

Project Report

Title: Corporate Employee Attrition Analytics

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1. INTRODUCTION

1.1 Project Overview:

This project aims to discover insights that will help a company make conscious decision about hiring talents and improve employee satisfaction and retention. The report will go through exploratory data analysis, data preparation, and use IBM Cognos Analytics tool to drive the decision-making process. The target audience of this project would be executives or Human Resources leader who are interested in uncovering insights around employee attrition. The modeling of employee attrition prediction will help the target audience make an informed decision about why employees attrition on a broad level and consider options that can prevent attrition of talents.

1.2 Purpose:

One of the keys to success in an organization is the ability to hire and retain great talent. It helps minimize the costs in recruiting and contributes to the overall growth of the business. So, the main purpose of this project is to find the factors causing the attrition in their organizations.

2. LITERATURE SURVEY

2.1 Existing Problem:

- Work culture in the organization
- Less work life balance
- Employee job satisfaction in the organization
- Lack of recognition and better pay
- Huge pressure on employees
- Not allocating the employees based on their skills and interest to the department.

The above-mentioned points are the major cause for the employees leaving the organization.

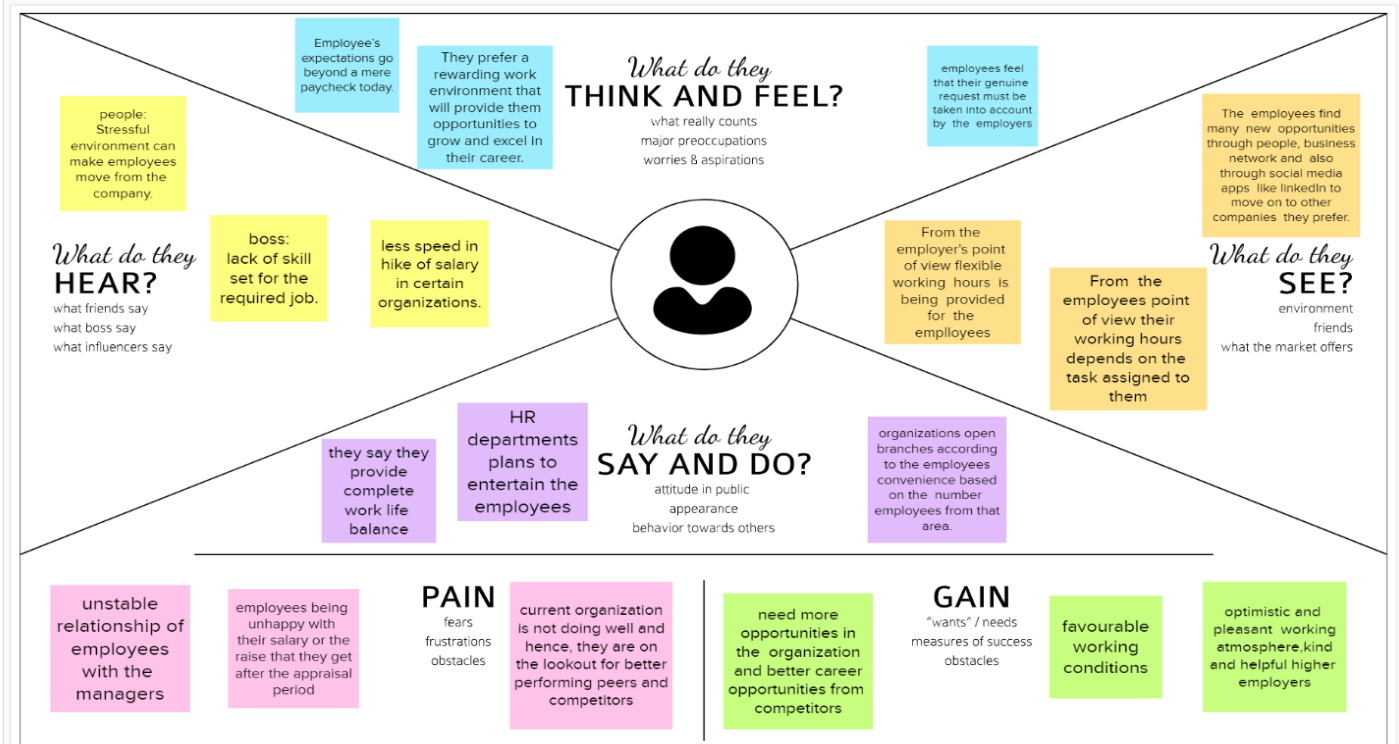
2.2 References:

- Setiawan, I., Suprihanto, S., Nugraha, A. C., & Hutahaeen, J. (2020, April). HR analytics: Employee attrition analysis using logistic regression. In IOP Conference Series: Materials Science and Engineering (Vol. 830, No. 3, p. 032001). IOP Publishing.
- Ganthi, Lok Sundar, et al. "Employee Attrition Prediction Using Machine Learning Algorithms." Proceedings of International Conference on Data Science and Applications. Springer, Singapore, 2022.
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- Nagadevara, Vishnuprasad, Vasanthi Srinivasan, and Reimara Valk. "Establishing a link between employee turnover and withdrawal behaviours: Application of data mining techniques." (2008).

