Internship Report on HR Analytics using Power BI and DAX Measures
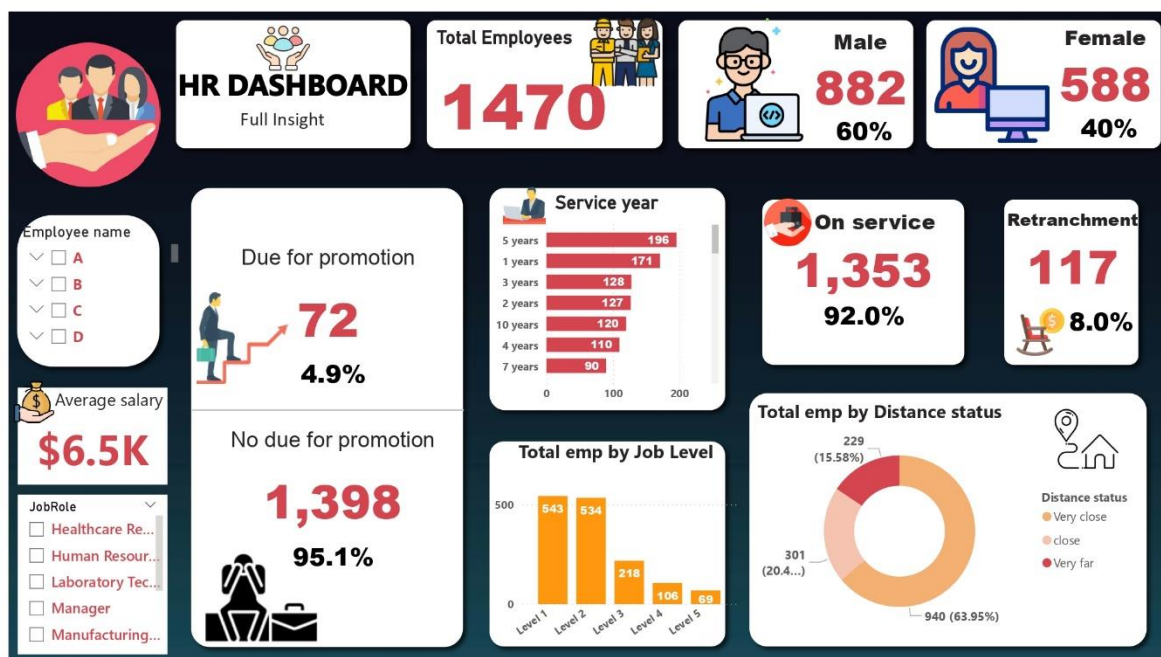
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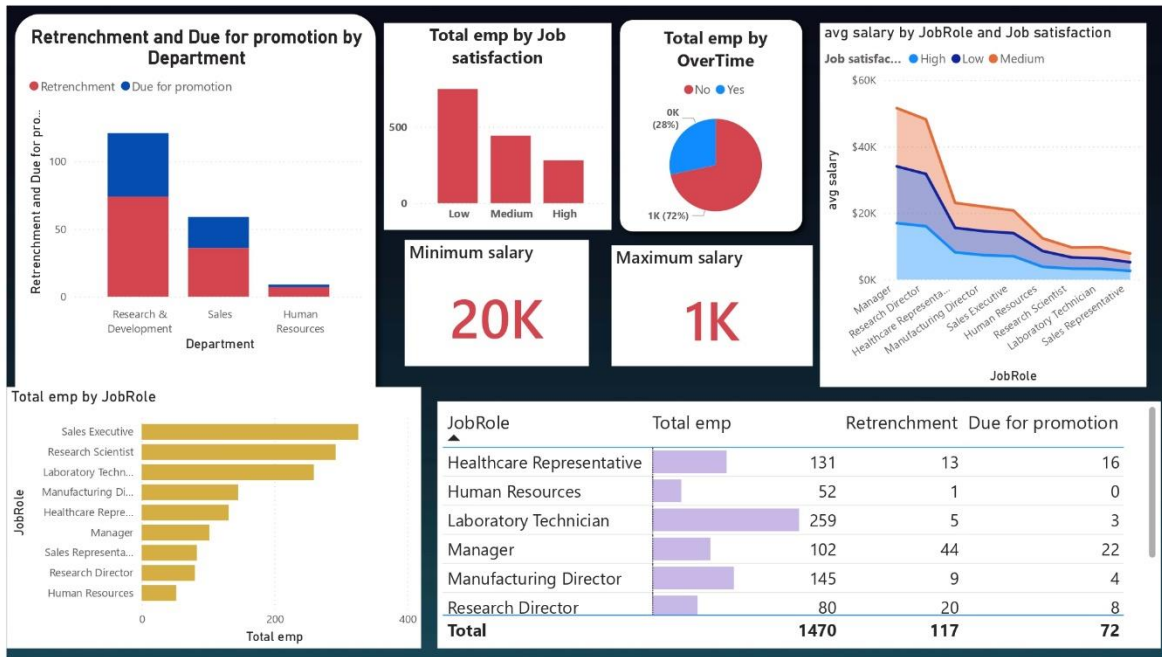
Milestone 1 – Infosys internship

