

Subjectivity Bias Elimination in Employee Appraisal Process – Role of People Analytics

Debadrito Saha

MBA Student, Symbiosis Institute of Business Management, Pune; Symbiosis International (Deemed University), Pune, India

*Corresponding author: iamdebadrito@gmail.com (Debadrito Saha)

ARTICLE INFO

Key Words: *Human Resource Analytics, Appraisal Process, Performance Management, Human Subjective Bias, Objective Decision Making.*

ABSTRACT

Purpose: This research serves the purpose of dealing with different types of Human Subjective Biases in Performance Management System by interview-based analysis and content analysis depending upon inputs from renowned HR professionals and then to determine if HR Analytics can help the HR practitioners in objective-decision making rather than intuition in PMS.

Design/Methodology/Approach: Focused-Group-Interview approach is followed here to acquire in-depth information about Subjectivity Bias Elimination in Employee Appraisal Process and how the same can be mitigated with the help of People Analytics.

Findings: This research will reveal the truth of erroneous subjective judgments based on instincts and how HR Analytics can help the HR practitioners in objective decision making rather than intuition in PMS.

Originality/ Value: This research identifies factors leading to Subjectivity Bias in Employee Appraisal Process. It suggests updated criteria for HR professionals to mitigate subjectivity bias in Employee Appraisal Process with help of People Analytics.

Received 01.09.2022; Accepted 11.10.2022

DOI: [10.48165/gmj.2022.16.2.6](https://doi.org/10.48165/gmj.2022.16.2.6)

Copyright @ Gyan Management Journal (acspublisher.com/journals/index.php/gmj)

Introduction

The improvement of the efficiency and performance of an employee is closely tied with the performance evaluations during the Performance Appraisal process (Latham and Mann, 2006). An inaccurate Performance Appraisal accounts for the discontentment of the employees which is why there is a high attrition rate just after the yearly appraisal comes out. A biased Performance Appraisal process creates a hindrance for evidence based ethical decision-making process which accounts for the dissatisfaction of the employees, which in turn accounts for employee outcomes in a negative way like lower commitment levels and higher turnover ratio (Idowu, 2017). A biased Performance Appraisal system impacts an organization as well as its employees negatively (Kaufman and Miller, 2010) because it leads to the progression of an employee over others in an unfair manner (Brown et al., 2010), and thus limits the organization's capability to nurture its top talents and implementation of the succession planning (Sharma et al., 2003). The cognitive ability of the managers to recall an employee's performance over a timespan accounts for an inaccurate Performance Appraisal as it leads to observational inaccuracy (Sharma and Sharma, 2017) and reduction of the lifetime value of an employee (Bell and Arthur, 2008) which ultimately results in the ineffectiveness of the Performance Appraisal system (Ledford et al., 2016). Different types of Biases are very much prevalent during the time of Performance Appraisal. All the biases are bad – this is a misconception because many of them help to make decisions in a quick (Coco et al., 2011) and time-saving manner (Donaldson and Grant-Vallone, 2002). But many a time, harmful human biases account for unconscious errors in the process of collection of the data and when the distorted data is used in the appraisal process, it hampers the process of performance management (Delery and Shaw, 2001) and optimization of the collaboration among the employees (Gudmundsson and Lechner, 2003), which can be plugged with HR Analytics.

The purpose of this research is to learn more about implementing HR Analytics into Performance Management Systems in various organizations around the world to reduce the effect of various types of subjective biases. The focus group interview approach was

utilized in this study to obtain in-depth information. This study's participants include 28 seasoned Human Resource Professionals (26 from India, 1 from United Kingdom and 1 from Japan) from diverse renowned organizations with employee strength ranging from less than 1000 to more than 0.1 million.

Literature Review

The improved efficacy of Performance Management Systems enabled by HR Analytics has not been fully conceived in diverse literatures, necessitating more study in this area. Employee appraisals take place in complicated social systems. Thus, successful assessments are those that are valid, trustworthy, free of prejudice, and relevant. The accuracy of performance evaluations and observations, as well as the capacity to enhance employee performance, constitute appraisal effectiveness. All the Human Resource Practitioners who are interviewed for this research, agreed that their individual PMS are not 100% foolproof and there is sufficient scope of further incorporation of Analytics. Most of the interviewees also agreed on a term that various types of subjectivity biases are still prevalent in the Performance Management System. The most interfered subjectivity biases are,

Strictness Bias: Strictness Bias accounts for attributing low ratings in every parameter of an appraisal (DeNisi and Pritchard, 2006), which eventually accounts for a by and large negative impression of a particular employee (Kromrei, 2015) and serious implications in HR decision making (Jiang et al., 2012).

