Project Name: Human Resources Dataset Analysis

YAT402A_CAI2_DAT2_G8_DEPI2/Group 4

Team Members

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Project Planning & Management for HR Project

1. Project Proposal

Project Title:
Human Resources Dataset Analysis Using Power BI

Overview:
This project aims to analyze HR datasets to extract valuable insights that help organizations enhance employee satisfaction, retention, and overall HR decision-making. By leveraging Power BI, the project will transform raw HR data into actionable information **through data cleaning, analysis, and visualization. The findings will support HR professionals in understanding key workforce trends, such as employee turnover, satisfaction levels, and performance metrics**.

Objectives:

- **Data Preparation:** Clean and preprocess HR datasets to ensure accuracy and completeness.

- **Analysis Questions Development:** Identify key HR-related analytical questions that can provide meaningful insights for decision-makers.

- **Dashboard Development:** Build an interactive Power BI dashboard that visually represents HR data insights.

- **Final Presentation:** Summarize findings in a structured report and presentation format for stakeholders.

Scope of Work:

This project focuses on structured HR data analysis using Power BI and includes:

- Data collection, cleaning, and preprocessing.

- Identifying relevant HR metrics such as employee retention, satisfaction, and productivity.

- Developing a visual dashboard to present key insights.

- Delivering a final presentation with recommendations based on the analysis.

Out of Scope:

- Real-time HR data monitoring.

- Direct employee feedback collection or survey design.

- Integration with external HR management systems.

Main Questions for Designing the HR Dashboard Using Power BI

To develop an effective Power BI dashboard for HR analysis, we must define key questions that address workforce trends, employee satisfaction, retention, and overall HR decision-making. Here are the main questions:

1. Employee Demographics & Distribution

- What is the total number of employees?

- What is the gender distribution across different departments?

- What is the age distribution of employees?

- What is the tenure distribution (Years at Company)?

2. Employee Retention & Turnover

- What is the employee retention rate over time?

- What is the attrition rate, and what are the common reasons for employee exits?

- How does tenure influence attrition rates?

- Which departments have the highest turnover?

3. Employee Performance & Productivity

- What is the distribution of employee performance ratings?

- How does performance vary by department, job role, and experience?

- What is the impact of overtime on performance?

- What are the key drivers of high-performing employees?

4. Employee Satisfaction & Engagement

- What is the average employee satisfaction score?

- What is the correlation between employee satisfaction and attrition?

- How does work-life balance impact job satisfaction?

- How does training participation affect employee engagement?

5. Compensation & Benefits Analysis

- What is the salary distribution by department and job role?

- How do employee benefits impact retention and satisfaction?

- What is the salary competitiveness compared to industry benchmarks?

- Is there a correlation between salary and performance ratings?

6. Training & Career Growth

- How many employees participated in training programs?

- What are the most common training topics and their impact?

- What is the average promotion wait time per department?

- How does training participation impact career progression?

Type of Dashboard

Based on the HR analytics focus, the Power BI dashboard falls into the following category:

Dashboard Type: Strategic & Analytical HR Dashboard
Purpose: To help HR managers and executives monitor key workforce trends, assess employee satisfaction, track performance, and make data-driven decisions.

Main Stakeholders

The key stakeholders who will use the dashboard include:

1. **HR Managers** – Monitor workforce trends, employee satisfaction, and retention.

2. **Executives & Senior Management** – Analyze overall HR performance and make strategic decisions.

3. **Department Heads** – Track performance and attrition within their teams.

4. **Talent Acquisition & Recruitment Teams** – Use insights for hiring and reducing turnover.

5. **Compensation & Benefits Teams** – Assess salary competitiveness and benefits impact.

6. **Employee Engagement & Training Teams** – Improve training programs and employee experience.

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2. Project Plan

Project Duration: 4 weeks
Project start time: February 24, 2025
The project will be executed over four weeks, divided into structured phases to ensure timely completion.

Project Phases & Timeline (Gantt Chart):

Phase	Tasks	Duration	Responsible Team
Week 1: Data Cleaning & Preprocessing	- Gather HR datasets. - Clean and preprocess data using Power BI. - Handle missing values and outliers. - Ensure dataset readiness for analysis.	1 Week	Data Analyst
Week 2: Analysis Questions Development	- Identify key HR-related questions (e.g., employee retention factors, satisfaction levels). - Develop hypotheses for workforce trends. - Document analysis questions and expected insights.	1 Week	Business Analyst
Week 3: Dashboard Development	- Build an interactive Power BI dashboard. - Visualize key HR metrics and trends.	1 Week	Dashboard Developer

Phase	Tasks	Duration	Responsible Team
	- Ensure dashboard usability and accuracy.		
Week 4: Final Report & Presentation	- Compile findings into a structured report. - Create a PowerPoint presentation summarizing insights. - Conduct a project review before submission.	1 Week	Report Writer

3. Task Assignment & Roles

Each team member has a designated role to ensure efficiency in project execution.

