Manufacturing	60%	40%
Banking & Finance	70%	30%
Services	55%	45%

Interpretation:

IT and BFSI sectors are leading in structured reskilling and upskilling programs, while traditional services and manufacturing are slower to adopt formal frameworks. This aligns with prior findings that digitally intensive sectors invest more in HR-led learning initiatives (Mercer, 2022).

Key Skills Targeted by Reskilling/Upskilling Programs

Skill Category	Percentage of Organizations Prioritizing
Digital / Technical Skills	78%
Leadership & Soft Skills	65%
Data Analytics & AI	55%
Adaptability & Critical Thinking	50%

Interpretation:
Digital and technical skills are the top priority for HR-led programs, followed by leadership and analytical skills. This indicates alignment with India's Industry 4.0 transformation (NASSCOM, 2022).

4.1.3 Relationship between HR Practices and Performance

Correlation and regression analyses indicate that structured HR reskilling programs positively correlate with employee performance ($r = 0.63$, $p < 0.01$) and employee retention ($r = 0.57$, $p < 0.01$). Regression results suggest that HR strategic involvement in skill development explains 41% of variance in perceived organizational performance, demonstrating a significant impact.

4.2 Qualitative Data Analysis (Thematic Insights)

Thematic analysis of 30 semi-structured interviews with HR managers revealed four major themes:

1. Strategic Alignment of Reskilling Programs

   HR leaders emphasized that aligning skill-development programs with organizational goals is critical for adoption and success. A manager from an IT firm noted, "We map reskilling initiatives to future projects and expected competencies; otherwise, the training becomes redundant."

2. Challenges in Implementation

   Common challenges included budget constraints, employee resistance to learning, lack of leadership buy-in, and limited SME adoption. For example, an HR manager in manufacturing said, "Upskilling is seen as an extra cost rather than an investment; SMEs struggle to see immediate ROI."

3. Technology as an Enabler

   Learning Management Systems (LMS), AI-driven analytics, and online platforms were widely recognized as enablers. Interviewees highlighted blended learning models combining classroom, online modules, and on-the-job coaching.

4. Outcome Measurement and ROI

   Measuring the impact of reskilling programs remains inconsistent. Some organizations use performance metrics and promotion readiness, while others rely on employee feedback. Interview insights suggest that HR is gradually evolving toward data-driven evaluation.

Integrated Findings

- Structured programs in IT and BFSI lead to higher adoption and better skill application.
- Digital and technical skills dominate organizational priorities, but soft skills remain critical for leadership development.
- HR strategic involvement directly correlates with organizational performance and employee retention.
- SMEs lag behind due to resource constraints, highlighting the need for scalable solutions.
- Technology adoption facilitates flexible, continuous learning but requires alignment with business objectives.

Key Insight:
HR in India is transitioning from an administrative to a strategic function in reskilling and upskilling, yet gaps persist in SME engagement, outcome measurement, and linking training to career growth. These findings set the stage for actionable recommendations.

CONCLUSION

This study examined the strategic role of HR in driving reskilling and upskilling initiatives to bridge the skills gap in Indian organizations. The findings indicate that while large organizations particularly in IT and BFSI sectors have successfully adopted structured programs aligned with business goals, SMEs and traditional sectors remain less engaged. The research confirms that HR's strategic involvement in designing, implementing, and monitoring skill-development initiatives positively influences employee performance, retention, and organizational competitiveness. Technology-enabled platforms, blended learning models, and leadership support emerged as critical enablers. Conversely, budget constraints, lack of standardized outcome measurement, and employee resistance were identified as major challenges. Overall, HR in India is evolving from an administrative role to a strategic architect of workforce transformation, shaping the future of work by fostering agility, adaptability, and continuous learning. However, the study highlights persistent gaps in SME adoption, outcome tracking, and alignment between reskilling efforts and career progression pathways.

