

DEPI Graduation Project

HR DATA ANALYSIS

This project focuses on analyzing HR data to gain insights into key factors affecting employee performance, satisfaction, and attrition within a company.



All Thanks

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روداد مصر الرقمية

WHAT WE WILL TALK ABOUT

Introduction

Our Analysis Objective

Project Used Tools

Topics Covered

Recommendations

Questions & Discussion



HELLO, EVERYONE!



Yosr Hammad



Baher Gamal



Malak Negm



Mohamed ElRasy



Soha AlNagar



OUR ANALYSIS OBJECTIVE

This project focuses on analyzing HR data to gain insights into key factors affecting employee performance, satisfaction, and attrition within a company. The dataset includes a wide variety of attributes related to employee demographics, performance reviews, job satisfaction, work-life balance, and attrition.



PROJECT USED TOOLS

- **Power Query:**

1. Data collection and cleaning
2. Handling missing values and transforming data for analysis

- **MYSQL**

1. Extracting data insights using SQL queries
2. Identifying patterns and correlations through database queries

- **Excel**

1. Creating Pivot Tables for data summarization
2. Developing visualizations (bar charts, pie charts, line charts) for insights representation



TOPICS COVERED

FIRST TOPIC

- Data Collection
- Data Cleaning

SECOND TOPIC

- Data Exploration
- Data Transformation

THIRD TOPIC

- Data Modeling
- Data Visualization



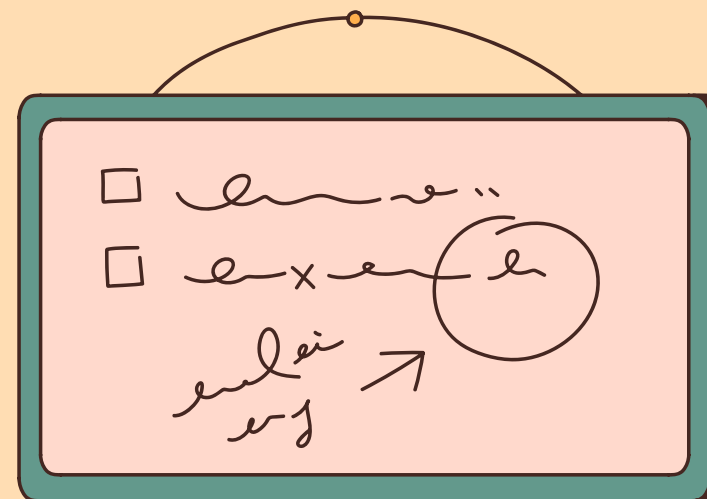
FIRST TOPIC

DATA COLLECTION.

Gather raw data from CSV files.

DATA CLEANING.

Handle missing values, duplicates, and outliers.



Data Collection & Cleaning

EnvironmentSatisfaction	JobSatisfaction	RelationshipSatisfaction
5	4	5
5	4	4
3	4	5
5	3	2
5	2	3
3	3	2
3	4	5
4	5	4
4	5	2
5	4	3
4	3	3
4	4	2
3	5	3

Raw Data

Fill Data

RatingID	RatingLevel
1	Unacceptable
2	Needs Improvement
3	Meets Expectation
4	Exceeds Expectation
5	Above and Beyond

SECOND TOPIC

DATA EXPLORATION.

Perform descriptive analysis to understand the structure.

DATA TRANSFORMATION.

Filter, group, or aggregate data for deeper analysis



SQL Queries:

--1- Number of employee-----

```
SELECT COUNT(*) AS TotalEmployees  
FROM ['All data$'];
```



Results



Messages

	TotalEmployees
1	1280

--2- Male to Females employee-----

```
SELECT  
    Gender ,  
    COUNT(*) AS TotalEmployees,  
    (COUNT(*) * 100.0 / (SELECT COUNT(*) FROM ['All data$'])) AS Percentage  
FROM ['All data$']  
WHERE Gender IS NOT NULL  
GROUP BY  
    Gender;
```



Results



Messages

	Gender	TotalEmployees	Percentage
1	Non-Binary	109	8.515625000000
2	Prefer Not To Say	15	1.171875000000
3	Male	561	43.828125000000
4	Female	595	46.484375000000

--3- employee distribution based on department-----

```
SELECT
    Department,
    COUNT(*) AS TotalEmployees
FROM
    ['All data$']
WHERE
    Department IS NOT NULL
GROUP BY
    Department
ORDER BY
    TotalEmployees DESC;
```

