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Digital HRM Transformation by Artificial Intelligent (AI)

Zulkifli Djamin[1*], Dasmadi[1]

[1] STIE APRIN Palembang, Palembang, Indonesia.

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Corresponding Author:
Zulkifli Djamin
zulkiplid@pusri.co.id

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Abstract: Humans are gradually being substituted by of artificial intelligence and robots in virtually all departments in organizations. For some workers this might mean they have to find a new job, or a new orientation in terms of skills. Whatsoever, this revolution is upsetting the workforce. Human Resource professionals now have the responsibility of overseeing the placement of robots and AI, ensuring that everything goes smoothly, and intervening when problems arise. This thesis pertains examining the utilization in the workplace of AI, robot alongside man- power from the HRM standpoint. In the first section, there is a discussion on the introduction, objectives, the set-up of the problem, the delimitations and lastly, the concept of using manpower, AI, and robot at the workplace. In the second section, there is the demonstration of theoretical and the empirical parts of the thesis**.** This research is a literature review of several articles related to machine learning. The review was conducted from some of the recent research efforts that utilize machine learning. Furthermore, this review is derived from multiple literacies and includes an attempt at problem solving efforts that are divided into section areas from the perspective of each machine learning category. Machine learning can change the way the human resource management domain functions in an organization. It is making changes in all aspects of human resource management starting from human resource planning. Enormous data is available in human resource information systems (HRIS) available in organizations.

Keywords: Artificial intelligent; Digital; HRM; Transformation

Introduction

The integration of AI and robots enables Human Resource to interact well with other employees and customers in a new and better way (George & Thomas, 2019; Vrontis et al., 2023). For instance, agents specialized in Artificial Intelligence, example Cortana can conduct communication between people or even representatives, who are specialized in meetings and distributing readily available versions to people who were unable to participate. Applications of this type can be expanded and provide daily customer service to a large number of people at the same time, no matter where they are. Intelligent robots help Human Resource to expand their capabilities in three ways (Azah, 2021; Siagian et al., 2023).

Machine learning is a subfield from the broad field of artificial intelligence, this aims to make machines able to learn like human. Learning here means understanding, observing and representing information about some statistical phenomenon (Balaji et al., 2021). Digital technologies play an increasingly prominent role in both the lives of employees and HRM, which seems to be affected in multiple ways. This article focuses on the impact of these changes on HRM practice, in relation to changes to the human resource, to HRM in general and more specifically to the use of technology in delivering HRM practices (Bhanu Prakash et al., 2019).

The investment community, information has always been key and data has been the cornerstone of many investment strategies, from fundamental analysis to systematic trading and quantitative strategies alike.

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While structured data was at the core of such 'traditional' strategies, vast amounts of raw or unstructured/semi-structured data are now promising to provide a new informational edge to investors deploying AI in the implementation of their strategies. AI allows asset managers to digest vast amounts of data from multiple sources and unlock insights from the data to inform their strategies at very short timeframes (OECD, 2021).

Despite the widespread acknowledgement of its benefits, the creation of employer branding through VR applications remains understudied in the field of the hospitality and tourism. This is particularly so, as conventional HRM practices are no longer feasible in crises such as a pandemic and modern digitized E-HRM has become increasingly indispensable. Even though the hotel industry has rapidly embraced VR for employee interaction and marketing research, other functions such as quality evaluation, and employees' psychological acceptance are still developing (Najam et al., 2022).

Employee turnover can be defined as "The proportion of the employees who leave an organization over a set period", which is definitely unwelcoming for organizations. Every effort is taken by organizations to increase employee engagement and thus retain them once they prove their worth to the organization. In the era of fifth industrial revolution, organizations can definitely rely on technology to play a major role in this aspect (Cabrera et al., 2022; Tripathi & Sharma, 2018).