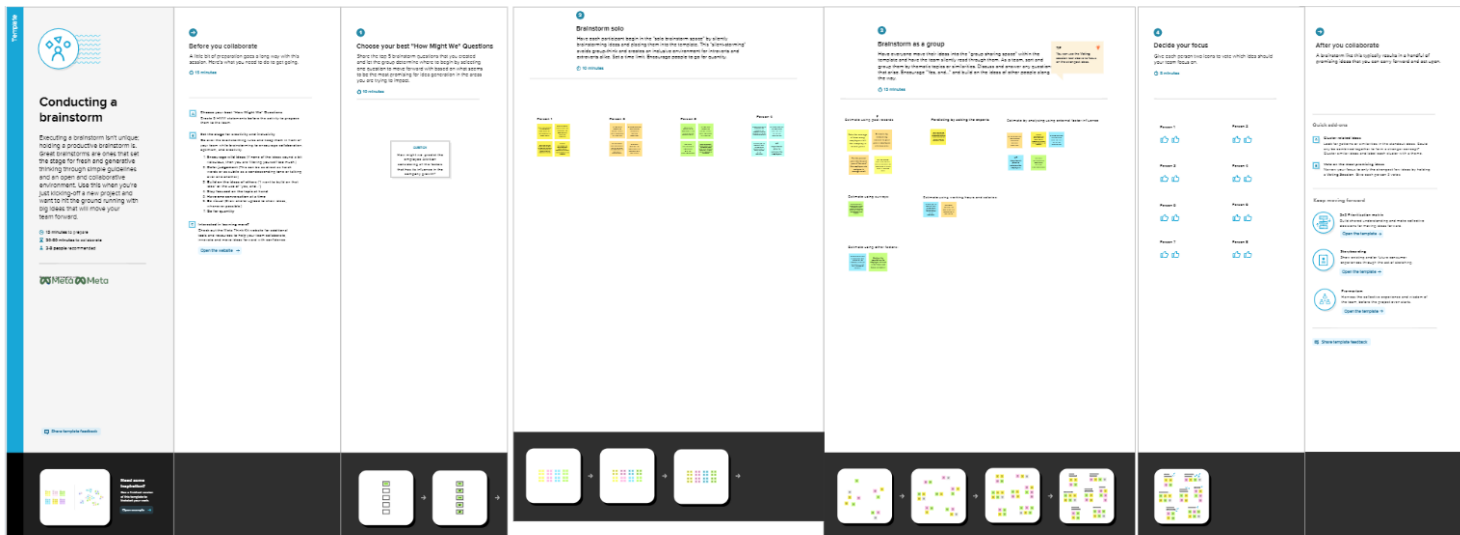
3. IDEATION & PROPOSED SOLUTION:

3.1 Empathy Map

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



3.2 Ideation & Brainstorming:



3.3 Proposed Solution:

The main aim is to identify what all the factors contribute for the employee attrition rate in an organization by using the gathered dataset and IBM Cognos Analytics tool for visualizing the data with different charts and deriving the insights from it. The proposed solution will help the organization analyze the causes of attrition. It will help them in retaining the employees with them.

3.4 Problem Solution fit:

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) CS Corporate Organizations	6. CUSTOMER CONSTRAINTS CC Insufficient insights/knowledge about the factors causing attrition in their organization.	5. AVAILABLE SOLUTIONS AS <ul style="list-style-type: none">• They just moved on to search for other available talent in the market.• There are solutions which use classification, logistic regression, CART, confusion matrix etc., (machine learning techniques) to predict probability of employees who fall under the condition of attrition and thus its high risk of leaving the company.	Explore AS, differentiate
	2. JOBS-TO-BE-DONE / PROBLEMS J&P <ul style="list-style-type: none">• Help them understand the usage of prediction and software application for good results in agriculture.• Data report should to be created to reduce the loss of the crop and earn more profit in agriculture fields	9. PROBLEM ROOT CAUSE RC Salary hike, employer-employee relationship, work culture, not steeper learning curve, uncertain environment	7. BEHAVIOUR BE <ul style="list-style-type: none">• Companies will collect the data to derive insights about the factors causing attrition in their companies.• HR analyst in organization conduct surveys to know about reasons why employees are leaving the company.• Try to know the perks and benefits offered by their competitors in the market.	
Focus on J&P, tap into BE, understand RC				Focus on J&P, tap into BE, understand RC

Identify strong TR & EM	3. TRIGGERS The Attrition, which leads to huge loss and time consumption for the company to find the new replacement triggers them to find a solution for this problem.	TR	10. YOUR SOLUTION The main idea to solve this problem is to identify what all factors contribute for the growth of attrition rate in an organization and to improvise these factors to prevent loss of good people. This can be done by generating a visual report of the dataset containing those factors with the help of IBM Cognos analytics tool. Suggesting of new policies to company based on their attrition rate and the factors causing attrition.	SL	8. CHANNELS of BEHAVIOUR 8.1 ONLINE A detailed view over the perks and benefits offered by the organization has to be mentioned in their website and promote themselves through blogs and employee reviews 8.2 OFFLINE Conducting offline events and encouraging employees with fun activities often to keep them in comfort zone.	CH	Identify strong TR & EM
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Identify strong TR & EM	4. EMOTIONS: BEFORE / AFTER Before: Companies were clueless about the root causes/factors of attrition in their organizations After: Companies are able to find out the reasons for attrition through better visualization & report on the data (factors causing attrition) and plan to take necessary actions to retain employees in advance.	EM			Identify strong TR & EM
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4. REQUIREMENT ANALYSIS:

4.1 Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Input data	<ul style="list-style-type: none"> Get input from HR team Specific surveys Company records
FR-2	Data Preprocessing	<ul style="list-style-type: none"> Clean the data Explore the attributes
FR-3	Visualization charts	Using IBM Cognos analytics, generate the required visualization charts for deriving insights
FR-4	Dashboard	Preparing the final dashboard for the provided data
FR-5	Storing the output	At the end, storing the solution in the filesystem/database of users.

