



# The Indian Economic Journal

JOURNAL OF THE INDIAN ECONOMIC ASSOCIATION

Volume - 5-C • Special Issue • December 2025

**SOCIAL INCLUSION  
EMPLOYMENT AND  
HUMAN DEVELOPMENT**



219. A Study on the Influence of Technological Innovation on Human Resource Management  
K. GAYATHRI  
K. MAJINI JES BELLA..... 1841
220. Social Inclusion and Psychological Well-being among Employees in India  
SADIYA FATHIMA. K  
MURUGANATHAN. M  
USHA RANI (RETD)..... 1851
221. Status of Education and Employment of the Disadvantaged Sections  
MADHURIMA SINGH  
KUMARI ANKITA  
MANOJ KUMAR ..... 1854
222. The Educational Disparity in Engineering Education in India: A Gender Perspective  
ANJANI KUMAR TRIPATHI  
MANOJ KUMAR..... 1861
223. Addressing and Tackling Adolescents' Social and Behavioural Problems in Education  
MARY.P.Y  
P.THIYAGARAJAN..... 1872
224. The Role of Employment and Human Development in Social Inclusion  
RISHI KUNJAN..... 1877
225. An Analysis of the Pahal Scheme: Direct Benefit Transfer (Dbt) And the LPG Subsidy Reforms in India  
NISHALI B  
S. MALINI ..... 1888
226. Healthcare Financing Trends in India: A Systematic Analysis of Nine Years of National Health Accounts and Comparative Insights from Brazil  
KAAVIYA ROSY Y  
REBECCA DEVAPRASAD..... 1897
227. Social Implications and Economic Growth of Self-Help Groups in Chengalpattu District Tamilnadu State  
M.THAIYALNAYAKI  
T.SUJATHA..... 1907
228. Infant Mortality and Socioeconomic Factor with Public Spending: Are Uttar Pradesh and Maharashtra Converging?  
VIMAL KUMAR VERMA  
MOHAMMAD ASIF..... 1914
229. The Influence of Socio Economic issues towards Academic Performance Faced by Arts College Students with Reference to Chengalpattu District  
T.SUJATHA  
M.THAIYALNAYAKI ..... 1923
230. AI-Enabled Skill Development and Inclusive Employment: Rethinking Human Capital and Livelihood Policies in Post-Pandemic India  
ARUN LAL  
ALOK KUMAR YADAV ..... 1928
231. Generalised Linear Mixed Model for Building Sustainable and Localised Employment in Uttarakhand  
PALLAVI GUPTA ..... 1936
232. A Study on Beyond GDP and Mortality: Qualitative Pathways Linking Healthcare Experiences to Human Development  
S. THASEEN..... 1945
233. Organic Food Adoption in India: Health, Environmental Impacts and Human Development Outcomes.  
S PADMA PRIYA  
M THAIYALNAYAGI ..... 1949
234. Backward Classes and the Caste Census: Past and the Road Ahead  
GAGANDEEP SINGH  
JASDEEP SINGH TOOR ..... 1957
235. Social Inclusion of Valmiki Community in Nainital  
KRISHNA BHARTI..... 1966
236. An Analysis of Green Finance Market in India  
RITIK BHARDWAJ  
ADITI PANDEY..... 1970
237. Dynamics in Health and Nutrition Status Among Indian States: Evidence from NFHS Survey  
MANOJ KUMAR DAS  
AMRUTA MISHRA  
SAGARIKA DAS ..... 1978
238. Employment Dynamics and Wage Earnings of Casual Labour Households in Rural Punjab  
GAGANPREET SINGH  
SARBJEET SINGH  
RAVITA ..... 1989

# A Study on the Influence of Technological Innovation on Human Resource Management

K. Gayathri\*

K. Majini.Jes Bella\*\*

**Purpose** - The paper will discuss the impact of technological innovation on Human Resource Management (HRM) practices and how new digital technologies can change the strategic role of HR in the delivery of effective organization and sustainable growth.

**Design/ Methodology/ Approach** - The paper uses a conceptual and empirical approach by incorporating the perspectives of the Resource-Based View (RBV) and Technology Acceptance Model (TAM) to examine the impact of technologies including Artificial Intelligence (AI), Machine Learning (ML), cloud computing, and analytics on the fundamental HRM activities. The review of the current literature, organizational case evidence, and survey data on HR professionals working in various fields support the analysis.

