

Project Report Format

1. INTRODUCTION

- 1.1. Project Overview
- 1.2. Purpose

2. LITERATURE SURVEY

- 2.1. Existing problem
- 2.2. References
- 2.3. Problem Statement Definition

3. IDEATION & PROPOSED SOLUTION

- 3.1. Empathy Map Canvas
- 3.2. Ideation & Brainstorming
- 3.3. Proposed Solution
- 3.4. Problem Solution fit

4. REQUIREMENT ANALYSIS

- 4.1. Functional requirement
- 4.2. Non-Functional requirements

5. PROJECT DESIGN

- 5.1. Data Flow Diagrams
- 5.2. Solution & Technical Architecture
- 5.3. User Stories

6. PROJECT PLANNING & SCHEDULING

- 6.1. Sprint Planning & Estimation
- 6.2. Sprint Delivery Schedule
- 6.3. Reports from JIRA

7. TESTING

- 7.1. Test Cases
- 7.2. User Acceptance Testing

8. RESULTS

- 8.1. Performance Metrics

9. ADVANTAGES & DISADVANTAGES

10. CONCLUSION

10. FUTURE SCOPE

11. APPENDIX

Source Code

GitHub & Project Demo Link

CORPORATE EMPLOYEE ATTRITION ANALYTICS REPORT

1.INTRODUCTION

Employees are the treasured property of any organization. However, if you quit your job unexpectedly, the company will cost a lot of money. Not only are new employees wasting money and time, but new employees are also spending time making profits for their companies. . Employee turnover is a diversity of existing staff and is replaced by new staff for a period of time. Staff turnover is one of the most urgent troubles in the enterprise's body of workers management. Previous lookup on the difficulty of workforce turnover failed to be successful in managing, supervising, and stopping employee turnover on manufacturing traces with excessive turnover rates.Employee churn has a range of bad penalties for a business, such as unequal workload distribution, huge monetary losses, and the extra time required to recruit a replacement, all of which can lead to an expand in consumer unhappiness.Tangible fees encompass coaching costs and the time it takes from when a worker begins to when they begin contributing intangible expenses contain what is closing when an environment friendly worker quits: new product ideas, high-quality challenge management, or client relationships. A survey of 1,000 full-time employees performed by way of the on-line recruitment company Headhunter.net reviews that 78% would take a new function if the proper possibility comes alongside and 48% these that are employed are on the lookout for sparkling opportunities. Because software program engineers may go away with a lot of crucial data and expertise, if developer turnover is no longer properly managed, it can undermine the success of a software program venture and end result in big losses for the firm. As a result, being in a position to pick out who will go away the organization early will permit the corporation to preserve brilliant software program builders whilst minimizing the loss when they leave.

1.1 PROJECT OVERVIEW

Data science is the most precious and broadly used technique for the exploration and evaluation of giant extent of records to accumulate valid, novel, probably useful and clever patterns hidden in data. Data science techniques are extensively used for modeling real-world problems. Specifically, for classification, regression and clustering, data science has been used extensively in recent times. The key tendency in statistics technological know-how is to extract treasured data from the large quantities of facts saved in files, databases, and different repositories by using creating tremendous

methods of examining and deciphering such data.

1.2 PURPOSE

Employee attrition analytics is specifically focused on identifying why employees voluntarily leave, what might have prevented them from leaving, and how we can use data to predict attrition risk. This research predicts whether developers will leave the company after a positive period of time, based on monthly reports. For prediction, Naive algorithms, KNN and SVM computing device algorithms that used to classify and predict the developer turnover the usage of factors, such as pleasure level, remaining evaluation, wide variety projects, average_monthly_hours, time spent_company, etc. The overall performance of all the algorithms has in contrast in phrases of accuracy. then the great mannequin will predict the worker turnover.

2.LITERATURE SURVEY

Corey Harris (Walden University 2018) researched on “Employee Retention Strategies in the Information Technology Industry” and mentioned that “Productivity declines when employees voluntarily leave an organization”. Khera¹ , Ms. Krishna Gulati² (Delhi 2012), concluded in their study on “Human Resource Information System and its impact on Human Resource Planning: A perceptual analysis of Information Technology companies” that Being an information system of human resources, it can store voluminous data about the employees, that not only helps in identifying the occupied and unoccupied positions but also whether the person at particular position is fit for the job or not. Hardik P. K. (2016) , researched on “a study on employee attrition: with special reference to Kerala IT Industry”. His research examined the relationship between organizational factors and attrition of IT professional’s. The result can conclude that the organizational factors played significant role in predicting the variance in turnover intention (attrition) of Kerala IT professionals. Therefore, the HR managers in IT organizations may take into consideration the problems with organizational factors of their workers to reduce the turnover intention of the skilled employees. Bodjrenou Kossivi, Ming Xu, Bomboma Kalgora (May 2016) published “Study on Determining Factors of Employee Retention”. The study concluded: Employees are the most valuable assets of an organization.

2.1 EXISTING PROBLEM

Existing system includes only few attributes for analysis and also deals with qualitative observations and simple statistical analysis. The qualitative observations deal with the data that can be observed through human senses . They do not involve measurements or number. The simple statistical

analysis includes Mean, Standard deviation, median, finding the size of data, variance etc., the results produced by this technique are not precise. With the current increase in IOT and connected device, we now have access to so much of data and along with it an increase needs to manage and understand data.

2.2 REFERENCES

study on employee attrition:<https://www.aihr.com/blog/employee-attrition/>

2.3 PROBLEM STATEMENT DEFINITION

In today's world many industries and specially IT are experiencing high attrition rate. Some common causes of attrition in their organization are known to managers and HR departments. This difficulty is triggered by using disappointment with various elements of a job, such as profession aspirations, work location, salary, overall performance management, job satisfaction, and managers, amongst others. Employee attrition (Francesca Fallucchi et al., 2020) manipulate is integral to the long-term fitness and success of any organization. Employees who leave on their own accord have a negative influence (James M. Vardaman et al., 2015) on the organization or project in which they are employed. Any industry's HR and senior management, as well as policymakers, are collaborating to reduce voluntary exits.

