



HUMAN RESOURCE MANAGEMENT USING DATA ANALYTICS

Dr. A. P. Gayatri¹, Dr.U.Jawahar Supraveen²

Article History: Received: 12.02.2023

Revised: 27.03.2023

Accepted: 12.05.2023

Abstract

The significance of data analytics technologies in managing human resources is discussed in this article. Predictive analytics, also known as data analytics and business analytics, are new terms in the business world. Concepts from HR analytics are highly helpful for evaluating employee performance, making educated decisions regarding pay and promotions, boosting employee retention, examining employee engagement, and evaluating employee growth and learning outcomes. [1] We came to the conclusion that there are substantial differences across the various levels of HR Roles inside the organisation by utilising the statistical method ANOVA.

Keywords: Data analysis, predictive modelling, human resource analytics, and ANOVA

¹Associate Professor, Department of MBA, Vishwa Vishwani Institute of Systems and Management, Hyderabad,

²Associate Professor, Department of MBA, Vishwa Vishwani School of Business Management, Hyderabad.

DOI: 10.31838/ecb/2023.12.s2.270

1. Introduction

Business analytics is increasingly important for a company's success. Similar to this, HR analytics is crucial to a company's success. One of an organization's major departments is human resources. Every firm needs a specific amount of skilled labour. The HR department will handle hiring, choosing, training, placement, promotions, transfers, performance reviews, retirement, and other things. The success of every business depends on the quality of its data, and HR analytics is a strategy for gathering information about human resources and turning raw data into meaningful information. [2]

Consider an employee, for every organisation to succeed, regular attendance or presence is crucial. Employee absences are a poor indicator of HR activity. The productivity of a business is impacted by issues with employee turnover. Organizations need the assistance of HR analytics to lower excessive worker turnover. Employee data set patterns will be seen using HR analytics. It will examine the time needed to find new personnel, the investment needed for new hires, the likelihood

that new hires will quit the company, and the effect of innovative learning and development ideas on organisational performance.[2]

Objectives of the Study

- 1) To Study Analytics Applications in HRM
- 2) To understand the significance of HR analytics in the modern day
- 3) To research how different HR roles at different levels feel about the use of data analytics in HRM.

2. Research Methodology

Applications for business analytics are highly helpful in human resource management. Three groups of personnel from the IT industry were used in the current study: HR generalists, HR Managers, and Chief HR Officers. TCS, Infosys, Wipro, and IBM are the chosen IT businesses. I chose five workers from each of the five companies for each category to use as data subjects. ANOVA is one of the statistical methods employed. ANOVA is used to determine whether there is a significant difference in opinion towards the improvement of human resource management procedures.[4]

Application of Data Analytics in Human Resource Management

S.No	HR Area
1	performance evaluation
2	Informing about pay and promotions
3	Increasing Retention by Understanding Attrition
4	Considering Employee Engagement
5	measuring the results of employee growth and learning

Performance Evaluation of Employees:

Performance evaluation of employees is a crucial component of human resource management. Every firm must establish specific standards to assess the performance of different teams. The HR department must gather specific information on employees, such as age, education, skills, project work, rewards, technological aptitude, conceptual aptitude, and so forth, in order to assess employee performance. To evaluate employee performance, we must interpret statistical methods like the mean, correlation, regression, and Chi-square test. [5]

Informing Pay and Promotion: Recruitment, selection, training, compensation, and other concepts are part of human resource management. One of the crucial HRM duties is compensation. The proper payment must be made at the proper time to the proper worker. For competent professionals, especially in private organisations, compensation will be substantial. The HR department determines the competence levels of its

staff using data analytics. One of the crucial HRM roles is promotion. Promotion entails a rise in pay and responsibility. We can determine the list of employees who are eligible for promotions using statistical technologies. [6]

Understanding attrition and boosting retention:

Attrition is a key subject in human resource management. Employee attrition occurs in a company willingly as a result of resignations brought on by personal issues, among other reasons. Every employee in a firm nowadays is regarded as human capital. Every employee must commit to a lengthy tenure with the company. A company's skilled human resources are a valuable asset. The HR department uses data analytics techniques to develop effective retention tactics for workers. [7]

Evaluating Employee Engagement: In human resource management, employee engagement is a key idea. Employee engagement refers to an employee's level of commitment to his or her work

and the level of interest with which they carry out their duties inside the firm. Employee engagement techniques place a high value on emotional involvement. HR managers may learn which elements are encouraging workers to achieve corporate goals by using factor analysis in data analytics. [8]

Assessing the results of employee learning and development: Management places a lot of importance on training. Employee confidence is increased via training. Data analytics technologies assist the firm in identifying training requirements and monitoring an employee's progress in the training industry. Models for predictive analytics can assist in identifying data patterns and researching the organization's specific training needs. [9]

Review of Literature

Kirtane (2015) - He claims that HRA is a strategy for boosting business performance. Every business must regularly make decisions. With HRA, core supporting areas like statistical methodology, management principles, and leadership see significant improvements in decision quality.