**Findings** - The findings show that the technological innovation can contribute reaching the goals of HR in a considerable way, improving its efficiency, accuracy, and alignment to the strategic business objectives. Reports of impact are in the areas of digital recruitment, talent analytics, e-learning and performance management systems. Nevertheless, the implementation of progressive technologies also introduces some dilemmas as employee resistance, mismatch of the skills, data protection issues, and the robotic decision-making ethicality.

**Practical implications** - The research has practical implications on HR practitioners and organizational leaders to develop technology-based HR practices that are more balanced between automation and humanistic values. It also recommends the capacity-building initiatives to improve the digital literacy and foster agile HR designs in response to the technological change.

**Originality/ Value** - This paper is a part of the developing discourse on digital transformation in HRM as it offers an integrative framework that connects technological innovation to the development of human capital and the competitiveness of the organization. It contributes to the academic knowledge of the way innovation can be used to build resilient, adaptive and future-ready HR systems.

**Key words:** HR strategies, HR practitioners, digital recruitment, innovation, technology

**Paper type:** Research Paper

## 1. Introduction

The world has experienced an unparalleled surge of technological advancement that is changing the organizational formulation, procedures and labour relations all over the world. Human Resource Management (HRM) which was largely administrative and transactional has to this day changed to be a strategic ally with the power of digital technologies (Zhou et al., 2021). How organizations attract, develop, engage, and retain talent has been re-examined by the integration of Artificial Intelligence (AI), Machine Learning (ML), data analytics, cloud computing and automation (Wang & Zang, 2005).

\* Research scholar, Department of Commerce, Vels Institute of Science Technology And Advanced studies, VISTAS, Pallavaram, Chennai – 600 117

\*\* Research Supervisor and Assistant Professor, Department of Commerce, Vels Institute of Science Technology And Advanced studies, VISTAS, Pallavaram, Chennai – 600 117

This digitalisation has moved HRM away as a normal people management process and is a strategic, technology-oriented process that contributes to evidence-based decision making and organizational flexibility (Soomro & Shah, 2015; Tummers et al., 2015). In the context of unpredictable markets and intercontinental business rivalry, technological innovation is an important facilitator of HR efficiency and a factor in the success of a company over the long term.

HRM technological innovation does not simply stop at automation of traditional activities, it transforms the whole process of workers. AI-based recruitment tools allow selecting the candidate based on the data and reducing bias, whereas digital onboarding systems enhance integration and interaction (Soomro & Shah, 2015). Likewise, training via e-learning systems and training in virtual reality promote long-term learning and acquisition of skills. The use of the HR analytics enables the companies to anticipate the turnover, evaluate the performance of the employees, and benchmark the human capital strategies against the business goals (Pradana et al., 2020). These technological innovations not only make the HR operations efficient, but promote innovation, inclusivity and personalized employee experiences. Nonetheless, these changes demand new skills of HR practitioners who will have to strike a balance between technology effectiveness and ethical, emotional and social aspects of human resource management (Potgieter & Mokomane, 2020).

Although these have been made, there are indeed challenges to the integration of technology in HRM. Some of the challenges that organizations face include a risk of data privacy, resistance to digital adoption, digital illiteracy, and possible dehumanization of work (Pérez et al., 2002). In addition, excessive use of technology may even compromise on the human-based nature of HRM dependence unintentionally unless handled strategically. Thus, it is necessary to comprehend the two-fold effect of technological innovation its possibilities and challenges to ensure the ability of organizations that want to use digital transformation as a chance to develop human capital in a sustainable manner (Cano & Cano, 2006a). Such studies are especially applicable to emerging economies, where the use of technology in HRM is progressing at a very rapid rate and it is still disparate within sectors and industries (Olander et al., 2015).

In this regard, the current research intends to determine the impact of technological innovation on HRM functions and organizational performance and how digital transformation transforms the strategic role of HR (Lee et al., 2019; Lopez-Cabrales et al., 2009). It also aims to provide to the theoretical and empirical knowledge by combining the resources provided by the Resource-Based View (RBV) and the Technology Acceptance Model (TAM) with the focus on how the use of technology-driven HR capabilities can boost the competitive advantage (Kossek, 1987). Through the analysis of enablers and barriers to technological use in HRM, this study can examine the topic in a holistic manner, which fills the gaps between the theory, practice and policy, and subsequently offers the future research and practical innovation in the human resource management field (Gope et al., 2018).

