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Human Resource Management: Machine Learning Perspective

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Abstract - Human Resource Management (HRM) has experienced noteworthy changes in the last decade due to evolution of technologies. Recent developments in data-driven techniques are rapidly reshaping the HR industry. Now organizations are concentrating more on creating an employee-oriented corporate culture. For recruitment, engagement, development and retention of employees, organizations are using various computational techniques along with Information & Communication Technology.

In this digital era most of the organizations make optimum use of machine learning for better decision making and productivity enhancement. Machine learning is a discipline of computer science that provides the machine the ability to learn and adapt through experience without being programmed. Machine learning focuses on prediction making with the help of information within computers which involves applications of various algorithms. This paper briefly described the existing examples of machine learning application in HRM.

Keywords - HRM, Machine Learning, ICT.

I. Introduction

Human Resource Management is a continuous function concerned with maximizes human potential. It puts into effect the policies and systems to manage people efficiently. Humans are of great importance in almost all functional areas. Human Resource Management has utility in macro as well as micro perspective. Macro perspective involves managing the aggregate of human capital in organizations and nations. Micro perspective involves managing the nature of employment and employee engagement.

The goal of HRM is to increase organizational productivity by effective utilization of resources and human potential. HRM deals with employee benefits, Training and development, Talent

management, Hiring, Risk reduction, Compensation management, maximizing Return on Investment etc. HR manager must have appropriate skills and strategies to deal with these aspects.



Fig-1 Functions of Human Resource Management

II. Evolution of HR

- Its origin is dated back to 1800 BC, when wage and incentive plans were included in the Babylonian code of Hammurabi.
- The world's first Management book, titled "Arthashastra" written by Kautilya during Chaldeans in 400 abc, codified many aspects of human resource practices in ancient India.
- Since 1999, HR became part of corporate strategy Formulation and strategy implementation team.

III. Technology in HRM

Traditional HR focused mainly on labor management. New HR functions address strategic business issues. HR adapted due to liberalization and globalization. Various technological tools such as recruitment web portals, communication data sharing, and Artificial intelligence system. are applied in HR for effective decision making and managing employee relations. There is a shift in HR functions from traditional personnel functions such as recruitment, selection, training and development, performance appraisal, rewards to consultative strategic business issues and policy formulation to some extent. Technological advancements have impacted HR.

Evolution of HRM ...