Results		Messages	
	Gender	TotalEmployees	Percentage
1	Non-Binary	109	8.515625000000
2	Prefer Not To Say	15	1.171875000000
3	Male	561	43.828125000000
4	Female	595	46.484375000000

-4-- Retention Rate-----

```
SELECT
    (COUNT(CASE WHEN Attrition = 'No' THEN 1 END) * 100.0 / COUNT(*)) AS RetentionRate
FROM
    ['All data$']
```

Results		Messages	
	RetentionRate		
1	81.484375000000		

--9-- EDUCATION-----

```
SELECT
    Education,
    COUNT(*) AS TotalEmployees
FROM
    ['All data$']
WHERE
    Education IS NOT NULL

GROUP BY
    Education
ORDER BY
    Education;
```

Results

Messages

	Education	TotalEmployees
1	Bachelors	500
2	Doctorate	41
3	High School	253
4	Masters	333
5	No Formal Qualifications	153

--5- Years at company-----

```
SELECT
    AVG(YearsAtCompany) AS AvgYearsAtCompany
FROM
    ['All data$'];
```

Results

Messages

	AvgYearsAtCompany
1	5.19296875

Pivot Tables:

	Mrital status ▼	No.of employee	
	Divorced	21.48%	
	Married	44.14%	
	Single	34.38%	
	Grand Total	100.00%	

	Department ▼	No.of employee	
	Human Resources	4.14%	
	Sales	30.00%	
	Technology	65.86%	
	Grand Total	100.00%	

	Department ▼	No.of employee	
	Human Resources	53	
	Female	29	
	Male	19	
	Non-Binary	4	
	Prefer Not To Say	1	
	Sales	384	
	Female	177	
	Male	176	
	Non-Binary	29	
	Prefer Not To Say	2	
	Technology	843	
	Female	389	
	Male	366	
	Non-Binary	76	
	Prefer Not To Say	12	
	Grand Total	1280	

	Gender ⚡	No.of employee	
	Female	51.47%	
	Male	48.53%	
	Grand Total	100.00%	

THIRD TOPIC

Data Visualization:

Represent findings visually through charts and graphs

INSIGHTS & REPORTING:

Interpret visualized data to generate actionable insights





Human Resources Analysis Dashboard From (2012 - 2022)



Company's Employee



NO.Of Employee

1280



AVG. Retention Rate

81.48



Years In Same Role

2.61



Years At Company

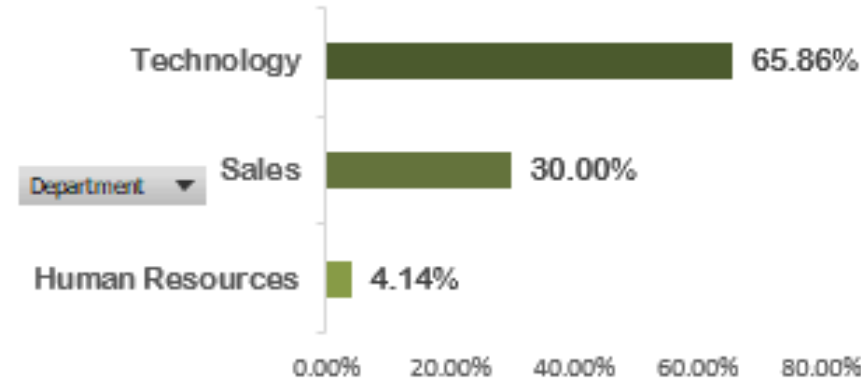
5.19

Company
Demographic
Analysis

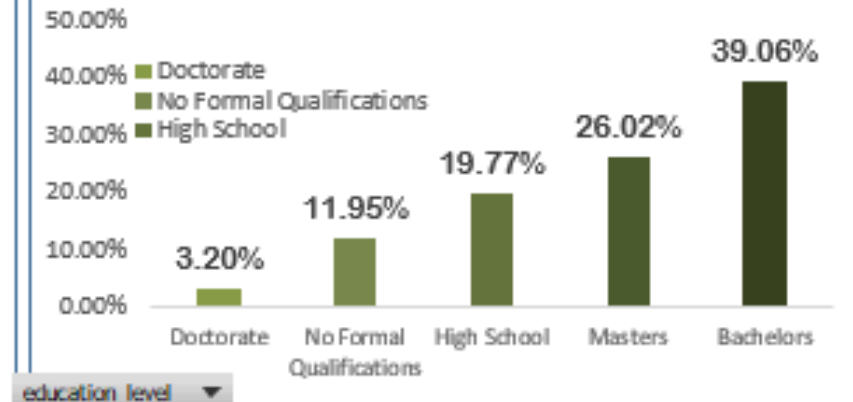
% Of Female to Males



% Of Employee per Depa.