## 2. Literature review

### 2.1. HRM Transparency and Effectiveness

Transparency in Human Resource Management (HRM) may be defined as transparency and openness of HR processes, policies, and decision-making which promotes trust, accountability and equity in the organization (Cano & Cano, 2006b). The HR functions to recruit, appraise performance, promote and remunerate employees among others was traditionally viewed as being behind the veil and this might result in employee dissatisfaction and even conflict (Olander et al., 2015). Transparency in HRM has been greatly promoted through integration of technological advances which has digitalized records, automated workflow and offered real time access to information related to HR (Kang & Snell, 2009). HR systems based on the cloud, employee self-service portals, and analytics dashboards will enable

employees to monitor their performance and attendance, leaves and career development, which will lessen the uncertainty and perceived discrimination (Zhao & Tu, 2021). Furthermore, predicting and data-driven decision-making will provide uniformity in appraisal, shortlisting of candidates and rewarding. Technology also helps build trust and engagement among employees by increasing transparency which support ethical governance, compliance with labour laws as well as positive organizational culture which in the end leads to increased workforce satisfaction and organizational effectiveness (Lee et al., 2019).

The effectiveness of Human Resource Management (HRM) is the extent to which the HR practices and strategies play a role in achieving the organizational performance, employee satisfaction and general workforce productivity (Zhao & Tu, 2021). The technological innovation has already become a key to the success of HRM, as it simplifies the processes, facilitates the decision-making process, and allows aligning human capital with business goals (Aguinis et al., 2022). Artificial Intelligence (AI) and other tools, like cloud-based HR platforms, automation systems, and HR analytics enable HR specialists to optimize the recruitment, training, and performance appraisal, attendance monitoring, and engagement of employees in a more data-driven and efficient way (Zhao & Tu, 2021). Technology also makes it easy to monitor in real-time, make predictions and develop evidence-based policy, which minimize mistakes, enhance transparency and build trust in the employees (Potgieter & Mokomane, 2020). Moreover, HRM has been empowered by technology to create strategic value, through the planning of workforce, talent development, and retention policies, which, in the long-term, leads to organizational agility, competitive power, and long-term growth (Farrukh et al., 2022). Consequently, HRM as an administrative function grows into a strategic accomplice that is used to develop human capital as well as organizational success due to the integration of novel technologies (Zafar et al., 2023).

**H1: HRM Transparency has a positive effect on HRM effectiveness.**

## 2.2. Recruitment screening

Human Resource Management is an important role in recruitment screening that depends on the quality and fitness of applicants in the organizational positions. Historically, screening in the recruitment process was done manually and through reviewing of resume, interviews and reference checks, which was time consuming and subject to human bias (Ganz, 2020). The technological innovation has made a profound change in this process by introducing the tools that include Artificial Intelligence (AI), Machine Learning algorithms, and Applicant Tracking Systems (ATS) (Domínguez Escrig et al., 2016). These technologies make it possible to automatically parse resumes, focus on candidate potential and shortlist effectively based on skill, experience and cultural compatibility (Engelsberger et al., 2022). AI-based recruitment solutions can also process substantial amounts of applications within a fraction of the time, minimize unconscious bias, and offer data-driven information to improve the quality of the recruitment decision (Della Torre et al., 2020). In addition, the possibility of integration with digital platforms and social media analytics helps organizations to find passive candidates, evaluate online presence, and foresee future performance. This has not only made technology-enhanced recruitment screening more efficient in terms of operations, but also enhanced the strategic parallel of human capital acquisition with the organizational goals, producing a more agile and competent workforce that is more diverse (Cano & Cano, 2006b).

**H2: Recruitment screening has a positive effect on HRM Transparency.**

## 2.3. Attendance tracking

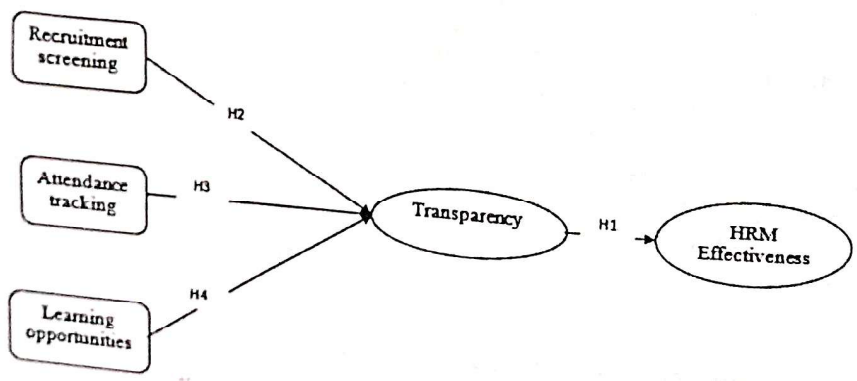
The attendance tracking is one of the central HR functions and is provided to ensure proper attendance check of staff members in terms of their attendance and their working hours and adherence to the