3.IDEATION & PROPOSED SOLUTION

- ☐ People **analytics** involves using data to understand the situational **attrition** risks that different **companies**, groups, and individuals experience. **Employee attrition** became a serious issue regarding a **company's** competitive advantage. It's very expensive to find, hire and train **new** talents.

3.1 EMPATHY MAP CANVAS

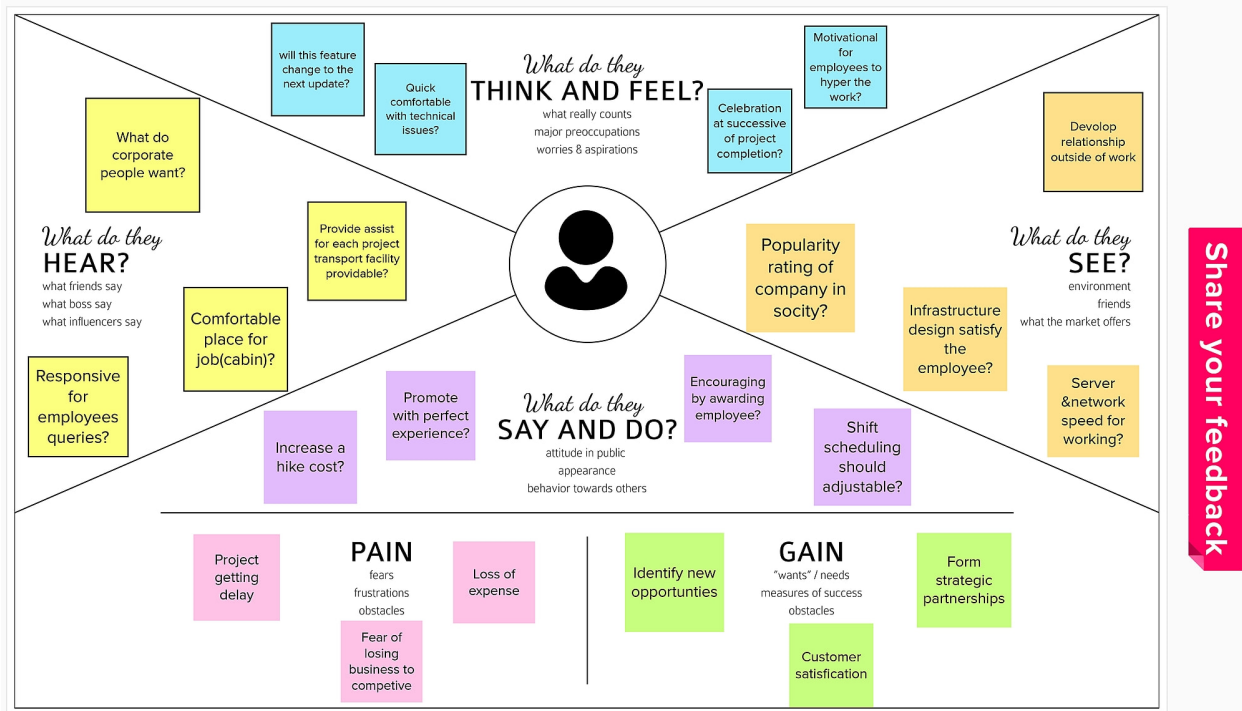
Edit this template
Right-click to unlock

Empathy Map Canvas

Gain insight and understanding on solving customer problems.

1

Build empathy and keep your focus on the user by putting yourself in their shoes.



3.2 IDEATION & BRAINSTROMING

Analyzing this demographic will reveal information about turnover in various job roles, tenure levels, business units, and locations. In each of these projects, the exploration, brainstorming, and ideation is described well as the analytics team moves from definition toward .Uncover the factors that lead to employee attrition and explore important questions such as 'show me a breakdown of distance from home by job role. Ideation is usually derived from brainstorming sessions, online forums, seminars,

surveys, social media platforms, and team. Group brainstorming, if done properly, can promote creative thinking, ... ideation avoids the inevitable, premature shooting down of ideas. From project planning, to brainstorming, to meeting management, set your ... for business: mind maps help students improve knowledge retention and recall. Predict attrition using eNPS & pulse surveys. Fix the problems leading to disengagement. Book a demo of Empuls. See how you can reduce attrition and disengagement.



3.3 PROPOSED SOLUTION

S.No	Parameter	Description
1.	Problem Statement (Problem to be solved)	Why is employee attrition a problem? Employees who are forced to take on more work may be more inclined themselves.
2.	Idea / Solution description	Employee Engagement? Measure and improve satisfaction, commitment, and performance.
3.	Novelty / Uniqueness	What is employee attrition? Employee attrition is when an employee leaves the company through any method Download a collection of some of the best HR Analytics resources we've come .
4.	Social Impact / Customer Satisfaction	How does corporate social responsibility benefit firms? The study discusses five employee variables that impact on customer satisfaction , namely, communication and rewards as well as employee loyalty.
5.	Business Model (Revenue Model)	Business model? Attrition is a problem that impacts all businesses, irrespective of geography, industry and size of the company.
6.	Scalability of the Solution	Manager effectiveness? 360 feedback and intelligent coaching to improve manager effectiveness.

3.4 PROBLEM SOLUTION BIT

1.CUSTOMER SEGMENT

Using data about an employee's personal and job profile and other performance related metrics to identify variables that have a high correlation with .Segmentation is the practice of categorizing employees into different groups based on common characteristics. This process takes on great ...

2. PROBLEMS/PAINS

we'll examine how organizations can use predictive analytics to impact employee attrition and retention – and prevent the loss . The attrition rate is the measurement you use to determine the percentage of **employees** who have left a **company** in a given period.Attrition affecting Companies. A major problem in high employee attrition is its cost to an organization. Job postings, hiring processes.