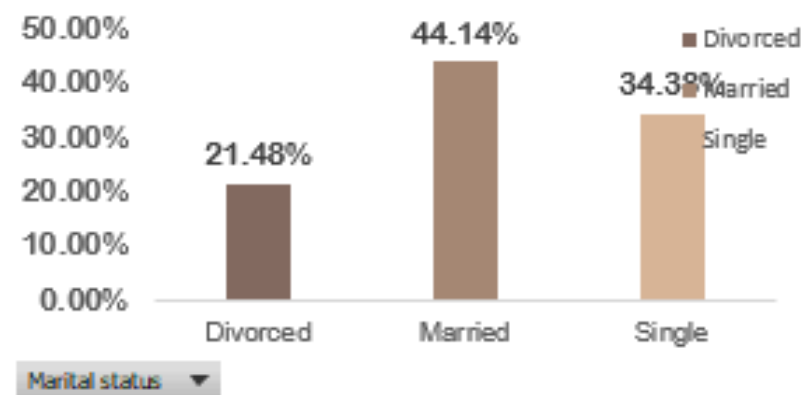


% Education Level

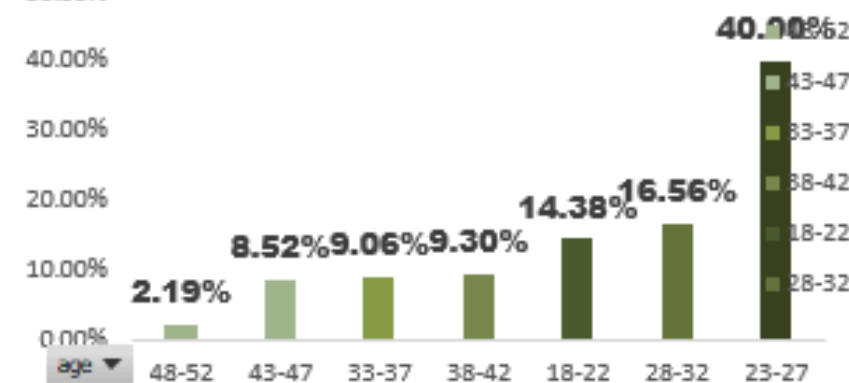


Attrition Analysis

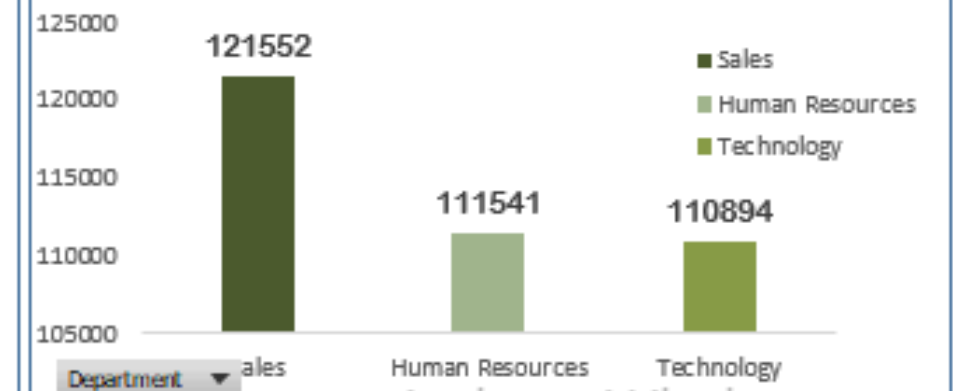
% Of Marital Status



% Of Employees' Age



AVG. Salary per Dept.



Performance Analysis

Activate Windows

Company Demographic Analysis:

Company's Employee

Company DemoGraphic Analysis

Attrition Analysis

Performance Analysis

Department

Human Resources

Sales

Technology

Travel

Frequent Traveller

No Travel

Some Travel

Enthicty

American Indian or Alaska Native

Asian or Asian American

Black or African American

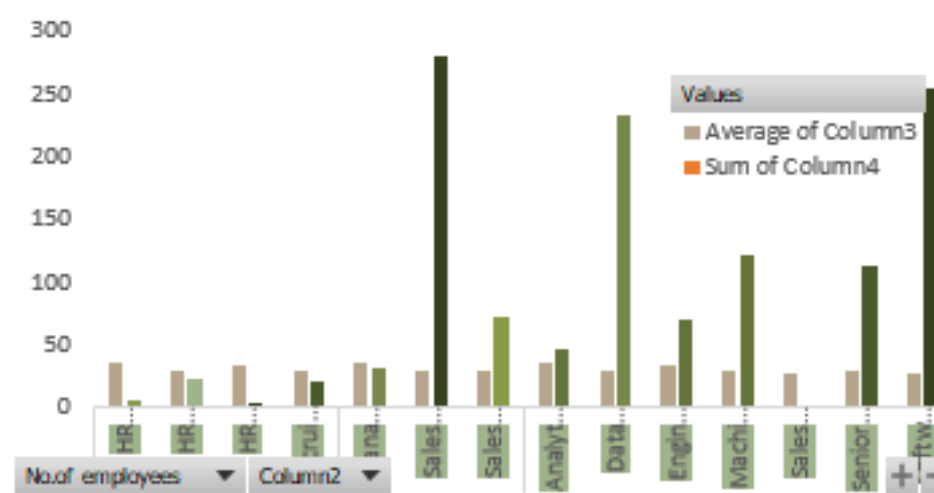
Mixed or multiple ethnic groups

Native Hawaiian

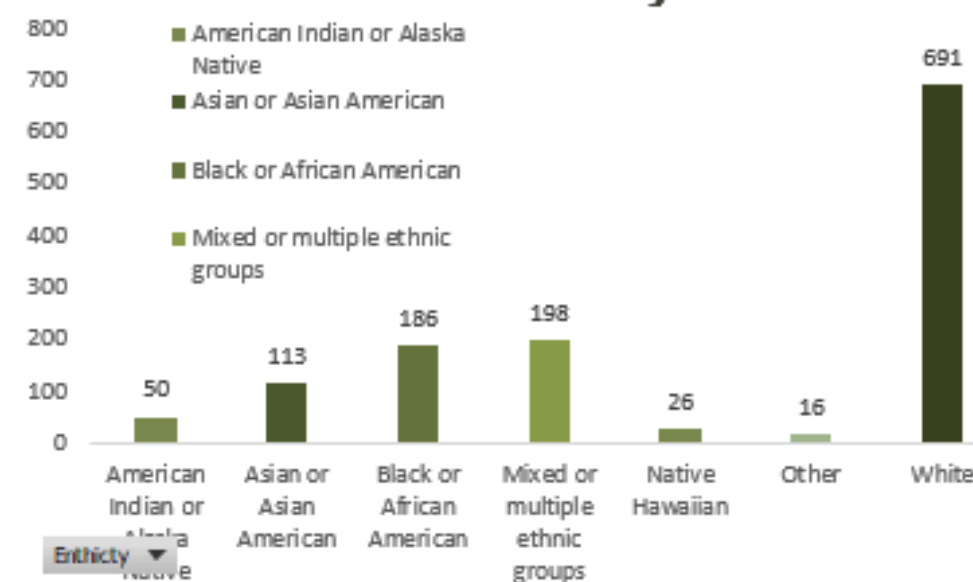
Other

White

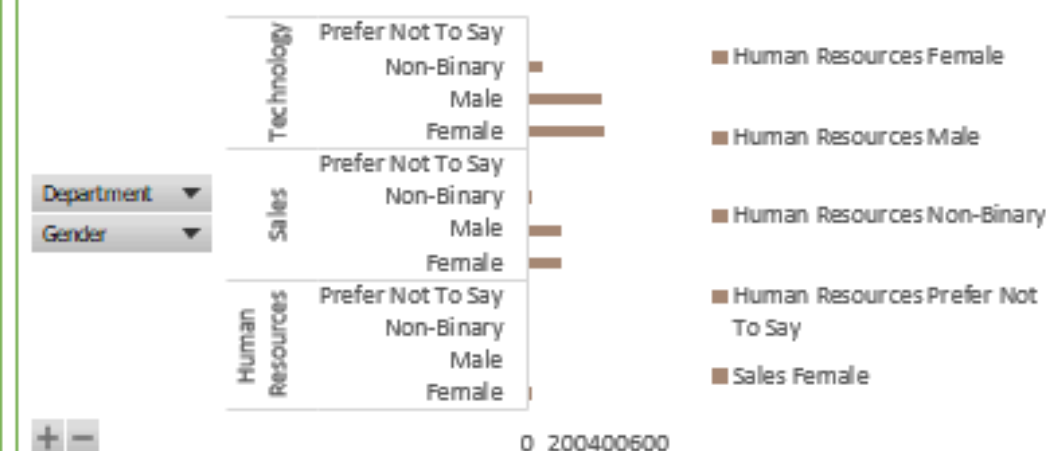
Age Distribution by Department and Job Role