organizational policy (Bayo-Moriones et al., 2021). The manual registers or punch cards which were used as traditional methods were usually susceptible to error, tedious, and could be manipulated. With the creation of technological advancements, the management of attendance has become a revolution as it has introduced the digital processes, such as biometric scanners, RFID cards, time-tracking programs based on the cloud, and mobile applications (Aguinis et al., 2022). These systems make it possible to track data in real-time, capture data automatically, and integrate with the payroll and performance management systems. High-tech solutions may also involve geofencing and AI analytics to identify absenteeism trends, lateness, or overtime and offer practical data to HR managers (Lawrence & Pfeffer, 1998). Automation of attendance tracking does not only help organizations to increase accuracy and efficiency, it also enhances transparency, lowers the administrative burden, and encourages employees to become accountable (Zhao & Tu, 2021). Besides, the use of technology in attendance systems enhances work remoteness and flexible working hours in line with the current trends in the working population and employee satisfaction as well as operational compliance and organizational performance (Cappelli, 2019).

**H3: Attendance tracking has a positive effect on HRM Transparency.**

**2.4. Learning opportunities**

The Human Resource Management revolves around learning and development, which equips employees with necessary skills and knowledge base to achieve organizational goals and path their way in the dynamic work environments (Wang & Zang, 2005). Classroom training and other traditional modes of training, like workshops, were limited in terms of scalability, accessibility, and personalization. Learning has been revolutionized by technological advances, making it possible via digital learning environments, online learning courses, virtual environments, and immersive technologies such as virtual reality (VR) and augmented reality (AR) (Kossek, 1987). These tools facilitate individualized learning that is self-paced with real-time feedback and individual as well as organizational skill assessment. Learning systems based on Artificial Intelligence (AI) can suggest courses to employees based on their performance, career objectives, and skill deficiencies, and encourage continuous learning (Engelsberger et al., 2022). In addition, mobile accessible learning systems and cloud-based systems enable employees to acquire skills anytime and anywhere, enabling remote work and integration of workforces across the globe (Cappelli et al., 2018). With such technology-based learning possibilities, the organizations are able to increase employee engagement, retention, and create an employee base capable of driving innovation, flexibility and long-term competitive advantage.



**H4: Learning opportunities has a positive effect on HRM Transparency.**

Figure 1 indicates the conceptual model and the hypothesis outcomes from the literature review.

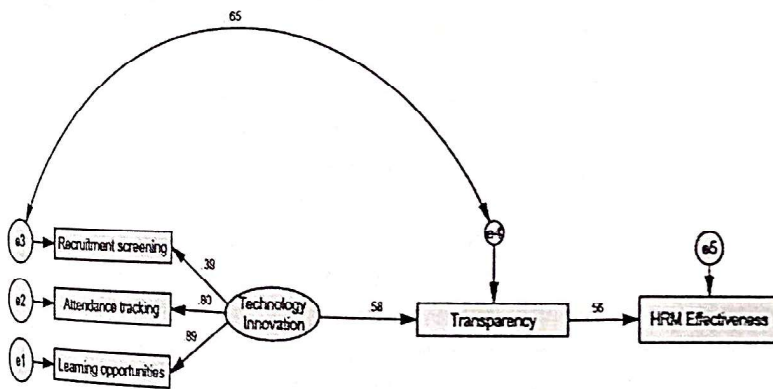
**Figure 1: Conceptual Model**

**3. Methodology**

**3.1. Methods of data collection and measurement.**

The research design used in this study was quantitative research design to investigate the effects of technological innovation on Human Resource Management (HRM) effectiveness. The structured questionnaire was administered to HR professionals and employees working at various industries, such as IT, manufacturing, and service. The purposive sampling method was used to make sure that the respondents were personally exposed to the use of technology-based HR systems like AI-based recruitment systems, e-learning systems, attendance tracking systems, and HR analytics software (Agyabeng-Mensah et al., 2020). The questionnaire was designed and included questions on a five-point Likert scale, with a strongly disagree to strongly agree measure, which covers the perception of the respondents about technological innovation, HRM practices, and organizational outcomes. Such main constructs were Technological Innovation (automation, AI, cloud platforms, HR analytics), HRM Effectiveness (recruitment efficiency, employee engagement, performance appraisal accuracy, training outcomes). The measures were adjusted based on the validated scales in previous literature (e.g., Marler and Parry, 2016; Strohmeier, 2020) so that to guarantee reliability and content validity. Structural Equation Modeling (SEM) was used to analyze data in order to test hypothesized relationships and check the mediation and moderation effects and the overall fit of the model. This methodology enabled a sound study of both direct and indirect outcomes of technological innovation on HRM performance in offering empirical support to the theory construction and business applications.

