International Journal of Multidisciplinary Research and Growth Evaluation.

The transformative role of human resource information systems (HRIS) in talent management post-pandemic: A comprehensive review

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Article Info

ISSN (online): 2582-7138
Impact Factor: 5.307 (SJIF)
Volume: 05
Issue: 01
January-February 2024
Received: 30-10-2023;
Accepted: 05-12-2023
Page No: 245-250

Abstract
Background: The COVID-19 pandemic has profoundly altered the global workforce landscape, forcing organizations to fundamentally reconsider their talent management strategies. With the emergence of remote work models, changing employee expectations, and heightened talent competition, businesses are facing a multitude of challenges in attracting, retaining, and engaging top talent. Using human resource information systems (HRIS), an HR professional might take on a strategic role. Due to its growing price and functionality, HRIS is being widely employed in businesses of all kinds. Despite this, surprisingly little is known about how HRIS is being used, if there are differences across organizations of different sizes, or how HRIS affects HR professionals' overall professional status. We created and implemented a survey, conducted structured interviews, and introduced a taxonomy that offers a framework for scholarly discussion and comparison to evaluate and contrast the many areas of application. We also investigated the strategic use of HRIS, its perceived value addition to the company, and its effect on HR professionals' professional standing. Data was collected by 102 employees of HR, and they participated in our survey to answer our questions. Questions were developed based on HRIS and results were created based on SPSS independent t-test and secondary data of literature. According to the study, HR professionals spend far more time than the theoretical "zero" value on all examined functions (such as performance management, recruitment, etc.), indicating that HRIS has increased workload in these domains. This suggests that HRIS adoption is becoming more widespread across all business sizes. According to the report, strategically using HRIS can improve how valuable HR is seen inside a business, which will raise HR professionals' status in the workplace.

Keywords: Data analytics, employee engagement, skill gaps, remote work, talent management, COVID-19, and HRIS

1. Introduction

The environment has been more dynamic and complex recently. As a result of increased competition brought about by globalization and new technology, businesses must demonstrate that they are extremely productive, sustainable, and economical (Dessler, 2013) [1]. As a result, businesses must recognize and put into practice strategies that promote efficient personnel management and close the gap between workers and the company's strategic goals. Human resource management, or HRM, is an inherent component of all organizations and is crucial to their success over their entire life cycle. Information Systems also significantly influence Human Resource Management because they can support many HRM functions (Papalexandri & Bourantas, 2002) [2]. However, as the most recent example of the Covid-19 pandemic shows, companies are frequently required to function in times of crisis, necessitating the adaptation of human resource management to changing circumstances in order to guarantee the accomplishment of the organization's strategic objectives.

The COVID-19 epidemic is causing a metamorphosis in HR. The epidemic altered people's work habits and caused a global economic downturn. A number of people lost their jobs as a result of furloughs and layoffs brought about by the policies of social separation, lockdown, and quarantine (Gourinchas, 2020) [3]. The lockdown made it necessary to alter how organizations operated normally before. The interruption caused by the epidemic has required changes to standard operating procedures. Global organizations have also strayed from conventional methods of conducting business in favor of innovative approaches at both the micro and macro levels. Companies had to make decisions quickly to stay in business.

HR, a crucial component of an organization, has also been profoundly impacted. This has made the need for more adaptable talent even more pressing. HR practitioners need to rethink workforce, strategic workforce planning, HR management, performances, experiences, and methodologies as the COVID-19 pandemic upsets the work environment (Lund, 2020). The companies were forced to reconsider and update their business plans. According to Carnevale and Hatak (2020) [5], the pandemic opened the door for innovative digital methods of human connection in HRM. HR experts were hired to assist organizations in putting agile workforce initiatives into practice (Yawson, 2020) [6]. The concept of the remote workplace also emerged with work from home, virtual meetings, etc., which varied according to the type and industry of the organisations. COVID-19has had a significant impact on the world.