3. TRIGGERS TO ACT

Provides a means to reach out to customer.Measuring employee attrition; Measuring employee commitment; Carefully examining the reasons why people leave; Creating a better ...very **company** deals with attrition. There are myriad ways in which we can slice and analyze attrition and related HR metrics.HR analytics can aid in several practical goals for companies. Reducing attrition is one - here is what practitioners should consider:

4.EMOTIONS

Feel a sense of freedom Feel a sense Of thrill.employee attrition became a serious issue regarding a company's competitive advantage. It's very expensive to find, hire and train ou can test your assumptions about attrition through analysis considering the new information. The actions that are doing nothing to support Predict attrition using eNPS & pulse surveys. Fix the **problems** leading to disengagement. Book a demo of Empuls. See how you can reduce attrition and disengagement.

5.AVAILABLE SOLUTIONS

Create Intelligent Workflows & Uncover Business Insights w/ Analytics services Consulting. Predict attrition using eNPS & pulse surveys. Fix the problems leading to disengagement.Motivate employees with rewards Choose from global reward catalog.Listen & resolve employee concerns. Keep them happy and engaged.500,000+ **Employees** & 225+ CHROs in 60+ countries trust Amber for great **Employee** Engagement.Create Intelligent Workflows & Uncover Business Insights w/ **Analytics** services Consulting.Uncover the factors that lead to employee attrition and explore important questions such as 'show me a breakdown of distance from home by job role.

6.CUSTOMER LIMITATIONS

Employee attrition analytics is specifically focused on identifying why employees voluntarily leave. The data set contains approximately 1500 entries. Given the limited size of the data set, the model should only be expected to provide modest improvement. employee attrition became a serious issue regarding a company's competitive advantage. It's very expensive to find, hire and train new .Employee Attrition Analytics Many executives, with good reason, focus on the issue of excessive turnover when discussing attrition. regular employee turnover prohibits your organization from increasing its collective knowledge base and experience over time.

7.BEHAVIOR

Analyzing this demographic will reveal information. about turnover in various job roles, tenure locations. People analytics involves using data to understand the situational attrition risks that different companies, groups, and individuals experience .Traditional behavioral analytics has proven useful to many organizations in finding, hiring, and even retaining quality talent. empowering teams to improving collaboration and engagement, here are five ways behavioral analytics can help your employees succeed.Employee attrition analytics focuses on determining why workers leave willingly, what may have stopped them from leaving, and how we can .

8..CHANNELS OF BEHAVIOR

Corporate Employee is a comprehensive and technologically integrated Software application with addresses any specialized managerial & mission critical People & Companies interact to Accomplish individual. Informal interactions among loosely organized firms Interaction guide by strong organization.Tying Data to Outcomes To answer that question, you need to establish links between these types of behaviors and relevant business outcomes. There are three main behavioral analysis tools involved in building a complete picture of your customer journey: segmentation analysis, funnel analysis.The organization was expanding its operations in south region in India where it was developing alternative channels to grow its business.

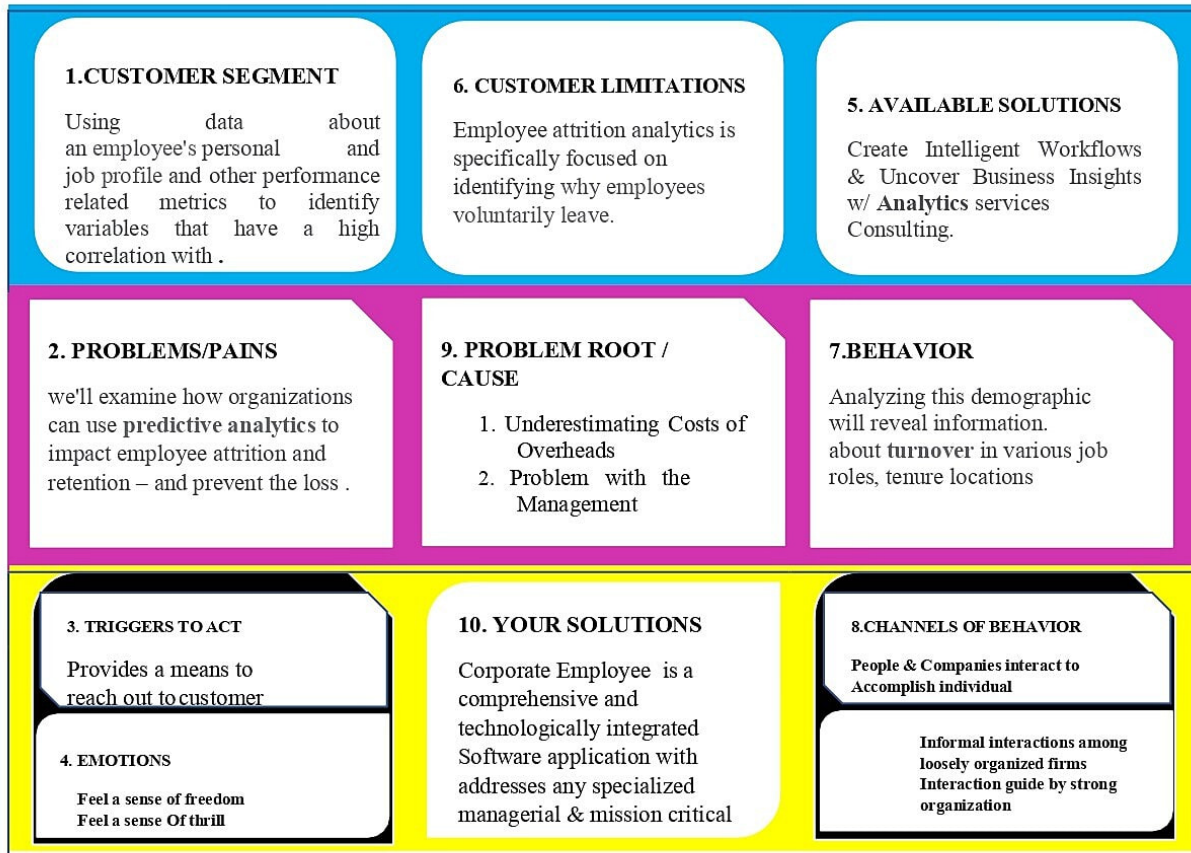
9. PROBLEM ROOT / CAUSE

Underestimating Costs of Overheads . Problem with the Management. Analyzing this demographic will reveal information about turnover in various job roles, tenure levels, business units, and locations. An issue that every company deals with is attrition. Sales being an especially high attrition function makes this analysis paramount.mployee attrition became a serious issue regarding a company's competitive advantage. It's very expensive to find, hire and train new. It is critical to take this measure and focus on workers, as their satisfaction will lead to the success of the company in the long term.The end goal is to develop analysis approach to Employee Attrition problem. Ideally, we want to be able to solve similar problems with different .

