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A Dedication of Machine Learning for Trend of Digital HRM

Dasmadi[1]

[1] Slamet Riyadi University Surakarta, Indonesia.

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Corresponding Author:
Dasmadi
dasmadi@unisri.ac.id

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Abstract: The digital world has inevitably entered various fields of human life in carrying out their duties as world leaders. Technology is an important tool to ease the human workload, including in this discourse is human resource management. Machine Learning is a technology that allows machines to learn and adapt quickly from given data without having to be explicitly programmed. Machine Learning has found its place in many industries and has great potential to improve the efficiency of human resources within organizations. 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: Human Capital; Machine; Learning; Management

Introduction

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 (Milano, 2018). Feeding ML models with big data can provide asset managers with recommendations that influence decision-making around portfolio allocation and/or stock selection, depending on the type of AI technique used (Mirete-Ferrer et al., 2022). Big data has replaced traditional datasets, which are now considered a commodity easily available to all investors, and is being used by asset managers to gain insights in their investment process (OECD, 2021).

For 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 (Schinckus, 2018). 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 (Bose et al., 2023; OECD, 2021).

However, in the research area of human resource management, there is still a lack of an overall ML application framework, combined with the specific dimensions of human resource management, to analyze its specific application. Therefore, based on the six dimensions of human resource management and the main technical applications of ML, this paper proposes a conceptual AI application to HRM model to guide enterprises how to use AI technology to assist human resource management (Jia et al., 2018; Vrontis et al., 2022).

Employee turnover can be defined as "The proportion of the employees who leave an organization

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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 (Brynjolfsson & McAfee, 2011; Cabrera et al., 2022).

Figure 1. Ilustration of Machine Learning on HRM (Source: https://medium.com)

Only a satisfied employee can be a productive employee and the retention rate is comparatively high for employees belonging tothat 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; Mahdavinejad et al., 2018).

Method

The type of research used in this study is descriptive research with a qualitative approach. 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; Action (Khoa et al., 2023).

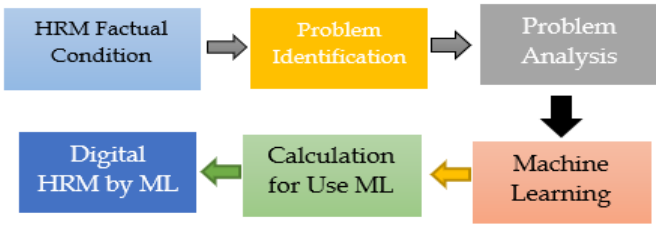

Figure 2. Flow Method of Study

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 Machine Learning technology to supervision methods and means, and improves the degree of supervision automation and intelligence (Greene et al., 2019; Subagio & Sitepu, 2023).

Result and Discussion

The Beginnings of Machine Learning

The term machine learning is basically the process of computers to learn from data. Without data, computers will not be able to learn anything. Therefore, if we want to learn machine learning, we will definitely keep interacting with data. All machine learning knowledge will definitely involve data. The data can be the same, but the algorithms and approaches are different to get optimal results (Mahesh, 2020) & (Jamal et al., 2018).

In one of the artificial neural network models called MLP (multilayer perceptron), the term layer is known, several artificial neurons are grouped into one layer then one layer becomes the input for another layer, MLP is actually a (mathematical) model consisting of compositions of functions from vectors to vectors, this model is usually trained using gradient-based optimization algorithms such as gradient descent, various problems arise when the artificial neural network model has many layers, one of the famous problems is called the vanishing gradient, this problem arises because artificial neural networks with many layers are actually functions consisting of many compositions of functions so that when calculating the gradient of the parameters of the function, we must use the chain rule which causes the parameter gradient to be small so that the gradient descent algorithm runs slowly (Park & Lek, 2016).

The term Machine Learning was first coined by John McCarthy in 1956 when he organized the first academic conference on the subject. But the journey to understand if machines can really think started long before that. In Vannevar Bush's as We May Think (1945) he proposed a system that amplifies people's knowledge and understanding. Five years later Alan Turing wrote a paper on the idea of machines that could simulate humans and the ability to do intelligent things, such as playing chess (1950). Machine Learning is a big

umbrella. 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).

