



**" Workforce Management and Attrition Analysis: Leveraging HR  
Data for Growth"**

**Project Report submitted in Partial fulfillment of the requirement for the  
Award of the degree of**

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# 1. Problem Statement

Employee attrition is a major challenge in any organization, leading to increased recruitment costs, loss of talent, and potential declines in productivity. The goal of this analysis is to:

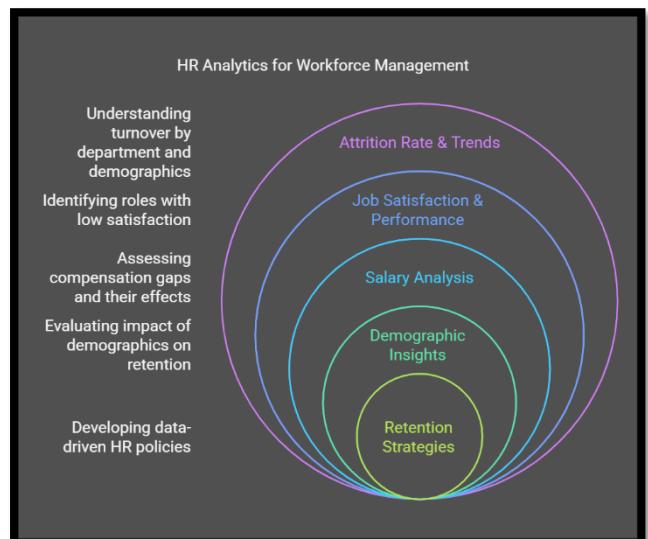
- Identify key factors contributing to **employee attrition**.
- Understand how **salaries, job satisfaction, performance, and demographics** influence employee retention.
- Provide **actionable recommendations** to improve employee engagement and reduce turnover.



# 2. Business Understanding

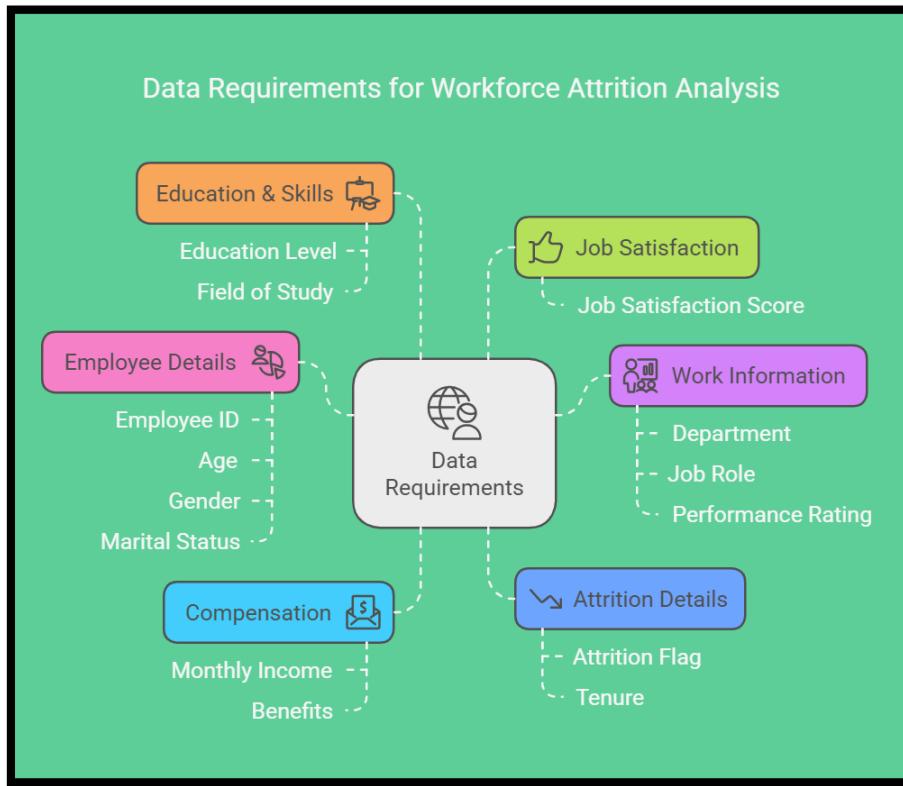
HR analytics plays a crucial role in workforce management by **predicting attrition, improving employee satisfaction, and optimizing workforce planning**. In this case, the focus is on:

- **Attrition Rate & Trends:** Understanding which departments and demographics experience the highest turnover.
- **Job Satisfaction & Performance:** Identifying roles with the lowest satisfaction levels and evaluating their impact on attrition.
- **Salary Analysis:** Determining if compensation gaps contribute to employee exits.
- **Demographic Insights:** Evaluating how age, education, and marital status impact retention.
- **Retention Strategies:** Developing HR policies based on data-driven insights.