Topic : HR ANALYTICS USING POWER BI AND DAX MEASURES

Mentor : Nagasri

DASHBOARD

Retrenchment and Due for promotion by Department

● Retrenchment ● Due for promotion

Total emp by Job satisfaction

Total emp by OverTime

● No ● Yes

0K (28%)
1K (72%)

avg salary by JobRole and Job satisfaction

Job satisfac... ● High ● Low ● Medium

Minimum salary	Maximum salary
20K	**1K**

Total emp by JobRole

JobRole	Total emp		Retrenchment	Due for promotion
Healthcare Representative		131	13	16
Human Resources		52	1	0
Laboratory Technician		259	5	3
Manager		102	44	22
Manufacturing Director		145	9	4
Research Director		80	20	8
Total		**1470**	**117**	**72**

HR DASHBOARD
Full Insight

Total Employees	Male	Female
1470	**882** 60%	**588** 40%

Employee name
∨ ☐ A
∨ ☐ B
∨ ☐ C
∨ ☐ D

Average salary
$6.5K

JobRole
☐ Healthcare Re...
☐ Human Resour...
☐ Laboratory Tec...
☐ Manager
☐ Manufacturing...

Employee name	Due for promotion
Adelaide L Harrop	1
Aiko Blossom	1
Alexis Q Grose	1
Aliza X Sammons	1
America V Lobel	1
Amiee Z Chaffins	1
Andrew Detweiler	1
Brendon E Mone	1
Buck H Rancourt	1
Candelaria Zajicek	1
Carlotta T Ryles	1
Carmelia E Bergeron	1
Carolin T Loya	1
Carolynn V Moynihan	1
Cecily D Houser	1
Celine Baskin	1
Christie Rodger	1
Clemente S Wiechmann	1
Deanna P Scoggin	1
Detra D Rymer	1
Devin Hales	1
Dulce E Grizzard	1
Edmund Mcclung	1
Elsy B Latta	1
Total	**72**

Employee name	Retrenchment
Abbey Schindler	0
Abe J Macleod	0
Abe Morales	0
Abe X Paro	0
Abram Q Keffer	0
Abram S Manrique	0
Adalberto W Creek	1
Adam B Katzer	0
Adelaide L Harrop	1
Adele M Burnam	0
Adelia Abbas	0
Adelia U Villagomez	0
Adell W Trower	0
Adella U Foushee	0
Adelle E Brunner	0
Adria M Melendrez	0
Adriana O Medved	0
Agnes Blow	0
Agnes D Doud	0
Ahmad V Lynde	0
Ahmed C Minch	0
Ahmed I Strope	0
Ahmed V Lease	0
Aiko Blossom	0
Total	**117**

Sum of EmployeeCount by Gender

588 (40%)
882 (6...)

Gender
● Female
● Male

Average work life balance
2.76

Sum of DailyRate by Gender and Department

Depart... ● Human Res... ● Research ... ● Sales

Sum of RelationshipSatisfaction by Gender

2K (39.55%)
2K (60.45%)

Gender
● Male
● Female

Sum of JobInvolvement by Gender

2K (39...)
2K (60.23%)

Gender
● Male
● Female

1. Introduction

This report summarizes my internship experience focused on creating and analyzing HR data visualizations using Power BI. The primary objective was to provide insights into HR metrics such as employee promotion eligibility, gender distribution, retention status, and salary analysis through calculated DAX measures. This project enabled me to enhance my skills in Power BI, DAX functions, and HR data analysis.