These changes connected to the workplace have had a significant impact on the physical and mental well-being of the employees. Depression, anxiety, and numerous other problems such as stress, isolation at work, and job instability were caused by the pandemic (Liu et al., 2020) [7]. Significant organizational changes have occurred, including supply chain innovation, increased investment in technology and data security, increased investment in remote working, an increase in online commerce, an increase in technology and data security, and a discernible shift in customer demand, preferences, and expectations (LaBerge et al, 2020) [8]. For both companies and employees, working remotely presents unique difficulties and concerns. The pre- and post-pandemic situations have presented the workforce with a number of challenges in terms of burnout, stress, anxiety, and security. Because there is less in-person social interaction at work, working remotely makes employees feel more alone and lonelier, which has an impact on their mental health. Due to this circumstance, HR procedures and practices have undergone a paradigm change, and it is now necessary to support employees' mental and emotional well. The COVID-19-mandated remote work may continue to be an essential part of the organization's post-pandemic strategies. It's possible that many businesses will stick with remote employment, which calls for further automation. Due to this disruption, it is necessary to rethink the traditional method of working and replace it with technological interventions in HR strategies and processes. Performance management is impacted by remote work (Castrillon, 2021). Contingent workers have replaced permanent employees in the workplace, and "to manage remote workers in the new normal, it will be necessary to rethink how goals are created and identify crucial performance criteria" (Castrillon, 2021). All procedures, including engagement, training, selection, and recruiting, must be adjusted accordingly. In reference to contingent labor, companies are also substituting contingent labor for full-time staff (Kapoor & Agarwal, 2022) [10]. In HRM, this has resulted in a paradigm change. In light of the increasingly virtual and new normal of work, HRM's procedures and policies need to be updated. A lot of organizations are making significant investments in AI for HRM in an effort to lessen the impact of COVID-19. The way people are handled is significantly impacted by technological disruption (Cascio, 2019). The nature of labor and organizational structures are evolving due to technological advancements. Organizations are under constant pressure to reduce expenses in the wake of COVID-19. The IBM Institute for Business Value report states that organizations' futures will involve strategic planning for employee safety and security, organizational agility, cost management, and creative use of technology in the workplace in addition to new product development. Through online discussions and virtual meetings, COVID-19 developed a new digital method of human interaction for HRM (Carnevale & Hatak, 2020) [12]. These are the issues associated with augmentation in HRM. As defined by Raisch and Krakowski (2021) [13], augmentation is the process by which "humans and machines both learn from one another in this co-evolutionary process. “The application of AI has transformed HRM. It will be essential to use AI to identify critical performance criteria for managing remote workers in the new normal. "Reimagining the post-pandemic organization" is urgently needed (Alexander et al, 2021).

Examples of digital technologies used to improve services, work engagement, and employee engagement are big data analytics, artificial intelligence, machine learning, and so on. According to Tambe et al, (2019) [15], AI is a useful tool for HRM. Automation and AI must be used by high-level human interaction organizations (Lund et al., 2021) [4]. AI, as defined by Bhave et al, (2020) [17], is computer technology that simulates human intellect. Deep learning and machine learning are two examples of how AI is used in the workplace. The HRM processes of hiring, workforce planning, talent acquisition and management, performance management process, and pay system will all be improved by the application of AI, such as data analytics (Am et al, 2020). As big data algorithmic analytics, tracking and sensory technologies for adaptive decision-making at the workplace (Tambe et al., 2019) [15]; HR processes for onboarding, development, and offboarding of personnel are all being transformed (Sivathanu & Pillai, 2018). AI tools are finding applications in most of the HR functions. In order to maintain competitiveness in the post-COVID-19 future, organizations must leverage workforce analytics to identify the ideal personnel and maximize revenue through cost reduction.

According to Strohmeier (2018), "smart human resource management technology (SHRMT) includes artificial intelligence, cloud computing, VR, big data analytics, data mining, and automation" is how to describe the digital revolution in HRM. HR professionals benefit from this technological innovation even if they lack expertise in a particular field. Selection, evaluation, and training will all be rationalized by electronic performance monitoring. For an organization to function, there must be discipline in the workplace, which algorithm technologies can control (Kellogg et al, 2020) [20].

