

# TechSphere Solutions: Data-Driven Employee Performance and Training Analysis

## Project Overview

### Company Description:

TechSphere Solutions is a mid-tier IT services provider specializing in software development, cloud solutions, and infrastructure management. With over 200 employees across multiple locations in India, the company emphasizes employee development and operational efficiency. The management at TechSphere Solutions seeks data-driven insights to optimize employee performance, project execution, and the impact of training programs.

### Problem Statement:

TechSphere Solutions faces challenges in consolidating and analyzing employee-related data stored across multiple Excel files. The current manual process of extracting insights is inefficient, prone to errors, and incapable of handling the increasing volume of data. Specific pain points include:

#### 1. Scattered Data:

- Employee details, project assignments, attendance records, and training program data exist in separate files without a unified key.

#### 2. Training Effectiveness:

- No systematic method to evaluate the impact of training programs on employee or departmental performance.

#### 3. Operational Inefficiency:

- Lack of insights into attendance patterns, project resource allocation, and employee contributions.

#### 4. Budget Utilization:

- Inadequate tracking of project budget efficiency and return on investment for employee training.

### Objective:

The objective of this project is to create a consolidated database and conduct in-depth analysis to address the above challenges. This will enable TechSphere Solutions to:

1. Streamline data integration for accurate and consistent analysis.
2. Generate actionable insights into employee performance, training outcomes, and project efficiency.
3. Enhance decision-making through a centralized, data-driven approach.

### Data Sources

#### 1. Employee Details:

- Core employee information, including department, job title, and performance scores.

#### 2. Project Assignments:

- Details of projects employees are involved in, project milestones, and budget allocation.

#### 3. Attendance Records:

- Employee attendance data, including total hours worked, leaves taken, and manager feedback.

#### 4. Training Programs:

- Data on training sessions attended by employees, covering feedback scores and technologies learned.

### Challenges:

#### 1. Data Integration:

- The Training Programs dataset lacks a direct mapping to employee records, complicating analysis.

#### 2. Analysis Complexity:

- Identifying the correlation between training programs and project success requires advanced techniques.

#### 3. Scalability:

- The current Excel-based analysis cannot scale with the growing volume of data.

#### 4. Budget Insights:

- Lack of visibility in project budget utilization and employee contributions.

### Proposed Solution:

The solution involves three phases:

#### 1. Data Integration:

- Import the datasets into a relational database (MySQL) using a unified schema.
- Add a logical mapping for the Training Programs dataset using department\_id and employee\_name to assign employee\_id.

#### 2. Data Analysis:

- Conduct advanced SQL-based analysis, including:
  - Employee performance trends.
  - Departmental training impact.
  - Project resource and budget efficiency.

#### 3. Dashboard Creation:

- Export results to Excel for dynamic dashboards to visualize key insights.

### Tasks

#### Data Integration Tasks-

##### 1. Consolidate Datasets:

- Combine the four datasets (Employee Details, Project Assignments, Attendance Records, and Training Programs) into a centralized MySQL database.

##### 2. Add Mapping for Training Programs:

- Use logical mapping to add employee\_id to the Training Programs dataset by matching department\_id and employee\_name from the Employee Details dataset.

##### 3. Schema Design:

- Create a relational schema with the following tables:
  - Employee\_Details: Contains core employee information.
  - Project\_Assignments: Tracks projects and employee contributions.
  - Attendance\_Records: Logs employee attendance data.
  - Training\_Programs: Details of training sessions and feedback scores.

### Analysis Tasks

#### 1. Employee Productivity Analysis:

- Identify employees with the highest total hours worked and least absenteeism.

## **2. Departmental Training Impact:**

- Analyze how training programs improve departmental performance.

## **3. Project Budget Efficiency:**

- Evaluate the efficiency of project budgets by calculating costs per hour worked.

## **4. Attendance Consistency:**

- Measure attendance trends and identify departments with significant deviations.

## **5. Training and Project Success Correlation:**

- Link training technologies with project milestones to assess the real-world impact of training.

## **6. High-Impact Employees:**

- Identify employees who significantly contribute to high-budget projects while maintaining excellent performance scores.

## **7. Cross Analysis of Training and Project Success**

- Identify employees who have undergone training in specific technologies and contributed to high-performing projects using those technologies.

## **Dashboard Tasks**

### **1. Dynamic Visualizations:**

- Create dashboards in Excel using PivotTables and slicers to display:
  - Employee performance trends.
  - Training effectiveness by department.
  - Project budget utilization.

### **2. Interactivity:**

- Add filters for department, employees, and project to enable deeper insights.

## **Expected Deliverables**

**1. Database:** A consolidated MySQL database containing synchronized datasets.

**2. Analysis Reports:** Detailed SQL-based analysis reports addressing productivity, training impact, and budget efficiency.

**3. Dashboards:** Interactive dashboards summarizing key insights for management.

## **Impact**

By implementing this solution, TechSphere Solutions aims to:

1. Improve operational efficiency through data-driven decisions.
2. Optimize employee training investments and measure their ROI.
3. Identify high-performing employees and reward them appropriately.
4. Enhance resource allocation for projects and improve budget utilization.