10.YOUR SOLUTIONS

Corporate Employee is a comprehensive and technologically integrated Software application with addresses any specialized managerial & mission critical.We have successfully learned how to analyze employee attrition using “LOGISTIC REGRESSION” with the help of R software. **Employee** Monitoring Software To Enhance Your **Employee** Productivity. Monitor user activity and improve **employees** overall performance with We360.ai. Monitor Mouse & Keystroke.Manage **Employee** Database, Payroll, Time & Attendance, Talent Management, Onboarding & More. Engage **Employees** Remotely, Touch-Free Attendance (Facial Recognition), Digital Onboarding. World Class Security.

PROBLEM SOLUTION FIT



4.REQUIREMENT ANALYSIS

Analyzing this demographic will reveal information about turnover in various job roles, tenure levels, business units, and locations. A company needs to maintain a pleasant working atmosphere to make their employees stay in that company for a longer period. We plan to run a Logistic regression model and CART to determine the probability of a certain employee to fall into the condition of Attrition and thus its high. You can test your assumptions about attrition through analysis considering the new information. The actions that are doing nothing to support .

4.1.FUNCTIONAL REQUIREMENT

A functional requirement document helps you to define the functionality of a system or one of its subsystems. Functional requirements along with requirement analysis help identify missing requirements. They help clearly define the expected system service and behavior.

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Employee feedback	Getting feedback from employees.
FR-2	Employee expectation	Getting expectation Report.
FR-3	Retirement	Collect the reason for Retirement.
FR-4	Low pay & No Recognition	Analysis their skills & salary expectation.

4.2.NON-FUNCTIONAL REQUIREMENT

Non-Functional requirements analysis examines the requirements for the solution that define how well the functional requirements must perform. Simply put, non functional requirements are constraints imposed on the system. They're used to define the quality attributes which will determine how the system A functional requirement defines a system or its component, whereas a non-functional requirement defines the performance attribute of a software.

Following are the non-functional requirements of the proposed solution.

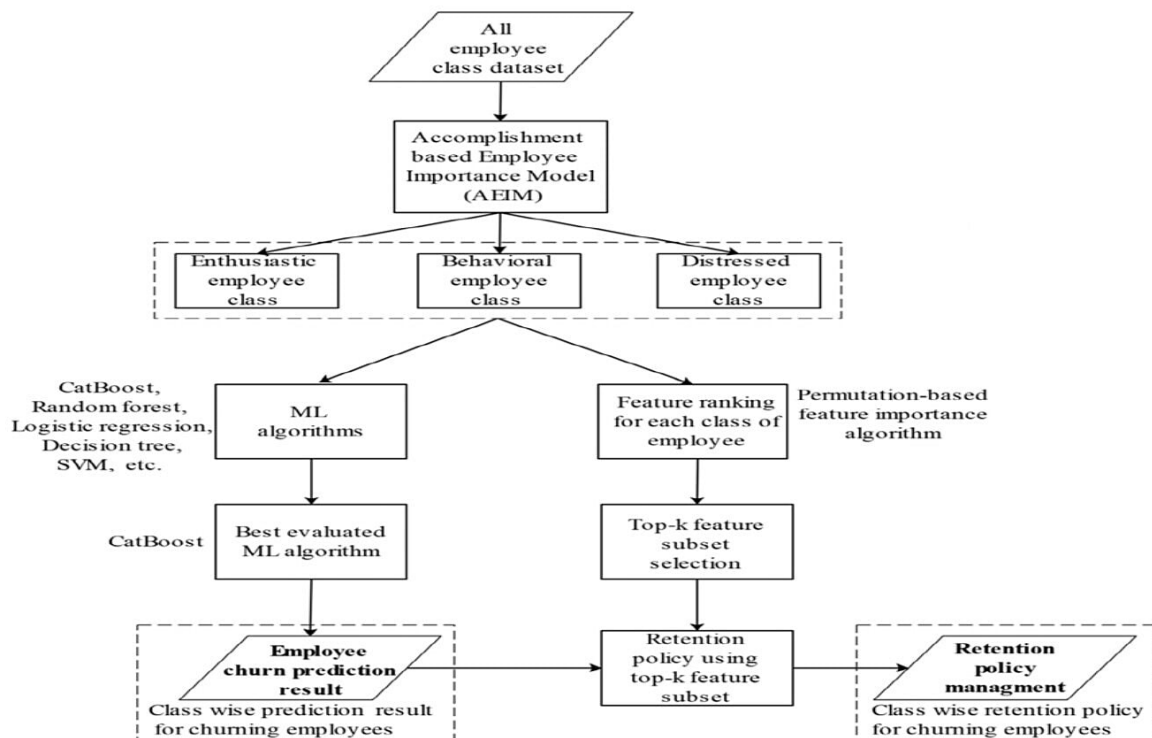
FR No.	Non-Functional Requirement	Description
NFR-1	Career growth	Analysis & help to improve the employee personal growth.
NFR-2	feedback	Getting feedback from all participation.
NFR-3	expectation	What employee's expect from company?
NFR-4	Resignation	Analysis the reason for resignation?