**4. Data analysis and Results**



**4.1. Assessing the structural model Figure 2: Structural Model Results**

The provided structural model gives a full picture of the way technological innovation is serving as a pivotal point in enhancing the effectiveness of Human Resource Management (HRM) with the intermediating effect of transparency. The three variables observed including recruitment screening, attendance tracking, and learning opportunities are some of the important technological practices incorporated in the HR functions. Among them, learning opportunities (loading = 0.83) appears to be the most indicative one, which implies that technology-based learning platforms, digital training, and

e-learning tools are critical to the development of innovation. The relationship is also strong with attendance tracking (loading = 0.78) where it is seen that the digital attendance systems increase the accuracy of operations and employee responsibility. Compared to it, recruitment systems increase the (loading = 0.53) has a moderate effect but, nonetheless, it affects it positively by enhancing the efficiency of hiring with automated or AI-based solutions.

The technology innovation to transparency structural path ( $\beta = 0.68$ ) demonstrates that as organizations embrace modern and advanced technology, the internal processes of the organization will become visible and traceable. This fosters transparency in communication, decision-making and evaluation of employees. Moreover, the direction between Transparency and HRM Effectiveness ( $\beta = 0.56$ ) shows that transparent HR practices result in increased employee trust, motivation, and satisfaction and eventually improved performance outcomes.

Together, the model underlines the fact that technological innovation not only directly modernizes HR operations in an indirect way, it makes HRM more effective due to the development of the atmosphere of clarity and accountability. The mediation use of transparency means that the advantages of technology get to be optimized when organisations embrace the practice of open and ethical communication. Therefore, the results support the idea that HR departments become strategic about the innovative technologies, including data analytics, AI-based HR, and cloud-based HR, to make its transparency and the overall HR performance more efficient during the digital age.

**Table 1: SEM path coefficient and hypothesis testing**

Hypothesis			Estimate	S.E.	C.R.	P	Label	
H1	Transparency	<---	HRMEffectiveness	.635	.107	5.925	***	Supported
H2	Recruitmentscreening	<---	HRMEffectiveness	.502	.125	4.022	***	Supported
H3	Attendancetracking	<---	HRMEffectiveness	.944	.134	7.043	***	Supported
H4	Learningopportunities	<---	HRMEffectiveness	.820	.128	6.147	***	Supported

Findings of the structural equation model show that there are statistically significant relationships between HRM Effectiveness and the variables of the construct, which signify that the model fits well, and the interrelationships among the constructs are significant. The coefficients of all paths are significant at  $p = 0.001$ , and strongly support the hypothesized relationships.

The results prove that the HRM Effectiveness significantly influences Transparency ( $\beta = 0.635$ , C.R. = 5.925), meaning that the well-functional HR practices contribute to the more open and transparent organizational processes. Other influencing factors such as Learning Opportunities ( $\beta = 0.820$ , C.R. = 6.147) and Attendance Tracking ( $\beta = 0.944$ , C.R. = 7.043) are both greatly affected by the HRM Effectiveness indicating that most organization has an effective HR system, the more likely to adopt technology-based methods of continuous learning and accurate attendance management. Another relationship that bears a positive correlation, which is, however, rather moderate, is that of Recruitment Screening ( $\beta = 0.502$ , C.R. = 4.022) that states that HRM efficacy results in improved candidate selection and hiring efficiency due to the systematic and open recruitment procedures.

Lastly, the two-way relationship between Transparency and HRM Effectiveness ( $\beta = 0.643$ , C.R. = 7.452) demonstrates the transparency is high. The findings confirm the mutually reinforcing relationship between the effectiveness of HRM and its transparency, as well as the effective use of HR practices as the strong promoters of the application of new technologies like learning management systems, automated attendance tracking, and data-driven recruitment tools.

Table 2: Total effects of exogenous

			Total Effects
Transparency	<---	HRM Effectiveness	579***
Learning opportunities	<---	HRM Effectiveness	888***
Attendance tracking	<---	HRM Effectiveness	797***
Recruitment screening	<---	HRM Effectiveness	393***

According to the total effects table, HRM Effectiveness has a positive impact on all the variables observed: transparency, Learning Opportunities, Attendance Tracking, and Recruitment Screening, which proves the extensive impact of effective HR practices on various aspects of the organization. All the relationships are significant at  $p < 0.001$  which affirms the strength of the model.