Role	Responsibilities	Assigned Person
Project Manager	Oversee project timeline, manage risks, and ensure milestone completion.	[Your Name]
Data Analyst	Perform data cleaning and preprocessing to ensure dataset reliability.	[Data Analyst]
Business Analyst	Identify key HR-related questions and develop hypotheses.	[Business Analyst]
Dashboard Developer	Create a Power BI dashboard for data visualization.	[Dashboard Developer]
Report Writer	Document findings and prepare the final presentation.	[Report Writer]

4. Risk Assessment & Mitigation Plan

To ensure project success, potential risks have been identified along with mitigation strategies.

Risk	Impact	Mitigation Strategy
Incomplete or Inconsistent Data	Could affect analysis accuracy.	Implement thorough data cleaning and preprocessing in Week 1.
Power BI Dashboard Complexity	May delay project progress if issues arise.	Conduct initial testing and debugging before finalizing the dashboard.
Time Constraints	Risk of missing project deadlines.	Follow the structured Gantt chart schedule and conduct weekly reviews.
Technical Issues with Power BI	Dashboard may not function as expected.	Provide alternative visualization tools if required.
Stakeholder Feedback Delays	Could impact final report submission.	Schedule feedback sessions in advance to ensure timely adjustments.

5. Key Performance Indicators (KPIs)

The project's success will be evaluated using the following KPIs:

KPI	Measurement	Target
Data Processing Efficiency	Percentage of missing values handled correctly.	100% clean dataset.
Dashboard Usability	Number of key insights visualized effectively.	At least 5 major HR insights.
Stakeholder Satisfaction	Feedback score from reviewers.	80% positive response.
Presentation Clarity	Completeness of report and presentation.	Well-structured and comprehensive final submission.

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Employee Retention Rate	(# of employees retained / Total employees) * 100	85%+ retention rate
Attrition Rate	(# of employees who left / Total employees) * 100	Less than 15% attrition
Average Employee Satisfaction	Average score from JobSatisfaction & WorkLifeBalance columns	≥ 3.5 (on a scale of 5)
Performance Rating Distribution	Percentage of employees per performance category	Balanced distribution
Salary Distribution by Department	Median salary per department vs. industry benchmarks	Competitive salaries
Training Participation Rate	(# of employees taking training / Total employees) * 100	At least 60% participation
Overtime Impact on Attrition	Attrition % among those with "Yes" in OverTime column	Identify significant correlation
Promotion Wait Time	Average YearsSinceLastPromotion per department	≤ 3 years on average

6. Requirements Gathering

Stakeholder Analysis

Stakeholder	Role	Expectations
HR Manager	Decision-maker	Needs insights on employee retention, satisfaction, and productivity.
Employees	Data subjects	Expect fair evaluation and improved policies.
Senior Management	Strategy developers	Require high-level insights for workforce planning.

Data Analysts	Data processors	Need structured data to analyze and visualize trends.

User Stories & Use Cases

- *As an HR Manager, I want to visualize employee retention rates so that I can identify departments with high turnover.*

- *As a Business Analyst, I want to compare job satisfaction across roles so that I can suggest policy improvements.*

- *As a Senior Executive, I want to track salary distributions to ensure fair compensation.*

Functional Requirements

- The system shall process and clean HR datasets for analysis.

- The dashboard shall display key HR metrics, including attrition and satisfaction rates.

- The system shall allow filtering data by department, job role, and tenure.

- The dashboard shall provide interactive visualizations using Power BI.

Non-functional Requirements

- The dashboard should be user-friendly and accessible to non-technical users.

- Data processing should ensure at least 99% accuracy in computations.

- The system should refresh data at least once a month.

- Response time for dashboard interactions should be under 2 seconds.

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6. System Analysis & Design

Database Design & Data Modeling

The HR database is designed to store and manage employee-related data efficiently. The key entities, their attributes, and relationships are as follows:

Entities and Attributes

1. **Employee** (EmployeeID, FirstName, LastName, Gender, Age, Department, JobRole, HireDate, Salary, Attrition, PerformanceRating)

2. **Department** (DepartmentID, DepartmentName, ManagerID)

3. **JobRole** (RoleID, RoleName, DepartmentID)

4. **Performance** (PerformanceID, EmployeeID, ReviewDate, ManagerRating, SelfRating, JobSatisfaction, WorkLifeBalance)

5. **Training** (TrainingID, EmployeeID, TrainingName, CompletionDate, TrainingScore)

6. **Compensation** (CompensationID, EmployeeID, Salary, Bonus, StockOptionLevel)

Relationships

- **Employee - Department** (One-to-Many): Each employee belongs to one department, but a department can have multiple employees.