5.PROJECT DESIGN

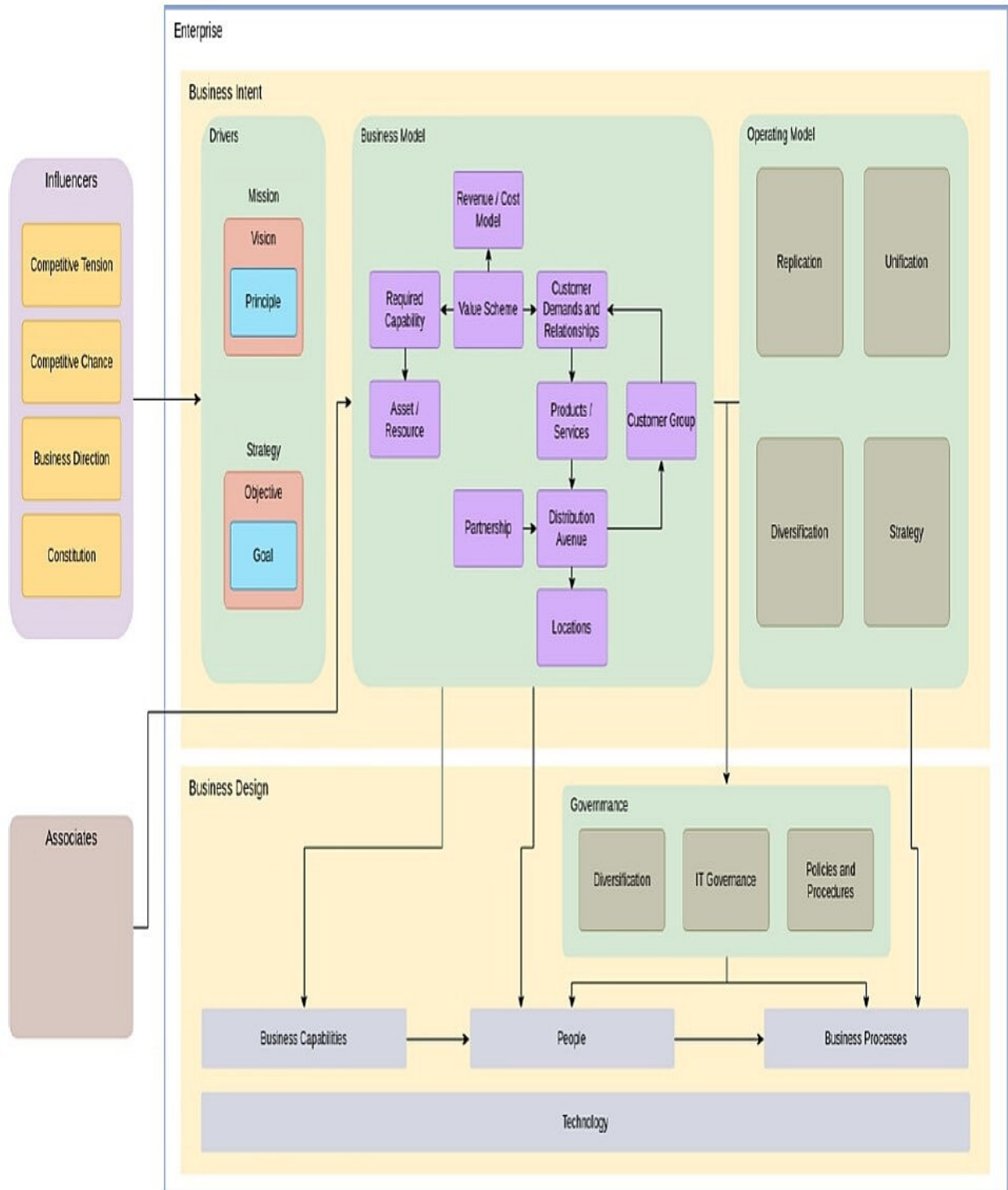
We have constructed a very simple pipeline for predicting employee attrition, from some basic Exploratory Data Analysis to feature resource managers will be challenged to place a high priority on job design, and develop policies that help employees to The study educates the causes of attrition for employees in an organization.In general, relatively high attrition is problematic for companies. HR professionals often assume a leadership role in designing company compensation.

5.1.DATA FLOW DIAGRAMS

A study on attrition analysis in sundaram **business** service **Employee's attrition** is one of the critical problem which are faced by an HR.This **data** set presents an **employee** survey from IBM, indicating if there is **attrition** or not. The **data** set contains approximately 1500 entries.Uncover the factors that lead to **employee attrition** and explore important questions such as 'show me a breakdown of distance from home by job role.