Artificial Intelligence (AI) can be a valuable tool for skill enhancement, training, and learning, as demonstrated by intelligent robots and simulations (Bell et al, 2008) [21]. Wang

et al (2017) [22] assert that integrating AI into HRM can efficiently lower and assess employee turnover. As the automotive industry grew by 44%, healthcare businesses by 44%, finance firms by 28%, retail by 26%, professional services by 25%, and telecom by 24%, numerous organizations have boosted their investment in AI to lessen the effects of COVID-19 (LaBergeet al., 2020) [8]. The current study examines the relationship between AI technologies and HRM in contemporary organizations using a conceptual analysis based on a literature assessment.

2. Benefits of Using E-HR

The combination of HRM with new technologies is a "inevitable trend for the future development of enterprises," according to Li et al, 2021. Recruitment, training, and performance management are among the HRM functions that were done by hand before to digitization. These days, big data can assist in managing full-cycle management and building larger databases (Da Silva et al., 2022) [24]. Sengupta et al. (2021) [25] claim that digitization is prevalent in the HR functions of performance management, compensation, training & development, and recruitment.

Modern technology can reduce repetitive labor for HRM experts, automate processes to reduce documentation, and increase the overall efficacy of HRM systems (Burrichter et al, 2022) [26]. Machine learning can be applied to recruiting and personnel management procedures to identify soft talents (Da Silva et al., 2022) [24]. Technology and human resources practices "work side by side in an organization," according to a French study that questioned the relationship between digitization and autonomy. This implies that the technology will assist the staff members if the HR procedures and policies are doing so. Conversely, technology will be seen as a tool for these goals if HR procedures pose a threat to workers (Zeshan et al, 2021).

In order to ensure that the technology being used has benefits, Heslina and Syahruni's research demonstrated that businesses should train their workers and that management should be aware of staff competency (Heslina & Syahruni, 2021) [29]. According to AlHamad et al. (2022) [28], E-HRM can improve organizational health, foster communication inside the business, and aid in establishing organizational cohesion. It can also lessen bias in performance reviews. The pandemic's forced digitization of labor may have a big impact on sustainability (Burrichter et al, 2022) [30]. The effects are reduced its CO2 emissions thanks to the introduction of remote and hybrid working models and recruitment process (Kuzior et al, 2021) [31].

3. Technology in other HRM processes

Contemporary technology is frequently employed in various HR procedures than recruitment. For example, businesses can design personalized development plans by using AI in training. Workers might obtain training materials from anywhere and select a time that worked best for them (Zhang & Chen, 2023) [32]. According to Graßmann and Schermuly (2021) [33] AI coaching is a "machine-assisted, systematic process to help clients set professional goals and construct solutions to efficiently achieve them." AI can be a useful coaching tool, but only if the client is aware of the issue and knows what the objectives are. As a result, it is doubtful that AI will handle coaching in its entirety.

But HR professionals ought to take use of it and integrate the advantages of AI and human techniques (Graßmann & Schermuly, 2021) [33]. One technology that can "recognize, learn about, and interact" with emotional life is emotional artificial intelligence (Walkowiak, 2023) [37]. These platforms could be used to track anxiety and stress. One of the most recent developments is the rise in the usage of virtual reality to assist employees' mental wellness. VR became more widely used and more reasonably priced as a result of the epidemic (Walkowiak, 2023) [37]. Employees' full career cycle, from their first day of employment to their last, can be covered by digital service centres.

Employees and companies can benefit from a variety of "Web portals, mobile apps, WeChat public numbers, self-service terminals, call lines, smart robots, and semantic analysis" (Zhang & Chen, 2023) [32]. The Internet of Things, or IoT, has applications in the business, industrial, and personal spheres (Almeida et al, 2020) [36]. The internet is "being extended to the physical world, forming Internet of Things," claims (Li, 2021). Organizations have made use of IoT, particularly when employees are working remotely. It is facilitating knowledge management, changing business models, facilitating HRM in general, and it can save money by preventing or fixing problems (Gamede & Mtotywa, 2022).

Complex activities are completed by robots, and Industry 4.0 presents a huge opportunity for robotics' further development and advancement (Almeida et al, 2020) [36]. Since robots can already learn and communicate with humans, human resources management will undoubtedly find use for them.