Leniency Bias: Leniency Bias leads to providing high inflated ratings in all the parameters of an appraisal, which creates a pseudo positive sense of an employee (McGregor, 1987).

In-Group Bias: In-Group Bias is a partiality of considering the staff of own team as more proficient than staff not of a particular team (Brewer, 1979).

Central Tendency Bias: It is the main cause of a normally distributed and bell-shaped overall performance curve (Aral et al., 2012). It is related to scoring each of the questions on a scale near the center or average (Deshmukh, 2019).

Horn Effect: Horn effect denotes the tendency where the assessors mark everything on the low end of performance scale (Angrave et al., 2016) because of a single negative parameter considered (Sundar et al., 2014).

Selective Perception: Managers selectively construe what they see depending upon individual attitudes, interests, and experience in Selective Perception or “Similar to me bias” which leads to an erroneous assessment of an employee (Dusterhoff et al., 2014).

Halo Effect: Halo Effect leads to drawing an impression by and large about an individual because of a single characteristic (Coombs and Holladay, 2006).

Contrast Effect: Contrast Effect denotes the evaluations of an employee’s characteristics that are either underestimated or exaggerated by the comparisons with other employees of late encountered (Palmer and Gore, 2014) who rank either lower or higher related to similar characteristics.

Projection: Projection denotes attributing evaluator’s own characteristics to the employees whom he or she evaluates (Bazinger and Kühberger, 2012). Same religions, same gender, same political preference etc. are part of projection which accounts for subjective judgement (Kaifi and Noori, 2011).

Stereotyping: Stereotyping is related to evaluating an employee on the conformity with the evaluator’s perception (Walton et al., 2014) of the team in which the particular employee belongs to.

Spillover Effect: Spillover Effect is the resultant effect of an employee’s performance in the previous appraisal cycle. A well performance in the preceding appraisal cycle accounts for an artificially elevated rating even if the performance is average in the present appraisal cycle (Nilsson et al., 2017). The opposite incident is also factual in performance appraisal system where the negative performance of previous year can misconstrue a good performance in the present appraisal cycle (Wood et al., 2013).

Depending upon the interview it has been found that still many of the organizations (only the organizations whose HR professionals are interviewed for this research), especially startups of having number of employees less than 1000 use Open Box Performance Appraisal System, the most used Performance Appraisal

System in different organizations till now. It is open to prejudiced parameters (Saffie-Robertson and Brutus, 2014) as it mainly depends on the qualitative techniques instead of the quantitative ones (Hasan and Huq, 2010). In the Open Box Performance Management System, the employees have to answer ambiguous open-ended questions about their job descriptively in a blank space or open box which leads to subjective judgment and evaluation discrepancy. There is a high chance of Subjectivity Bias in Performance Appraisal when the criteria and the contexts for evaluations are indistinct and depending on gut feeling (Javidmehr and Ebrahimpour, 2015) and thus it accounts for the Idiosyncratic-Rater Effect (Paramesh et al., 2020) where assessment and rating is variable and depending upon managers and other evaluators (Van der Heijden and Nijhof, 2004). The assessors tend to rely on so-called stereotypes such as gender, race, and ethnicity at the time of making decisions (Jacobs et al., 2014) in the absence of an Objective Performance Management System (McKenzie et al., 2019). But it is to be mentioned that it is not always possible to eliminate the subjectivity factors in a Performance Appraisal system because taking into account some of the subjectivity factors (Fedor et al., 2001) which capture some crucial parameters that an assessor cannot capture through a purely objective and quantifiable Appraisal process.

Human Resource executives must prepare their teams and organizations for an analytics-driven workflow before the operational and mathematical components can take effect. While discussing the need for analytics with the C-suite is one aspect of the shift, the other is preparing the team to cope with the data that will be used to measure the change. This is a critical component of both HR’s digital transformation and the company’s overall digital transformation. Human resource automation began in the 1980s by the virtue of automation of few procedures and various responsibilities associated with administration (Keeping and Levy, 2000). These days were just the early phases of Human Resource Information Systems (HRIS) adoption, which sparked an entire movement around how HR might automate more of its activities. Academics began to take an interest in these technical enablers at this point as Data-driven solutions are assisting in the resolution of several significant HR and business issues, as well as in making better and more informed decisions. Introduction of

the Human Resource Information System (HRIS) radically transformed different functionalities of the Human Resource management. Then an advent of analytics – HR Analytics further transforms the Human Resource functionalities. HR Analytics is an IT warranted process of managing workforce for visualization and statistical analyses of data of Human Resource (Marler and Boudreau, 2017), which have a substantial influence on business and thus enables in decision making process backed by data which in turns helps in determining the specific HR drivers that impact the business outcomes in a positive way ultimately.

