HR Metrics & Analytics
MSB21T2001

Index-Session1

S. No.	Specifications	Slide Number
1	Module 5 (HR ANALYTICS AND PREDICTIVE MODELLING)-Content	3
2	Session Objectives	4
3	Recap	5
4	Concept Discussion	6-7
5	Visualization of the concept	8
6	Demonstration	9- 16
7	Thanks	17

Module 5
HR ANALYTICS AND PREDICTIVE MODELLING

- **Basics of HR analytics and predictive modelling**

- **Different phases of HR analytics and predictive modelling**

- **Examples of predictive analytics**

- **Data and information for HR predictive analysis**

- **Predictive analytics tools and techniques**

- **Practical process of using predictive analytics for HR decisions**

Session Objectives

- Understanding the process of using metrics, analytics and

  predictive analytics by using big data.

- Examples Of Predictive Analytics

Recap

HR managers need to acquaint with the meaning and connotations of terms such as metrics, analytics and predictive analytic

Here again, briefly, we will examine these terms for pacing the discussions of this chapter.

- A metric is a fact, in terms of counts, percentages, ratios and so on. HR metrics help us in simple measurement, such as the level of employee engagement, attrition rate, performance score, employees' satisfaction level, training effectiveness score recruitment efficiency and so on. Therefore, metrics are capable only to track HR activities, particularly those which are quantifiable. Metrics cannot establish cause-effect relationships, namely, what causes employees' attrition and so on.

- Analytics refers to measurement and reporting facts or metrics over a time period, explaining how these relate to one another. HR analytics per se can study how each of the aforementioned HR metrics can drive or affect the performance of an organization, can we see any pattern in these HR metrics and so on. For finding proper answers to all these queries, along with the analytics, we also use statistical tests.

- Predictive analytics is a step forward, as with this we can even assess the probability of the future occurrence of an event which may have significant implications on HR decisions. Predictive analytics help in measuring predictive patterns of HR issues combining algorithms, metrics, data and so on with a forward-looking approach. It helps in solving problems that may occur in future, getting answer(s) to specific question(s). For example, with predictive analytics, we can identify talents who are likely to leave the job of the company in the next one year and find out what could be the appropriate HR initiatives to ensure the retention of such talents. All these are now important to ensure HR decisions are effective in future.

HR Analytics and Predictive Modelling

- Focus on analyzing predictive patterns of HR issues in terms of probability; it makes use of various statistical tools. For example, positive correlation indicates that one metric relates to another, while negative or inverse correlation indicates just the opposite.

- Predictive modelling for HR decisions: Focuses on the predictive patterns of HR issues, measuring probability and making use of various statistical tools

- Another term, i.e., big data denotes large and complex collection of data sets, which cannot be managed manually, and requires some database management or data processing solutions.

- With HR decisions becoming more and more complex, all-encompassing, and business and strategy aligned, big-data analysis for HR decisions help HR managers to get better insights.

HR Analytics and Predictive Modelling

- For any organization, HR analytics application follows certain distinct phases of activities.

- Although we cannot have a model-based approach for successful application of HR analytics, emulating the professional practices, we can have a stepped approach for data collection; data analysis; development of HR metrics, scorecards, dashboards and so on; understanding effectiveness in terms of KPIs by using analytics; understanding how value creation takes place by using predictive analytics and finally overall impact analysis.

- More or less, this approach can benefit organizations in structuring their journey through HR analytics and predictive modelling of HR decisions.

DIFFERENT PHASES OF HR ANALYTICS OR HR PREDICTIVE MODELLING

- Different phases of HR analytics from an organization's perspective can be described using the Bersin by Deloitte's maturity model (O'Leonard, 2013) of talent analytics. The model details the scientific progression from operational reporting to predictive analytics by using four distinct levels. We can also call it a roadmap for the gradual adoption of predictive analytics for human resources.