According to Dooren (2012), Lochab et al. (2018), HRA researches the connection between HR practises and business performance. Organization profitability increases when good HR strategies are used.

Jain and Nagar (2015) found that HRA is a blend of qualitative and quantitative data for successful

decision-making and implementation in the company.

According to **Vihari and Rao (2013)**, as in **Ben-Gal (2018)**, the use of business intelligence and data mining principles in HRM. Kapoor and Sherif (2012) According to them, gathering HR data and employing business intelligence to analyse it are essential steps in making wise decisions.

Reddy and Lakshmi Keerthi (2017) said that making decisions requires a lot of critical thought. Every organization's main objectives are to enhance decision-making, boost profitability, and improve customer engagement.

Jabir et al. (2019) - HRA analyse data bases in accordance with organisational needs. It examines how two variables correlate with one another. The link between independent and dependent variables is thoroughly investigated in regression.

Kiran et al. (2018) - HRA offers a data-driven framework for resolving organisational issues utilising current data in order to provide fresh insights. It is all about good decision-making, provided through a mix of hardware, software, and approaches that use statistical models to analyse work-related data to help company executives manage their human resources more effectively.

Importance of HR analytics [10]

HRA now plays a significant part in an organization's performance. HRA analyses the current HR database and gives recommendations for bettering organisational performance.



(Source-<https://www.naukrirms.com/blog/the-importance-of-hr-analytics>)

The illustration above clearly demonstrates the significance of HR analytics. The first point is that HRA enhances HR performance. Employee information such as identity, qualifications, experience, expertise, prior experience, technical knowledge, and machine operation abilities are collected by HRA. After analysis of the core data set, it

builds and enhances HR performance. HRA finds the ideal applicant at the ideal time and location. It recognizes the organization's already talented employees. [11] A prevalent phrase in human resource management is attrition. Employee decrease in the company is known as attrition. Employee attrition may occur voluntarily—as in the case of

resignations or personal issues—or it may occur as a result of employer compulsion. We discovered this in the most recent Covid-2019 report; the majority of businesses fired their personnel. Through India's most recent industrial initiatives - there are so many international corporations in India. Indian enterprises have to go through the deployment of cutting-edge technology through MNCs operating in India. Each

employee must receive the most recent technological training. Future technological trends may be predicted, and talents that will be in need can be identified. Strategic management is a topic that is more significant nowadays. Every business employs certain tactics to get an edge over rivals. HRAs that are implemented effectively become important partners in the sector.

Table 01-Descriptive Statistics-Summary

HR Generalist		HR Manager		Chief HR officer	
Mean	95.5	Mean	88.6	Mean	91.9
Standard Error	0.64	Standard Error	1.48	Standard Error	1.69
Median	94	Median	87.5	Median	96
Mode	94	Mode	88	Mode	96
StandardDeviation	2.94	StandardDeviation	6.53	StandardDeviation	7.45
Sample Variance	8.76	Sample Variance	42.88	Sample Variance	54.55
Kurtosis	0.03	Kurtosis	-0.46	Kurtosis	1.51
Skewness	0.70	Skewness	-0.32	Skewness	-1.66
Range	11	Range	24	Range	24
Minimum	91	Minimum	75	Minimum	75
Maximum	104	Maximum	99	Maximum	99
Sum	1932	Sum	1780	Sum	1859
Count	20	Count	20	Count	20

Interpretation: In Table 1, three kinds of employees—HR generalists, HR managers, and chief HR officers—are summarized in terms of descriptive data. In statistics, key terms include mean, standard deviation, median, mode, sample variance, kurtosis, skewness, and range. From Table 1, the average score for an HR generalist is 95.5, for an HR manager it is 88.6, and for a chief

HR manager it is 91.9. HR Generalists have a standard deviation of 2.944705; HR Managers have a standard deviation of 6.532621; and Chief HR Officers have a standard deviation of 7.455555. HR generalist sample variation is 8.76, HR manager sample variance is 42.88, and Chief HR officer sample variance is 54.55.