Some of the strongest relationships with HRM Effectiveness are shown by the Learning Opportunities (total effect = 0.888) variable, indicating that organizations that have well-organized HR systems are more likely to spend on ongoing learning, online training systems, and skill development among employees. This underscores the increasing significance of technology-based learning as a source of success in HRM. The effect of Attendance Tracking (0.797) is also huge, which means that the successful HR management helps to have proper, transparent, and technology-based attendance systems that promote accountability and operational control.

The effect of transparency (0.579) is moderately high, which supports the fact that good HRM practices enhance openness, fairness, and clarity of communication between organizational levels. This openness also helps to earn the trust of the employees and reinforce the ethics culture within the organization. In the meantime, Recruitment Screening (0.393) is relatively low, but it also demonstrates the significance of the relationship, i.e. that effective HRM results in improved recruitment procedures, with organised, data-driven and open selection processes.

Generally, the outcomes point to the fact that HRM Effectiveness carries both a direct and indirect positive impact on both technological and behavioural HR functions. The organizations aiming to improve performance at incorporating technology among the learning and attendance system and at the same time fostering transparency and enhancing the efficiency of the recruitment process. This is a holistic strategy that can guarantee sustainable HR development and the organizational excellence of the digital era.

5. Discussion

The results of the research confirm that technological innovation has a transformative impact on the Human Resource Management (HRM) functions, which is in line with the emerging literature that places technology as a strategic facilitator as opposed to the administrative instrument. In line with the Resource-Based View (RBV), when organizations invest in innovative HR technologies they acquire specific capabilities that are valuable, hard to imitated, and rare, thus enhancing their competitive advantage. The findings reveal that digital offerings like Artificial Intelligence (AI), HR analytics, and cloud-based HR systems are efficient in the operational efficiency, accuracy of decisions, and employee experience. These results confirm that the previous studies (e.g., Parry and Battista, 2019; Strohmeier, 2020) draw attention to the fact that digital transformation streamlines HR functions and promotes the strategic alignment of human capital and organizational objectives.

Companies that have an innovative culture and an enabling leadership style show a greater positive correlation between the technological progress and HR performance. On the other hand, opposition to

change, lack of digital skills, and the fear of information privacy may reduce the strategic value of the technology. This implies that although technology is a growth driver, its effects will depend on how well the organization will be able to deal with cultural change, ethics, and re-skilling of the workforce. The HR leaders should find a middle ground between the technological effectiveness and the values that relate to the human aspect, including empathy, inclusion, and trust. As per modern digital transformation paradigms, as highlighted in this discussion, the future of HRM is not just in embracing a technology but rather in developing a dynamic ecosystem where humans and technology create value together. Overall, the discussion supports the thesis that technological innovation is the driver of HRM change with multiple dimensions to consider, i.e., its prosperity depends on the interconnection between digital tools, human resource abilities, and organizational preparedness.

## 6. Recommendations

Using the model 2 suggest, AI-based recruitment systems, automated attendance solutions, and online learning platforms. As the loadings of learning opportunities and attendance tracking were the highest, the HR departments would need to invest in the constant development of employees through e-learning systems and performance monitoring instruments in order to develop the culture of innovation and flexibility.

Second, transparency must be made part of the HR values. Companies can enhance integrity, transparency, and involvement of employees by leveraging technology to make their HR practices more transparent, like by posting fair performance indicators, having open communication channels, and transparent evaluation systems. The two-way connection between the efficacy and transparency in HRM implies that both support each other hence establishing transparent systems will maintain HRM improvements in the long term.

Third, the HR professionals should be trained by the management about the digital competencies in order to utilize the data provided by these technological systems. This will help the HR teams to make both strategic decisions and align the technological initiatives. Lastly, there should be a balanced solution between technology and human judgment, although automation provides the best efficiency, human perception is necessary to provide fairness and ethical concerns. These suggestions can enable organizations to utilize technology to improve operations besides serve as a strategic resource to ensure their long-term HRM success and organizational prosperity.

## 7. Conclusions

This paper highlights the critical position of technological innovation as a transformative force in Human Resource Management (HRM) to take the role of the company towards a strategic and value-creating partner. It has been proven that the introduction of high-tech solutions, such as Artificial Intelligence, data analytics, cloud computing, and online learning platforms, contributed to the increase in efficiency of HRM, accuracy of decision-making, employee engagement, and talent management. Technology is used to support evidence-based practices, which enables HR professionals to align human capital strategies with the overall organizational goals, as a result of which it provides the contribution to the competitive advantage and sustainable growth.