Objectives of the Study

The objective of this research paper, an interdisciplinary study of Social Psychology and Information Technology, is to deal with different types of Human Subjective Biases by focused group interview-based analysis and content analysis depending upon inputs from renowned HR professionals and then to determine if Human Resource Analytics can help the Human Resource practitioners in objective decision making rather than intuition in Performance management System.

Research Methodology

The focus group interview procedure with predefined questionnaires was applied in this research to acquire in-depth information about organizations' progress and approach in incorporating People Analytics in Performance Management System. This study's participants include 28 seasoned Human Resource Professionals (26 from India, 1 from United Kingdom and 1 from Japan) from 28 diverse renowned organizations with employee strength ranging from less than 1000 to more than 0.1 million. The organizations have been divided into six segments with respect to number of employees.

Table 1: Focused Group Interview Segment

Segment of the organization	Number of employees
Segment 1	<1000
Segment 2	1001 - 5000
Segment 3	5001 - 10001
Segment 4	10001 - 50000
Segment 5	50001 - 100000
Segment 6	>100001

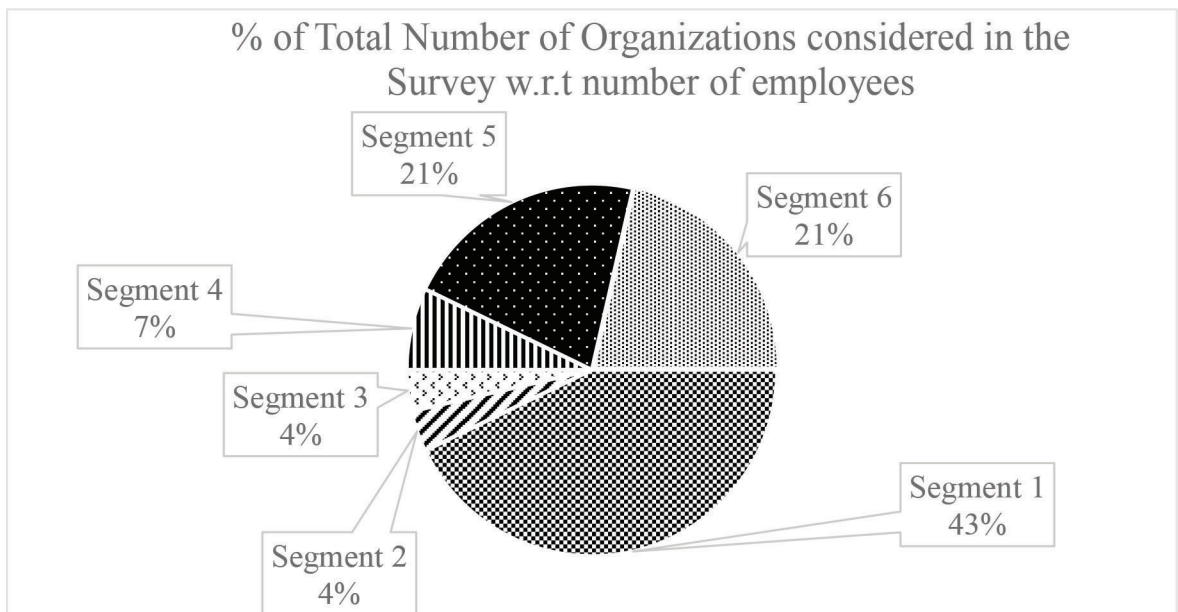


Fig. 1: % of Total Number of Organizations considered in the Survey w.r.t number of employees

Although gender of the interviewees, here the Human Resource Managers, does not matter much with respect to the parameters of this research, still to make it unbiased, the ratio of men and women interviewees are kept 50-50 in this research. The questions asked to them cover a significant portion of Performance Management including number of times performance is measured in the organization, how much analytics is utilized in this process, how many number of days analytics has been utilized in Performance Management System (if it is actually utilized in PMS at all), how analytics have improved Performance Management System of the respective organizations (if Analytics is incorporated in PMS at all), whether analytics has been able to recognize the High Potential employees of the organization and most importantly how much analytics has been able to curb the malicious effect of subjective biases in the Performance Management process of the respective organizations. The future of People Analytics in Performance Management System in a much broader scope and how it can be more effectively utilized in Virtual Work environment are also a part of this research. Additionally, how People Analytics is providing Performance Management System a more strategic platform as a major component of HR by providing evidence-based insights to assist businesses achieve strategic goals and anticipated results is very much within the purview of this research.