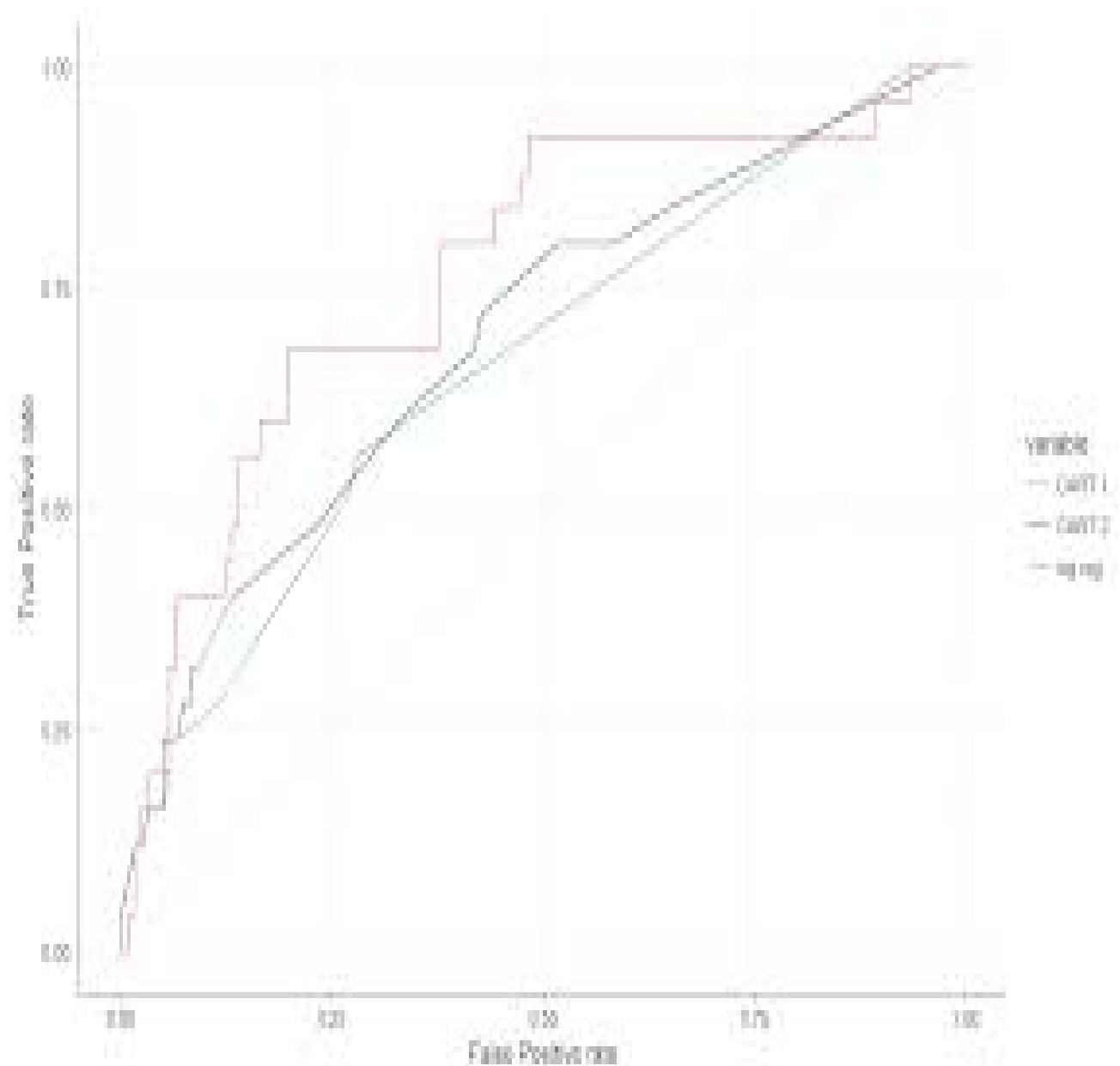


5.2.SOLUTION & TECHNICAL ARCHITECTURE



5.3 USER STORIES

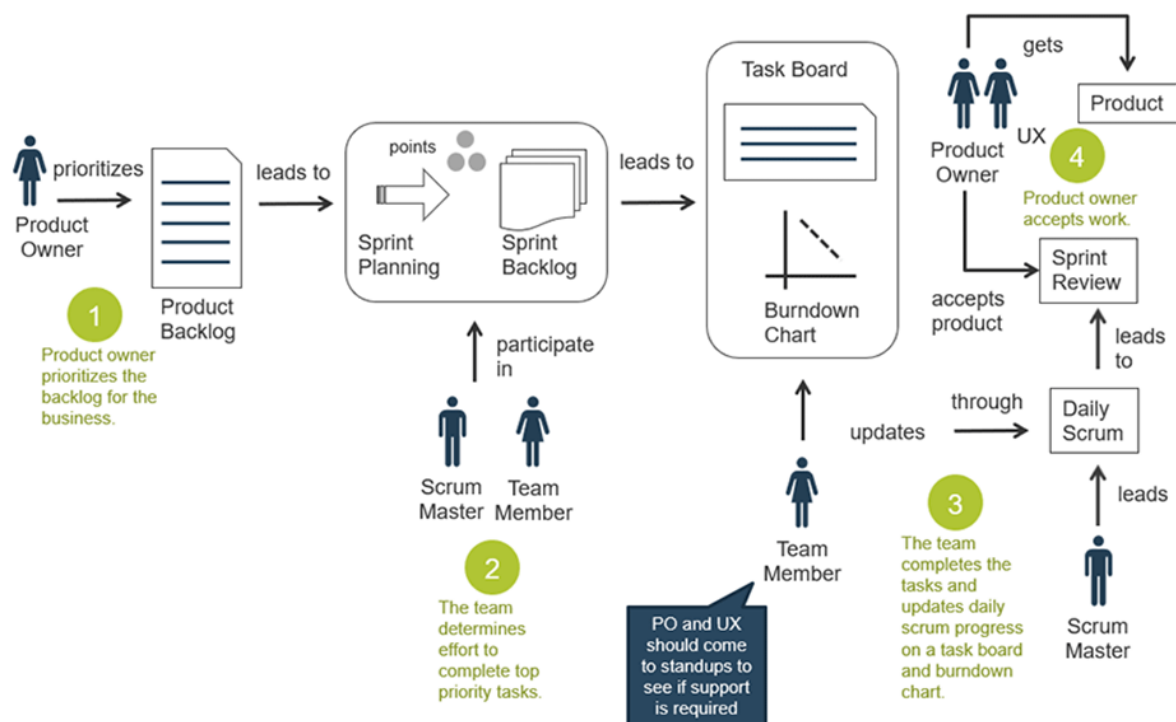
Employee Attrition and Performance analytic dashboard for Human Resource (HR) for analyzing the why their employees are leaving. Now, a company's HR department uses some data analytics tool to identify which areas to be modified to make most of its employees to stay. The attrition rate is the measurement you use to determine the percentage of employees who have left a company in a given period.