### 3. Data Requirements

To conduct a meaningful analysis, we need the following **data attributes**:

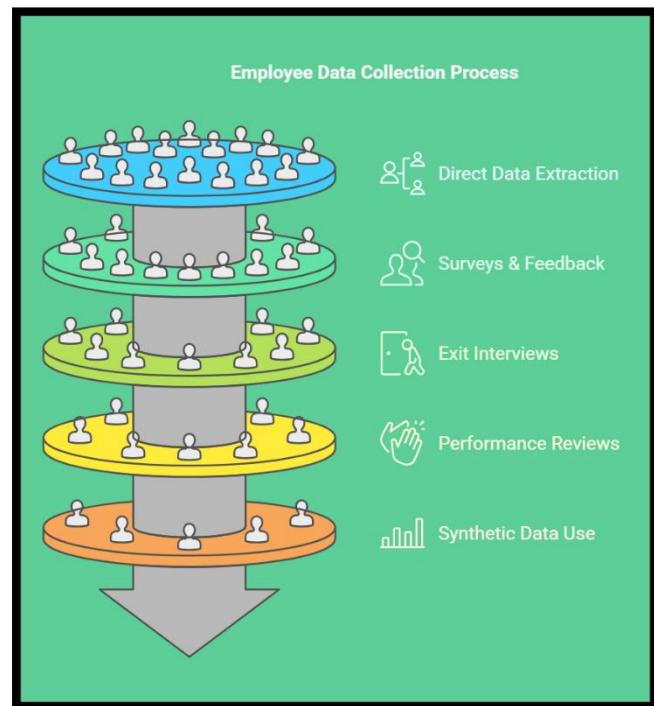


Category	Data Fields Required	Purpose
<b>Employee Details</b>	Employee ID, Age, Gender, Marital Status	Understanding workforce demographics
<b>Work Information</b>	Department, Job Role, Performance Rating	Evaluating departmental impact on attrition
<b>Compensation</b>	Monthly Income, Benefits	Identifying salary-related dissatisfaction
<b>Attrition Details</b>	Attrition Flag (Yes/No), Tenure	Determining attrition trends
<b>Education &amp; Skills</b>	Education Level, Field of Study	Checking if education influences attrition
<b>Job Satisfaction</b>	Job Satisfaction Score	Linking satisfaction levels to turnover

## 4. Data Collection

The dataset can be obtained from **HR Management Systems (HRMS)**, **Employee Surveys**, **Payroll Systems**, and **Performance Evaluation Tools**. Methods of collection:

- **Direct Data Extraction:** Pulling employee data from HRMS.
- **Surveys & Feedback Forms:** Measuring job satisfaction and engagement.
- **Exit Interviews:** Understanding why employees leave.
- **Performance Reviews:** Linking performance ratings to attrition.
- **Synthetic Data:** Data is artificial, not original data of any Company.