4.2 Non-functional Requirements:

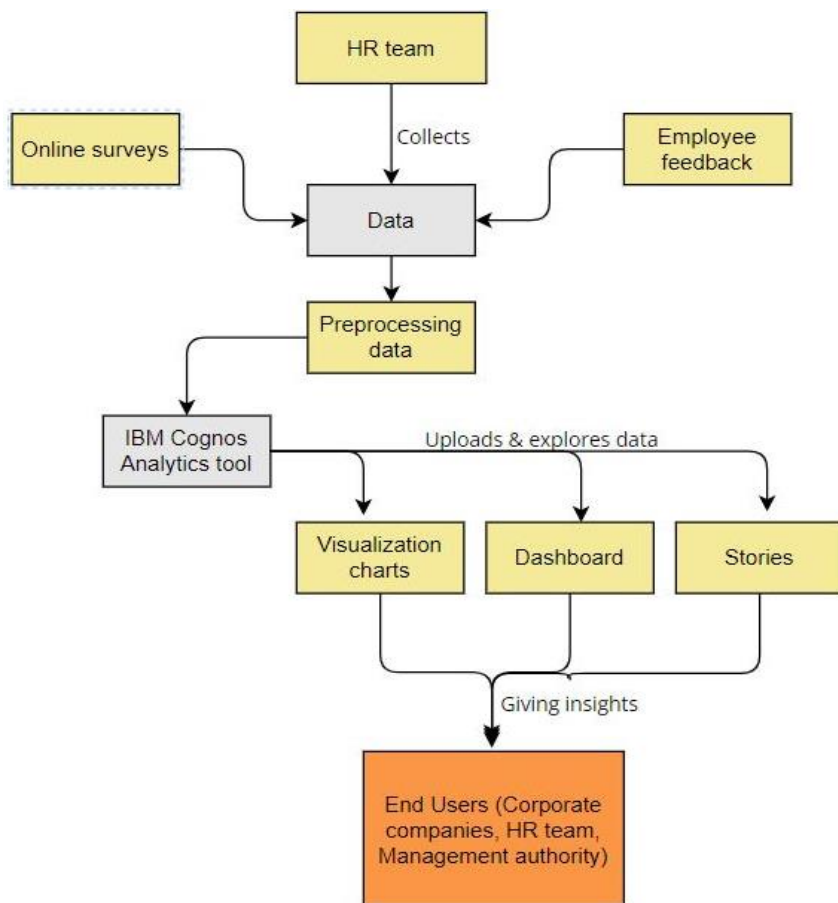
Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Corporate companies must get a useful insight about their current attrition factors with very interactive efficient interface.
NFR-2	Security	The data which is used for this solution building should be stored in a secure medium for security purposes.
NFR-3	Reliability	The proposed solution model should give high accuracy insight for the end users.
NFR-4	Performance	The model must take less time and system resource for generating the data visualizations
NFR-5	Availability	Model should run at anytime convenient to the users and gives insights
NFR-6	Scalability	The solution model must handle even the huge dataset provided to it.

5. PROJECT DESIGN:

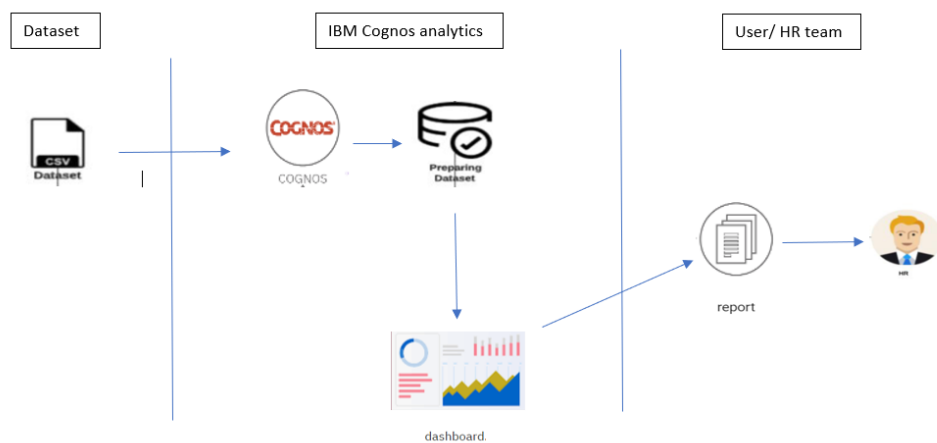
5.1 Data Flow Diagram:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



5.2 Solution & Technical Architecture:

Technical Architecture:



6. PROJECT PLANNING & SCHEDULING:

6.1 Sprint Planning

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Understanding of the dataset	USN-1	As a user, I collect the relevant data through online surveys, employee feedback and company records	2	High	Dhaarani
Sprint-2	Data module creation & Exploration	USN-2	As a user, I need to pre-process the collected data	1	High	Soundarya, Dhivya, Padma
Sprint-3	Visualization charts	USN-3	As a user, I visualize the data through different charts for deriving insights	2	Medium	Dhaarani, Dhivya
Sprint-4	Final Dashboard & exporting it	USN-4	As a user, I can get the final dashboard which provides factors causing attrition	2	Medium	Soundarya, Padma

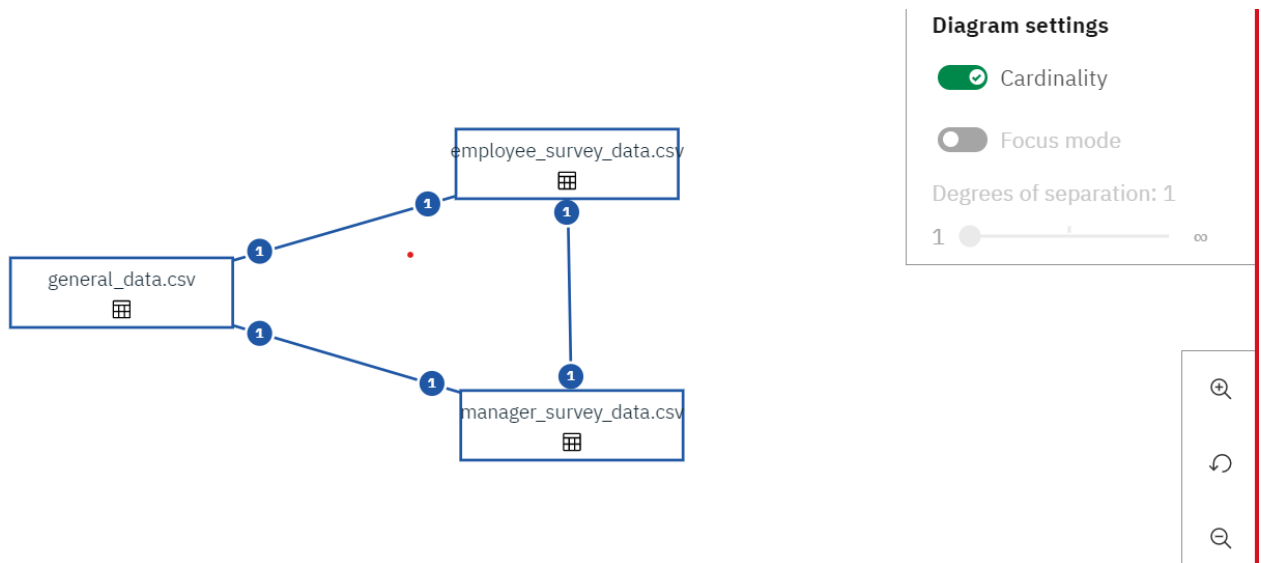
6.2 Sprint Delivery Schedule:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	29 Oct 2022	01Nov 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	05 Nov 2022	06 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	08 Nov 2022	09 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	11 Nov 2022	12 Nov 2022

7. SOLUTION:

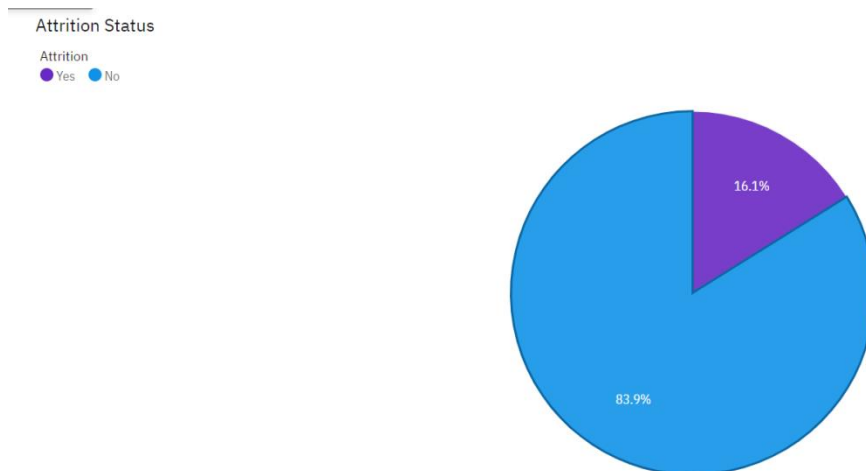
Here, we have created the visualization charts for the gathered dataset. Through that we have analyzed the factors causing the attrition in the organization.