Findings and analysis

How much HR analytics is able to diminish Subjectivity Bias in the Performance Appraisal Process is very much dependent upon how superior or inferior the data is because the concept of “Garbage In Garbage Out” is very much prevalent in HR Analytics (Stone et al., 2015). Organizations collect data through various information systems along with HRIS powered by the advent of Information Technology. But these are of little use, if there is an inappropriate analysis of data (Pape, 2016). So, the agenda of data-oriented leadership should be to collect and analyze the data which is important rather than what data is easy to capture (LaValle et al., 2011) and it is extremely important to

have a data-driven culture for decision making (Chong and Shi, 2015). Analytics implementation needs a strong visionary leader as well as appropriate access to diverse resources. In this regard, a change agent is required to a great extent in order for analytics to be employed properly. So, the main focus should be fostering evidence-based decision making and developing an analytical mindset in and around various Human Resource functionalities.

HR Analytics is unquestionably the proper path to make more meaningful and strategic decisions, which boosts an organization's Performance Management System. Depending upon the responses from the Human Resource managers considered here in this research, it has been found that the considered organizations measure employee performance in various timeframes, i.e., once in a year (60.7% of the considered organizations), twice in a year (28.6% of the considered organizations) and quarterly (10.7% of the considered organizations). All the Human Resource practitioners considered here unanimously agreed that measuring performance only at the end of year invites the perilous effects of more subjectivity biases and too frequent measurement did not at all satisfy the relevance of PMS. Additionally, majority of the respondents (67%) agreed that in order for analytics to completely support the Performance Management System, the organization must first achieve a certain level of maturity in analytics in order to accomplish the anticipated Performance management goals and thus inclusive strategy in the big picture. The absence of data analytical capabilities inside the Human Resource department is a key issue in the adoption of HR analytics in Performance Management Systems, and this has been a prominent worry among HR professionals who answered to this research's questionnaire.

None of the Human Resource professionals admit that the PMS of their respective organizations is cent percent foolproof. Here the organizations are subdivided into four segments depending upon the accurateness (0% - 25%, 26% - 50%, 51% - 75%, 76% - 100%) of the PMS as per the research conducted.

It has been discovered that, the Performance Management System of most of the start-up organizations

or the organizations whose employee strength is less than 1000 considered here are less foolproof than the organizations whose employee strength is more.

As high as 42.9% of the organizations considered here, either don't rely or minimally rely on analytics in Performance Management System which leads to more subjective judgement. Whereas, the rest 57.1% of the organizations considered here use analytics somehow in their respective Performance Management System. But if we consider the segment of organizations where the number of employees is less than 1000 (Segment 1, mentioned earlier) then as high as 76.4% of the organizations under-utilize the

power of analytics in their respective Performance Management Systems. The presence of the subjective elements in the HR-Score Card accounts for uncertainty in the reward system (Becker et al., 2011) and thus quid pro quo and favoritism play a central role instead of actual parameters for performance evaluation as per the principal agent model (Kremer, 2018). This favoritism can be eliminated by objective evaluation criteria and objective performance measurement (Handa and Garima, 2014). The timeframe of using analytics in Performance Management System among 57.1% of the organizations considered here who have been using analytics varies.

