Literature Survey

Corporate Employee Attrition Analytics

Study 1: Predict employee attrition by using predictive analytics - **Ramakrishnan Raman**, **Sandeep Bhattacharya, Dhanya Pramod.**

Research questions that this paper attempts to answer are – do the features in general email communication have any significance to a teaching faculty member leaving the business school? Do the sentiments expressed in email communication have any significance to a teaching faculty member leaving the business school? Do the stages mentioned in the transtheoretical model have any relevance to the email behavior of an individual when he or she goes through the decision process leading to the decision to quit? The purpose of this paper is to study email patterns and use predictive analytics to correlate with the real-world situation of leaving the business school.

Study 2: Employee Attrition Analysis Using Predictive Techniques - **Devesh Kumar Srivastava, Priyanka Nair**

Employee churn is an unsolicited aftermath of our blooming economy. Attrition may be defined as voluntary or involuntary resignation of a serving employee from an organization. Employee churn can incur a colossal cost to the firm. However, furtherance to prediction and control over attrition can give quality results. Earmarking the *risk of attrition,* the management can take required steps to retain the high valued talent. Workforce Analytics can be applied to reduce the overall business risk by predicting the employee churn. Predictive Analytics is the field of study that employs statistical analysis, data mining techniques and machine learning to predict the future events with accuracy based on past and current situation. The paper presents a framework for predicting the employee attrition with respect to voluntary termination employing predictive analytics.

Study 3: Predicting Employee Attrition Using Machine Learning Techniques - **Francesca Fallucchi, ORCID,Marco Coladangelo, Romeo Giuliano , Ernesto William De Luca**

There are several areas in which organizations can adopt technologies that will support decision-making: artificial intelligence is one of the most innovative technologies that is widely used to assist organizations in business strategies, organizational aspects and people management. In recent years, attention has increasingly been paid to human resources (HR), since worker quality and skills represent a growth factor and a real competitive advantage for companies. After having been introduced to sales and marketing departments, artificial intelligence is also starting to guide employee-related decisions within HR management. The purpose is to support decisions that are based not on subjective aspects but on objective data analysis. The goal of this work is to analyses how objective factors influence employee attrition, in order to identify the main causes that contribute to a worker's decision to leave a company, and to be able to predict whether a particular employee will leave the company. After the training, the obtained model for the prediction of employees' attrition is tested on a real dataset provided by IBM analytics, which includes 35 features and about 1500 samples. Results are expressed in terms of classical metrics and the algorithm that produced the best results for the available dataset is the Gaussian Naïve Bayes classifier. It reveals the best recall rate (0.54), since it measures the ability of a classifier to find all the positive instances and achieves an overall false negative rate equal to 4.5% of the total observations.

Study 4: HR analytics: Employee attrition analysis using logistic regression **- Setiawan, S Suprihanto, A C Nugraha and J Hutahaean**

Employee attrition can become a serious issue because of the impacts on the organization's competitive advantage. It can become costly for an organization. The cost of employee attrition would be the cost related to the human resources life cycle, lost knowledge, employee morale, and organizational culture. This study aimed to analyze employee attrition using logistic regression. The result obtained can be used by the management to understand what modifications they should perform to the workplace to get most of their workers to stay. The data for the study were around four thousand employees, covering 261 days (one year working days) during 2015 — the data period between January and December. We use R for data integration, exploratory data analysis, data preparation, logistic regression, model evaluation, and visualization. The study has five steps: (1)

data collection and business understanding, (2) data pre-processing, (3) exploratory data analysis, (4) model selection and training, and (5) test and evaluation of the model. The result of the study found eleven variables as key driving factors for employee attrition. It also showed that the model has 75 percent accuracy with 73 percent sensitivity and 75 percent specificity.

Study 5: Employee Attrition In Human Resource Using Machine Learning Techniques - **Dr. T. S. Poornappriya and Dr. R. Gopinath**

Employee turnover is a concern that is serious knowledge-based organizations. When employees leave a company, they carry together with them tacit that is invaluable which will be usually the way to obtain competitive advantage when it comes to business. To help a company to continually have an increased advantage that is competitive its competition, it must ensure it is a duty to attenuate employee attrition. HR analytics is a multidisciplinary approach to put together methodology for enhancing the quality of people-related decisions in order to get better individual and organizational performance. There are transposable terms used for HR analytics are talent analytics, people analytics, and workforce analytics. HR analytics plays a role in every characteristic of the HR function, including recruiting, training and development, succession planning, retention, engagement, compensation, and benefits. In this research work, Neural Network based Regressor is used to predict the employee attrition. The performance of the proposed NNR is evaluated with their existing techniques using various evaluation metrics.