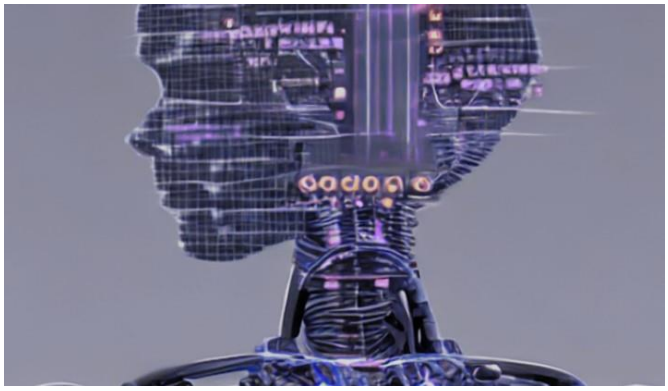

Figure 1. Illustration of Artificial Intelligent on HRM (Source: https://duniahr.com)

Only a satisfied employee can be a productive employee and the retention rate is comparatively high for employees belonging to that category. Identifying the factors leading to satisfaction of employee will definitely assist management in introducing feasible factors among the ones identified. This is where machine learning comes into action. Machine learning techniques like classification and clustering play a major role in analyzing data as well as making effective predictions (Cabrera et al., 2022).

Method

The type of research used in this study is descriptive research with a qualitative approach. A framework, a process, and compositional approaches for designing qualitative methods research in the human and social sciences (King, 1991). Increased The data taken, identified in the following order: data collection; data sorting; data analysis; conclusion making. As for data analysis, there is a predetermined sequence in accordance with the empirical steps taken, namely as follows: examination of data; suspected data findings; data confirmation; diagnosis; and action.

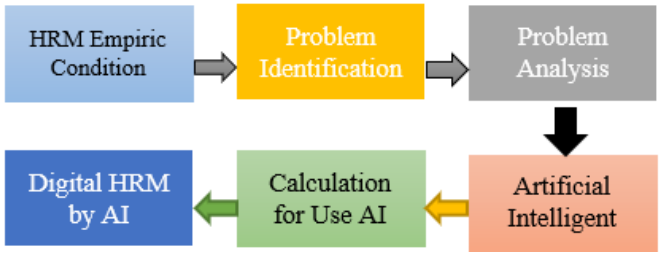

Figure 2. Flow method of study

The description of the data, presentation, analysis and findings that will be obtained from this study will be written in the paragraphs below, in the research discussion segment. Machine Learning fulfills its destiny to become a business instrument, which in the discourse of this study is the marketing of various products, both from the government and from the business world, from micro to multinational scale. The financial supervision department further clarifies the supervision responsibility, applies AI technology to supervision methods and means, and improves the degree of supervision automation and intelligence.

Result and Discussion

The Beginnings of Digitalization

Digitalization is becoming increasingly important for the HR function which has the ability to simplify, accelerate and economize the activities it carries out. However, these digital transformation benefits need to be weighed while also considering the negative implications, such as data security issues. Technological, organizational and people factors are essential to successfully implement new digital technologies within the organization, but it is equally important to be able to meet certain conditions (Maria, 2020).

In conclusion, we can say that through this work we are able to provide an overview of the most important factors for the success of HRM digitalization and its consequences. This work can represent a basis for further deepening knowledge in this field trying to

understand how these factors can be best balanced in the implementation of new HR technologies (Maria, 2020).

Digital approaches to human resource management are taking on an increasingly important role and have now become essential for defining strategies for human resources and for the organization as a whole. Due to the relative novelty of the topic, there are still few studies on the subject and there is no clear identification of the factors that are important for a correct implementation of digital technologies within the HR function and its consequences. We attempt to fill this gap through an exploratory analysis of the literature produced over the past decade. Under it, we find visual recognition, voice recognition, natural language processing, expert systems, affective computing, and robotics (Siregar et al., 2020).

Machine Learning has actually started since the summer of 1956. at that time a group of computer experts, experts and researchers from other disciplines from various academies, industry and various groups gathered at Dartmouth College to discuss the potential of computers to mimic or simulate human intelligence. to mimic or simulate human intelligence. Some of the scientists involved were Allen Newel, Herbert Simon, Marvin Miskey, Oliver Selfridge, and John McCarthy. Since then, experts began to work hard to create, discuss, change and develop until it to the point of full progress. Starting from the laboratory to the implementation of real work (Kalsum, 2022).