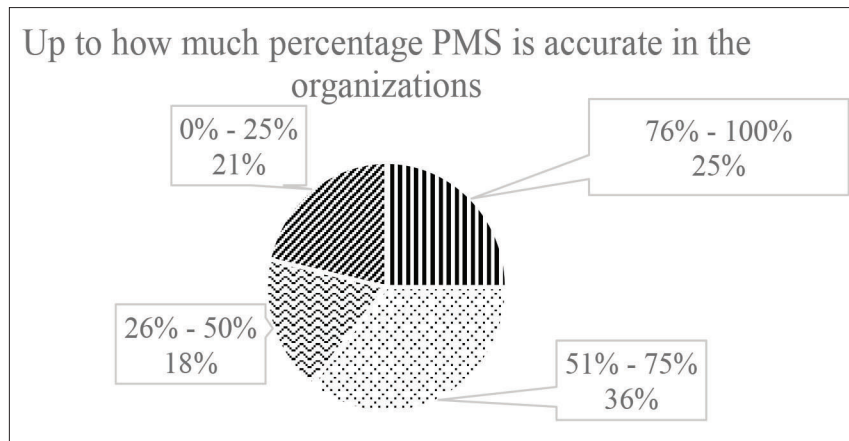


Fig. 2: Up to how much percentage PMS is accurate in the organizations

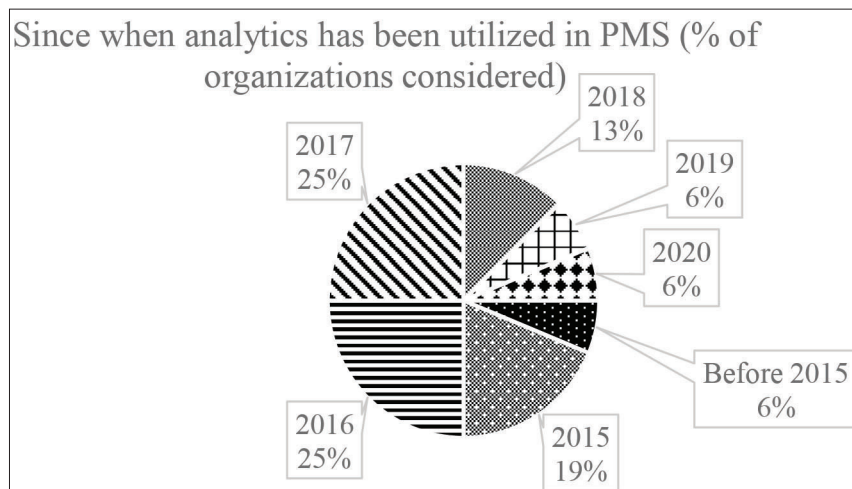


Fig. 3: Since when analytics has been utilized in PMS (% of organizations considered)

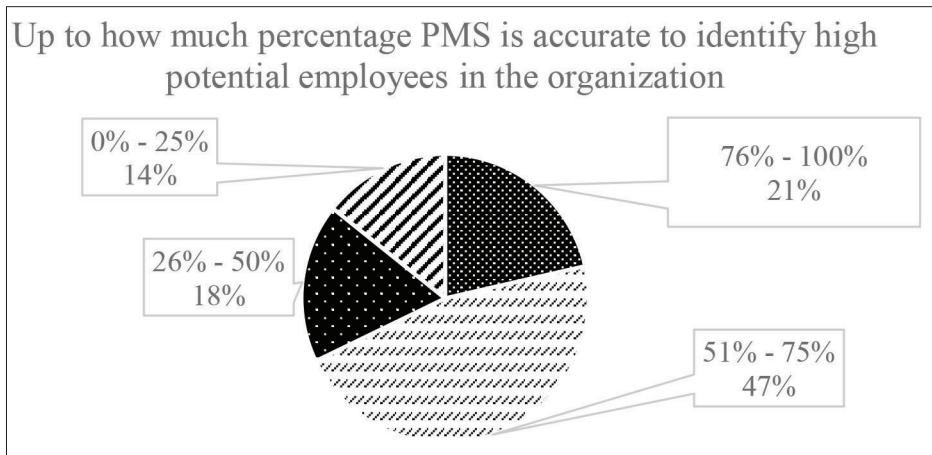


Fig. 4: Up to how much percentage PMS is accurate to identify high potential employees in the organization

Although among the 28 participants, considered in this interview, 3/4th of them somehow agreed that PMS is somehow improved by Analytics in their respective organizations, but their response widely vary considering the efficacy of analytics in PMS in the goal of recognizing the High Potential employees by elimination or at least minimization of subjective judgement.

Incorporation of Analytics into the procedure of Performance Appraisal is beneficial to organizations as well as the workforce because the perception of the workforce about the Performance Appraisal process heavily depends upon the fairness and accurateness of the Performance Appraisal Process (Bose, 2015). HR Analytics helps to make the appraisal process fairer by elimination of different types of biases but there still a very large scope for the organizations to improve their analytics and thus their respective PMS. Similarity happens in elimination of various biases with the help of HR analytics as 59.3% of the interviewed Human Resource practitioners give the verdict that still their respective Performance Management Systems have high percentage of human bias. HR Analytics in Performance Appraisal gathers enormous importance after 2020 when the pandemic disrupted the world. As a result of this pandemic, the need for the gig workers increases manifolds, and work from home becomes the new norm. As the chance of face-to-face discussion and meeting becomes less, so the chance of physical supervision of subordinates by managers is not easy