6.PROJECT PLANNING & SCHEDULING

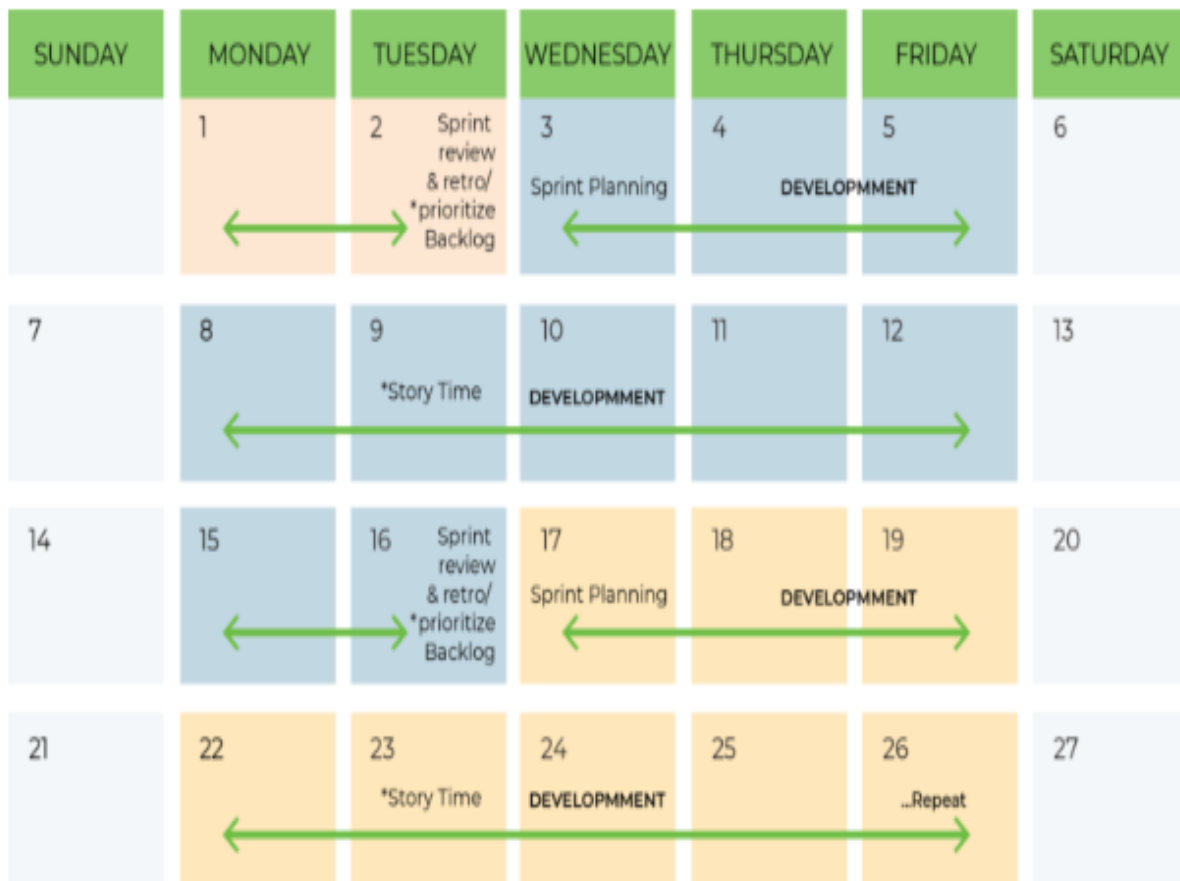
The study focused on three categories of employer performance people management, employee development, and workplace climate 13% of employees. A study on attrition analysis in sundaram business service. Employee's attrition is one of the critical problem which are faced by an HR. A successful attrition analytics project begins with a clear ... but it is wise to plan conservatively on the project schedule, regardless.

6.1 Sprint Planning & Estimation



6.2.SPRINT DELIVERY SCHEDULE

This blog focuses on how organizations today are adopting Predictive Analytics and how it can help HR professionals combat employee Uncover the factors that lead to employee attrition and explore important questions such as 'show me a breakdown of distance from home by job role andUncover the factors that lead to employee attrition and explore important questions such as 'show me a breakdown of distance from home by job role.



6.3.REPORT FROM JIRA

employees prefer to change their job and which factors make employee dissatisfy. Since the study is critical issue This project aims to discover insights that will help a company make conscious decision about hiring talents and improve employee satisfaction Conversations about applying data analytics to HR management aren't new. Despite more than a decade of discussion, organizations.

7.TESTING

This project aims to discover insights that will help a company make conscious decision about hiring talents and improve employee satisfaction Turnover and attrition are business and Human resource terms, there are several types of turnover such as sales turnover. The dataset includes features like Age, Employee Role, Daily Rate, Job Satisfaction, Years At Company, Years In Current Role etc.

7.1.TEST CASE

Attrition has always been a major concern in any organization. The time, money and effort invested in training new employees, the work dependency and other factors leads to a massive overall loss to the firm when an employee leaves. Also, attrition causes distrust among existing employees which can itself become a major difficulty for the management of the organization. The *Attrition* dataset had 1470 observations with 35 variables. Out of the 35 variables, there exists one target variable *Attrition* with possible outcomes *Yes* and *No*. The other 34 variables are independent variables but one, that was, *Employee Number* which denotes the employee number or the identification number.4 factors namely, *EnvironmentSatisfaction*, *JobInvolvement*, *JobSatisfaction*, *RelationshipSatisfaction* were taken, the sum of which was considered as *Holistic Satisfaction*. The maximum score '16' indicated a perfect Holistic Satisfaction whereas '4' was considered as the lowest Holistic Satisfaction.It is important to check the dependence between target variable and independent variable. If there exists insignificant relation between the two, we should not select that independent variable for model building process.Multi collinearity refers

to the strong relationship or correlation between to input variables. There is said to be multi collinearity between two variables if there exist a correlation coefficient of more than 0.80. It is important to remove such variables as this leads to an inflated variance in the model which also increases the error in the model.

7.2 User Acceptance Testing

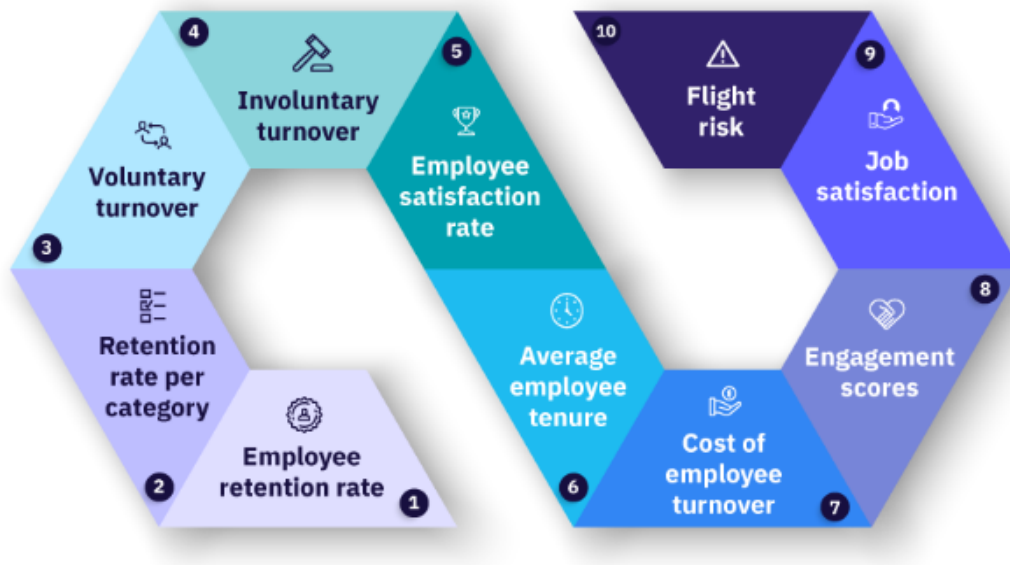
The current research would help most companies to know the level of satisfaction of their employees and obtain some valuable information a company's HR department uses some data analytics tool to identify which areas to be modified to make most of its **employees** to stay The concept of **UAT** comes from the software development lifecycle (SDLC) and is intended to **test** how the system would perform in circumstances similar to those Subsequently in this paper we attempt to develop a model which will predict employee attrition rate dependent on HR analytics dataset.

