

# Business Requirements Document (BRD)

## Project: Construction Performance Analysis

### Business Problem

The construction company manages multiple projects across different regions, departments, contractors and phases. However, management currently lacks centralized visibility into project budgets, actual costs, safety incidents, contractor performance, and monthly trends.

Without a unified dashboard:

- Budget overruns are difficult to detect early.
- Contractor performance is not consistently monitored.
- Safety risks are not clearly analyzed by region or phase.
- Monthly performance trends are not systematically tracked.
- Decision-making relies heavily on manual reports and spreadsheets.

This limits the organization's ability to optimize financial performance, improve safety standards and enhance operational efficiency.

### Business Objectives

- Monitor total project portfolio performance in one centralized dashboard.
- Compare allocated budgets against actual costs to detect overruns.
- Track contractor and department performance across projects.
- Analyze safety incidents by region, phase, and project type.
- Monitor monthly financial and operational trends.

### Data Source & Description

**Dataset:** construction.csv

## Key fields:

| Column Name                | Description   |
|----------------------------|---|
| project_id                 | Unique identifier for each project                        |
| project_name               | Name of the construction project                          |
| region                     | Geographic region (North, South, East, West)              |
| project_type               | Type of project (Residential, Commercial, Industrial)     |
| phase                      | Current phase (Design, Construction, Finishing)           |
| status                     | Project status (Completed, In Progress, Pending)          |
| department                 | Responsible department (Engineering, Safety, Procurement) |
| contractor                 | Assigned contractor company                               |
| start_date                 | Project start date  |
| end_date                   | Project end date  |
| month_name                 | Month of reporting  |
| month_number               | Numeric month (1-12)                                      |
| budget                     | Allocated budget for the project                          |
| cost                       | Actual cost incurred                                      |
| safety_incidents           | Number of safety incidents reported                       |
| issue_resolution_time_days | Average issue resolution time                             |

## Key Performance Indicators (KPIs)

1. **Total number of project** – Total number of project
2. **Total Cost** – Sum of actual project costs.
3. **Total Budget** – Sum of actual project budget.
4. **Cost per Project** – Average cost across projects.
5. **Safety Incidents** – Total number of reported workplace accidents,

## Business Questions

### Project Performance

1. How many projects are currently active?
2. Which regions have the highest number of projects?
3. Which project types dominate the portfolio?
4. What is the distribution of projects by phase and status?
5. Which projects are delayed or pending?

## **Budget & Cost Analysis**

1. What is the total allocated budget vs total actual cost?
2. Which departments are overspending?
3. Which regions are exceeding budget?
4. Which project types are most expensive?
5. Which contractors consistently exceed budget?
6. What is the average cost per project?
7. Which projects show the highest budget variance?

## **Contractor & Department Performance**

1. Which contractors manage the most projects?
2. Which contractors have the highest safety incidents?
3. Which departments handle the largest workload?

## **Safety & Risk Analysis**

1. Which region has the highest safety incidents?
2. Which project phase has the most safety risks?
3. Which project type records the highest incident rate?
4. Which contractors have recurring safety issues?

## **Monthly Trend**

1. How does budget vs cost change month-over-month?
2. Are safety incidents increasing in certain months?
3. Is resolution time improving over time?