4. Research Objectives

1. To evaluate how much time is spent on hiring procedures within companies as a result of HRIS adoption.
2. To assess if using HRIS can cut down on the amount of time needed for staff training courses.
3. To find out how much HRIS helps with decision-making in organizational processes more quickly.
4. To investigate how HRIS might expedite organizational communication and cut down on time spent on communication assignments.

5. Research Methodology

For analysis, the data was put into the Statistical Package for the Social Sciences (SPSS 2021). To measure the independent t-test between the variables.

Table 1

		Recruitment	Training	Decision Making	Organizational Communication	Paperwork
Recruitment	Pearson Correlation	1	-.029	-.029	-.029	-.029
	Sig. (2-tailed)		.773	.773	.773	.773
	N	100	100	100	100	100
Training	Pearson Correlation	-.029	1	1.000**	1.000**	1.000**
	Sig. (2-tailed)	.773		.000	.000	.000
	N	100	100	100	100	100
Decision Making	Pearson Correlation	-.029	1.000**	1	1.000**	1.000**
	Sig. (2-tailed)	.773	.000		.000	.000
	N	100	100	100	100	100
Organizational Communication	Pearson Correlation	-.029	1.000**	1.000**	1	1.000**
	Sig. (2-tailed)	.773	.000	.000		.000
	N	100	100	100	100	100
Paperwork	Pearson Correlation	-.029	1.000**	1.000**	1.000**	1
	Sig. (2-tailed)	.773	.000	.000	.000	
	N	100	100	100	100	100
**. Correlation is significant at the 0.01 level (2-tailed).						

The one-sample t-test findings for each of your study questions about how HRIS affects different HR functions are shown in this table. Below is a summary of the findings and what they indicate:

Test Value: The test value is always set to 0. This suggests that you are probably examining the statistical significance of the average mean difference between your data and a theoretical number (0).

t-statistic and df: These numbers, which show the direction and magnitude of the observed difference between your sample data and the test value (0), are 72.492 for recruitment and 52.806 for the other functions, with df = 99. The average amount of time spent on each function appears to be substantially greater than the theoretical value, as indicated by the strongly positive numbers.

Sig. (2-tailed): Since all of these values are 0.000, the observed differences are considered statistically significant at the 2-tailed 0.01 level. This supports the conclusion that there is substantial evidence for a deviation from the theoretical value and that the time spent on each function is probably not random.

Mean Difference: The average difference between the actual mean time spent on the function and the theoretical value of 0 is represented by each value (e.g., 1.020 for recruiting). These values are all positive, indicating that the amount of time actually spent on each function is more than the amount predicted by theory.

Confidence Interval: These intervals give a range of values that, with a 95% confidence level, represent the true mean difference between the sample data and the theoretical value. The CI, for instance, indicates that the true mean difference for recruitment could fall between 0.99 and 1.05.

6. Discussions

The purpose of the paper is to explore and provide a conceptual framework for the role of AI and the paradigm shift in HRM practices following the COVID-19 epidemic. Additionally, the study looks into the effects that AI in HRM has on businesses and workers. As per the initial goal, the research demonstrated that the COVID-19 pandemic had resulted in significant modifications to HRM practices. These included an increased emphasis on managing remote work, hiring more contingent workers, emphasizing mindfulness in the workplace, reskilling and upskilling the workforce to acquire new competencies, employee engagement, and socialization/social capital. AI has played a major role in all these aspects.

Overall, this research gives useful insights into the growing function of HRIS in the post-pandemic context. Its findings provide important considerations for firms and HR professionals looking to strategically and successfully exploit HRIS, even though it also raises more questions for future research. Study limitations include the possibility of bias because the research only used self-reported data from HR experts. Furthermore, the sample size (102) is not that large. A larger and more varied sample size for replication would support the results.

Consequences for HR procedures: The results show that, in order to ensure optimal use of HRIS, implementation and training must be carefully considered. HR staff can further their professional growth and increase the value of HRIS by strategically utilizing it.