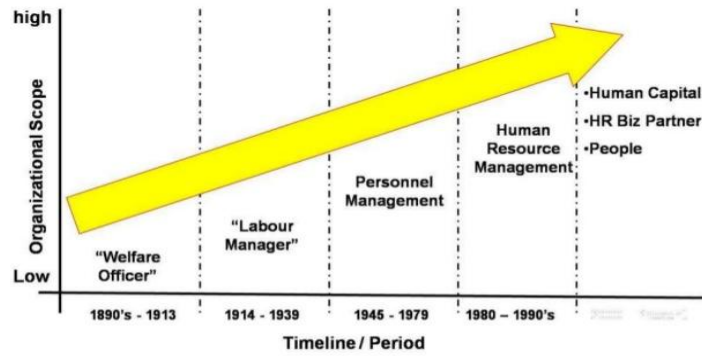


Fig-2 Evolution of HRM

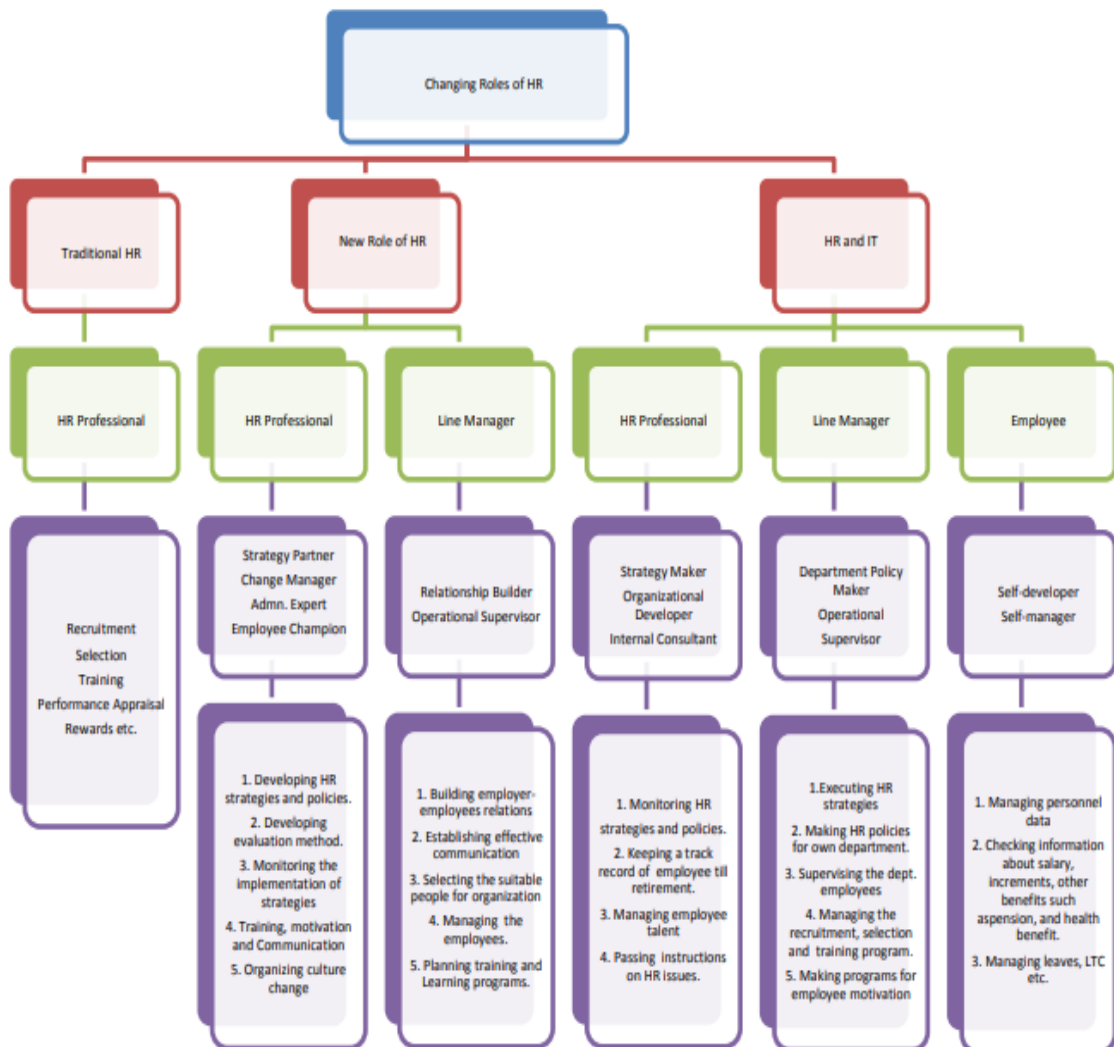


Fig-3 Technology in HRM

IV. Machine learning in Human Resource Management

“Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed”. Machine learning focuses on the development of computer programs that can access data and use it learn for themselves. It is necessary to understand it and leverage as a tool. Intelligent assistants would be helpful to office workers to help them be more productive. Machine learning is possible due to Natural Language processing that allows humans and bots to understand each other. HR tasks are time consuming. Machine learning has helped to improve speed, quality and cost by tracking employee growth and development and providing assistance and reviewing.

V. Applications of Machine learning in HRM

5.1. Applicant tracking and assessment

Machine learning provides better work experience and saves money. Machine learning tools help HR and management personnel to hire new team members by tracking a candidate’s journey.

5.2. Attracting talent

LinkedIn recommends jobs by using Machine learning interaction maps based on user’s data from previous searches, clicks and posts. This way right potential would lead to company’s growth.

5.3 Performance development

Machine learning gives platform to provide guidance to humans and individual skill management. It helps people to grow and stay engaged. Workday is one such example for managing performance.

5.4 Attrition detection

Prediction of employee attrition is a major cost to any organization. Now we have capabilities for both extreme predictive accuracy and understandability.

VI. Research Design

Research methodology was descriptive in nature. Only secondary data could be collected. Major portion of the study is done from literature review. Findings are based on study in Ontario.

VII. Findings

- HR professional see the value of this technology.
- Machine learning should be incorporated for HR decision making.
- Machine learning can manage multiple tasks especially recruitments.
- Internal hiring in jumped from 4% to 60% in Canada and US.
- Predicting future careers based on current and previous job titles. It provides smarter recommendations to employees.

VIII. Conclusion

Machine learning would prove to be of great advantage. Machine learning expertise would impact HR domain significantly. It would lead to better decision making due to behavior tracking. But as of now, Machine learning cannot replace Human Resources completely. It can be applied as a tool only.

