Lesson 21

Topic: HR Analytics Dashboard – Project Plan & Requirements **Prerequisites:** All data is provided in HR_Analytics.csv file

1. Project Objective

The objective is to design and build a comprehensive **HR Analytics Dashboard** using Power BI that enables HR managers and decision-makers to gain insights into key workforce metrics. The dashboard will focus on:

- Employee performance trends
- Retention and resignation patterns
- Department-wise KPIs
- Work engagement metrics (e.g., overtime, satisfaction, training hours)

It will use:

- **Power Query** for data cleaning and transformation
- **DAX** for KPI calculation
- **Relationships** for a structured model
- **Interactive visuals** for exploration
- **Power BI Service** for publishing and sharing

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2. Dataset Details

Table Name: Employee_Performance
Columns:

- Employment_id
- Department
- Age
- Job Title
- Hire_Date
- Years_at_company
- Education_level
- Performance_Score

- Monthly_Salary
- Work_Hours_per_Week
- Project_Handled
- Overtime_Hours
- Sick_Days
- Remote_Work_Frequency
- Team_Size
- Training_Hours
- Promotions
- Employee_Satisfaction_Score
- Resigned (Yes/No)

This dataset includes **employee demographic, job role, salary, work behavior, and resignation status**, which makes it ideal for a multi-angle HR analysis.

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3. Power Query Editor – Data Preparation Steps

1. **Rename Columns:**
    - Use proper casing and readable format, e.g. Employment_id → Employment ID, Work_Hours_per_Week → Work Hours per Week.
2. **Change Data Types:**
    - Hire_Date → Date
    - Numeric: Monthly_Salary, Age, Years_at_company, Performance_Score, etc.
    - Text: Department, Job Title, Education_level, etc.
3. **Remove Duplicates:**
    - Apply to Employment ID to ensure uniqueness in employee records.
4. **Create Calculated Columns:**
    - **Tenure Category:**

powerquery

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if [Years_at_company] <= 2 then "New"

else if [Years_at_company] <= 5 then "Mid"

else "Veteran"

- **Overtime Category:**

powerquery

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if [Overtime_Hours] > 10 then "High" else "Low"

5. **Handle Null Values:**
    - Remove rows with critical missing values (e.g., Employment ID, Hire Date).
    - Fill or replace others as appropriate (e.g., 0 for null Training Hours).
6. **Create a Date Table:**
    - Use CALENDARAUTO() in DAX or a manual range.
    - Mark it as the **official date table** and connect to Hire_Date.

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4. Data Model – Relationships

- **One-to-Many Relationship:**
    - Connect Date[Date] → Employee_Performance[Hire_Date]
- **Star Schema Structure:**
    - Central table: Employee_Performance
    - Lookup/Dimension tables: Department, Education_Level, Date
- **Avoid Circular Dependencies:**
    - Use single-direction filters where possible.
    - Avoid bi-directional joins unless necessary for visuals.

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5. DAX Measures (Key KPIs)

Below are DAX measures you should define to enable actionable insights on the dashboard:

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1. Employee Count

DAX

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Employee Count = COUNT('Employee_Performance'[Employment ID])

2. Resignation Rate

DAX

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Resignation Rate =

DIVIDE(

  CALCULATE(COUNTROWS('Employee_Performance'), 'Employee_Performance'[Resigned] = "Yes"),

  COUNTROWS('Employee_Performance')

)

3. Avg. Performance Score

DAX

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Avg Performance Score = AVERAGE('Employee_Performance'[Performance_Score])

4. Avg. Monthly Salary

DAX

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Avg Monthly Salary = AVERAGE('Employee_Performance'[Monthly_Salary])

5. Avg. Training Hours

DAX

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Avg Training Hours = AVERAGE('Employee_Performance'[Training_Hours])

6. Avg. Employee Satisfaction

DAX

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Avg Satisfaction Score = AVERAGE('Employee_Performance'[Employee_Satisfaction_Score])

7. Overtime Utilization

DAX

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Overtime Utilization =

DIVIDE(

SUM('Employee_Performance'[Overtime_Hours]),

COUNTROWS('Employee_Performance')

)

8. Sick Days per Employee

DAX

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Sick Days per Employee =

DIVIDE(SUM('Employee_Performance'[Sick_Days]), COUNTROWS('Employee_Performance'))

9. Remote Work Adoption Rate

DAX

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Remote Work Adoption =

DIVIDE(

CALCULATE(COUNTROWS('Employee_Performance'),
'Employee_Performance'[Remote_Work_Frequency] <> "Never"),