In the beginning, Machine Learning existed only in universities and research laboratories, and very few - if any - practical products had been developed. Towards the end of the 1970s and early 1980s, it began to be fully developed and the results gradually came to market. Today, many research results are being and have been 1 are being converted into real products that bring benefits to the users (Kalsum, 2022).

AI and HRM

In the present scenario, business is conducted with the needs and demands for the international business motive, also goods transfer takes place from one country to another, services, managerial knowledge, and technology transfer also takes place between countries. Globalization made the entire world small in the means of communicating with others (Hadiyatno et al., 2023; Varadaraj & Al Wadi, 2021).

HR and AI are integrated with analyzing the ability to create different types of report for HR professionals. They can take better decision for semi- structured and unstructured problems in respect to accuracy and uncertainty. There are a few studies where IDSS is applied for HRM such as for training and development performance appraisal and HR administration. Most researchers used KBS or expert system approaches for HRM digital (Dasmadi, 2023; Wadjdi & Yuliza, 2023). Due to some limitations of expert system and AI, hybrid intelligent techniques may be preferable for HRM. Knowledge based system with machine learning can be more effective hybrid intelligent technique for HRM (Masum et al., 2018).

The HR activities can be executed using this approach, for examples, matching people to jobs, selecting new employees, planning training needs for new and old employee, planning career paths, predicting future employee and employee turnover, predicting existing employee performance, and others. For prediction task, some machine learning approaches produce more honest outcome. In this study, we have focused on AI using machine learning approach for HR decision support (Masum et al., 2018).

The HR department must welcome digital transformation in HR and must also upgrade the policy of HR according to the need for digital transformation. Digital Human resources management faces many challenges and difficulties in order to give the best quality of work for the organization across the world. In order to achieve in the competitive market structure organization must expand the trading globally (Varadaraj & Al Wadi, 2021).

Performance Appraisal

Employees that display high levels of on-the-job efficacy, productivity, and participation are a source of value added to an organization. At the same time, these variables are difficult to assess from the company's side using conventional success metrics, since these are often too crude. AI can enhance the granularity of performance appraisal by HR administrators by making it possible for them to assess performance over smaller ranges of observation, therefore contribute to more precise interventions for improving cumulative performance (Sakka et al., 2022).

Training and Development

Training is particularly crucial to keep abreast with the pace of technological development can play a role in this respect, at the level of scheduling, arranging, and coordinating virtual training activities, such as online courses and remote classrooms. Beyond these logistical tasks, ML can also play a higher role in assigning employees to tailored training activities, based on their personal needs (Sakka et al., 2022).

Employee Motivation and Engagement

ML provides the information processing muscle to parse and learn from big data, mobilizing vast and diverse datasets, for instance several terabytes' worth of professional biographies and performance appraisal histories. This is bound to result in more effective

management interventions, as well as in more fitting opportunities for professional development in line with individual (Sakka et al., 2022)

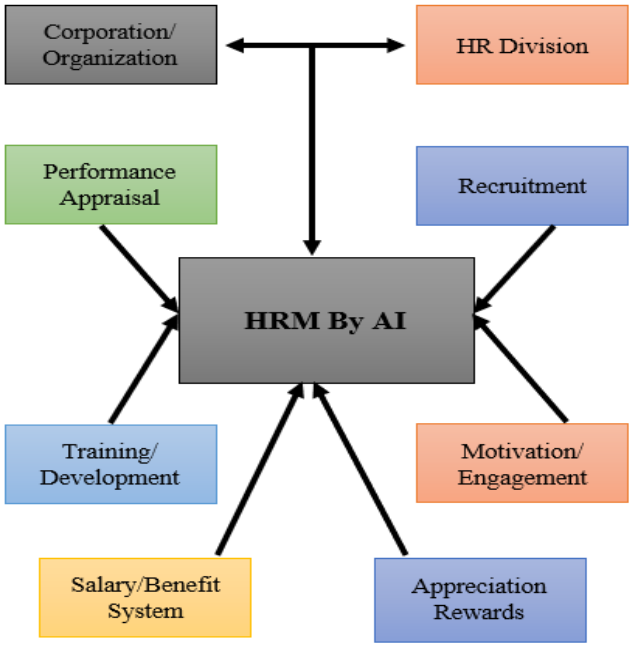

Figure 3. Model of HRM by artificial intelligent

Human Resources Strategy and Planning

Human resource strategic planning is the starting point of HRM. Managers use artificial intelligence technology as an auxiliary decision-making system, which can carry out strategic planning more comprehensively. First, technologies such as data mining and knowledge discovery are needed to collect global information and combine with existing internal and external information. After summarizing the information, we can understand the current rationality of the human resources situation and forecast, evaluate and adjust the company's future management (Jia et al., 2018).

