

Use Case: Employee Performance and Resource Management with Power BI

Company Overview

Nexus Manufacturing Corp. is a leading industrial equipment manufacturer dedicated to streamlining its workforce efficiency and improving resource management. With a large, diverse workforce operating across multiple locations, Nexus faces the challenge of optimizing employee performance and ensuring resource allocation aligns with operational goals.

Objective

To utilize Power BI for tracking workforce metrics, analyzing employee performance, and managing resource allocation. The aim is to provide actionable insights for boosting labor productivity, identifying high-performing employees, and optimizing departmental resource allocation.

Data Sources

The analysis will use four key datasets:

1. Employee Data:

- Fields: EmployeeID, Name, Department, Position, HireDate, Location, ManagerID

2. Performance Data:

- Fields: EmployeeID, Month, TasksCompleted, HoursWorked, QualityScore, EfficiencyRating

3. Resource Allocation Data:

- Fields: Department, ResourceType, AllocatedHours, UsedHours, RemainingHours, Cost

4. Training and Development Data:

- Fields: EmployeeID, TrainingProgram, CompletionDate, Score, CertificationReceived

Tasks

1. Data Preparation Operations in Power Query

- Remove Duplicates:** Ensure that each employee, training entry, and resource allocation record is unique.
- Replace Missing Values:** Fill in any missing values in QualityScore or EfficiencyRating in the Performance Data table (e.g., use averages where appropriate).
- Date Formatting:** Format Month, HireDate, and CompletionDate fields as date types and extract year, month, and quarter to support time-based analysis.
- Data Transformation:**

- Standardize text (e.g., proper case for employee names and titles).
 - Convert columns to proper data types (e.g., integers for HoursWorked, decimal for EfficiencyRating).
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2. Analytical Calculations Using DAX

Employee and Performance Calculations

- **Employee Productivity Index:** Measures employee productivity by calculating tasks completed per hour worked.
- **Monthly Efficiency Score:** Averages efficiency ratings for each employee by month, helpful for tracking improvement.

Department and Resource Calculations

- **Resource Utilization Rate:** Shows the percentage of allocated resources that were used.
- **Total Cost by Department:** Aggregates the cost of allocated resources for each department.

Training Impact Calculations

- **Training Success Rate:** Measures the rate of employees who completed training and received certification.
- **Training Improvement Index:** Compares the average performance before and after a training program.

Attrition Risk Calculations

- **Employee Attrition Prediction:** Using low productivity and quality score as indicators, create a flag for employees at risk of attrition.
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3. Visualizations and Interactive Elements in Power BI

1. Employee Performance Dashboard:

- **Productivity Trends:** Line chart of Productivity Index by month.
- **Employee Ranking:** Bar chart ranking employees based on Quality Score and Efficiency Rating.

2. Departmental Resource Usage:

- **Resource Utilization Heat Map:** Heat map showing resource utilization rates by department and resource type.
- **Cost Analysis:** Pie chart showing the percentage of costs by resource type for each department.

3. Training Effectiveness Analysis:

- **Training Success Rate:** Gauge showing overall training success rate.
- **Training Impact Chart:** Scatter plot of Quality Score before and after training for individual employees.

4. Attrition Risk Map:

- **Employee Attrition Flags:** Matrix of departments showing high-risk employees flagged for attrition.
 - **Risk Factors Analysis:** Card visualization displaying average Productivity Index and Quality Score for high-risk employees.
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4. Bookmarks and Filters for Dynamic Reporting

- **Departmental Bookmarks:** Create separate bookmarks for each department with custom filters and views.
- **Monthly and Quarterly Filters:** Time-based filters to explore performance and resource allocation by month or quarter.
- **Drill-Through on Employee Profiles:** Allow drill-through on employee names to view a detailed profile, showing productivity, quality, and training history.

Expected Outcomes

1. **Enhanced Workforce Efficiency:** Insights into productivity metrics help managers optimize task assignments and resource allocation.
2. **Improved Training Programs:** Training impact analysis guides the development of programs that directly boost employee performance.
3. **Cost-Effective Resource Management:** Optimizing resource usage and reducing excess allocation supports cost savings across departments.