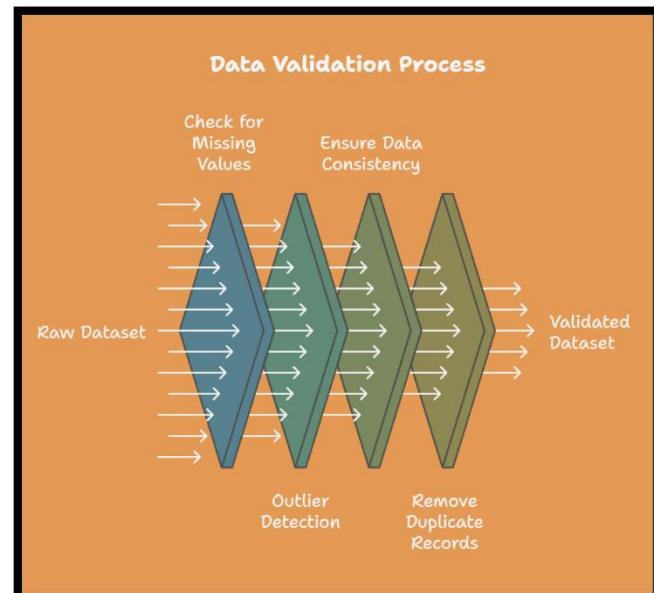


## 5. Data Validation & Understanding

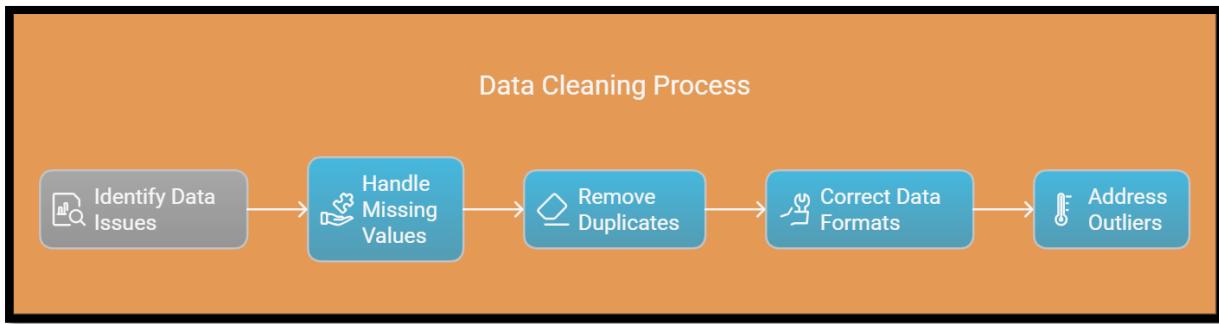
Before analysing, the dataset must be **validated for accuracy, completeness, and consistency**.

Steps include:

- ✓ **Checking for Missing Values:** Ensuring no essential fields (e.g., attrition status, salary) are missing.
- ✓ **Outlier Detection:** Identifying abnormal salary figures or job satisfaction scores.
- ✓ **Data Consistency:** Ensuring attributes like job roles and departments are correctly labelled.
- ✓ **Duplicate Records:** Removing redundant employee entries.



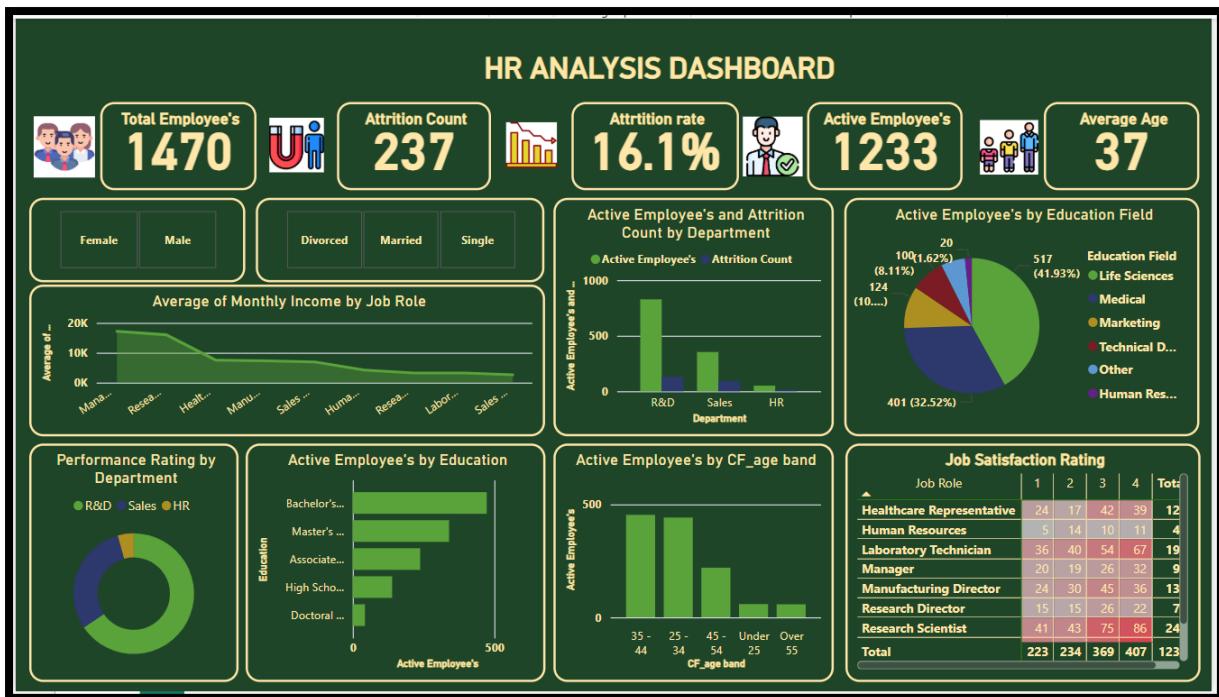
## 6. Data Cleaning



Once issues are identified, the data undergoes **cleaning and preprocessing**:

- **Handling Missing Values:** Using median imputation for salary, filling missing job satisfaction scores with department averages.
- **Removing Duplicates:** Eliminating repeated employee records.
- **Correcting Data Formats:** Standardizing date formats for employee tenure.
- **Addressing Outliers:** Capping extremely high salary figures or job satisfaction anomalies.

