CORPORATE EMPLOYEE ATTRITION ANALYTICS

Author name: A C Nugraha and J Hutahaean

Abstract : 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.

Author name: Dr. R. S. Kamath

Abstract : Talent management involves a lot of managerial decisions to allocate right people with the right skills employed at appropriate location and time. Authors report machine learning solution for Human Resource (HR) attrition analysis and forecast. The data for this investigation is retrieved from Kaggle, a Data Science and Machine Learning platform [1]. Present study exhibits performance estimation of various classification algorithms and compares the classification accuracy. The performance of the model is evaluated in terms of Error Matrix and Pseudo R Square estimate of error rate. Performance accuracy revealed that Random Forest model can be effectively used for classification. This analysis concludes that employee attrition depends more on employees' satisfaction level as compared to other attributes.

Author name: Parv N Gandhi

Abstract : Every organization has its own productivity and strength which stands of the legs of the employees world. Employee Attrition is one of the biggest business problems in HR Analytics. Companies invest a lot in the training of the employees keeping in mind the returns they would provide to the company in the future. If an employee leaves the company, it is the loss of opportunity cost to the company. These study interpreters the employee's attrition rate through the. Keeping regular employee is a great challenge for all organization in the competitive related attributes like Job Role, overtime, job level affect the attrition largely. The paper contain the survey of various classification algorithms like logistic regression, LDA, SVM, KNN, Random Forests to predict the probability of attrition of any new employee.As a result, training balanced dataset with Random Forest achieved the second highest performance, with 0.269 F1-score but has achieved the highest accurancy with the algoritms we have used.

Author name: Kate Hutchings

Abstract : This paper presents findings from a survey conducted in the Australian resources sector in 2009 exploring human resource (HR) managers‟ perceptions of how their organisational practices and external contextual changes in industrial relations legislation present challenges for the sector and influence attraction and retention of highly skilled employees. The research makes an important contribution to the literature on good employment/high involvement work practices by investigating organisational practices within the politico-legislative context of this economically significant sector. Our findings indicate that organisations have implemented a range of „good‟ employment practices, while dealing with concerns about skills shortages, employee turnover, an aging workforce, and changes in legislation. We identify a need for employers to give greater attention to diversity and work-life balance issues. Further, there is a need for strategies to increase the attractiveness of work in remote locations.

Author name: Ghana

Abstract : The prime purpose of this study was to investigate whether employers use branding in their organisations, and how employer branding influence the attraction and retention of employees in the banking sector in Ghana. The descriptive survey design was adopted for the study. Eighty-seven employees, including junior and senior staff were conveniently sampled for the study. Data was analyzed using both descriptive and inferential statistics. The results of the study suggest that organisations use employer branding processes in their business to attract employees and customers. It was also found that brand names of organisations may significantly influence the decision of employees to join and stay in the organisation. It was therefore suggested that employers need to create conducive work environment with conditions to enable employees feel comfortable and remain in the organisation. Key words Employer branding, Employee attraction and retention, Ghana.

Author name: Alao D. & Adeyemo A. B.

Abstract : Employee turnover is a serious concern in knowledge based organizations. When employees leave an organization, they carry with them invaluable tacit knowledge which is often the source of competitive advantage for the business. In order for an organization to continually have a higher competitive advantage over its competition, it should make it a duty to minimize employee attrition. This study identifies employee related attributes that contribute to the prediction of employees' attrition in organizations. Three hundred and nine (309) complete records of employees of one of the Higher Institutions in Nigeria who worked in and left the institution between 1978 and 2006 were used for the study. The demographic and job related records of the employee were the main data which were used to classify the employee into some predefined attrition classes. Waikato Environment for Knowledge Analysis (WEKA) and See5 for Windows were used to generate decision tree models and rule- sets. The results of the decision tree models and rule-sets generated were then used for developing a a predictive model that was used to predict new cases of employee attrition. A framework for a software tool that can implement the rules generated in this study was also proposed.

Author name: Rahul Yedida

Abstract : This project aims to predict whether an employee of a company will leave or not, using the k-Nearest Neighbors algorithm. We use evaluation of employee performance, average monthly hours at work and number of years spent in the company, among others, as our features. Other approaches to this problem include the use of ANNs, decision trees and logistic regression. The dataset was split, using 70% for training the algorithm and 30% for testing it, achieving an accuracy of 94.32%.

Author name: Ayman Elsayed Khedr

Abstract : This article proposes a data mining framework to predict the significant explanations of employee turn-over problems. Using Support vector machine, decision tree, deep learning, random forest, and other classification algorithms, the authors propose features prediction framework to determine the influencing factors of employee turn-over problem. The proposed framework categorizes a set of historical behavior such as years at company, over time, performance rating, years since last promotion, and total working years. The proposed framework also classifies demographics features such as Age, Monthly Income, and Distance from Home, Marital Status, Education, and Gender. It also uses attitudinal employee characteristics to determine the reasons for employee turnover in the information technology sector. It has been found that the monthly rate, overtime, and employee age are the most significant factors which cause employee turnover.

Author name: Mian Muhammad Sadiq Fareed

Abstract : Employee attrition refers to the natural reduction in the employees in an organization due to many unavoidable factors. Employee attrition results in a massive loss for an organization. The Society for Human Resource Management (SHRM) determines that USD 4129 is the average cost-per-hire for a new employee. According to recent stats, 57.3% is the attrition rate in the year 2021. A research study needs to be implemented to find the causes of employee attrition and a learning framework to predict employee attrition. This research study aimed to analyze the organizational factors that caused employee attrition and the prediction of employee attrition using machine learning techniques. The four machine learning techniques were applied in comparison. The proposed optimized Extra Trees Classifier (ETC) approach achieved an accuracy score of 93% for employee attrition prediction. The proposed approach outperformed recent state-of-the-art studies. The Employee Exploratory Data Analysis (EEDA) was applied to

determine the factors that caused employee attrition. Our study revealed that the monthly income, hourly rate, job level, and age are the key factors that cause employee attrition. Our proposed approach and research findings help organizations overcome employee attrition by improving the factors that cause attrition.

Author name: Aseel Qutub, Asmaa Al-Mehmadi

Abstract : Employees are the most valuable resources for any organization. The cost associated with professional training, the developed loyalty over the years and the sensitivity of some organizational positions, all make it very essential to identify who might leave the organization. Many reasons can lead to employee attrition. In this paper, several machine learning models are developed to automatically and accurately predict employee attrition. IBM attrition dataset is used in this work to train and evaluate machine learning models; namely Decision Tree, Random Forest Regressor, Logistic Regressor, Adaboost Model, and Gradient Boosting Classifier models. The ultimate goal is to accurately detect attrition to help any company to improve different retention strategies on crucial employees and boost those employee satisfactions.