

HR ANALYTICS CASE STUDY

SUBMISSION

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Objective

- ★ In the company XYZ, the attrition rate of 15% is quite high and concerning majorly because of few reasons:
 - 1) The projects get delayed and are not able to submit in the given deadlines
 - 2) A new department has to be maintained for recruiting new people from the market.
 - 3) The new employees must be trained by them to work effectively in the company.

They are seeking help from a HR analytics firm to analyse the reasons for high rate of attrition and the ways to reduce it.
- ★ For this we are provided with lots of data having the variables like employeeID, Job satisfaction, work environment, their in and out times in office etc., along with if the employee has left the company or not. With this available data and using R tool, we have to find out the reasons for attrition and find ways to reduce it.

APPROACH

To model probability of attrition, we need to follow the steps

1. Data Cleaning
2. Model building
3. Model Evaluation

APPROACH

With the given files of data first data cleaning has been done in the following steps

- ★ Finding out missing values or duplicated values
- ★ Outlier checking for continuous variables
- ★ Treating missing values
- ★ Standardization of variables
- ★ Dummy variable creation

APPROACH

After Data cleaning is done, **Model building** is done in such a way that only the variables that affect the attrition rate are considered.

- ★ First the data is divided into train and test data with 70% and 30% respectively using training data set we check for test data set to make sure the model is working good
- ★ Using the available libraries in R, we modeled the data 10 times to get the desired R-squared and VIF to avoid multi-collinearity

Result of Model Building

Finally there are 20 variables that are effecting the attrition rate they are

- ★ EnvironmentSatisfaction, JobSatisfaction , WorkLifeBalance , Age, BusinessTravel_Travel_Frequently, BusinessTravel_Travel_Rarely, `EducationField_Life Sciences`, EducationField_Marketing, EducationField_Medical, EducationField_Other, `EducationField_Technical Degree`, JobRole_Manager, `JobRole_Manufacturing Director`, MaritalStatus_Single, NumCompaniesWorked, TotalWorkingYears, TrainingTimesLastYear, YearsSinceLastPromotion, YearsWithCurrManager, `Avg time spent`

Results of Model Evaluation

- ★ With the model that was finalised, we now build it again on test data and see how accurate the model is for different values of 'p'
- ★ After checking for values '0.5', '0.6', '0.7' and '0.82', at cut-off value of $p=0.82$, we get good percentages of accuracy, sensitivity and specificity
- ★ With this value we perform the KS table test and the KS-statistics turns out to be 0.52, so it is a fairly good model

Description of important decision variables

- Education Field- This is the categorical field, which gives the details of graduation specialization of the employees. From the analysis, it has been observed that this variable has the significant impact on the attrition of the workforce. Especially, technical degree holders are more likely to continue with the company as compared to other graduates. It is followed by the marketing degree holders, medical degree holders and life science graduates.

Description of important decision variables

- Average time spent- This is the most significant variable, which gives negative correlation with the continuity(Non-attrition) of the employee association with the company. It can be understood that the employees feel that they are overutilized when they spend more time in office, which in turn make them look for the external opportunities for better pay off and they leave the company.
- Years since last promotion- It shows the negative correlation with the continuity(Non-attrition) of the employee association with the company. It justifies the psychological impact of the employees depression phase which occurs due to the delayed promotion cycle.

Conclusion

Environment and job satisfaction plays a major role in deciding if an employee will stay or leave the company along with other factors of travelling rarely or frequently both has effect on the attrition rate,so giving chances to people to travel based on their location preference can improve their environment satisfaction in turn job satisfaction too. Job role of manager and manufacturing director also shows impact, so some special attention should be given to know their problems and bring some reforms.

Thank You!