IX. References

- [1] <https://www.techemergence.com/machine-learning-in-human-resources/>
- [2] <https://www.thriveglobal.com/stories/14460-is-machine-learning-a-complete-replacement-for-human-resources>
- [3] Rob May, AI in HR: What Are Word Vectors And Why Do They Matter?, HR Technology, HRExaminer, July 18,2016
- [4] <https://www.slideshare.net/AntonMahi/development-of-human-resource-in-india>.
- [5] Adrian Wilkinson, Tom Redman, Scott A. Snell and Nicolas Bacon, Field of Human Resource Management.
- [6] <http://www.expertsystem.com/machine-learning-definition/>
- [7] Angrave, D., Charlwood, A., Kirkpatrick, I., Lawrence, M., & Stuart, M. (2016). HR and analytics: Why HR is set to fail the big data challenge. *Human Resource Management Journal*, 26, 1-11.
- [8] A.R. Cassandra and L. P. Kaelbling. Learning policies for partially observable environments: Scaling up. In *Machine Learning Proceedings 1995*, page 362. Morgan Kaufmann, 2016.
- [9] M. Abadi, A. Agarwal, P. Barham, E. Brevdo, Z. Chen, C. Citro, G. S. Corrado, A. Davis, J. Dean, M. Devin, et al. *Tensorflow: Large-scale machine learning on heterogeneous systems*, 2015. Software available from tensorflow. org, 2015.
- [10] L. Bassi and D. McMurrer, "A Quick Overview of HR Analytics: Why, What, How, and When?" Association for talent development, March 04, 2015
- [11] D. Handa and Garima, "Human Resource (HR) Analytics: Emerging Trend In HRM (HRM)", *IJRCM*, Vol. No. 5, Issue No. 06, June 2014

- [12] S. Jahan, "Human Resources Information System (HRIS): A Theoretical Perspective", *Journal of Human Resource and Sustainability Studies*, Vol.2 No.2, Article ID: 46129, 2014.
- [13] C. von Hippel, E. K. Kalokerinos and J. D. Henry, "Stereotype threat among older employees: Relationship with job attitudes and turnover intentions", *Psychology and aging*, 28(1), 17, 2013.
- [14] D. Alao and A. B. Adeyemo, "Analyzing employee attrition using decision tree algorithms", *Computing, Information Systems, Development Informatics and Allied Research Journal*, 4, 2013.
- [15] L. M. Finkelstein, K. M. Ryan and E.B. King, "What do the young (old) people think of me? Content and accuracy of age-based metastereotypes", *European Journal of Work and Organizational Psychology*, 22(6), 633-657, 2013.
- [16] D. Liu, T. R. Mitchell, T. W. Lee, B. C. Holtom, and T. R. Hinkin, "When employees are out of step with coworkers: How job satisfaction trajectory and dispersion influence individual-and unit-level voluntary turnover", *Academy of Management Journal*, 55(6), 1360-1380, 2012.
- [17] H. Jantan, A. R. Hamdan, and Z. A. Othman, "Towards Applying Data Mining Techniques for Talent Managements", 2009 International Conference on Computer Engineering and Applications, IPCSIT vol.2, Singapore, IACSIT Press, 2011.
- [18] V. V. Saradhi and G. K. Palshikar, "Employee churn prediction", *Expert Systems with Applications*, 38(3), 1999-2006, 2011.
- [19] B. W. Swider, and R. D. Zimmerman, "Born to burnout: A metaanalytic path model of personality, job burnout, and work outcomes", *Journal of Vocational Behavior*, 76(3), 487-506, 2010.
- [20] B. Holtom, T. Mitchell, T. Lee, and M. Eberly, "Turnover and retention research: A glance at the past, a closer review of the present, and a venture into the future", *Academy of Management Annals*, 2: 231-274, 2008
- [21] V. Nagadevara, V. Srinivasan, and R. Valk, "Establishing a link between employee turnover and withdrawal behaviours: Application of data mining techniques", *Research and Practice in Human Resource Management*, 16(2), 81-97, 2008.
- [22] W. C. Hong, S. Y. Wei, and Y. F. Chen, "A comparative test of two employee turnover prediction models", *International Journal of Management*, 24(4), 808, 2007.
- [23] L. K. Marjorie, "Predictive Models of Employee Voluntary Turnover in a North American Professional Sales Force using Data-Mining Analysis", Texas, A&M University College of Education, 2007.
- [24] T. M. Heckert and A. M. Farabee, "Turnover intentions of the faculty at a teaching-focused university", *Psychological reports*, 99(1), 39-45, 2006.
- [25] J. M. Sacco and N. Schmitt, "A dynamic multilevel model of demographic diversity and misfit effects", *Journal of Applied Psychology*, 90(2), 203-231, 2005.
- [26] S. L. Peterson, "Toward a theoretical model of employee turnover: A human resource development perspective", *Human Resource Development Review*, 3(3), 209-227, 2004.
- [27] M. Stoval and N. Bontis, "Voluntary turnover: Knowledge management – Friend or foe?", *Journal of Intellectual Capital*, 3(3), 303-322, 2002.
- [28] D. G. Allen and R. W. Griffeth, "Test of a mediated performance – Turnover relationship highlighting the moderating roles of visibility and reward contingency", *Journal of Applied Psychology*, 86(5), 1014-1021, 2001.