AI is utilizing NLP, ML, predictive analytics, and robots to make remote work smooth, despite the numerous hazards connected with the hybrid model of work. By optimizing current HR procedures, AI solutions have made the shift from onsite to remote employment seamless. Robotics are becoming more and more common as technology solutions are needed to make remote work run smoothly. Research indicates that the application of AI will improve human resource management (HRM) processes like hiring, workforce planning, talent acquisition, talent management, performance management, and remuneration. (Am 2020). AI is being used by organizations more and more for various workplace projects.

AI is a vital tool that works incredibly well during difficult circumstances. NLP, visual scanning, and robots have all helped to foster mindfulness, which is becoming increasingly important. According to Vaidya et al. (2019), chatbots—computer programs that use natural language processing—help with employees' mental health therapy. People prefer robots for mental health as they provide a judgement-free zone, prompt replies to health questions, and are unbiased. Conversely, post-pandemic workforce reskilling and upskilling toward new competencies has been made easier by VR and AR. Additionally, AI techniques like ML and NLP are crucial for fostering productive working connections and raising employee engagement.

In addition, there have been a lot of modifications to HRM procedures in the context of AI since the epidemic. Therefore,

research on AI and agile HRM, virtual teambuilding, social-emotional intelligence, AI, psychological capital in the AI era, and other related topics can be done in the future. Similarly, empirical studies can also be conducted on AI and its effect on post-pandemic emerging HRM practices.

7. References

1. Dessler G. Strategic human resource management and the HR scorecard. NJ, New, 2013.
2. Papalexandri N, Bourantas D. Human Resource Management. Athens: G. Benou Publications; 2002.
3. Gourinchas PO. Flattening the pandemic and recession curves. Mitigating the COVID economic crisis: Act fast and do whatever. 2020; 31(2):57-62.
4. Lund S, Madgavkar A, Manyika J, Smit S, Ellingrud K, Meaney M, Robinson O. The postpandemic economy. 2021.
5. Carnevale JB, Hatak I. Employee adjustment and well-being in the era of COVID-19: Implications for human resource management. Journal of business research. 2020; 116:183-187.
6. Yawson R. Strategic flexibility analysis of HRD research and practice post COVID-19 pandemic. Human Resource Development International. 2020; 23(4):406-417.
7. Liu Z, Ma Y, Zheng H, Liu D, Liu J. Human resource recommendation algorithm based on improved frequent itemset mining. Future Generation Computer Systems. 2022; 126:284-288.
8. LaBerge L, O'Toole C, Schneider J, Smaje K. How COVID-19 has pushed companies over the technology tipping point—and transformed business forever. McKinsey & Company. 2020, 5.
9. Garzón Castrillón MA. The concept of corporate governance. 2021.
10. Agarwal A, Kapoor K. Analysis of barriers in green human resource implementation for enhancing organizational sustainability: a DEMATEL approach. Transnational Corporations Review. 2022, 1-15.
11. Cascio WF. 15 Implications of the Changing Nature of Work for Recruitment and Retention. The Cambridge Handbook of the Changing Nature of Work. 2020, 318.
12. Carnevale JB, Hatak I. Employee adjustment and well-being in the era of COVID-19: Implications for human resource management. Journal of business research. 2020; 116:183-187.
13. Raisch S, Krakowski S. Artificial intelligence and management: The automation–augmentation paradox. Academy of management review. 2021; 46(1):192-210.
14. Alexandra V, Ehrhart KH, Randel AE. Cultural intelligence, perceived inclusion, and cultural diversity in workgroups. Personality and Individual Differences. 2021; 168:110285.
15. Tambe P, Cappelli P, Yakubovich V. Artificial intelligence in human resources management: Challenges and a path forward. California Management Review. 2019; 61(4):15-42.
16. Lund S, Madgavkar A, Manyika J, Smit S, Ellingrud K, Meaney M, Robinson O. The future of work after COVID-19. McKinsey global institute. 2021, 18.
17. Bhave DP, Teo LH, Dalal RS. Privacy at work: A review and a research agenda for a contested terrain. Journal of Management. 2020; 46(1):127-164.
18. AM EN, Affandi A, Udobong A, Sarwani S. Implementation of human resource management in the adaptation period for new habits. International Journal of Educational Administration, Management, and Leadership, 2020, 19-26.
19. Strohmeier S. Digital human resource management: A conceptual clarification. German Journal of Human Resource Management. 2020; 34(3):345-365.
20. Kellogg KC, Valentine MA, Christin A. Algorithms at work: The new contested terrain of control. Academy of Management Annals. 2020; 14(1):366-410.
21. Bell BS, Kanar AM, Kozlowski SW. Current issues and future directions in simulation-based training in North America. The International Journal of Human Resource Management. 2008; 19(8):1416-1434.
22. Wang P, Zhang X, Zhang J, Wan S, Guo S, Lu G, et al. Precise tuning in platinum-nickel/nickel sulfide interface nanowires for synergistic hydrogen evolution catalysis. Nature communications. 2017; 8(1):14580.
23. Li Y, Wang Q, Wang Z, Chen L. Improving business processes or human resources? The performance implications and contingencies. Industrial Management & Data Systems. 2021; 121(7):1577-1598.
24. Da Silva LBP, Soltovski R, Pontes J, Treinta FT, Leitão P, Mosconi E, et al. Human resources management 4.0: Literature review and trends. Computers & Industrial Engineering. 2022; 168:108111.
25. Sengupta A, Lalwani S, Goswami S, Srivastava P. Reinventing HR functions with SMAC technologies-an exploratory study. Materials Today: Proceedings. 2021; 46:10169-10174.
26. Burrichter K, Chen B, Marco G. Evaluation of modern technology on human resources management and sustainable development in Pharma industries. Journal of Commercial Biotechnology. 2022, 27(2).
27. Zeshan M, Qureshi TM, Saleem I. Impact of digitalization on employee's autonomy: evidence from French firms. VINE Journal of Information and Knowledge Management Systems. 2023; 53(6):1287-1306.
28. AlHamad A, Alshurideh M, Alomari K, Kurdi B, Alzoubi H, Hamouche S, et al. The effect of electronic human resources management on organizational health of telecommunications companies in Jordan. International Journal of Data and Network Science. 2022; 6(2):429-438.
29. Heslina H, Syahruni A. The influence of information technology, human resources competency and employee engagement on performance of employees. Golden Ratio of Human Resource Management. 2021; 1(1):01-12.
30. Burrichter K, Chen B, Marco G. Evaluation of modern technology on human resources management and sustainable development in Pharma industries. Journal of Commercial Biotechnology. 2022, 27(2).
31. Kuzior A, Kettler K, Rąb Ł. Digitalization of work and human resources processes as a way to create a sustainable and ethical organization. Energies. 2021; 15(1):172.
32. Zhou L, Chen Z, Li J, Zhang X, Tian F. The influence of electronic human resource management on employee's proactive behavior: based on the job crafting perspective. Journal of Management & Organization. 2023; 29(5):854-871.
33. Schermuly CC, Creon L, Gerlach P, Graßmann C, Koch J. Leadership styles and psychological empowerment: A