which culminates into distorted and discriminatory Appraisal depending upon inaccurate and subjective judgments of the managers. Here comes the importance of HR Analytics. Employees' performance analysis and career-alignment can be mapped with the help of HR Analytics and thus it helps the employers to find the right fit for a particular job and keeps them more engaged by satisfying the goal of Employee Engagement (Karmańska, 2020). 92.9% of the responders in this survey mentioned that they depend more on Analytics in Virtual mode of work created by pandemic and 89.3% of the respondents think usage of HR Analytics has a much broader scope than the current one in their respective organizations and it can be game changer in PMS of their respective organization in the coming years. The different levels of each type of analytics have created different values in a Performance Management System, but the more an organization progresses to prescriptive analytics from descriptive one, the greater the additional value is created for the organization and its overall performance as a whole (Ben-Gal, 2019). HR Analytics being reactive helps the managers to leverage real-time data analytics for identifying the performance curve of an employee. Leveraging analytics in PMS allows an employer to discover performance gaps throughout an evaluation cycle and strive to close them using data such as increasing tardiness, missing assignments, and other issues. Later, these characteristics may be evaluated and discussed with management and staff

to assist increase overall performance and productivity (Zeidan, 2016). Thus, it helps in providing immediate feedback which helps in the improvement of employee morale in the short term and development of his/her career in the long term and thus accentuate the insights of the business from data analytics.

Discussions and Conclusions

The digital era has enabled HR practitioners to acquire and analyze huge amounts of data in order to solve complicated HR-related problems and then make better decisions. None contradicts that fair Compensation Management and Performance Appraisal system are extremely important in any organization because it helps to align individual's performance with the objectives of the organization. Performance management, if not done carefully and accurately, can have a severe adverse impression on the enthusiasm level of the good performers. If the good performance of an employee is not acknowledged by his/her organization, his/her performance can plummet significantly. If the Performance Appraisal process does not help to differentiate a good performance from an ordinary performance, then the good performer does not garner motivation to perform well again. On the contrary, if the Performance Appraisal process is the true reflection of the knowledge, skill, and abilities of the workforce; then the employees of the organization accept the Performance Appraisal System in a fair manner. Additionally, it creates a value addition for the supervisor because he/she would not need to find an alternative way for performance improvement of the employees because the workforce is more likely to admit the feedback provided by the supervisor.

So, Performance Appraisal System must have more objective and quantifiable criteria instead of subjective ones and HR Analytics helps to reach that goal of objectivity. Traditionally, performance evaluation techniques such as the Bell Curve Method have been used. These techniques are subjective and time-consuming. Rater bias, inaccuracy, and insufficient feedback make such approaches unsuitable for today's dynamic virtual work settings. This is where HR analytics can help. HR analytics may aid in the performance evaluation process by increasing openness in the review procedures

through the use of data-backed judgments, increasing the entire process legitimacy. Utilizing Analytics in a Performance Management System can additionally help businesses to create yearly KPIs and then properly assessing them during appraisals. HR managers may identify and then incentivize higher performers by successfully drawing insights from existing data, resulting in lower turnover. HR Analytics, consisting of various modeling tools such as ROI Analytics, Cost-benefit Analytics, Behavioral modeling, helps in unbiased decision-making in the Performance Appraisal System. Thus, HR Analytics proves its mettle to capture comprehensive cross-functional data and hence helps the Human Resource Managers to gain insights about the fact-based decisions strategically instead of intuitions.

References

- 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*, vol. 26, pp. 11–21.
- Aral, S., Brynjolfsson, E., & Wu, L. (2012). Three-way complementarities: Performance Pay, human resource analytics, and information technology. *Management Science*, vol. 58, pp. 913–931.
- Bazinger, C., Kühberger, A. (2012). “Is social projection based on simulation or theory? Why new methods are needed for differentiating”, *New Ideas in Psychology*, vol. 30, pp. 328-335.
- Becker, B. E., Huselid, M. A., Ulrich, D. (2011). “The HR Scorecard: Linking People, Strategy, and Performance”, *Harvard Business Review*, Source: <https://hbswk.hbs.edu/archive/the-hr-scorecard-linking-people-strategy-and-performance>
- Bell, S. T., Arthur, J. W. (2008). “Feedback acceptance in developmental assessment centers: the role of feedback message, participant personality and affective response to the feedback session”, *Journal of Organizational Behavior*, vol. 29, No. 5, pp. 681-703.
- Ben-Gal, H. C. (2019). “An ROI-based review of HR analytics: practical implementation tools”, *Personnel Review*, vol. 48, No. 6, pp. 1429-1448.
- Bose, M. T. (2015). “Growing impact of human capital analytics on modern economy: a generic overview”, *Journal of Business and Management*, vol. 17, No. 1, pp. 11-13.