ML 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(Varadaraj & Al Wadi, 2021).

The financial and economical patterns of the world have been integrated with better advancement. In today's digital world where digital human resource management plays a prominent function when compared to conventional human resource management due to the demand of the organization. Many organizations need high-efficient Digital Human Resource Management for better organizational performance (Varadaraj & Al Wadi, 2021).

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. ML 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 & El Hadi El Maknouzi, 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 & El Hadi El Maknouzi, 2022).

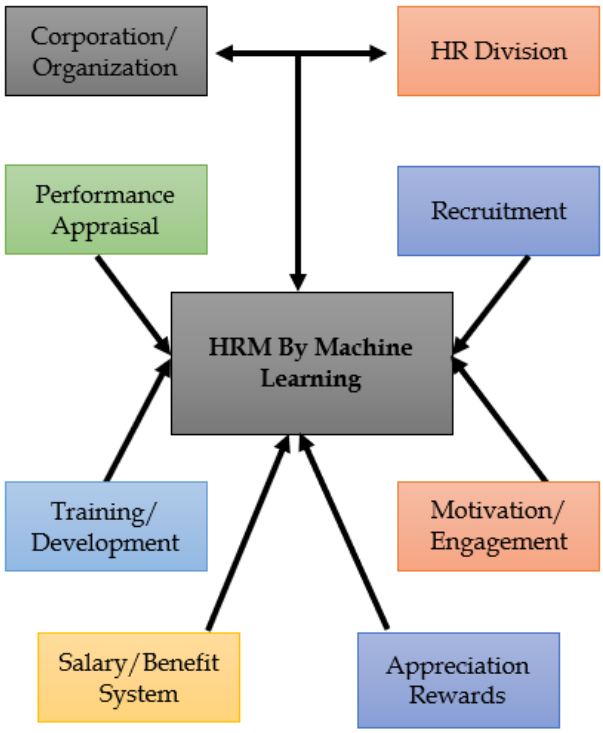

Figure 3. Model of HRM by Macine Learning

Employee Motivation and Engagement

ML provides the information processing muscle to parse and learn from big data, mobilising 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 & El Hadi El Maknouzi, 2022).

Digital employee management by ML is about planning and implementing digital technologies to support and network the HR profession (Kambur & Yildirim, 2023). 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; Lawler III et al., 2004). 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).

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, administration and application tasks, should not be out of consideration (Chytiri, 2019).

ML ethics is another one – very important – issue that must be addressed by HR managers, regarding growing unemployment (downsizing), hiring bias, inappropriate employee data usage, transparency (Chytiri, 2019). Mobility and remote working as significant consequences of the introduction of the digital transformation process have proven to be very successful (Barišić et al., 2021).

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 (Pithadia & Vashisth, 2022; Strohmeier, 2020).

While the concept of digital organizations remains rather broad on a mere terminological level, three clearly differing sub-categories of digital organizations can be distinguished based on the typology. These three types provide a concretization and categorization of digital organizations. Moreover, the digital transformation of organizations starts with the third ideal- type but fully manifests only with the fourth ideal-type. Executing previously formulated strategies based on digital technologies implies change (Strohmeier, 2020) & (Witschel et al., 2019). Another fundamental condition for the digital transformation of HRM is the identification of key players within the organization. Among these we can underline in particular the role played by HR managers (Maria, 2020).

However, the formulation and execution of digital organizational strategies implies more systematic and fundamental changes. By contrast, the concept of digital disruption necessarily shows no relation to the typology of digital organizations, as digital disruption does not result in digital but marginalized organizations (Strohmeier, 2020).

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)

Conclusion

Machine learning has made some enormous strides over the last couple of years thanks to certain technological advances, but it is safe to say that we have yet to see its full impact on the world of business and HR specifically. The important thing is not to oppose it immediately and see it as a bringer of doom. The future of HR will most probably involve a human-machine collaboration and that can end up being a good thing. 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.

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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.

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