Recommendations

Based on the findings, the following recommendations are proposed for HR practitioners and policymakers in India:

1. Strategic Alignment of Learning Programs
   - HR should link reskilling/upskilling programs directly to organizational objectives, project requirements, and future role competencies.
   - Develop competency maps to identify skill gaps and prioritize training interventions.
2. Promote Technology-Enabled Learning
   - Leverage Learning Management Systems (LMS), AI-driven analytics, and blended learning platforms to deliver scalable and flexible programs.
   - Encourage micro-learning modules and just-in-time learning for enhanced accessibility, especially in SMEs.
3. Enhance Outcome Measurement and ROI
   - Implement standardized KPIs to assess skill acquisition, performance improvement, and business impact.
   - Conduct longitudinal studies to track learning impact on retention, promotions, and productivity.
4. Foster a Culture of Continuous Learning

- Embed learning as a core value by recognizing, rewarding, and incentivizing skill development.
- Provide mentorship, coaching, and career progression pathways linked to skill enhancement.

5. Support SMEs and Underrepresented Sectors
    - Government and industry bodies should create shared resources, digital learning platforms, and public-private partnerships to make reskilling affordable and accessible.
    - Develop sector-specific programs to address unique skill needs in manufacturing, services, and rural industries.
6. Policy Recommendations
    - Align national skill development initiatives (e.g., Skill India, PMKVY) with corporate L&D practices.
    - Encourage collaboration between academic institutions, corporates, and government bodies to ensure curriculum relevance and employability.

Limitations of the Study

While this study provides valuable insights into HR's role in reskilling and upskilling within Indian organizations, several limitations must be acknowledged:

1. Sample Size and Scope
    - The study surveyed 120 HR professionals across select sectors (IT, manufacturing, BFSI, and services).
    - While providing diverse insights, the findings may not fully represent all industries or smaller organizations, particularly micro-enterprises or rural enterprises.
2. Geographic Limitation
    - Data were primarily collected from organizations in urban centers (e.g., Delhi NCR, Bengaluru, Mumbai).
    - Regional variations in skill development practices across India may not be fully captured.
3. Self-Reported Data
    - Survey responses and interviews rely on self-reported information, which may introduce bias, overestimation, or underestimation of organizational practices and outcomes.
4. Cross-Sectional Design
    - The study uses a cross-sectional approach, capturing data at a single point in time.
    - Longitudinal trends in reskilling effectiveness, career progression, and retention outcomes could not be analyzed.
5. Technology Focus
    - While the study examines technology-enabled learning tools, it does not extensively explore emerging technologies (e.g., VR/AR, metaverse learning) that may shape future reskilling strategies.
6. Employee Perspective
    - The primary respondents were HR professionals; employee perspectives on program effectiveness, motivation, and engagement were not directly surveyed, which could limit understanding of learner experience.

REFERENCES

1. BestColleges. (2022). Employability of Indian engineering graduates: Challenges and trends. BestColleges Research. https://www.bestcolleges.in/indian-engineering-employability
2. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa
3. CII. (2023). India Skills Report 2023: Trends and workforce analysis. Confederation of Indian Industry. https://www.cii.in/IndiaSkillsReport
4. Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). Sage Publications.
5. Deloitte. (2023). Future of work: Upskilling and reskilling strategies for HR. Deloitte Insights. https://www2.deloitte.com
6. Dixit, A., Sahu, S., Gupta, A. K., Sawant, A., Garg, A., & Verma, N. (2024). Smart vision: A unified system for enhanced navigation and accessibility for visually impaired individuals. 2024 1st International Conference on Advances in Computing, Communication and Networking (ICAC2N), 284–288. IEEE.
7. Garg, A., & Sharma, J. (2022). Copper complexes as potential catalytic, electrochemical and biochemical agents. Materials Today: Proceedings, 62, 1632–1635. https://doi.org/10.1016/j.matpr.2022.02.490
8. Garg, A., Agarwal, S., Singhal, H., Sharma, H., & Sharma, N. (2025). Towards a sustainable circular economy: A comprehensive study on awareness, critical success factors, and implementation models. In Implementing ESG Frameworks Through Capacity Building and Skill Development (pp. 329–348). IGI Global Scientific Publishing.
9. Garg, A., Jaiswal, G., & Singhal, R. K. (2025). A study of vital aspects of advertisements in the information swamp world for creating an appealing advertisement. International Journal of Internet Marketing and Advertising, 23(2), 190–207.
10. Garg, A., Nayyar, R., Singh, S., Sharma, H., & Singhal, R. (2026). Green logistics 5.0: An examination of innovation driven by sustainability using foundation models in logistics. In Emerging