- These four distinct phases are as follows:

- The operational phase. This involves the task of operational reporting; say performance, compliance matters and so on. This is also known as reactive phase.

- Advanced reporting phase. This phase performs multidimensional analysis by using dashboards and others alike. In this phase, organizations also go for benchmarking. We also call this the proactive operational reporting phase.

DIFFERENT PHASES OF HR ANALYTICS OR HR PREDICTIVE MODELLING….

- Advanced analytics phase. This is the phase of proactive identification of problems or decisional issues for reaching to actionable solutions. In this phase, various statistical modelling techniques, root cause analysis and so on are performed for solving business issues. This is the phase from where we actually begin the use of HR analytics solutions to solve our business problems.

- Predictive analytics phase. In this phase, we develop predictive models, develop scenario plans, perform risk analysis and so on, integrating with strategic plans and alike. This is the phase where ultimately HR functions must focus on to derive the benefits of HR analytics.

- For the advanced analytics and predictive analytics phases, HR managers require strong statistical and data analysis skills. In this module, we will perform one case analysis by considering a specific HR issue, illustrating the phase-wise activities, for better understanding of the application of HR analytics and predictive analytics for futuristic HR decision-making.

EXAMPLES OF PREDICTIVE ANALYTICS

- To develop predictive models for HR decisions, right at the beginning, we critically study the data volume. This can be explained with the real-life corporate example.

- It is common for organizations to develop a risk model to understand who among the talents are vulnerable to attrition risk.

- Let us assume that a company has a headcount of 20,000, and the past records indicate that the voluntary annual attrition rate is 5 percent.

- Based on this information, we can deduce that our sample data size is 1,000 employees for those who may be at voluntary attrition risk.

- Now this data volume further needs refinement in terms of certain other parameters such as service seniority, performance level and so on.

- Let us assume we need to develop our predictive models for attrition risk measurement taking into account those talents who left the job of the company voluntarily over last five years.

- This increases our sample size to 5,000.

EXAMPLES OF PREDICTIVE ANALYTICS...

- Here, we may put one data filter, such as from this sample size, we will only consider those who have delivered performance at the 'exceeds expectation' level.

- Let us assume 50 percent of these employees performed at the 'exceeds expectation' level.

- This reduces our sample size from 5,000 to 2,500.

- To further filter the data, we may consider factoring of some demographic variables, such as age group, education level and so on.

- Further, the data filter can be demonstrated competencies in work that are reflected in their performance records.

- With all these, let us assume we could ultimately reach a figure of 500 headcounts for those who may be vulnerable to voluntary attrition risk.

- Now our predictive models will measure the probability of these identified talents (500 in numbers) retention with possible HR interventions such as new career development opportunities, new compensation and benefits plans, employee engagement programmes and so on.

Period-wise Attrition Rate -Graphical Presentation

We can elaborate our ideas by using the following graphical presentations.

