

Employee Retention Through Data-Driven Insights

Objective:

The objective of the Employee Retention Through Data-Driven Insights (ERTDI) project is to:

Reduce employee turnover and improve employee retention within your organization by leveraging data analysis and predictive modeling.

This objective can be further broken down into specific goals:

1. Identify high-risk groups for employee departure based on factors like demographics, job role, and job satisfaction.
2. Understand the root causes of employee departures through data analysis of exit interviews, surveys, and other relevant data sources.
3. Develop and refine predictive models to anticipate employee departure with higher accuracy.
4. Inform data-driven HR decisions regarding compensation & benefits, training & development programs, and company culture initiatives.

Rationale:

High employee turnover rates can be detrimental to an organization's success. It leads to lost productivity, increased recruiting costs, and disruption of workflows. Understanding the reasons behind employee departures is crucial for developing effective retention strategies and fostering a more engaged workforce.

Methodology:

1. Data Collection and Preprocessing:

1. Data Sources: Primary:
 - HR Information System (HRIS) - Gather core employee data like demographics, hire/termination dates, and exit interview reasons (why they left).

2. Data Cleaning:

- Address missing values strategically and inconsistencies. |
- Ensure data accuracy through quality checks and cross-referencing between sources.

3. Data Integration:

- Combine data from HRIS (and potentially ATS, Surveys) into a single, unified dataset for analysis in Power BI.
- Utilize Power BI's built-in tools or your data warehouse to seamlessly integrate all sources.

2. Data Analysis:

1. Descriptive Analytics :

- Analyze turnover rates by department, tenure (length of employment), and exit reasons.
- Identify departments or demographics with high turnover for further investigation.

2. Diagnostic Analytics (identify reasons):

- Explore correlations between exit reasons and factors like time-to-hire (if using ATS) and job satisfaction (if using surveys).
- Uncover root causes of turnover (e.g., compensation, workload, lack of growth opportunities).

3. Predictive Analytics (forecast future):

- Develop models to predict future employee departures based on employee data and historical trends.
- Proactively identify employees at high risk of leaving.

4. Prescriptive Analytics (recommend actions):

- Recommend targeted actions based on insights (e.g., competitive salary adjustments, improved onboarding, clear career development paths).
- Simulate cost benefits of various retention strategies to optimize resource allocation.

3. Model Development:

1. Algorithm Selection:
 - Primary Model: Logistic Regression: This remains a good choice for predicting the binary outcome of employee departure (stay/leave) based on these demographic features.
2. Training and Validation:
 - Split Data: Divide your employee data into two sets:
 - Training Set: Use Power Query Editor's "Split" function or a custom function to create a training set (typically 70-80% of your data).
 - Testing Set: The remaining data (20-30%) becomes your testing set for model evaluation.

4. Implementation and Testing:

1. Pilot Study: Conduct a pilot study to test the feasibility and effectiveness of the analytics models in a real business environment.
2. Feedback Loop: Collect feedback from stakeholders to refine the models and address any practical challenges.

5. Deployment:

1. Integration: Incorporate the data analytics models into the business's decision-making processes and systems.
2. Monitoring: Continuously monitor model performance and update them with new data to maintain relevance and accuracy.

Dataset:

The study will utilize a comprehensive dataset comprising:

1. Employee Identification and Core Demographics
 - Employee Id: Unique identifier for each employee.
 - Attrition: Binary value indicating whether an employee left the company (Yes/No).
 - Attrition Count: Total number of employees who left the company (calculated measure).

- Attrition Rate: Percentage of employees who left compared to the total number (calculated measure using Attrition Count and Employee Count).
- Age: Employee's current age.
- Monthly Income: Employee's monthly salary.
- Years At Company: Number of years an employee has been with the company.

2. Education and Job-Related Data

- Education Field: The field of study the employee completed in their highest education level.
- Age group: Categorized age ranges (e.g., 20-25, 26-30) based on the Age field.
- Job Role: Specific job title or category the employee falls under.

3. Additional Employee Well-being Indicators

- Job Satisfaction: Employee's reported satisfaction level with their job, potentially based on a survey.
- Salary Slab: Categorized salary ranges (e.g., \$50,000 - \$75,000) based on the Monthly Income field.

Expected Outcomes:

Reduced Turnover & Improved Retention:

- Identify high-risk groups for targeted interventions.
- Understand reasons for departures and address root causes.
- Develop models to predict and prevent potential departures.

Data-Driven HR Decisions:

- Inform adjustments to compensation, benefits, and training programs.
- Optimize performance management practices and company culture initiatives.

Additional Benefits :

- More accurate workforce planning through turnover predictions.
- Enhanced employee engagement by addressing key factors.
- Benchmarking against industry standards for continuous improvement.

Conclusion:

Employee turnover analysis empowers data-driven HR decisions. By identifying high-risk groups and understanding reasons for leaving, we can predict and prevent departures. This leads to reduced turnover costs, improved retention, and ultimately, a stronger, more engaged workforce.