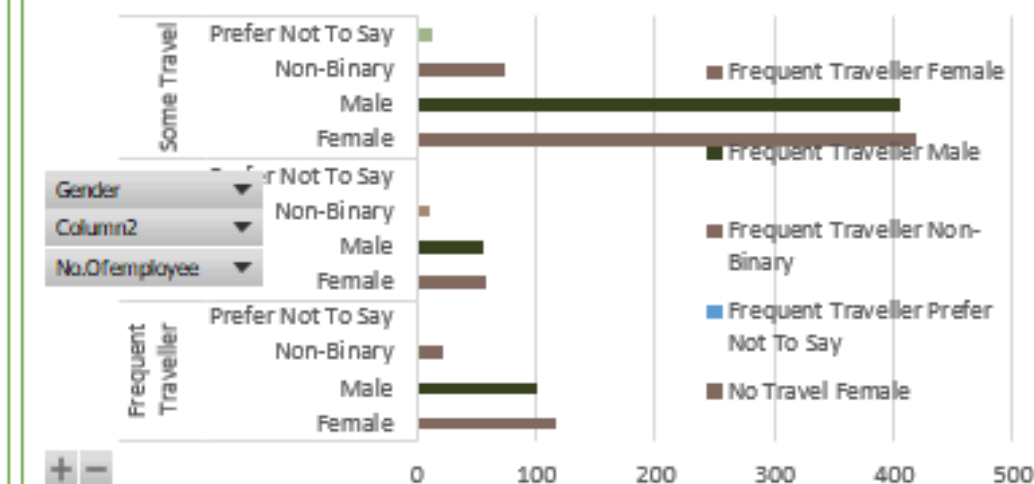
Ethnic Diversity:



Employee Count by Department and Gender:



Business Travel Analysis:



Activate Windows

Attrition Analysis

Company's Employee

Company Demographic Analysis

Attrition Analysis

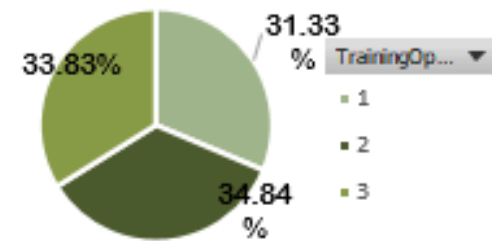
Performance Analysis

Attrition

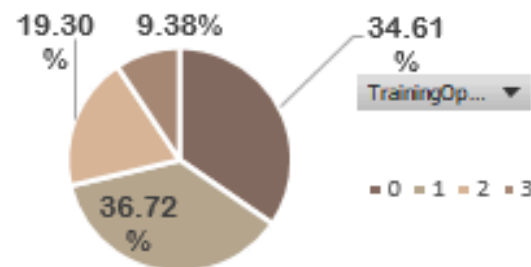
No

Yes

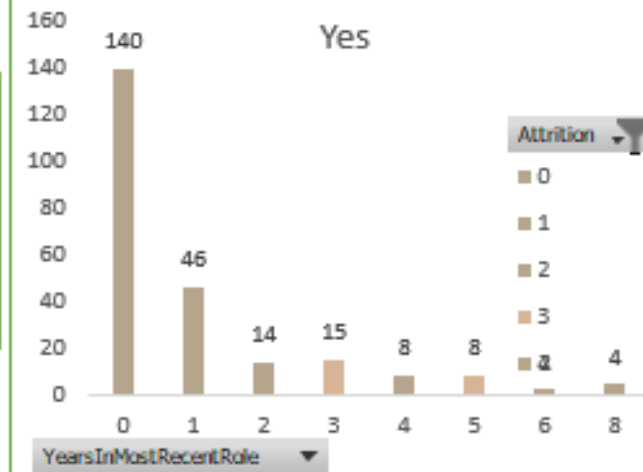
Training OPPortunities



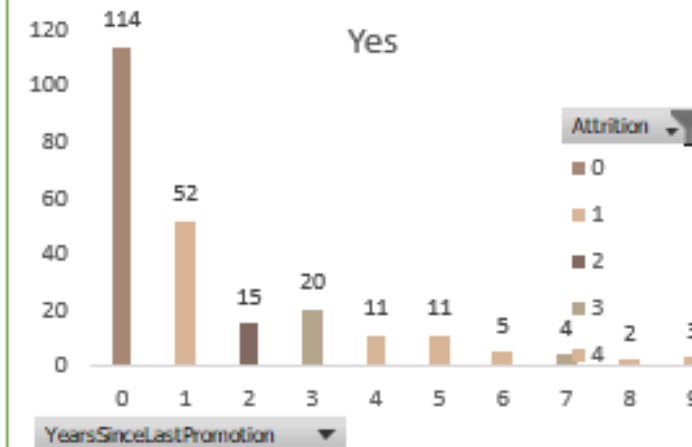
Training Opp. Taken



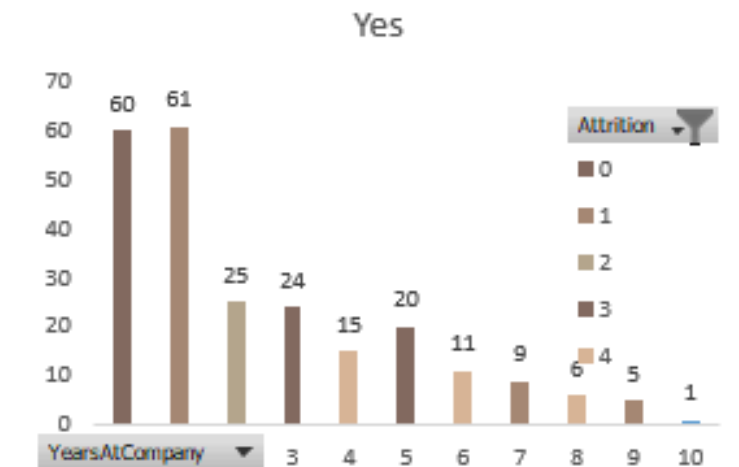
Years In Most Recent Role



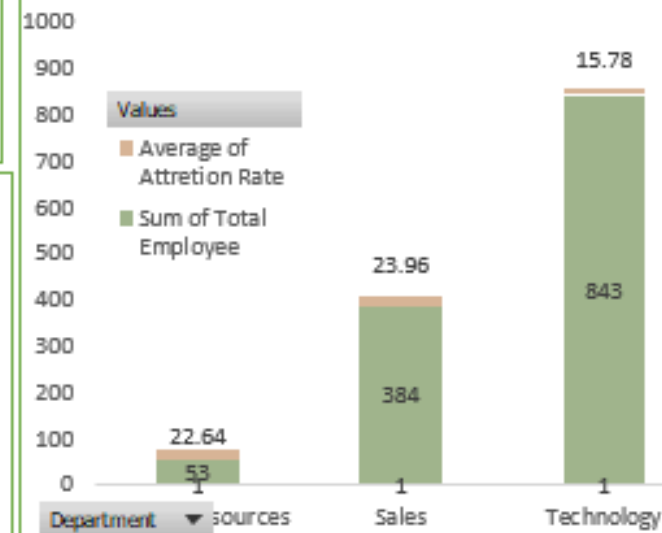
Years Since Last Promotion



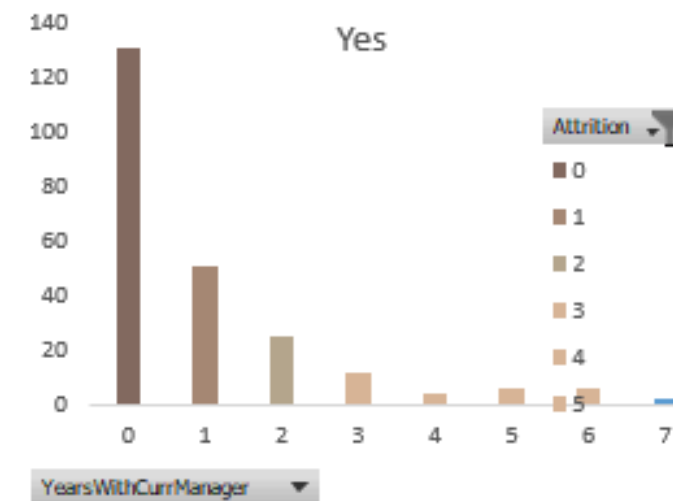
Years At Company



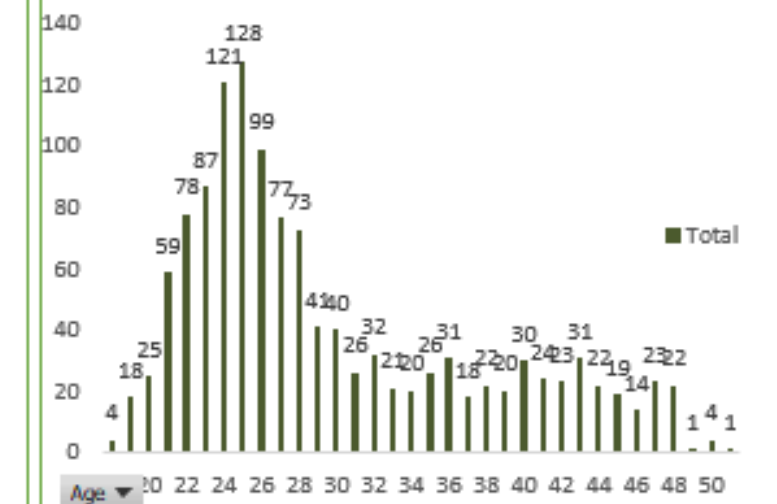
Department& Attrition



Years Wuth Current Manager



Attrition By Age



Activate Windows

Performance Analysis:

Company's Employee

Company Demographic Analysis

Attrition Rate

Performance Analysis

JobRole

Analytics Manager

Data Scientist

Engineering Manager

HR Business Partner

HR Executive

HR Manager

Gender

Female

Male

Non-Binary

Prefer Not To Say

Age

18

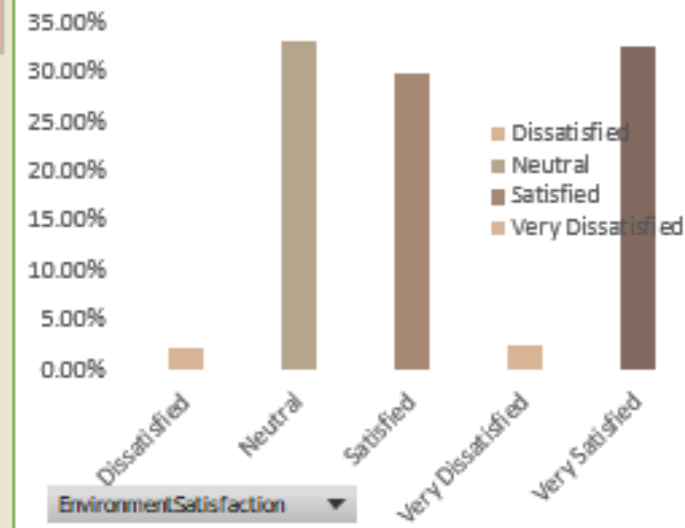
19

20

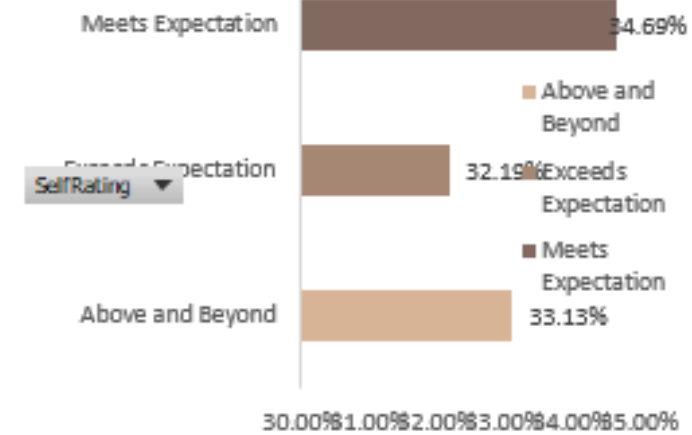
21

22

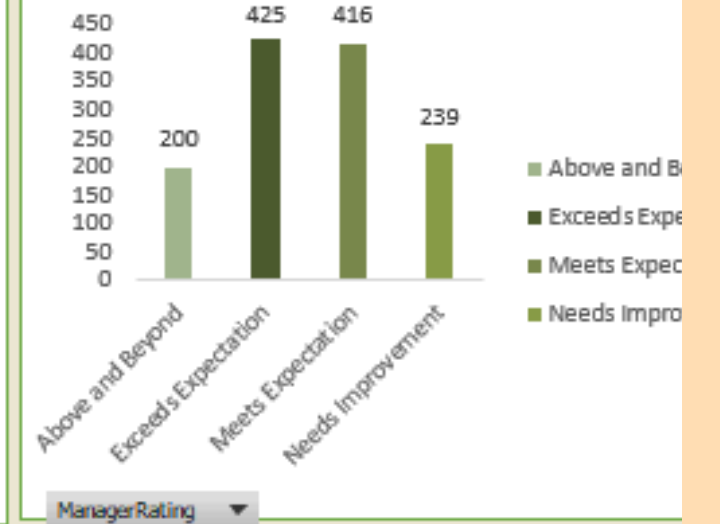
Environment Satisfaction



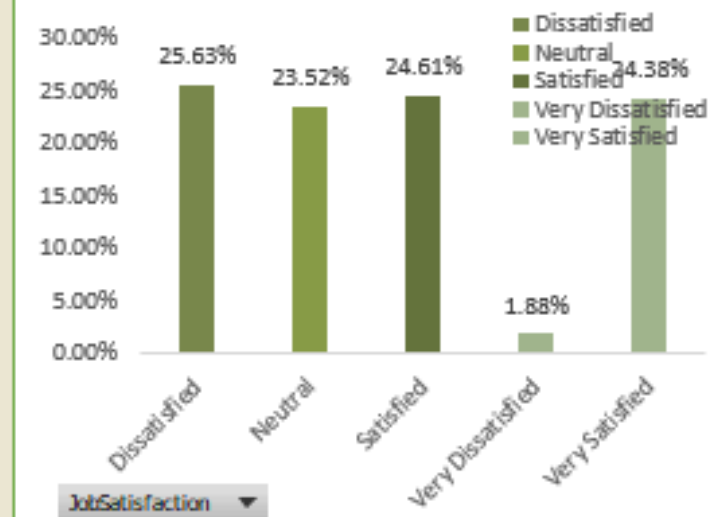
Self Rating



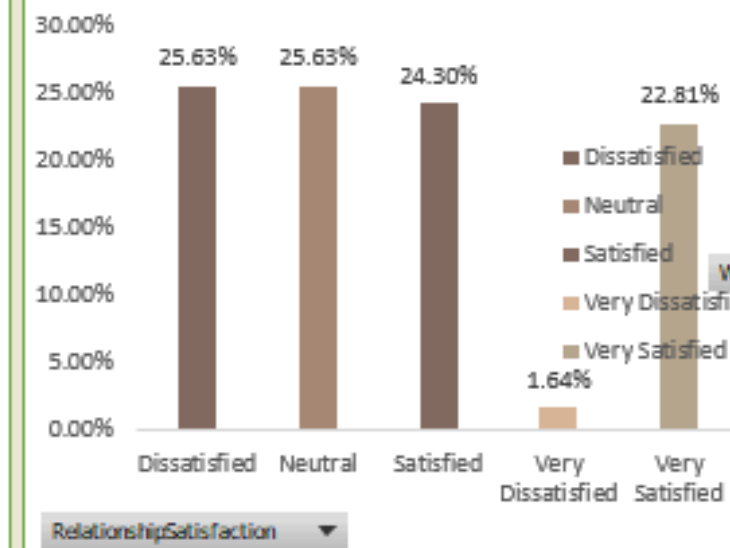
Manager Rating



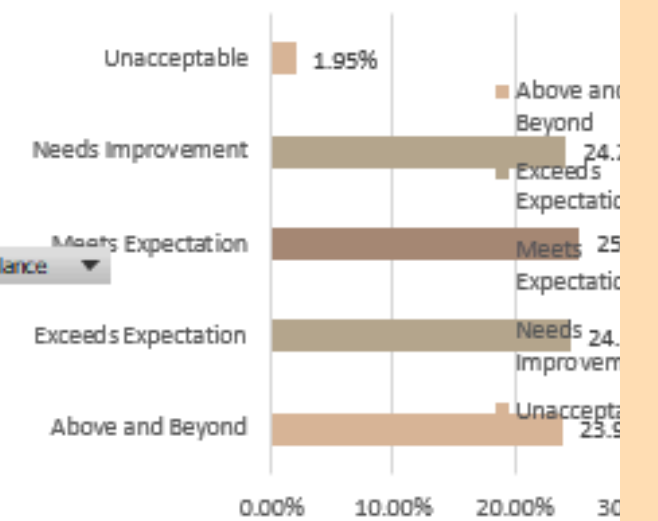
Job Satisfaction



Relationship Satisfaction



WorkLife Balance



RECOMMENDATIONS

Improve Employee Retention

Focus on high-attrition departments and identify specific causes

Optimize Training Programs

Analyze the impact of training opportunities on job satisfaction

Monitor Work-Life Balance

Assess work-life balance satisfaction regularly to prevent burnout.

Enhance Job Satisfaction

Provide targeted training and development opportunities for roles with lower satisfaction scores.

SUMMARY OF KEY POINTS

DEPI Graduation Project

TOOLS USED

Power Query

MYSQL.

EXCEL.

DATA PREPROCESSING

Data collecting& Cleaning

Data Exploration&
Transformation

Data Visualizations

YOU WILL FIND

Raw Data.

SQL Query.

Dashboard.

QUESTIONS & DISCUSSION.

Fell free to ask any questions, please.



THANK YOU FOR
LISTENING!