Relying on the statistical and modification functions of the intelligent decision support system, the report is finally provided with various required information. Operational functions of HR such as pay roll processing, but also managerial functions such as compensation, performance management or development are "digitally" supported (Chytiri, 2019). No doubt, the study revealed that an important aspect of Human Resources Management which has been neglected over years is staff training and development (Bakare, 2020).

Recruitment and Deployment

As an important part of the system, the recruitment process includes review, screening resumes, interviewing candidates, matching suitable positions, etc. Ideal Corp, a software company that uses artificial intelligence to automate recruitment tasks, its CEO Somen Mondal says that the biggest impact of artificial intelligence is to automatically screen candidates and reduce bias. Artificial intelligence can learn the qualifications for successful employees in a particular position and apply this knowledge to select qualified candidates and score and rate candidates. According to Mondal, the company used artificial intelligence software to recruit, with a 71% reduction in recruitment costs and a threefold increase in recruitment efficiency (Jia et al., 2018).

In being organized along a digitalization continuum, the developed typology represents a classic typology type two ideal-types characterized by minimum and maximum digitalization constitute the respective endpoints of this continuum. Two further ideal-types with successively increasing digitalization intensities are positioned between them. Evidently, the digitalization of organizations starts with the second ideal-type and gradually intensifies to the fourth ideal-type (Strohmeier, 2020).

An emerging field in this respect is that of "emotion analysis", which is based on processing data from employees' social media activity to gauge their positive and negative feelings, as well as their possible biases. For instance, user responses can be arranged into a lexicon, so that positive or negative scores might be associated to specific expressions, as being disclosive of particular emotions. An intelligent use of such tools could put emotion analysis software at the forefront of HRM practice, in order to enable organizational responsiveness to employee sentiment and motivation. As we come to the end of the first part of the paper, it is useful to note the considerable promise attached to AI adoption for improving HRM function within organizations (Sakka et al., 2022).

However, there remains a gap between the fulfilment of such promises and on-the-ground experience with AI. The increase in information-processing power that AI would afford requires a matching increase in the capability of HR staff to query and interpret AI applications meaningfully (Bhardwaj et al., 2020). This is where there is an extant skills gap. These considerations set the stage for the focus of the next section, which looks in greater detail at the anticipated skill sets that AI introduction would require organizations to have at their disposal.

Artificial intelligence technology has been applied to various fields (Jia et al., 2018). There is tremendous growth in technology today especially in IT and organizations who demands to reduce costs. The present computer automation has pushed itself to all chief of the organizations to more on with digitalization in each and every department. The worldwide sectors have begun

pursuing on digitalization for kookiest disposal of services (Bhanu Prakash et al., 2019).

It is obvious that HRM should change and align its strategies and activities to this new labor market cohort such "digital employees". The generation of younger employees grown up in a digital environment is both considerably more complex and considerably more heterogeneous. The strategic and operative adaptation of HRM to a changing workforce constitutes a step necessary to support organizations further (Johnson & Szamosi, 2018; Paauwe & Boon, 2018), through new, different and automated practices of recruiting, selecting and leadership practices. Artificial Intelligence (machines), for example, can save time for recruiters and enable them to focus more on the human aspect or hiring, as well as improve the candidates' experience (i.e. less response time, regular communications, scheduling interviews) (Chytiri, 2019).