Analytics Tool

Groups	Count	Sum	Average	Variance
HR Generalist	20	1932	95.5	8.76
HR Manager	20	1780	88.6	42.88
Chief HR officer	20	1859	91.9	54.55

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	578.13	2	289.1	8.03	0.0008	3.15
Within Groups	2050.6	57	35.97			

Interpretation: Three levels of various groups, including HR Generalist, HR Manager, and Chief HR Officer levels, are taken into account for evaluation in this case. There are 20 samples total, 20 from each group. HR manager Group mean is 88.9, and variation is 42.93, while Chief HR officer mean is 92.9, and variance is 56.0. The mean for HR generalist is 96.5, and variance is 8.78. The total of the squares between groups is 578.13, the sum of the squares within groups is 2050.6, there are 2 degrees of freedom between groups, and there are 57 degrees of freedom within groups. The mean square inside a group is 35.97, whereas the mean square across groups is 289,0667. F is equal to 8.035111. 3.158843 is the F Critical value. 0.000843 is the p value.

Ho-(Null Hypothesis) when it comes to enhancing human resources using data analytics principles, there are no appreciable differences across the various levels of managers.

Alternate Hypothesis H1:

Different levels of management have quite different perspectives on how to use data analytics to improve human resources.

The probability p value is less than 0.05, as shown using the aforementioned ANOVA statistical technique, hence we must accept the alternative hypothesis and reject the null hypothesis. So, it has been established that there are considerable differences amongst managers at different levels when it comes to notions for improving human resources using data analytics.

Ho-(Null Hypothesis) - when it comes to enhancing human resources using data analytics principles, there are no appreciable differences across the various levels of managers.

Alternate Hypothesis H1:

Different levels of management have quite different perspectives on how to use data analytics to improve human resources.

The probability p value is less than 0.05, as shown using the aforementioned ANOVA statistical technique, hence we must accept the alternative hypothesis and reject the null hypothesis. So, it has been established that there are considerable differences amongst managers at different levels when it comes to notions for improving human resources using data analytics.

Conclusion: The application of data analytics techniques to human resource management is crucial. The HR department can make wise judgements thanks to statistical analytics. The notion of predictive analytics is crucial to organisations. [12] This leads us to the conclusion that the HR process begins with hiring, selecting, training, placing, promoting, transferring, reviewing performance, and so on. The use of data analytics is extremely beneficial in all facets of HR.

Abbreviations

HRA-Human Resource Analytics HRM-Human Resource Management ANOVA Analysis of Variance

3. References

- Ben-Gal, H.C. (2018), "An ROI-based review of HR analytics: practical implementation tools", *Personnel Review*
- Bhattacharyya, D.K. (2017), *HR Analytics: Understanding Theories and Applications*. New Delhi: SAGE Publications.
- Chib, S. (2019), "Monograph on HR reporting using using HR dashboards", *International Journal of Scientific and Research Publications*.
<https://www.valamis.com/hub/hr-analytics>
- Malla, J. (2018), "HR Analytics Center of Excellence", *International Journal of Business, Management and Allied Sciences*, Vol. 5, 282-284.
- Kirtane, A. (2015), "corporate sustainable HR Analytical practices", *Journal of Management & Administration Tomorrow*, Vol. 4, No. 1, pp. 33-40.
- Levenson, A.R (2005), "Harnessing the power of HR analytics: why building HR's analytics capability can help it add bottom-line value", *Center for Effective Organizations*, Vol. 4, No. 3, pp. 3-12.
- Lochab, A., Kumar, S. and Tomar, H. (2018), "Impact of Human Resource Analytics on Organizational Performance: A Review of Literature Using R-Software", *International Journal of Management, Technology And Engineering*, Vol. 8, pp. 1252-1261.
- Malla, J. (2018), "HR Analytics Center of Excellence", *International Journal of Business, Management and Allied Sciences*, Vol. 5, 282-284.
- Mohammed, A.Q. (2019), "HR analytics: a modern tool in HR for predictive decision making", *Journal of Management*, Vol. 6, No. 3, pp. 51-63.
- Momin, W.Y.M. and Mishra, K. (2016), "HR analytics: Re-inventing human resource management", *International Journal of Applied Research*, Vol. 2, No. 5, pp. 785-790.
- Opatha, H.H.D.N.P. (2009), *Human Resource Management: personnel*. Sri Lanka: University of Sri Jayewardenepura