2. Data Processing Steps

1. Getting Data

I imported HR data into Power BI, ensuring data accuracy and relevance.

2. Data Transformation with Power Query

- **Split Columns**: Divided combined data columns for better readability.
- **Column Headers**: Standardized column headers to maintain data uniformity.
- **Transform Columns**: Modified specific data types for analysis compatibility.

3. Additional Data Modifications

- **Conditional Columns**: Created new columns based on criteria (e.g., Retrenchment status).
- **New Measures and Calculated Columns**: Developed specific DAX measures for HR metrics.
- **Formatting and Text Size Adjustments**: Enhanced readability and layout.

3. Key DAX Measures and Calculations

1. Percentage Calculations

- **% Due for Promotion**: DIVIDE([Due for promotion],[Total emp],0)
  Calculates the percentage of employees eligible for promotion.

- **% Female**: DIVIDE([Female],[Total emp],0)
  Calculates the female employee percentage.

- **% Male**: DIVIDE([Male],[Total emp],0)
  Calculates the male employee percentage.

- **% Not Due**: DIVIDE([Not due],[Total emp],0)
  Percentage of employees not eligible for promotion.

- **% on Retrenchment**: DIVIDE([Retrenchment],[Total emp],0)
  Displays the percentage of employees marked for retrenchment.

- **% on Service**: DIVIDE([On service],[Total emp],0)
  Shows the percentage of employees currently active.

2. Aggregations and Calculations

- **Average Salary**: AVERAGE('HR Analytics Data'[MonthlyIncome])
  Determines the average monthly salary across the organization.

- **Maximum Salary**: MAX('HR Analytics Data'[MonthlyIncome])
  Identifies the highest monthly salary.

- **Minimum Salary**: MIN('HR Analytics Data'[MonthlyIncome])
  Displays the lowest monthly salary.

3. HR Status Measures

- **Total Employees**: COUNTROWS('HR Analytics Data')
  Counts the total number of employees.

- **Due for Promotion**:

DAX

```
Due for promotion = COALESCE(

  CALCULATE([Total emp], 'HR Analytics Data'[Promotion Status] = "due for promotion"),

  0

)
```

Counts employees due for promotion.

- **Female Employees**: CALCULATE([Total emp],'HR Analytics Data'[Gender]="Female")
  Counts the number of female employees.

- **Male Employees**: CALCULATE([Total emp],'HR Analytics Data'[Gender]="male")
  Counts the number of male employees.

- **Not Due for Promotion**: CALCULATE([Total emp],'HR Analytics Data'[Promotion Status]="not due")
  Counts employees not due for promotion.

- **On Service**: CALCULATE([Total emp],'HR Analytics Data'[Retreanchment status]="on service")
  Counts employees who are currently active.

- **Retrenchment**:

DAX

Retrenchment = COALESCE(

  CALCULATE([Total emp], 'HR Analytics Data'[Retreanchment status] = "Will be retrenched"),

  0

)

Counts employees marked for retrenchment.

4. Insights and Observations

From my analysis, I observed the following insights:

- **Gender Distribution**: The male employee count was approximately 60%, while female employees accounted for 40%.

- **Promotion Status**: Only 4.9% of employees were due for promotion, with the majority (95.1%) not eligible yet.

- **Employee Retrenchment**: 8% of employees were set for retrenchment, while 92% were active in service.

- **Salary Analysis**: Average salaries varied significantly across job roles, with the highest salaries among managerial positions.

HR Dashboard Overview

The Power BI dashboard includes several visualizations and metrics, such as total employees, gender distribution, promotion eligibility, retrenchment status, and salary insights. These visuals provide a clear, data-driven overview of the workforce's structure, engagement, and performance.

1. Total Employees and Gender Distribution

- **Total Employees**: **1,470**
  The dashboard begins with a headcount of the organization, showing the total number of employees.

- **Male and Female Distribution**:

  - **Male**: 882 (60%)

  - **Female**: 588 (40%)
    This metric indicates the gender ratio within the organization, highlighting male dominance in the workforce.

2. Promotion Eligibility

- **Due for Promotion**: **72** employees (4.9%)

- **Not Due for Promotion**: **1,398** employees (95.1%)
  The dashboard segments employees by their promotion eligibility, showing a significant portion are not yet due, indicating either recent promotions or longer tenure requirements.