Conclusion

To increase our insight about HRM roles more research is needed to investigate how and to what extent these roles are affected by occupational and organizational characteristics. The ethical dimensions of using digital technologies to access store and use employee data need to be even more empirically examined. Digital employee management is about planning and implementing digital technologies to support and network the HR profession. Operational functions of HR such as pay roll processing, but also managerial functions such as compensation, performance management or development are "digitally" supported. The positive operational effects of this digital employee management such as less cost, higher speed and quality of HR processes, increased corporation and trust among HR stakeholders, more strategic orientation, etc. are obvious. Some negative issues such as lack of user acceptance, threats to privacy, loss of personal contacts, downsizing the HR – department or burdening HR professionals with technical implementation.

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This study was conducted by me personally, so the content presented is my full responsibility. The single author provides a space for free expression so that the satisfaction of pouring thoughts can be accommodated.

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Conflicts of Interest
There is no interest conflict in this research. This research is conducted for scientific studies that are widely disseminated through this journal. Writings that are free of conflicts of interest will be disseminated without fear of the author, so that they can be free to continue working.

References

Azah, A.-S. A. (2021). Manpower, AI, robot, Re-imagining the Workforce. *Industry and Higher Education*, *3*(1), 1689–1699. Retrieved from https://www.theseus.fi/bitstream/handle/10024/508853/Thesis_Manpower..%282%29.pdf?sequence=2

Bakare, K. M. (2020). Impact of Human Resources Development on Economic Growth: An Appraisal. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3675605

Balaji, T. K., Annavarapu, C. S. R., & Bablani, A. (2021). Machine learning algorithms for social media analysis: A survey. *Computer Science Review*, *40*, 100395. https://doi.org/10.1016/j.cosrev.2021.100395

Bhanu Prakash, N., Sri Rama Krishna, G., & Samuel Mores, G. (2019). Digitalization of HRM Practice in the Present Scenario. *International Journal of Research in Management Studies*, *4*(1), 1–5. Retrieved from http://www.ijrms.com/olvolume4issue1/NBhanuPrakash-GandhamSriRamaKrishna-GSamuelMores-1.pdf

Cabrera, R. M., Ganchozo, M. L., Oswaldo, R. S., Wilfredo, R., Bujaico, R., Samaniego, H. H., & Fredy, J. (2022). Impact Of Machine Learning In Human Resource Management : Towards The Modernization Of Leadership. *Journal of Positive School Psychology*, *6*(2), 290–299. Retrieved from https://journalppw.com/index.php/jpsp/article/view/10210

Chytiri, A.-P. (2019). Human Resource Managers' Role in the Digital Era. *SPOUDAI Journal of Economic and Business*, *69*(1), 62–72. Retrieved from https://dora.dmu.ac.uk/server/api/core/bitstreams/ea2d44b0-1211-4672-9c14-b594046a1ac1/content

Dasmadi, D. (2023). A Dedication of Machine Learning for Trend of Digital HRM. *Jurnal Penelitian Pendidikan IPA*, *9*(SpecialIssue), 416–421. https://doi.org/10.29303/jppipa.v9iSpecialIssue.

5804

George, G., & Thomas, M. R. (2019). Integration of artificial intelligence in human resource. *Int. J. Innov. Technol. Explor. Eng*, *9*(2), 5069–5073. Retrieved from https://shorturl.asia/o2YQc

Hadiyatno, D., Susilowati, D., Moorcy, N. H., Arrywibowo, I., & Yuliani, T. (2023). Artificial Intelligence Model for Human Capital Management. *Jurnal Penelitian Pendidikan IPA*, *9*(10), 8280–8286. https://doi.org/10.29303/jppipa.v9i10.5083

Jia, Q., Guo, Y., Li, R., Li, Y., & Chen, Y. (2018). A conceptual artificial intelligence application framework in human resource management. *Proceedings of the International Conference on Electronic Business (ICEB)*, 106–114. Retrieved from https://aisel.aisnet.org/iceb2018/91/

Johnson, P., & Szamosi, L. T. (2018). HRM in changing organizational contexts. In *Human resource management* (pp. 27–48). Routledge. https://doi.org/10.4324/9781315299556-2

Kalsum, U. (2022). Pengenalan Kecerdasan Buatan (Artificial Intelligence) Kepada Para Remaja. *Procedia Computer Science*, *166*, 310–314. Retrieved from https://eprints.binadarma.ac.id/15964/