DATA MODULE:

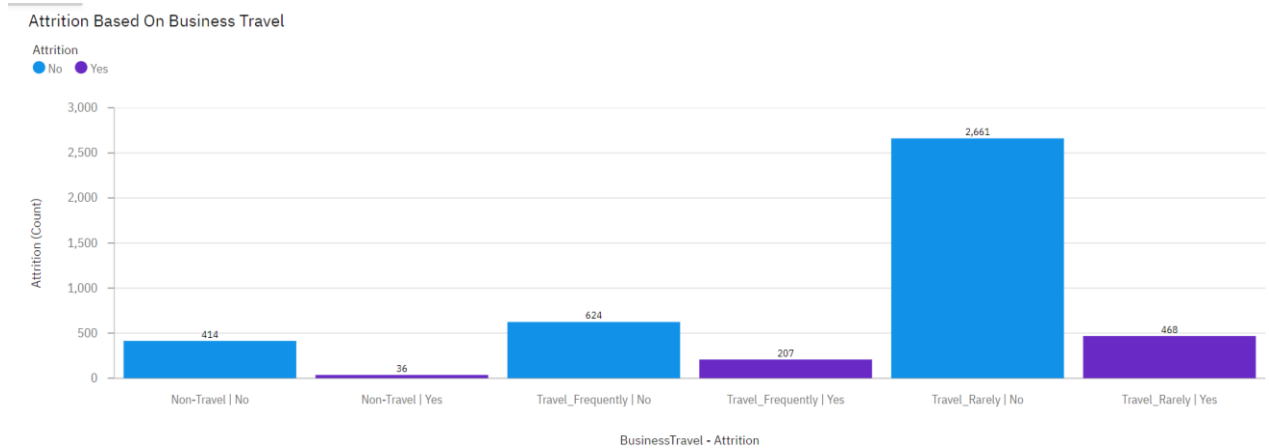


Visualization charts:

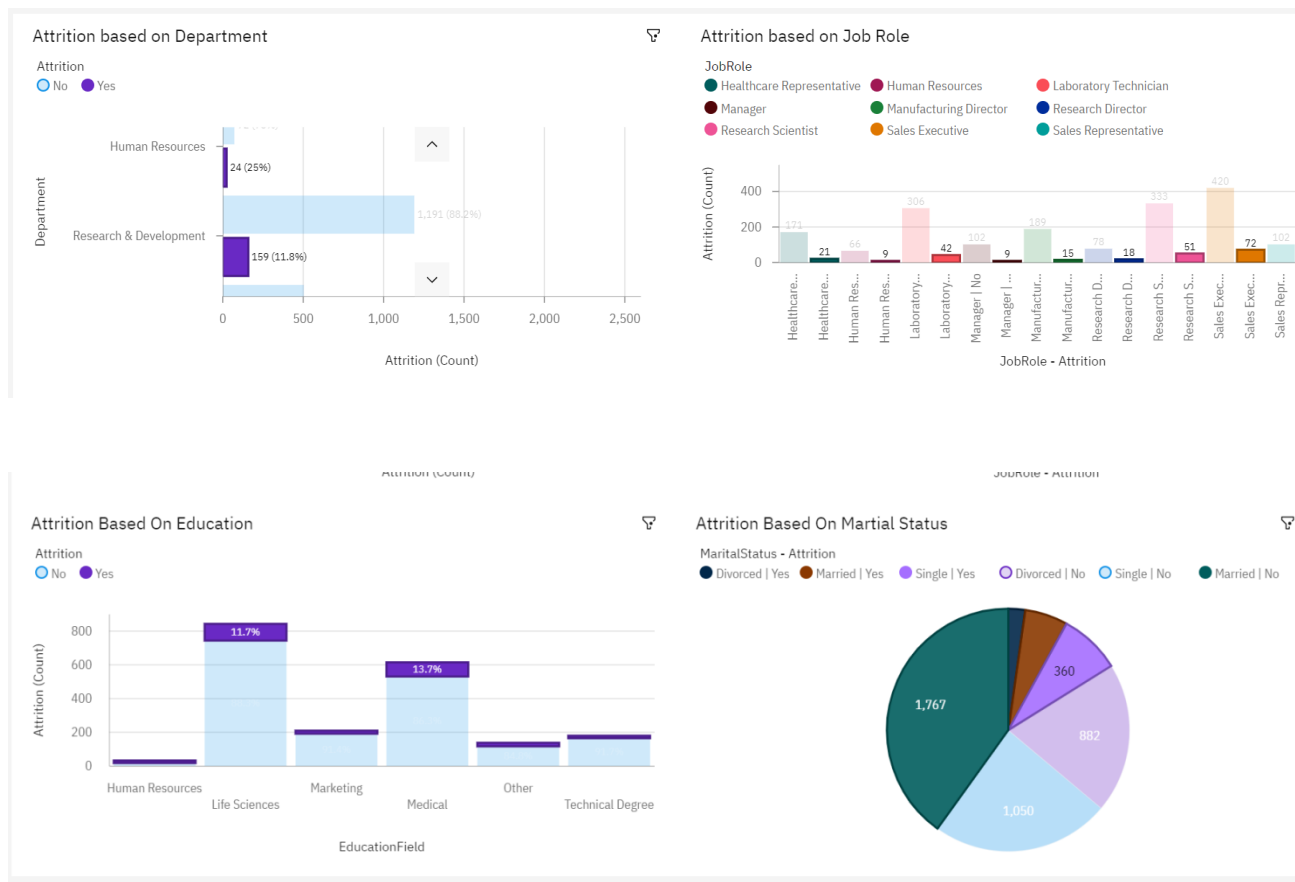
- Building of Visualizations with Analysis based on Data distribution.
- Attrition status