3. Retrenchment and Service Status

- **On Service**: **1,353** employees (92%)

- **Retrenchment**: **117** employees (8%)
  This data reflects employee retention and job stability, with most employees active and only a small portion flagged for retrenchment.

4. Service Years

- A bar chart details the number of employees by service year (1-10 years), with varying levels of employee tenure.
  Example Insight: The highest grouping is **196 employees with 5 years** of service, followed by lower counts in other years. This data helps gauge retention rates and longevity.

5. Total Employees by Job Level

- Levels 1 to 5 are analyzed, with **Level 1 (543 employees)** and **Level 2 (534 employees)** having the highest representation. Higher levels (e.g., Levels 4 and 5) have significantly fewer employees, indicating a more hierarchical structure where fewer employees occupy senior roles.

6. Distance from Workplace

- **Very Close (63.95%)**

- **Close (20.4%)**

- **Very Far (15.58%)**
  This categorization shows how close employees live to the workplace, which can impact job satisfaction, punctuality, and overall productivity.

7. Job Satisfaction Levels

- Employees are classified by satisfaction levels, with categories **Low, Medium, and High**. This metric can help identify departments or roles with potential dissatisfaction, guiding HR to address concerns.

8. Overtime Analysis

- **Yes**: **28%**

- **No**: **72%**
  The dashboard shows that most employees are not working overtime, which could reflect balanced workloads or effective time management within the organization.

9. Job Roles and Retrenchment/Promotion Status

- The dashboard lists job roles with corresponding numbers for **Total Employees**, **Retrenchment**, and **Due for Promotion**.

- **Example Insight**: **Healthcare Representative** has 131 employees, with 13 flagged for retrenchment and 16 eligible for promotion.

- Job roles with higher retrenchment numbers, like **Manager** (44 employees flagged for retrenchment), could indicate areas requiring attention from HR.

10. Average Salary by Job Role and Job Satisfaction

- The chart breaks down **average salary** based on **job roles** and **satisfaction levels**.

- **Example Insight**: Managers and directors have some of the highest average salaries, while roles like Laboratory Technicians have lower salaries, aligning with job hierarchy and responsibilities.

11. Salary Insights

- **Maximum Salary**: **$19,999**

- **Minimum Salary**: **$1,009**
  This range shows the financial spread within the organization, with high-ranking roles or specialized fields likely occupying the top salary brackets.

Summary of Insights

The dashboard provides clear, visual insights into the organization's HR dynamics, showcasing:

- Workforce structure (gender ratio, service status, job level)

- Promotion eligibility and retrenchment risks

- Job satisfaction levels, overtime statistics, and average salaries by role

These insights can assist HR in decision-making processes, particularly around promotions, retrenchment, workforce diversity, and compensation alignment with job roles and satisfaction levels.

5. Challenges and Learnings

One of the key challenges I faced was ensuring accurate calculation of complex HR metrics. I resolved this by carefully reviewing DAX syntax and applying COALESCE functions to handle null values, ensuring data integrity and correct calculations.

6. Conclusion

This internship allowed me to apply theoretical DAX and Power BI knowledge in a real-world HR analytics context. Through building measures and creating insightful visuals, I gained a deeper understanding of HR data analysis and the impactful role of Power BI in decision-making.

Based on the HR dashboard analysis, several key insights emerge that provide a comprehensive understanding of the workforce structure and dynamics. The organization maintains a balanced approach in terms of gender diversity and job role distribution, with a predominantly male workforce (60%) and a well-represented hierarchical structure across job levels. The promotion eligibility data highlights that only a small percentage (4.9%) of employees are due for promotion, signaling potential opportunities for career development within the company.

Additionally, retrenchment status shows that 8% of the workforce is marked for potential exit, a critical factor for HR to monitor closely to ensure talent retention. The analysis of job satisfaction levels and overtime reveals that most employees have manageable workloads, and overall job satisfaction remains positive, with varying satisfaction levels across roles. Lastly, the salary insights

provide a clear view of compensation trends, with managerial roles positioned at the top of the salary range, ensuring that compensation is aligned with role responsibilities.

In conclusion, this HR data analysis serves as a valuable tool for strategic workforce planning, allowing HR to make informed decisions regarding promotions, employee engagement, retention strategies, and compensation alignment. Addressing the insights identified here can help enhance employee satisfaction, career growth, and overall organizational efficiency.

7. Acknowledgments