King, G. R. D. (1991). Creswell's appreciation of arabian architecture. *Muqarnas*, *8*, 94–102. https://doi.org/10.1163/22118993-90000268

Maria, M. (2020). *Digitalization of HRM: A study of success factors and consequences in the last decade* (Issue August). Retrieved from https://essay.utwente.nl/82872/1/Mosca_MA_BMS.pdf

Masum, A. K., Beh, L. S., Azad, A. K., & Hoque, K. (2018). Intelligent human resource information system (i-HRIS): A holistic decision support framework for HR excellence. *International Arab Journal of Information Technology*, *15*(1), 121–130. Retrieved from https://iajit.org/PDF/January 2018, No. 1/9605.pdf

Najam, Z., Nisar, Q. A., Hussain, K., & Nasir, S. (2022). Enhancing Employer Branding through Virtual Reality: The role of E-HRM Service Quality and HRM Effectiveness in the Hotel Industry of Pakistan. *Asia-Pacific Journal of Innovation in Hospitality and Tourism*, *11*(2), 69–89. Retrieved from https://fslmjournals.taylors.edu.my/wp-content/uploads/APJIHT/APJIHT-2022-11-2/APJIHT-112_Paper-4.pdf

OECD. (2021). Artificial Intelligence, Machine Learning and Big Data in Finance: Opportunities, Challenges, and Implications for Policy Makers. *OECD Business and Finance Outlook 2020 : Sustainable and Resilient Finance, 1–72*. Retrieved from https://www.oecd.org/finance/financial-markets/Artificial-intelligence-machine-learning-big-data-in-finance.pdf

Paauwe, J., & Boon, C. (2018). Strategic HRM: A critical review. *Human Resource Management*, 49–73. https://doi.org/10.4324/9781315299556-3

Sakka, F., & El Hadi El Maknouzi, M. (2022). Human Resource Management in the Era of Artificial Intelligence: Future Hr Work Practices, Anticipated Skill Set, Financial and Legal Implications. *Academy of Strategic Management Journal*, *21*(S1), 1–14. Retrieved from https://sdbindex.com/Documents/index/00000155/00001-49257

Siagian, N., Pasaribu, J., & Siagian, T. M. N. (2023). The Power of Robots: A Dedication of Computer Science for Human Capitals Management. *Jurnal Penelitian Pendidikan IPA*, *9*(SpecialIssue), 939–944. https://doi.org/10.29303/jppipa.v9iSpecialIssue.5542

Siregar, H., Setiawan, W., & Dirgantari, P. D. (2020). Isu Proses Bisnis Berbasis Artificial Intelligence untuk Menyosong Era Industri 4.0. *Jurnal Bisnis Strategi*, *29*(2), 89–100. https://doi.org/10.14710/jbs.29.2.89-100

Strohmeier, S. (2020). Digital human resource management: A conceptual clarification. *German Journal of Human Resource Management*, *34*(3), 345–365. https://doi.org/10.1177/2397002220921131

Tripathi, S., & Sharma, A. (2018). Human Resource Management: Machine Learning Perspective. *International Journal of Allied Practice, Research and Review*. Retrieved from https://shorturl.asia/Azi9d

Varadaraj, D. A., & Al Wadi, D. B. M. (2021). A Study on Contribution of Digital Human Resource Management towards Organizational Performance. *The International Journal of Management Science and Business Administration*, *7*(5), 43–51. https://doi.org/10.18775/ijmsba.1849-5664-5419.2014.75.1004

Vrontis, D., Christofi, M., Pereira, V., Tarba, S., Makrides, A., & Trichina, E. (2023). Artificial intelligence, robotics, advanced technologies and human resource management: a systematic review. *Artificial Intelligence and International HRM*, 172–201. https://doi.org/10.4324/9781003377085-7

Wadjdi, F., & Yuliza, Y. (2023). The Augmented and Virtual Reality in HRM Development. *Jurnal Penelitian Pendidikan IPA*, *9*(11), 1137–1141. https://doi.org/10.29303/jppipa.v9i11.5333