8.RESULT

Nowadays, employee attrition became a serious issue regarding a company's competitive advantage. It's very expensive to find, hire and train Employee attrition analytics is specifically focused on identifying why employees voluntarily leave, what might have prevented them from leaving Uncover the factors that lead to employee attrition and explore important questions such as '**show me a** breakdown of distance from home by job role Attrition is a problem that **impacts all businesses**, irrespective of geography, industry and size of the company. The organization will get insights related to Employees promotion rate, performance score, salary information, work accidents.

8.1.PERFORMANCE METRICS

Analyzing this demographic will reveal information about turnover in various job roles, tenure levels, business units, and locations First let's look at the proportion of employees who are tenured vs those that are new. Higher the tenured proportion the better job the companyThis dashboard measures what percentage of employees left a business over a specific period.Employee attrition leads to significant costs for a business, including the cost of business disruption, hiring new staff and training new staff.With employee attrition analysis, you can identify which employee segments have the highest attrition risk and narrow in on plans to reduceUnderstanding ethnicity/race retention rates is key to monitoring your DEI&B goals. If a particular group has a noticeably poor retention rate.



9.ADVANTAGES

- It brings to fore the cause of employee disengagement.
- Enables HR managers develop long-term strategies to reduce attrition.
- Competitive measures to enhance company brand image.
- Develops and shapes drills that benefit both the management and the employees.

DISADVANTAGES

- Decreased overall performance: The whole business process is affected when an employee leave the organization. ...
- Daily task management: ...
- Increased cost: ...
- Lack of knowledgeable employees: ...
- Create a Negative image: ...
- Employee development:

10.CONCLUSION

The attrition rate is increasing in the whole industry. But it becomes prime important for us to take necessary steps to cease the same and rather attract the employees to work harder and motivate them to achieve the organizational goals. Employee attrition can cost If this is an employee you want to keep, make sure you discuss with them a plan for their career development. Ensure they know you are willing to invest time to achieve mutual goals if they are interested to stick around and learn.organization lakhs of rupees when they consider lost production time, re-training, cost of training given to the left employee and so on. One of the key ways to keep good staff is to inspire them a sense of loyalty and commitment. Here are some suggestions to achieve this If you want to maintain personnel, you have to prove that their career is not at threat by staying with you, and that you have what it takes to be a modern employer. Nobody is going to leave a company that pays sound, appreciates their needs as a human being, and offers job security together with a career plan for advancement. Good performance appraisal techniques should be introduced for better evaluation. Feedback for the same should be presented to the employees, which would help them to work much harder for their set goals. , performance is evaluated at regular intervals, but according to the analysis they are not given proper feedback. Performance here is mainly evaluated by the immediate supervisor or other related managers. So, to overcome this, new technique should be introduced such as 360 degree appraisal, by utilizing this method the overall evaluation from all the areas exact picture of the employees performance can be portrayed. And thus, it becomes easy for the head to appreciate and give reward for the same.Managers should examine the sources of employee attrition and recommend the best approach to fill the gap of the source, so they can be in a position to retain employees in their organization to enhance their competitiveness in this world of globalization.

11.FUTURE SCOPE

A focus on attrition drivers for top talent is particularly important for many organizations. In these cases, there is often more latitude for interventions; employees in these positions often have unique experience, are highly skilled, or are hard to replace for other reasons. If, for example, an organization has noticed a pattern of attrition in these roles where employees are leaving to become caregivers – either for children or elderly relatives – the intervention may be offering a flexible work schedule, the option to work from home, or other changes in the way they work that will allow them to balance caregiving duties with work.

12.APPENDIX

Data Loading and Pre-processing

1. Data Preparation: IBM Data Scientist have prepared dataset which is of score of 68. This score indicates that the dataset is of Medium Quality. Hence before using the data they have cleaned the data before uploading to IBM Watson. To clean the data, they have followed below steps:

- a) Remove summary rows and columns from your data file.
- b) Eliminate nested column headings and nested row headings.

2. Data Quality and Usage Optimization: After cleaning the data also, it cannot be directly used for prediction. It must be of better quality. Hence to improve the data quality IBM follows the following steps:

- a) To improve the data quality, first decide on the attributes to be used for prediction. IBM has provided with option to select and deselect the attributes for prediction.
- b) Set the proper Fields as Input Field and Output fields
- . c) Consider the missing values of the required attributes and see how it affects the result.
- d) Make use of more attributes for better results.
- e) Make use of domain knowledge to check whether the result makes any sense.

3. Using Aggregate Calculation Functions: Using functions like ABS, COUNT, SUM, MIN, MAX, MEAN, MEDIAN, etc. for exploring the dataset.

4. Changing the Data Format: Date, Time, Currency, etc.

5. Creating Hierarchies of the fields to be used for prediction: IBM has provided an option of refine to choosing the hierarchy for the Attributes and to add the additional field for prediction purpose.

6. IBM provides the option of grouping of the data columns: It also provides the option to group the non-group columns in another group. Thus, the new column containing individual column set is prepared and is used for prediction.

7. Filtering the Columns: IBM provides filter option to remove unwanted columns.

8. Replace Dataset after use: Use Specific dataset when needed.

9. Combining Data Sets option: IBM has combining datasets option by Joins method.