A typical metric for talent attrition when plotted in a graph represents the number of talents who had voluntarily left the organization over the last four years. This is a fixed measurement in terms of absolute headcounts.
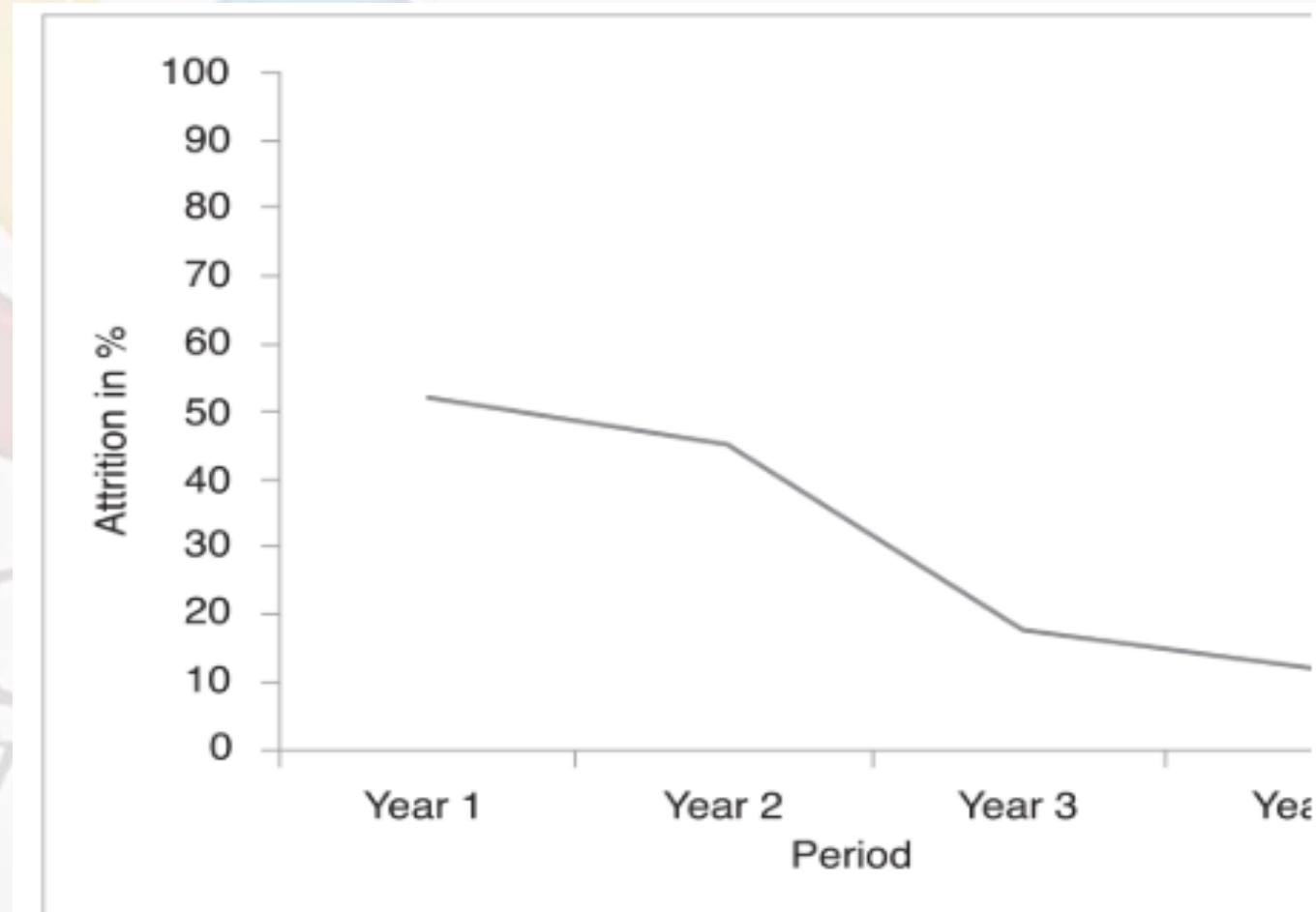
Correlation of Attrition Graphical Presentation

