Human Resource Predictive Analytics (HRPA) For HR Management In Organizations

Sujeet N. Mishra, Dev Raghvendra Lama, Yogesh Pal

Abstract: Human resource predictive analytics is an evolving application field of analytics for HRM purposes. The purpose of HRM is measuring employee performance and engagement, studying workforce collaboration patterns, analyzing employee churn and turnover and modelling employee lifetime value. The motive of applying HRPA is to optimize performances and produce better return on investment for organizations through decision making based on data collection, HR metrics and predictive models. The paper is divided into three sections to understand the emergence of HR predictive analytics for HRM. Firstly, the paper introduces the concept of HRPA. Secondly, the paper discusses three aspects of HRPA: (a) Need (b) Approach & Application (c) Impact. Lastly, the paper leads to the conclusion on HRPA.

Index Terms: Predictive Analytics, Talent Analytics, HR Analytics, Human Resource Management, Modelling, Return on Investment (ROI), Decision Making,

1 INTRODUCTION

HR analytics is a multidisciplinary approach to integrate methodology for improving the quality of people-related decisions in order to improve individual and organizational performance. There are interchangeable terms used for HR analytics are talent analytics, people analytics, and workforce analytics. HR analytics plays a role in every aspect of the HR function, including recruiting, training and development, succession planning, retention, engagement, compensation, and benefits. HR analytics are those that involve "high-end" predictive modelling where what-if scenarios forecast the consequences of changing policies or conditions. Traditional HR analytics focuses on the present, that is, items such as turnover and cost per hire. But most organizations lacked a consistent and general view of the workforce and thus needed HR analytics to perform workforce optimization and hence it became important for HR to develop IT and finance analytical skills and capabilities to produce better Return on Investment (ROI). [1], [2], [3] Further advancement of technologies when combined with predictive analytics exponentially enhanced HR purposes in last decade. HRPA generates insights that cannot be achieved through traditional benchmarking as HR analytics is reactive and an evidence-based decision system whereas HRPA is proactive and fact-based decision system. [4] Three significant changes that have really created a hunger for predictive analytics in HR and these are: [5]

i. Major boost in computing power and its affordability
ii. HR big data digitally accessible via cloud storage for processing
iii. Global talent war to protect and pursue talent streams.

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Predictive analytics is unlike descriptive analysis which considers external benchmarking data and involves tables, reports, ratios, metrics, dashboards or complex maths; it is about data-derived insights that drive better decisions. It includes statistical techniques, machine learning methods, and data mining models that analyse and extract existing and historical facts to make predictions. It enables organizations to analyse the past and look forward to spot trends in key factors related to voluntary termination, absences and other sources of risk. Predictive analytics involves models of organizational systems for prediction of future outcomes and realize the significances of hypothetical changes in organizations. Predictive analytics have led to prescriptive analytics where HR gets decision options to optimize performance and reshape entire HRM decision making. [6] Being an evolving phenomenon HRPA has much scope for HR purposes in future. Predictive analytics might be unexplored zone for HR, therefore to fully realize its profits; HR personnel need to team up with other business units and customer-facing functions to understand how they pull data and analytics to create value. [7] HRPA faces constraints of training and resistant to adapt from HR Personnel for e.g. a score of an employee engagement survey may mean different things to different lines of business, and regions around the world, depending on business purposes, economic actualities and workforce size. Collin says, [8] HRPA is an art and a critical skill to bring out the business insights of data analysis. There are opportunities for HRPA in HRM to expand due to necessary boost provided to enhance HR functions, to better business outcomes and to improve ROI. TimesJobs.Com COO Vivek Madhukar indicated to the fact that the ability to move from gut-based judgements to data-driven decision-making is making HRPA the future of HRM in India. Over 55 per cent of organizations feel that HRPA predictions help to secure quality hires. [9]

2 ASPECTS OF HRPA

2.1 Need

Organizations make sure the right people are in the right place at the right time by means of analytics. [10] To remain commercially relevant HRM needs to provide senior executives with a predictive analytics based justification for important talent related decisions. No organization is identical in terms of workforce, talent, environment, strategies, and market type. And hence one successful but fixed model cannot be applied to any function of HR. Only past data of the

particular organization or its identical culture have ability to provide right decision for HRM. Thus HRPA becomes essential for industries which desire for bringing unique decision policies. The HR requires skills of technology and management both where technology is not limited to analytics. HR should be able to create insights into data and produce predictive models that optimize the organizational performance. Advent of advance machine learning programs and HR expert systems [11] has eased to achieve organizational objectives of human capital management (HCM), workforce planning, employee management, and performance management etc.