- Brewer, M. B. (1979). "In-group bias in the minimal inter-group situation: A cognitive-motivational analysis", *Psychological Bulletin*, vol. 86, No. 2, pp. 307-324.
- Brown, M., Hyatt, D., Benson, J. (2010) "Consequences of the performance appraisal experience", *Personnel Review*, vol. 39, No. 3, pp. 375-396.
- Chong, D., Shi, H. (2015). "Big data analytics: a literature review", *Journal of Management Analytics*, vol. 2, No. 3, pp. 175-201.
- Coco, C. T., Jamison, F., & Black, H. (2011). Connecting people investments and business outcomes at Lowe's: Using value linkage analytics to link employee engagement to business performance. *People & Strategy*, vol. 34, pp. 28-33.
- Coombs, W. T., Holladay, S. J. (2006). "Unpacking the halo effect: reputation and crisis management", *Journal of Communication Management*, vol. 10, No. 2, pp. 123-137.
- Delery, J. E., & Shaw, J. D. (2001). The strategic management of people in work organizations: Review, synthesis, and extension, *Research in personnel and human resources management* (Vol. 20, pp. 165-197).
- DeNisi, A. S., Pritchard, R. D. (2006). "Performance appraisal, performance management and improving individual performance: a motivational framework", *Management and Organization Review*, vol. 2, No. 2, pp. 253-277.
- Deshmukh, T., Patel, J. (2019). "Research Paper On Bell Curve Method Of Performance Management", *International Journal of Management*, vol. 10, No. 1, pp. 38-42.
- Donaldson, S. I., Grant-Vallone, E. J. (2002). "Understanding Self-Report Bias In Organizational Behavior Research", *Journal of Business and Psychology*, vol. 17, No. 2, pp. 245-250.
- Dusterhoff, C., Cunningham, J. B., MacGregor, J. N. (2014). "The effects of performance rating, leader-member exchange, perceived utility, and organizational justice on performance appraisal satisfaction: applying a moral judgment perspective", *Journal of Business Ethics*, vol. 119, No. 2, pp. 265-273.
- Fedor, D. B., Davis, W. D., Maslyn, J. M., Mathieson, K. (2001). "Performance improvement efforts in response to negative feedback: the roles of source power and recipient self-esteem", *Journal of Management*, vol. 27, No. 1, pp. 78-82.
- Gudmundsson, S. V., Lechner, C. (2003). "Cognitive biases, organization, and entrepreneurial firm survival", *European Management Journal*, vol. 18, No. 2, pp. 19-29.
- Handa, D., Garima, A. (2014). "Human resources (HR) analytics: emerging trends in HRM", *International Journal of Research in Commerce & Management*, vol. 5, No. 6, pp. 59-62.
- Hasan, M. T., Huq, M. M. (2010). "Quantification of Qualitative Parameters for Performance Appraisal: A Case Study", *ASA University Review*, vol. 4, No. 2, pp. 39-45.
- Idowu, A. O. (2017). "Effectiveness of Performance Appraisal System and its Effect on Employee Motivation", *Nile Journal of Business and Economics*, vol. 8, No. 7, pp. 69-80.
- Jacobs, G., Belschak, F. D., Den Hartog, D.N. (2014). "(Un)ethical behavior and performance appraisal: the role of affect, support, and organizational justice", *Journal of Business Ethics*, vol. 121, No. 1, pp. 63-76.
- Javidmehr, M., Ebrahimpour, M. (2015). "Performance appraisal bias and errors: The influences and consequences", *International Journal Of Organizational Leadership*, vol. 4, pp 286-302.
- Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal*, vol. 55, pp. 1264-1294.
- Kaifi, B.A., Noori, S. (2011). "Organizational Behavior: A Study on Managers, Employees, and Teams", *Journal of Management Policy and Practice*, vol. 12, No. 1, pp. 88-96.
- Karmańska, A. (2020). "The Benefits of HR Analytics", *Research Papers Of Wroclaw University Of Economics And Business*, vol. 64, No. 8, pp. 25-34.
- Kaufman, B. E., and Miller, B. I. (2010). Firm's choice of HRM practices: Economic meets strategic human resources management. *Industrial and Labor Relations Review*, Vol. 64, pp. 526-577.
- Keeping, L. M., Levy, P. E. (2000). "Performance Appraisal Reactions: Measurement, Modeling, and Method Bias", *Journal of Applied Psychology*, vol. 85, No. 5, pp. 708-723.
- Kremer, K. (2018). "HR analytics and its moderating factors", *Budapest Management Review*, vol. 49, No. 11, pp. 62-68.