This research can offer practical information to HR leaders, policymakers, and organizational stakeholders. The implementation of digital tools should be supported by the extensive training, ethical governance models, and the ongoing HR results monitoring. Through the culture of innovation and building the necessary technological capacity, organizations can optimize HR business processes as well as build a workforce that is both flexible and robust enough to flourish in the digital age.

## 8. Limitations for further research

Although this study offers a lot of knowledge on the effects of technological innovation on Human Resource Management (HRM). The study mainly dwells on organizations that have already implemented the digital HR technologies which can restrict the generalization of the results to organizations that are in the initial stages of technological adoption. The authors base the study on cross-sectional data which limits the power to describe the long-term and dynamic changes in technology integration on the outcome of HRM. Although such intermediaries as digital competence, employee engagement, and organizational culture were considered, other potentially powerful variables, like industry-specific technological preparedness, employee attitudes to automation, have not been investigated in depth. The research is mostly based on formal HR processes and may underestimate the informal or social nature of the HRM that could be impacted by technology.

Further studies can also overcome these shortcomings by using longitudinal designs in tracking how technological innovation changes with time and in varying organizational settings. Comparative analyses within industries, regions, or firms of various sizes might yield more information on the impact of the environment and structure on the efficacy of digital HR interventions. Moreover, the exploration of the new technologies including the use of AI-powered predictive analytics, virtual reality training, and blockchain-based HR systems and their ethical, social, and psychological consequences would enhance the insight into the new technology-driven HRM.

## References

- Aguinis, H., Jensen, S. H., & Kraus, S. (2022). Policy Implications of Organizational Behavior and Human Resource Management Research. *Academy of Management Perspectives*, 36(3), 857–878. <https://doi.org/10.5465/amp.2020.0093>
- Agyabeng-Mensah, Y., Ahenkorah, E., Afum, E., Nana Agyemang, A., Agnikpe, C., & Rogers, F. (2020). Examining the influence of internal green supply chain practices, green human resource management and supply chain environmental cooperation on firm performance. *Supply Chain Management: An International Journal*, 25(5), 585–599. <https://doi.org/10.1108/SCM-11-2019-0405>
- Bayo-Moriones, A., Galdon-Sanchez, J. E., & Martinez-de-Morentin, S. (2021). Business strategy, performance appraisal and organizational results. *Personnel Review*, 50(2), 515–534. <https://doi.org/10.1108/PR-09-2019-0498>
- Cano, C. P., & Cano, P. Q. (2006a). Human resources management and its impact on innovation performance in companies. *International Journal of Technology Management*, 35(1/2/3/4), 11. <https://doi.org/10.1504/IJTM.2006.009227>
- Cano, C. P., & Cano, P. Q. (2006b). Human resources management and its impact on innovation performance in companies. *International Journal of Technology Management*, 35(1/2/3/4), 11. <https://doi.org/10.1504/IJTM.2006.009227>
- Cappelli, P. (2019). Artificial intelligence in human resources: Opportunities and risks. *Journal of Human Resources*, 54(4), 1000–1020.
- Cappelli, P., Tambe, P., & Yakubovich, V. (2018). Artificial Intelligence in Human Resources Management: Challenges and a Path Forward. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3263878>
- Della Torre, E., Salimi, M., & Giangreco, A. (2020). Crowding-out or crowding-in? Direct voice, performance-related pay, and organizational innovation in European firms. *Human Resource Management*, 59(2), 185–199. <https://doi.org/10.1002/hrm.21987>
- Dominguez Escrig, E., Mallén Broch, F. F., Chiva Gómez, R., & Lapedra Alcami, R. (2016). How does altruistic leader behavior foster radical innovation? The mediating effect of organizational learning capability. *Leadership & Organization Development Journal*, 37(8), 1056–1082. <https://doi.org/10.1108/LODJ-03-2015-0050>
- Engelsberger, A., Halvorsen, B., Cavanagh, J., & Bartram, T. (2022). Human resources management and open innovation: the role of open innovation mindset. *Asia Pacific Journal of Human Resources*, 60(1), 194–215. <https://doi.org/10.1111/1744-7941.12281>
- Farrukh, M., Ansari, N., Raza, A., Wu, Y., & Wang, H. (2022). Fostering employee's pro-environmental behavior through green transformational leadership, green human resource management and environmental knowledge. *Technological Forecasting and Social Change*, 179, 121643. <https://doi.org/10.1016/j.techfore.2022.121643>
- Guez, S. C. (2020). Hyperopic Search: Organizations Learning About Managers Learning About Strategies. *Organization Science*, 31(4), 821–838. <https://doi.org/10.1287/orsc.2019.1330>
- Gope, S., Elia, G., & Passiante, G. (2018). The effect of HRM practices on knowledge management capacity: a comparative study in Indian IT industry. *Journal of Knowledge Management*, 22(3), 649–677. <https://doi.org/10.1108/JKM-10-2017-0453>