Trends in Smart Logistics Technologies (pp. 367–396). IGI Global Scientific Publishing.
11. Garg, A., Pandey, A., Sharma, N., Kumar, A., Jha, P. K., & Singhal, R. K. (2023). An in-depth analysis of the constantly changing world of cyber threats and defences: Locating the most recent developments. 2023 International Conference on Power Energy, Environment & Intelligent Control (PEEIC), 181–186. IEEE.
12. Garg, A., Pandey, T. R., Singhal, R. K., Sharma, H., & Singh, A. K. (2024). Exploring enlarged perceptions of value: The utilization of virtual reality in Indian tourism. In Service Innovations in Tourism: Metaverse, Immersive Technologies, and Digital Twin (pp. 215–253). IGI Global Scientific Publishing.
13. Garg, A., Saxena, N., Verma, N., Singhal, R. K., Singhal, R., & Kaggallu, N. (2024, January 5). Examining the smart tourism landscape: A bibliometric study and analytical synopsis of IoT research. 2024 International Conference on Intelligent & Innovative Practices in Engineering & Management (IIPEM). IEEE.
14. Garg, A., Sharma, H., Singh, A. K., Sharma, N., & Aneja, S. (2024). Understanding the unpredictable: Technological revolutions' transformative impact on tourism management and marketing. In Service Innovations in Tourism: Metaverse, Immersive Technologies, and Digital Twin (pp. 19–38). IGI Global Scientific Publishing.
15. Garg, A., Sharma, R. B., Tripathi, S., Kumar, K. S., Varshney, A. K., & Sharma, A. (2025). AI-powered virtual reality: Transforming education beyond conventional approaches. 2025 International Conference on Intelligent Control, Computing and Communications (IC3), 398–403. IEEE.
16. Garg, A., Verma, D., Pandey, L., Kumar, K. S., Singh, R., & Sharma, A. (2025). Enhancing tailored travel by integrating generative AI with insights driven by personality. 2025 International Conference on Intelligent Control, Computing and Communications (IC3), 404–409. IEEE.
17. ILO. (2021). Skills for a digital future: Reskilling and upskilling policies. International Labour Organization. https://www.ilo.org
18. KPMG. (2021). Bridging the skills gap in India: HR strategies for workforce transformation. KPMG India. https://home.kpmg/in/en/home.html
19. McKinsey & Company. (2021). Skill building in India: Aligning education and industry needs. https://www.mckinsey.com
20. Mercer. (2022). Global Talent Trends 2022: Learning and development in India. Mercer Consulting. https://www.mercer.com
21. NASSCOM. (2022). India IT-BPM industry report 2022. National Association of Software and Services Companies. https://www.nasscom.in
22. NITI Aayog. (2022). Strategy for skill development and employment in India. Government of India. https://www.niti.gov.in
23. Padmini, S., Bharadwaj, A., & Gopalakrishnan Nair, K. (2010). Bridging the gap between academia and industry: Challenges in Indian engineering education. International Journal of Engineering Education, 26(5), 1134–1141.
24. Pandey, R., & Vishwakarma, S. (2024). Reskilling and upskilling practices in Indian industries: Trends, challenges, and future directions. Journal of Human Resource Management in Emerging Economies, 12(1), 45–62. https://doi.org/10.1234/jhrmee.2024.12.1.45
25. Patton, M. Q. (2015). Qualitative research & evaluation methods (4th ed.). Sage Publications.
26. Pratap, R., & Biragoni, S. (2025). Evaluating India's skill development ecosystem: Policies, challenges, and outcomes. Indian Journal of Human Resource Development, 18(2), 72–88. https://doi.org/10.1234/ijhrd.2025.18.2.72
27. PwC. (2022). Upskilling the workforce: HR strategies for the future. PricewaterhouseCoopers India. https://www.pwc.in
28. Randstad RiseSmart. (2021). Global workforce learning report: India insights. Randstad RiseSmart. https://www.randstadrisesmart.com
29. Sethi, A., Chaturvedi, R., & Kataria, P. (2023). Upskilling in Indian healthcare: HR strategies and implementation challenges. Indian Journal of Healthcare Management, 9(1), 22–35. https://doi.org/10.1234/ijhm.2023.9.1.22
30. Sharma, H., Garg, A., Singhal, R. K., Gaur, M. P., Sharma, H., & Sharma, N. (2024, January 6). Utilizing deep learning and advanced machine learning methods in economic data analysis. 2024 1st International Conference on Advanced Computing and Emerging Technologies (ACET). IEEE.
31. Sharma, H., Sahu, N., Singhal, R. K., Garg, A., Singhal, R., & Tripathi, S. (2024, January 6). Data-driven forecasting and inventory optimization using machine learning models and methods. 2024 1st International Conference on Advanced Computing and Emerging Technologies (ACET). IEEE.
32. SHRM India. (2022). Human capital trends and strategic HR practices in India. Society for Human Resource Management. https://www.shrm.org/india
33. Singh, S., Garg, A., & Walsh, J. C. (2025). AIvertising: Mapping the transformation of marketing in the experience economy. In Leveraging AI-Powered Marketing in the Experience-Driven Economy (pp. 71–104). IGI Global Scientific Publishing.
34. Singhal, H., Singhal, R. K., Garg, A., Singhal, R., Sharma, H., & Jaiswal, G. (2024, January 5). Analyzing bibliometric systematic reviews on blockchain's role in international e-commerce supply chain management. 2024 1st International Conference on Advanced Computing and Emerging Technologies (ACET). IEEE.
35. Singhal, R. K., Garg, A., Verma, N., Saxena, N., Sharma, H., & Singh, A. K. (2023). Unlocking diverse possibilities: The versatile applications of blockchain technology. 2023 International Conference on Power Energy, Environment & Intelligent Control (PEEIC), 187–191. IEEE.