When we correlate the aforementioned data sets or metrics by using analytics, we can present the data as shown in Figure -shows a graph that plots both voluntary (the upper line) and involuntary (the lower line) attritions over a time period, showing how they correlate with each other.
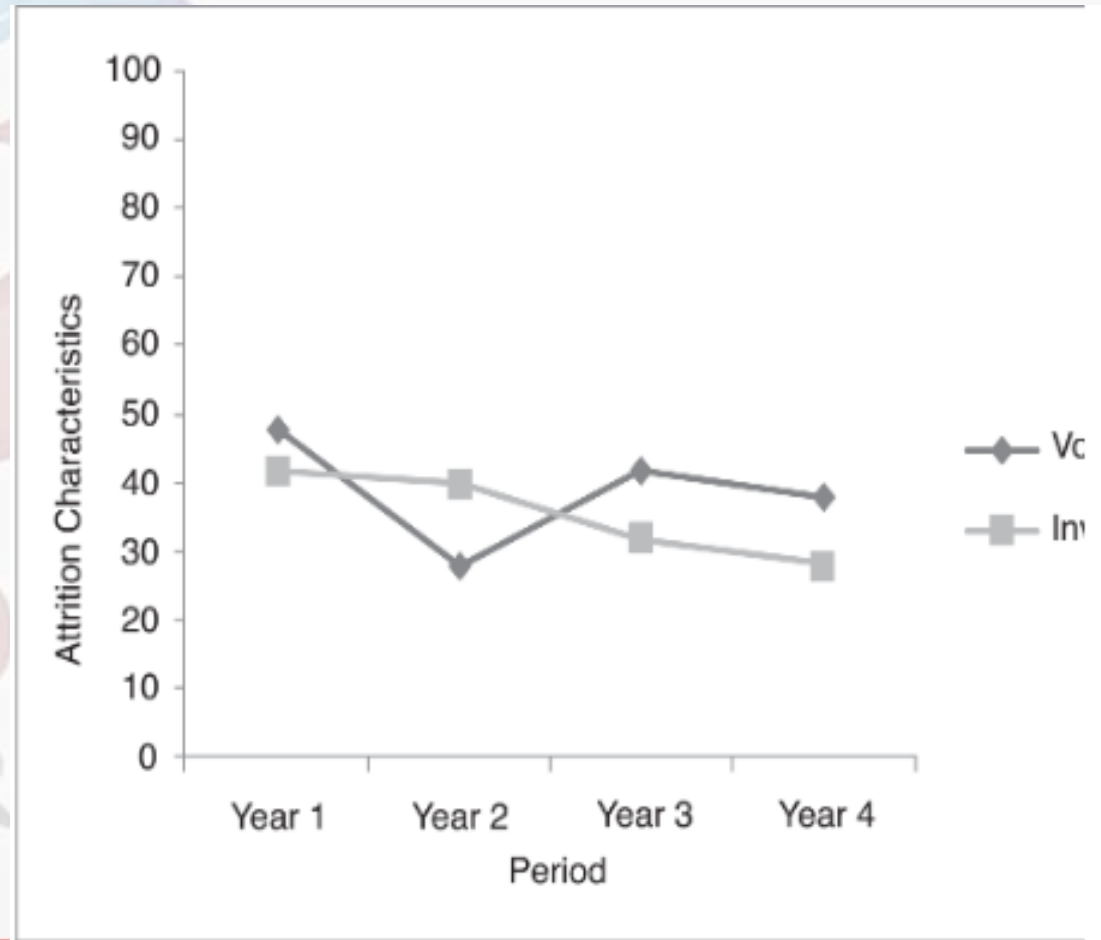
Analytics can also help in measuring inverse correlation, time series analysis and so on.
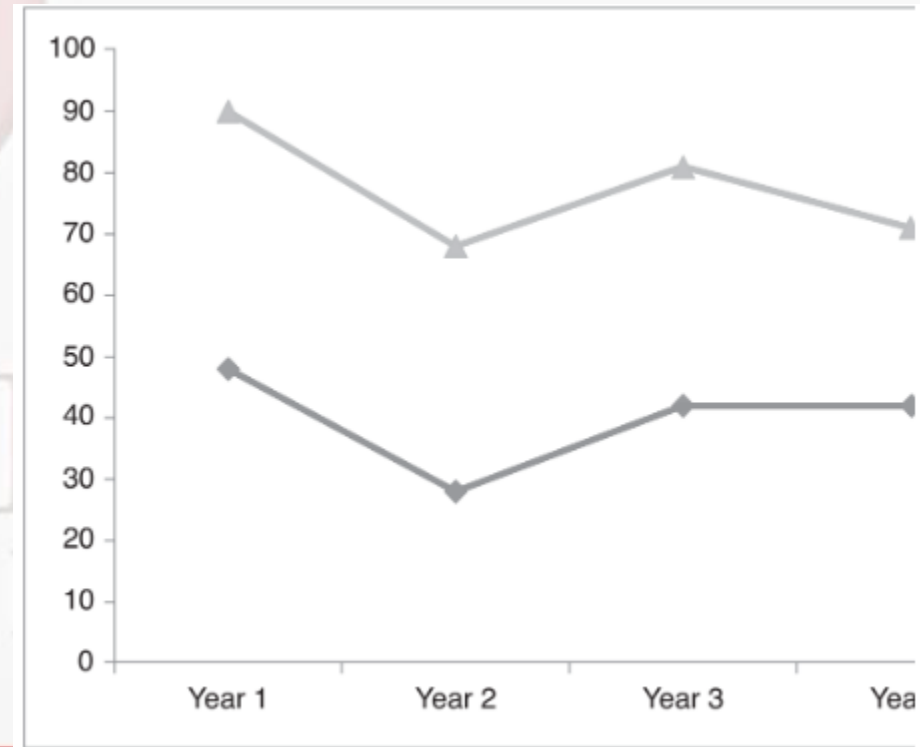
Predictive modelling-Correlation of Voluntary and Involuntary Attrition in Different Time Frames