## 7. Dashboard Using Power BI



## 8. Insights from the Dashboard

### A. Employee Attrition Analysis



- **Total Employees:** 1,470
- **Active Employees:** 1,233
- **Attrition Rate:** 16.1% (237 employees left)

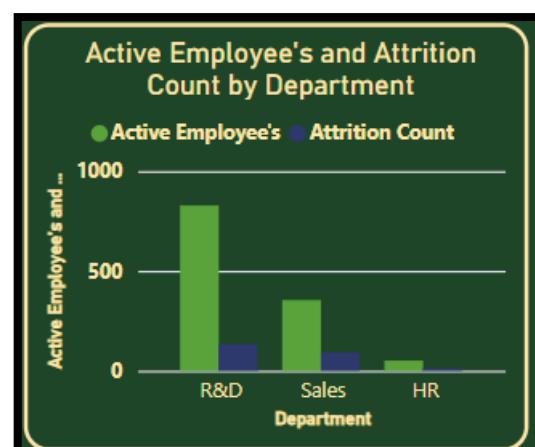
📌 **Key Takeaway:** A high attrition rate (16.1%) suggests dissatisfaction and retention challenges. This can be costly in terms of hiring expenses and knowledge loss.

### B. Attrition by Department

- **Highest Attrition:** R&D and Sales Departments
- **Lowest Attrition:** HR Department

📌 **Key Takeaway:** R&D and Sales experience higher turnover, possibly due to **high workloads, stress, or lack of career growth**.

⌚ **Recommendation:** Conduct exit interviews in these departments to understand reasons for departure.



### C. Income & Job Satisfaction Trends

- Managers & Researchers earn the highest salaries.
- Labor, Sales, and HR roles have the lowest salaries.
- Job Satisfaction Ratings: Research Scientists and Directors have the highest dissatisfaction.

📌 Key Takeaway: Lower-income roles and Research-intensive jobs correlate with **lower satisfaction levels**, leading to attrition.

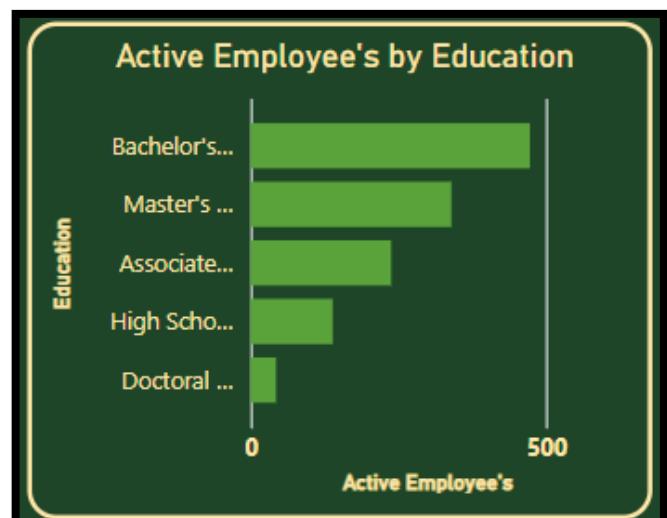
#### 🎯 Recommendation:

- Review salaries for low-income roles to match industry standards.
- Provide better incentives & recognition for Research Scientists.

### C. Education & Employee Distribution

- Majority of Employees have Bachelor's or Master's degrees.
- Life Sciences & Medical Fields dominate (41.93% & 32.52%).

📌 Key Takeaway: Employees with higher education might expect **better career progression**. A lack of growth opportunities can push them to leave.



#### 🎯 Recommendation:

- Offer skill enhancement programs.
- Create leadership tracks for employees in technical fields.

#### D. Employee Age & Tenure Trends

- **Highest representation:** 35-44 years (mid-career professionals).
- **Under 25 and Over 55 groups are significantly smaller.**



📌 **Key Takeaway:** The company struggles to attract young talent (<25) and retain older employees (>55).