COUNTROWS('Employee_Performance')

)

10. Promotion Rate

DAX

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Promotion Rate =

DIVIDE(

CALCULATE(COUNTROWS('Employee_Performance'),
'Employee_Performance'[Promotions] > 0),

COUNTROWS('Employee_Performance')

)

11. Avg. Tenure (Years at Company)

DAX

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Avg Tenure = AVERAGE('Employee_Performance'[Years_at_company])

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6. Report Pages and Visuals

The report consists of **five well-organized pages**, each focusing on specific HR areas:

Page 1: Executive Summary

- **Cards**:
    - Total Employees
    - Resignation Rate
    - Avg. Performance Score
    - Avg. Monthly Salary
- **Line Chart**: Resignation Rate over Time (based on hire or leave date)
- **Clustered Column Chart**: Department-wise Employee Satisfaction Score

This page gives high-level, real-time insights for HR executives and leadership.

Page 2: Department Insights

- **Bar Chart**: Number of Employees per Department
- **Heatmap**: Avg. Salary vs. Performance Score by Department
- **Pie Chart**: Distribution of Education Levels across all employees
- **KPI Visual**: Avg. Tenure (Years at Company) by Department

This helps HR focus on departmental performance, retention, and skill levels.

Page 3: Employee Engagement

- **Gauge**: Overall Employee Satisfaction Score
- **Donut Chart**: Remote Work Frequency Distribution

- **Clustered Column Chart**: Avg. Overtime Hours by Job Title
- **Scatter Plot**: Training Hours vs. Performance Score per employee

The visuals offer actionable insights into work-life balance, productivity, and learning culture.

Page 4: Retention & Promotions

- **Matrix**: Promotions distributed by Department and Education Level
- **Bar Chart**: Sick Days (average or total) for Resigned vs Active Employees
- **Line Chart**: Trend of Training Hours over the Years
- **Card**: Current Promotion Rate

This page supports understanding of employee movement and health-related disengagement.

Page 5: Filters and Slicers

- **Slicers** to filter the entire report:
    - Department
    - Job Title
    - Education Level
    - Remote Work Frequency
    - Tenure Category
    - Resigned (Yes/No)

All slicers are **synced across pages** for a smooth filtering experience.

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7. Power BI Features to Apply

Power BI Desktop

- **DAX**: Used for creating key measures (KPI calculations)
- **Custom Tooltips**: Applied to visuals to show additional context
- **Drillthrough Pages**: For employee-level detail from department or job role
- **Bookmarks**: For navigation (e.g., between summary and detail pages)

- **Conditional Formatting**: Applied on visuals like heatmaps, tables, or cards
- **Sync Slicers**: Slicers used across pages for consistent filtering

Power Query Editor

- Clean and transform data (data types, null values, casing)
- Create **calculated columns** (e.g., Tenure Category, Overtime Category)
- Merge with **lookup tables** (optional, for Department, Education Level)
- Categorize and group for better visualization

Design Guidelines

- Apply a **consistent color theme** (aligned with HR or company branding)
- Use **icons** for Department, Job Title for visual aid
- Implement a clean **grid layout**
- Add **company logo**, proper visual **titles**, and descriptions

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8. Publish and Share (Power BI Online Service)

Steps to Publish:

1. Create a dedicated **workspace**: *HR Analytics Workspace*
2. Publish from Power BI Desktop to this workspace
3. Set up **Scheduled Refresh** (e.g., daily at 8:00 AM)
4. Create an **App** from the workspace and publish for stakeholders

Assign Roles and Permissions:

- **HR Team**: Viewer access to all pages and insights
- **Department Managers**: Viewer access with **Row-Level Security (RLS)** to restrict views to their own departments
- Enable **Mobile View Optimization** for quick dashboard access on phones/tablets

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9. Optional Advanced Features

- **Row-Level Security (RLS)**: Implement department-based filtering to restrict data access for managers

- **Paginated Reports**: Design print-friendly HR summaries (for board meetings or compliance)
- **Power Automate Integration**:
    - Trigger automatic email alerts if **Resignation Rate exceeds 10%**
- **Q&A Visual**: Enable natural language queries like “Show average salary by department”

These advanced features enhance automation, security, and user accessibility.

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10. Versioning and Maintenance

- Maintain **documentation** for each update or change made in Power BI Service
- Store a **backup of the .PBIX file** (with version naming)
- Display the **last refresh date** on report pages using a measure
- Maintain a log of **publish history** for auditing
- Perform **monthly data quality checks** to ensure consistency and accuracy