Predictive analytics using regression can simulate the probable outcomes of a metric correlating with other metrics, e.g., predicting attrition risk based on the number of days of leave availed during last one year.

It can also be done using HR analytics solution in alignment with the business and strategies of the organizations.

Predictive modelling-Correlation of Voluntary and Involuntary Attrition in Different Time Frames

- We have divided time period in four different time frames so as to compare how voluntary and involuntary attritions in different time frames correlate with each other.

- With data availability for longer time period, we can design more accurate regression models for predicting talent attrition.

- Regression models may further get complicated when we draw other data sets or metrics in addition to the leaves availed, such as engagement level, interpersonal relations, new initiatives, innovation, and so on, for further precision-level measurement of the attrition probability.

- Predictive analytics can be used as a critical HR decision-making tool duly diagnosing the underlying problems.

- , predictive analytics can help providing value insights into the prevalent trend and future outcome.

Predictive modelling-Correlation of Voluntary and Involuntary Attrition in Different Time Frames

- To develop a predictive model, it is important to select the appropriate predictor variables.

- This requires HR managers to understand which predictor variables can have a potential effect on specific HR issues.

- Again limiting predictor variables to only a few is not desirable here, as this may cause inaccuracy in the results.

- Predictive modelling is done by using software solutions which can handle large number of data sets.

- Also, developing a predictive model needs to be validated, and the performance of the model needs to be assessed. When results are inaccurate, models require re-examination and calibration.

- Almost in all critical HR decision-making processes

REFERENCES

- Bhattacharya ,Deepak (2019). HR Metrics and Analytics, Pearson

- Bersin, J. (2012). The HR measurement framework (Bersin and Associates Research Report No. CA 94612). Oakland: Bersin and Associates.

- Edwards, K., & Edwards, M. (2016). Predictive HR analytics. London: Kogan Page.

- Fitz-enz, J., & Mattox, J. R., II. (2014). Predictive analytics for human resources. New Delhi: Wiley India.

- Huselid, M. (2014). The corporate mirror. D'Amore-McKim School of Business. Available at: http://www.damoremckimleadersatworkblog.com/corporate-mirror-looking-big-data-analytics-workforce-management/#sthash.4qx5y7F3.dpuf (accessed on 30 November 2015).

- O'Leonard, K. (2013). Getting started with talent analytics. Bersin by Deloitte. New York: Deloitte.

In case, you find any difficulty in understanding the concepts of lecture, please feel free to contact.

Dr Mamta Gaur

9891121396

mamtagaur@galgotiasuniversity.edu.in

Thanks