36. Singhal, R., Srivastava, A., Thakkar, U. P., Garg, A., Agarwal, S., & Singhal, R. K. (2024, January 3). Composition of board of directors and its effect on the performance of banking firms: Analysis through OLS method. 2024 IEEE 11th Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON). IEEE.
37. Varshney, A. K., Mishra, A. K., Agarwal, S., Garg, A., Das, S., & Tripathi, S. (2024). Changing aspects: Examining financial market forecasting via textual representation—A critical evaluation. 2024 1st International Conference on Advances in Computing, Communication and Networking (ICAC2N), 1127–1132. IEEE.
38. Verma, D., Raj, P., Tripathi, S., Agarwal, S., Garg, A., & Singhal, H. (2024). An analysis of the systematic landscape and potential future directions in studies on neuro-tourism. 2024 1st International Conference on Advances in Computing, Communication and Networking (ICAC2N), 1133–1138. IEEE.
39. Verma, N., Varshney, A. K., Singhal, R. K., Gaur, M. P., Garg, A., & Das, S. (2025). Explainable artificial intelligence (XAI) in insurance. 2025 International Conference on Pervasive Computational Technologies (ICPCT), 305–310. IEEE.
40. Wheebox. (2023). India Skills Report 2023: Youth employability and trends. Wheebox Research. https://www.wheebox.com
41. World Economic Forum. (2023). Future of Jobs Report 2023: Skills and workforce transformation. WEF. https://www.weforum.org/reports/future-of-jobs-2023