- Attrition by Business Travel



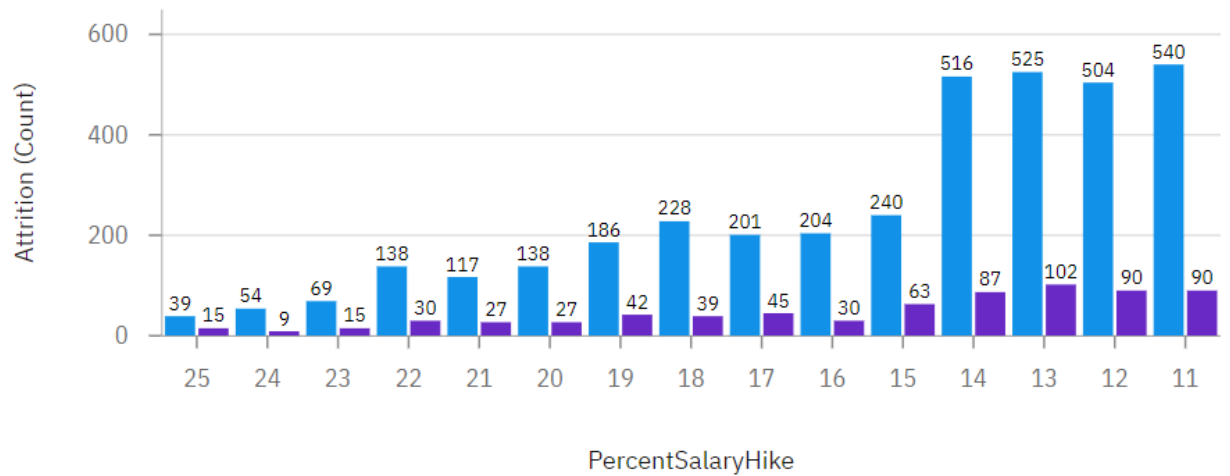
- Attrition by Department, Job Role, Education Level and Marital Status