- **Employee - JobRole** (One-to-One): Each employee has one job role.

- **Employee - Performance** (One-to-Many): Each employee has multiple performance reviews.

- **Employee - Training** (One-to-Many): Each employee can take multiple training sessions.

- **Employee - Compensation** (One-to-One): Each employee has one compensation record.
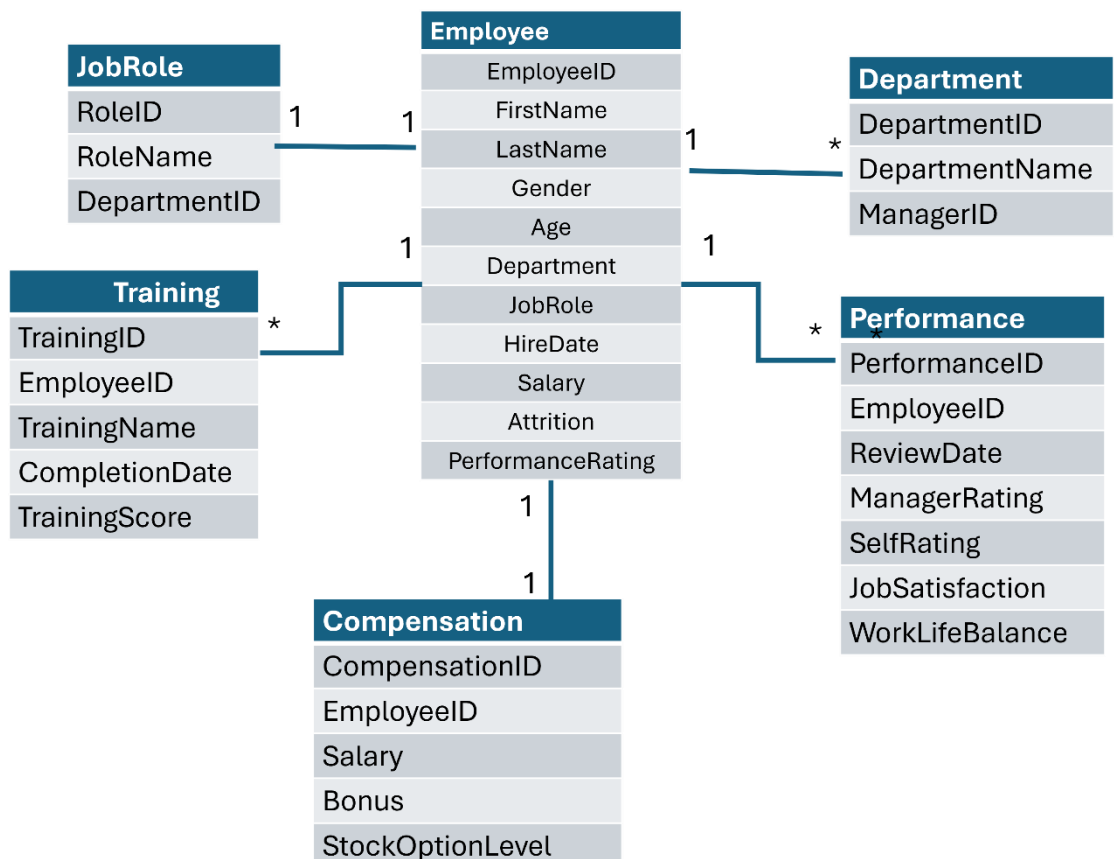
. Dashboard Type & Stakeholders

Dashboard Type: Strategic & Analytical HR Dashboard

- Provides **high-level HR insights** for executives and decision-makers.

- Focuses on **long-term workforce trends, retention, satisfaction, and performance metrics**.

Main Stakeholders:

1. **HR Directors & Executives** – Use insights for strategic workforce planning.

2. **HR Managers** – Monitor department-level performance and attrition.

3. **CEOs & Leadership Teams** – Assess overall workforce health and HR policy effectiveness.

4. **Recruiters & Talent Acquisition Teams** – Identify hiring needs based on attrition and turnover trends.

5. Conclusion

The HR analytics dashboard project is a structured and strategic approach to leveraging Power BI for workforce insights. By cleaning and analyzing HR data, developing key performance metrics, and building an interactive dashboard, the project aims to empower HR professionals with data-driven decision-making capabilities. The structured project management plan, risk assessment, and performance indicators ensure successful implementation and impactful outcomes.