# **Strategic HR Data Analysis – Step-by-Step Project Explanation**

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Project: HR Analytics – Strategic Insights for Employee Retention and Planning

Tools Used: Tableau, Excel

Project Type: Data-Driven HR Analytics (Interactive & Visual)

Objective: To analyze employee attrition and support HR decision-making using data.

## Step 1: Problem Definition and Objective

The organization observed rising attrition rates and lacked a data-driven framework to understand why employees were leaving. The objective was to identify key drivers of attrition and provide visual insights for HR managers to act on. This included analyzing employee demographics, job roles, education, satisfaction levels, and departmental trends.

## Step 2: Data Collection and Cleaning

The dataset was sourced in Excel format, containing employee information like age, gender, department, education field, attrition status, job satisfaction, and more.  
  
Data cleaning steps in Excel included:  
• Removing duplicates and irrelevant columns  
• Handling missing values (either filling or excluding)  
• Creating new columns such as 'Attrition Rate' using formulas  
• Standardizing column headers for clarity  
• Converting categorical fields into structured format for Tableau compatibility

## Step 3: Data Import and Model Setup in Tableau

After cleaning the data in Excel, the file was imported into Tableau. A proper data model was created to:  
• Define measures (e.g., employee count, attrition count)  
• Create dimensions (e.g., department, job role, education field)  
• Set up relationships if needed (in case of multi-sheet models)  
• Ensure data types (numeric, text, boolean) were correctly assigned

## Step 4: KPI and Metrics Calculation

Key HR metrics were calculated using Tableau’s inbuilt calculation editor:  
• Attrition Rate = (Number of Employees Left / Total Employees) \* 100  
• Active Employees = Total Employees - Attrition Count  
• Average Age = Average of Age column  
  
These KPIs were displayed at the top of the dashboard to provide an immediate overview.

## Step 5: Building Visuals for HR Insights

Multiple visualizations were designed to explore trends and patterns:  
1. Department-wise Attrition (Pie Chart): Highlighted which departments faced the most attrition.  
2. Employee Age Distribution (Histogram): Showed the most common age groups among employees.  
3. Job Satisfaction by Role (Heatmap Table): Compared satisfaction ratings across different roles.  
4. Education Field vs. Attrition (Bar Chart): Identified which education backgrounds experienced higher turnover.  
5. Attrition by Gender and Age (Donut Charts): Analyzed which gender and age groups were leaving most.  
  
Each chart was chosen based on its ability to simplify complex HR trends visually.

## Step 6: Adding Interactivity with Filters

To allow users (like HR managers) to explore the data themselves, filters and slicers were added:  
• Education Field filter to view attrition trends by qualification  
• Department filter for department-specific attrition  
• Gender and Age filters for demographic-based insights  
  
All charts and KPIs were linked to these filters, enabling a fully dynamic and customizable exploration.

## Step 7: Extracting Insights and Storytelling

After building visuals, insights were drawn:  
• R&D had the highest attrition – possibly due to job stress or lack of engagement  
• Younger employees (25–34) were more likely to leave – highlighting retention challenges  
• Life Sciences graduates showed high turnover – potential misalignment with role fit  
• Sales Executives showed varying job satisfaction – opportunity to improve communication or training  
  
These insights were documented in a structured story layout using Tableau’s story points or dashboard captions.

## Step 8: Final Review and Presentation

The dashboard was finalized with color-coded sections, consistent formatting, and labeled charts. It was presented as a simulated business case to stakeholders or mentors.  
  
Final steps included:  
• Validating KPI accuracy  
• Cross-checking data sources  
• Testing interactivity and usability  
  
This project successfully demonstrated the use of HR analytics to drive data-based workforce decisions.