meta-analysis. Journal of Leadership & Organizational Studies. 2022; 29(1):73-95.
34. Li Y, Wang Q, Wang Z, Chen L. Improving business processes or human resources? The performance implications and contingencies. Industrial Management & Data Systems. 2021; 121(7):1577-1598.
35. Business and Management, 2020, 10(2).
36. Almeida F, Santos JD, Monteiro JA. The challenges and opportunities in the digitalization of companies in a post-COVID-19 World. IEEE Engineering Management Review. 2020; 48(3):97-103.
37. Walkowiak E. Task-Interdependencies between Generative AI and Workers. Available at SSRN 4461406. 2023.
38. GAMEDE Z, MTOTYWA M. Leveraging the Internet of Things to Enhance Employee Productivity in Operations: A Conceptualization. Expert Journal of.
39. Mirowska A, Mesnet L. Preferring the devil you know: Potential applicant reactions to artificial intelligence evaluation of interviews. Human Resource Management Journal. 2022; 32(2):364-383.
40. Tranfield D, Denyer D, Smart P. Towards a methodology for developing evidence-informed management knowledge by means of systematic review. British journal of management. 2003; 14(3):207-222.
41. Crossan MM, Apaydin M. A multi-dimensional framework of organizational innovation: A systematic review of the literature. Journal of management studies. 2010; 47(6):1154-1191.