- Kromrei, H. (2015) "Enhancing the Annual Performance Appraisal Process: Reducing Biases and Engaging Employees Through Self-Assessment", *Performance Improvement Quarterly*, vol. 28, No. 2, pp. 53-64.
- Latham, G. P., Mann, S. (2006). "Advances In The Science Of Performance Appraisal, Implications For Practice", *International Review of Industrial and Organizational Psychology*, vol. 21, No. 5, pp. 15-29.
- LaValle, S., Lesser, E., Shockley, R., Hopkins, M. S., Kruschwitz, N. (2011). "Big data, analytics and the path from insights to value", *MIT Sloan Management Review*, vol. 52, No. 2, pp. 25-32.
- Ledford, G. E., Benson, G., & Lawler III, E. E. (2016). Aligning research and the current practice of performance management. *Industrial and Organizational Psychology*, vol. 9, pp. 253-260.
- Marler, J. H., Boudreau, J. W. (2017). "An evidence-based review of talent analytics", *The International Journal of Human Resource Management*, vol. 28, No. 1, pp. 3-26.
- McGregor, D. (1987). "An uneasy look at performance appraisal", *Training & Development Journal*, vol. 41, No. 6, pp 66-69.
- McKenzie, L., Wehner, J., Correll, S. J. (2019). "Why Most Performance Evaluations Are Biased, and How to Fix Them", *Harvard Business Review*, Source: <https://hbr.org/2019/01/why-most-performance-evaluations-are-biased-and-how-to-fix-them>
- Nilsson, A. Bergquist, M., Schultz, W. P. (2017). "Spillover effects in environmental behaviors, across time and context: a review and research agenda", *Environmental Education Research*, vol. 23, No. 4, pp. 573-580.
- Palmer, J. K., Gore, J. (2014). "A Theory of Contrast Effects in Performance Appraisal and Social Cognitive Judgments", *Psychological Studies*, vol. 59, No. 4, pp. 323-336.
- Pape, T. (2016). "Prioritizing data items for business analytics: Framework and application to human resources", *European Journal of Operational Research*, vol. 252, pp. 687-698.
- Paramesh, A. H., Samartha, V., Mathukutti, R. T., Hawaldar, I. T. (2020). "Manifestation of idiosyncratic rater effect in employee performance appraisal", *Problems and Perspectives in Management*, vol. 18, No. 3, pp. 55-67.
- Saffie-Robertson, M.C., Brutus, S. (2014). "The impact of interdependence on performance evaluations: the mediating role of discomfort with performance appraisal", *The International Journal of Human Resource Management*, vol. 25, No. 3, pp. 465-470.
- Sharma, A., Sharma, T. (2017). "HR analytics and performance appraisal system: A conceptual framework for employee performance improvement", *Management Research Review*, vol. 40, No. 6, pp.684-697.
- Sharma, P., Chrisman, J. J., Chua, J. H. (2003). "Succession Planning as Planned Behavior: Some Empirical Results", *Family Business Review*, vol. 16, No. 1.
- Stone, D., Deadrick, D., Lukaszewski, K., Johnson, R. (2015). "The influence of technology on the future of human resource management", *Human Resource Management Review*, vol. 25, pp. 216-231.
- Sundar, A., Kardes, F. R., Noseworthy, T. J., Clarkson, J. J. (2014). "Inferences on Negative Labels and the Horns Effect", *Advances in Consumer Research*, vol. 42, pp. 377-383.
- Van der Heijden, B. I., Nijhof, A.H. (2004). "The value of subjectivity: problems and prospects for 360-degree appraisal systems", *The International Journal of Human Resource Management*, vol. 15, No. 3, pp. 493-501.
- Walton, G. M., Murphy, M. C., Ryan, A. M. (2014). "Stereotype Threat in Organizations: Implications for Equity and Performance", *Annual Review of Organizational Psychology and Organizational Behavior*, vol. 18, No. 5, pp. 55-69.
- Wood, S., Braeken, J., Niven, K. (2013). "Discrimination and well-being in organizations: testing the differential power and organizational justice theories of workplace aggression", *Journal of Business Ethics*, vol. 115 No. 3, pp. 617-630.
- Zeidan, S., Itani, N. (2016). "HR Analytics and Organizational Effectiveness", *International Journal on Emerging Technologies*, vol: 11, No: 2, pp. 683 - 688.