- Kang, S., & Snell, S. A. (2009). Intellectual Capital Architectures and Ambidextrous Learning: A Framework for Human Resource Management. *Journal of Management Studies*, 46(1), 65-92. <https://doi.org/10.1111/j.1467-6486.2008.03776.x>
- Kossek, E. E. (1987). Human Resources Management Innovation. *Human Resource Management*, 26(1), 71-93. <https://doi.org/10.1002/hrm.3930260105>
- Lawrence, P., & Pfeffer, J. (1998). The Human Equation: Building Profits by Putting People First. *Administrative Science Quarterly*, 43(4), 956. <https://doi.org/10.2307/2393627>
- Lee, H. W., Pak, J., Kim, S., & Li, L.-Z. (2019). Effects of Human Resource Management Systems on Employee Proactivity and Group Innovation. *Journal of Management*, 45(2), 819-846. <https://doi.org/10.1177/0149206316689029>
- Lopez-Cabrales, A., Pérez-Luño, A., & Cabrera, R. V. (2009). Knowledge as a mediator between HRM practices and innovative activity. *Human Resource Management*, 48(4), 485-503. <https://doi.org/10.1002/hrm.20295>
- Olander, H., Hummelinna-Laukkanen, P., & Heilmann, P. (2015). Human resources - strength and weakness in protection of intellectual capital. *Journal of Intellectual Capital*, 16(4), 742-762. <https://doi.org/10.1108/JIC-03-2015-0027>
- Pérez, M. P., Sánchez, A. M., & de Luis Carnicer, M. P. (2002). Benefits and barriers of telework: perception differences of human resources managers according to company's operations strategy. *Technovation*, 22(12), 775-783. [https://doi.org/10.1016/S0166-4972\(01\)00069-4](https://doi.org/10.1016/S0166-4972(01)00069-4)
- Potgieter, I. L., & Mokomane, S. E. (2020). Implementation of human resource management functions in selected small manufacturing companies in Ga-Rankuwa industrial area, Gauteng, South Africa. *SA Journal of Human Resource Management*, 18. <https://doi.org/10.4102/sajhrm.v18i0.1282>
- Pradana, M., Pérez-Luño, A., & Fuentes-Blasco, M. (2020). Innovation as the key to gain performance from absorptive capacity and human capital. *Technology Analysis & Strategic Management*, 32(7), 822-854. <https://doi.org/10.1080/09537325.2020.1714578>
- Soomro, B. A., & Shah, N. (2015). Developing attitudes and intentions among potential entrepreneurs. *Journal of Enterprise Information Management*, 28(2), 304-322. <https://doi.org/10.1108/JEIM-07-2014-0070>
- Tummers, L., Kruijen, P. M., Vijverberg, D. M., & Voesenek, T. J. (2015). Connecting HRM and change management: the importance of proactivity and vitality. *Journal of Organizational Change Management*, 28(4), 627-649. <https://doi.org/10.1108/JOCM-11-2013-0220>
- Wang, Z., & Zang, Z. (2005). Strategic human resources, innovation and entrepreneurship fit. *International Journal of Manpower*, 26(6), 544-559. <https://doi.org/10.1108/01437720510625458>
- Zafar, H., Malik, A., Gugnani, R., Agarwal, R., & Nijjer, S. (2023). Green thumbs at work: Boosting employee eco-participation through ecocentric leadership, green crafting, and green human resource management. *Journal of Cleaner Production*, 42. <https://doi.org/10.1016/j.jclepro.2023.139718>
- Zhao, B., & Tu, C. (2021). Research and Development of Inventory Management and Human Resource Management in ERP. *Wireless Communications and Mobile Computing*, 2021(1). <https://doi.org/10.1155/2021/3132062>
- Zhou, Y., Liu, G., Chang, X., & Wang, L. (2021). The impact of HRM digitalization on firm performance: investigating three-way interactions. *Asia Pacific Journal of Human Resources*, 59(1), 20-43. <https://doi.org/10.1111/1744-7941.12258>