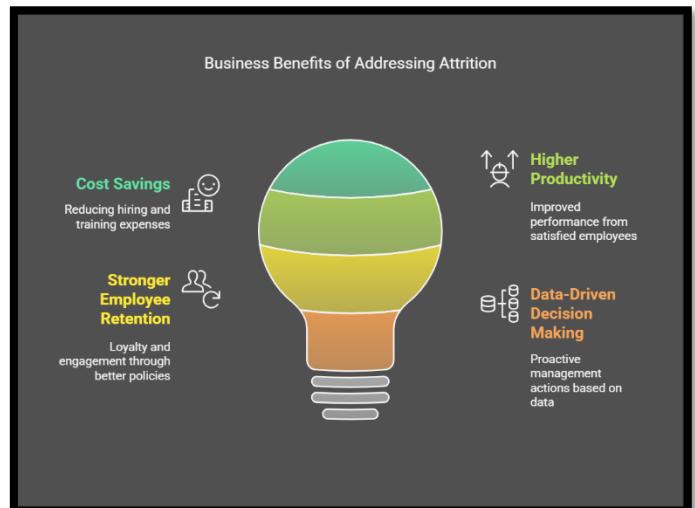
#### 🎯 Recommendation:

- For young employees: Introduce structured career development programs.
- For older employees: Offer flexible work arrangements and retention bonuses.

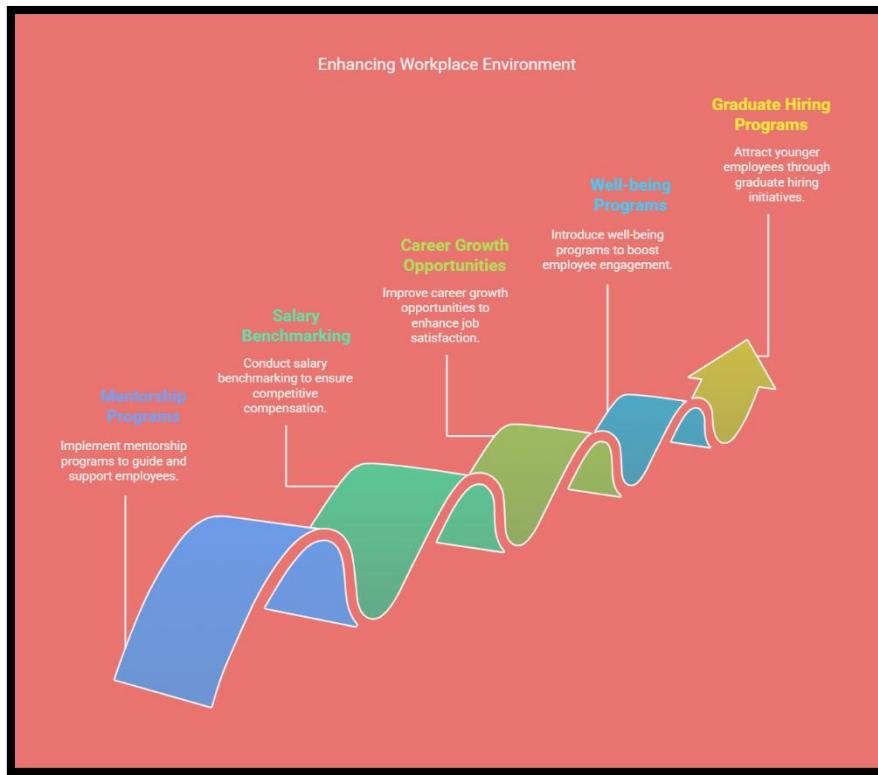
## 8. Impact on Business

The insights above have significant implications for the business:

- ✓ **Cost Savings:** Addressing attrition reduces hiring and training expenses.
- ✓ **Higher Productivity:** Satisfied employees lead to better performance.
- ✓ **Stronger Employee Retention:** Improved HR policies foster loyalty and engagement.
- ✓ **Data-Driven Decision Making:** Helps management take proactive steps based on real data.



## 9. Recommendations for Improvement



Based on the analysis, the following recommendations are proposed:

Category	Recommendation
Attrition Reduction	Implement mentorship programs, conduct stay interviews
Salary Adjustments	Conduct salary benchmarking, offer performance-based bonuses
Job Satisfaction	Improve career growth opportunities, reduce workload pressure
Employee Engagement	Introduce well-being programs, flexible work arrangements
Diversity & Inclusion	Attract younger employees with graduate hiring programs

## 10. Conclusion

This HR analytics dashboard provides a **strategic roadmap** for improving workforce retention. By addressing **attrition trends, job dissatisfaction, and compensation gaps**, the company can enhance employee engagement and **drive long-term business success**.