- Attrition by Salary Hike Percent

Attrition Based On Percentage Salary Hike

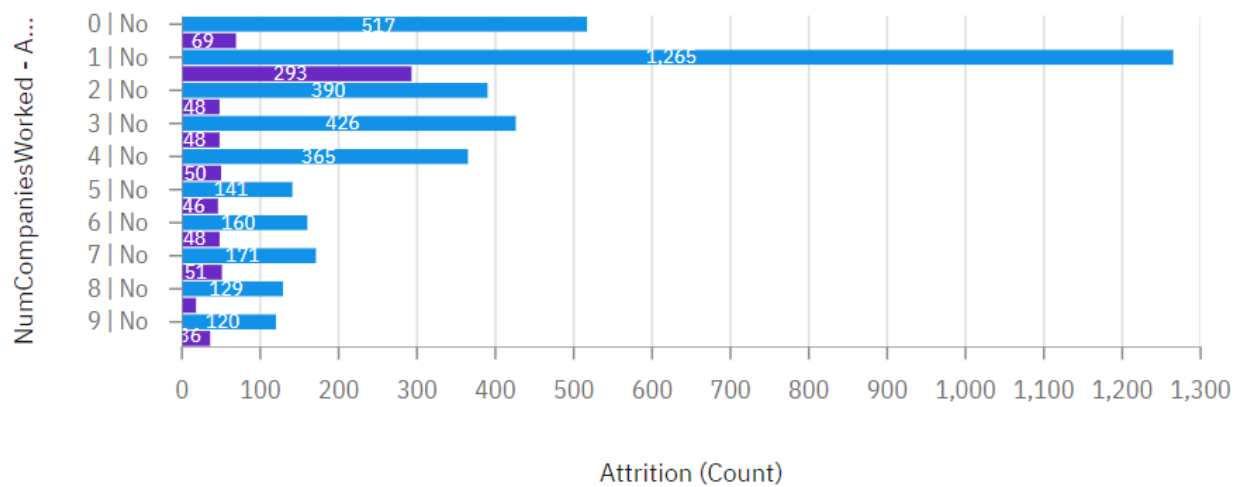
Attrition
● No ● Yes



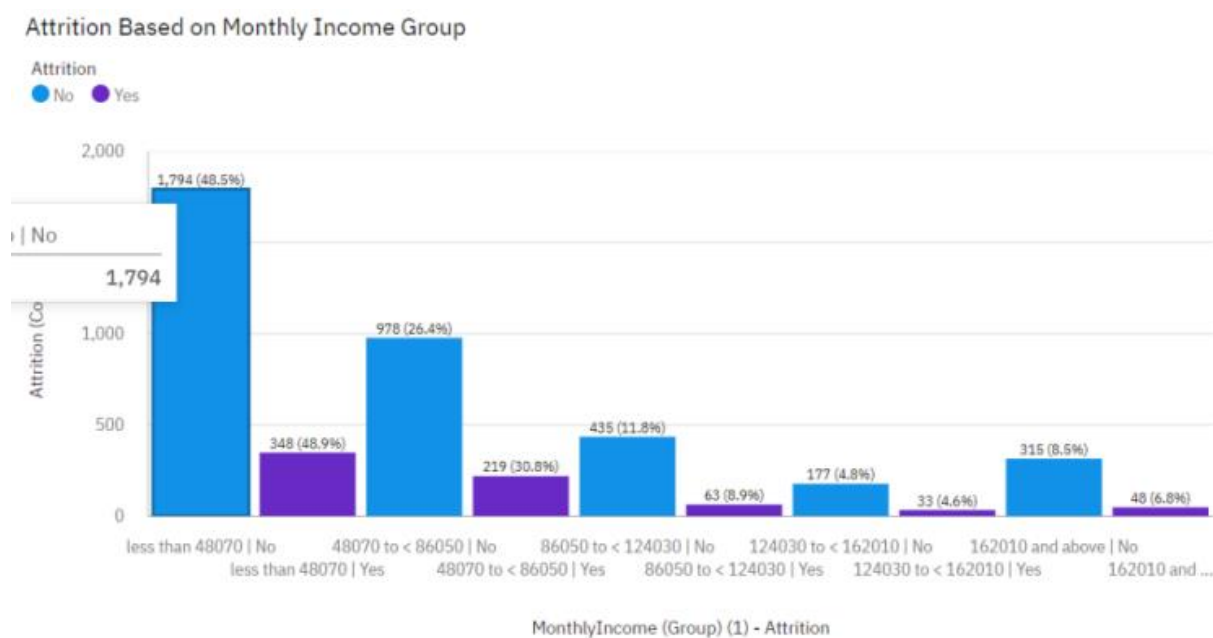
- Attrition by No. of Companies Worked

Attrition Based On Number of Companies Worked

Attrition
● No ● Yes

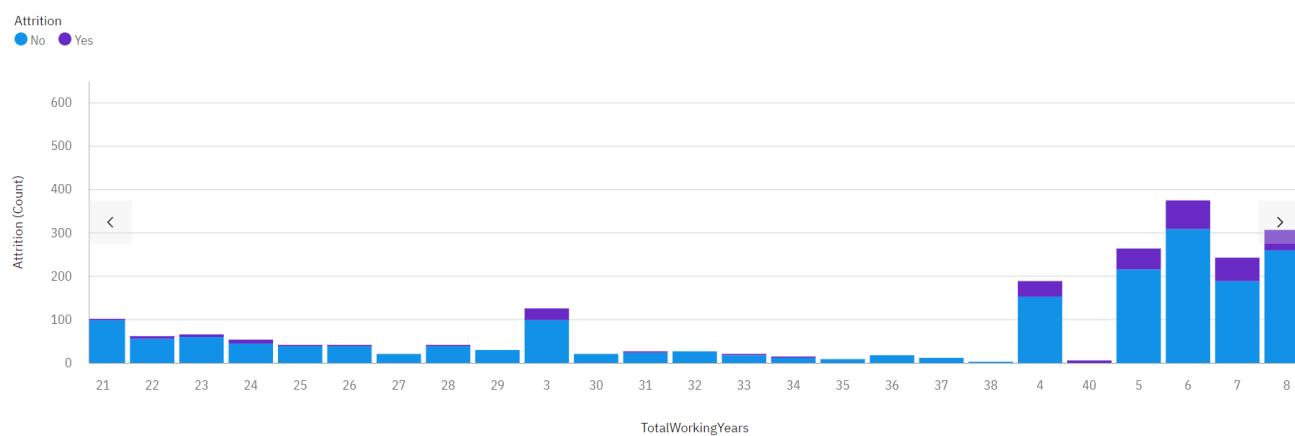


- Attrition by Income Groups



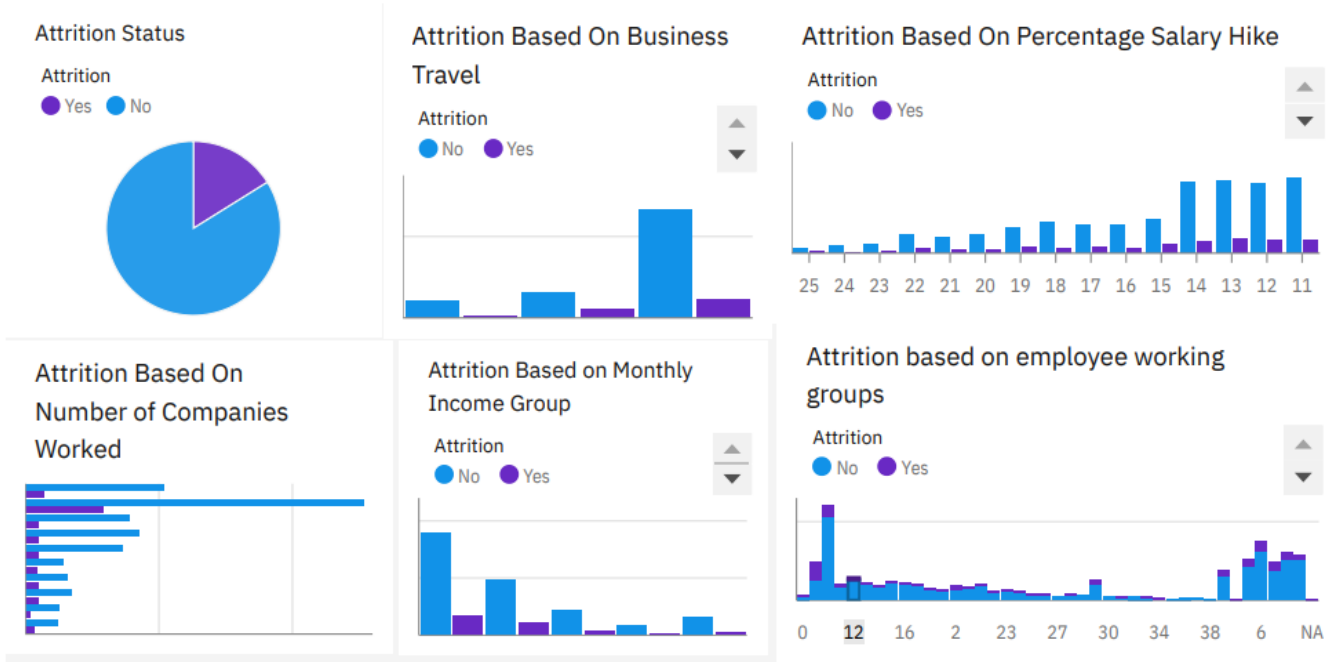
- Dashboard of Attrition of Employees based on Employment details