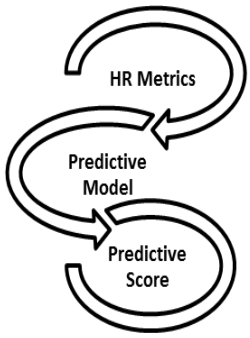

Fig. 1: *HRPA Approach for Decision Making*

2.2 Approach & Application

HR metrics are clearly defined to assess and collect essential data and then predictive models are built for each HR function which is needed to produce insights from historical data for future decision making in HRPA. [12]

2.2.1 HR Metrics:

The organizations use metric values to scale HR functions in terms of recruitment time, attrition level, employee turnover, and probability of success. Having concrete metrics is crucial to exhibit senior leaders and executives how strategic HR initiatives can help affect an organization's bottom line. There are 13 famous HR metrics [13] as follows;

i. Monthly turnover rate
ii. Revenue per Employee
iii. Yield Ratio
iv. Human capital cost
v. HR to staff ratio
vi. Return on investment
vii. Promotion rate
viii. Percentage female at management level
ix. Employee absent rate
x. Worker's compensation cost per employee
xi. Worker's compensation incident rate
xii. Overtime per individual contributor headcount
xiii. Average employee age.

2.2.2 Predictive Modelling

Predictive model combines analytical algorithms and provide results in form of a value or probability scores based on which decisions are taken. HCM: 21 Model [14] is one such predictive model proposed for HRM strategies inspired from Dr. Jac Fitz-Enz which states four stages of HRM, 1.Scan 2.Plan 3.Produce 4.Predict and HRPA applies the same. Predictive modelling [4], [15], [16] is applied on HR functions for decision making in various field of HRM as follows;

i. Turnover Modelling: Predicts future turnover of business in specific functions, business units, geographies and countries by looking at factors such as commute time, time since last role change, and performance over time. Thus this can scale hiring efforts accordingly, reducing empty desk time and panic hiring, which can lead to lower cost, higher quality hiring.
ii. Response Modelling: Use old advertising jobs data from previous campaigns to avoid contacting candidates or using channels that don't yield a response and focus on those channels that do work.
iii. Predictive Retention Modelling: Identify high-risk employees, build profiles, predict vacancies and leadership needs, and understand how risk is distributed throughout the organization.
iv. Risk Modelling: Develop a profile of candidates with a higher risk of leaving prematurely or performing below standard.
v. Talent Forecasting: Being able to predict which new hires, based on their profile, and are likely to be high fliers and then moving them in to your high potential programs.

2.3 Impact

Vestas [17], a US wind turbine maker, changed recruitment and retaining policies after HRPA suggested women employees performs 5% better than men. Gallup, a global consulting company, in their recent survey found that employee engagement can help companies survive, and possibly even succeed, in tough economic times. It promotes that companies with high engagement have a 20% boost in efficiency and effectiveness. Cisco [18] used IBM SPSS analytics tool to transform the relationship between its HR analysts and its executive leaders. It predicted and prevented attrition level.

3 Conclusion

It is evident that industries cannot survive in the long run if they do not possess predictive analytics skills from the human resource management. The usefulness of predictive analytics is wider and hence application in all related areas of HRM is essential. HRPA helps organizations contain HR-related costs while optimizing business performance as well as employee engagement and satisfaction. HRPA is rapidly changing and growing technology which has potential to achieve 100% accuracy in decision making for HR. Till 2020, HRPA will fully take over traditional analytics in organizations.

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