Attrition based on employee working groups

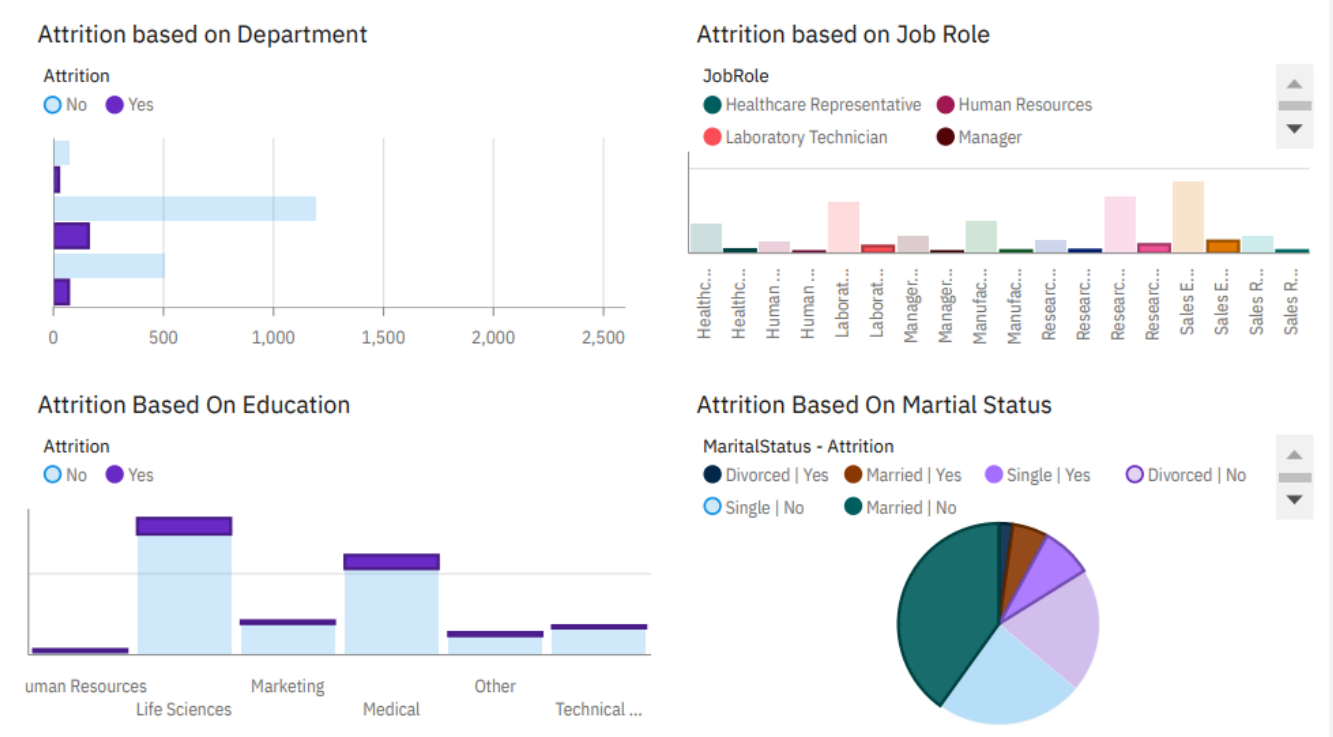


8. Results:

Dashboard 1



Attrition based on Department, Job Role, Education, Martial Status



9. Advantages and Disadvantages:

Advantages:

- It helps organizations to understand the employee's mindset
- Enhance the work culture
- Increase the employee benefits and perks
- Come-up with employee friendly policies

Disadvantages:

- Losing engaged and hard-working staff.
- Rehiring time and expenses.
- Indicating existing staffs' dissatisfaction and unhappiness.
- Pressurizing remaining staff.
- Delaying other business plans and developments.

10. Conclusion

At the start of this project, we identified the importance of talent retention for a company and collected a dataset on employee information and attrition. We then completed an exploratory data analysis, creating visualizations charts to understand the demographics and features of employees who left the organization. Then we concluded that there are some variables that are important factors in an employee's decision to attrit such as education fields, job roles, satisfaction, etc.The insights uncovered through analysis can be used to develop action items that help prevent future loss of talent.

11. Future Scope

Further enhancements can be made by collecting much more data from the employees and building an AI based tool to predict the attrition in the organization.

That tool may be a commercial one which provides service for the entire business sector. By providing the necessary insights and some tips and suggestions to help the organizations retain their employees in the organization.