

Building Resilience through Data

Creating a Database for Economic Impact Analysis using MySQL Workbench

By: Jemael Nzihou – Process Engineer, Data Scientist, Veteran Leader

J by Jemael Nzihou

What is a Database?

Definition

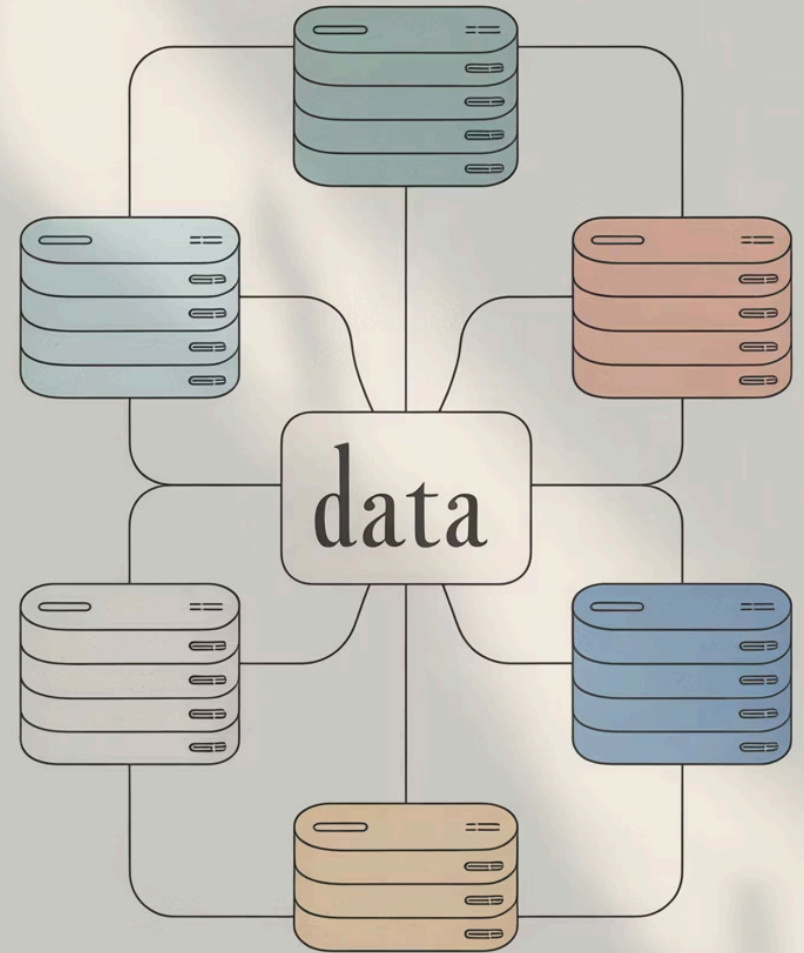
Structured collection of data stored electronically

Types

Relational (MySQL) and NoSQL (MongoDB)

Purpose

Store variables, maintain integrity, enable analysis



Who Uses Databases the Most?



Manufacturing

KPIs, defects, cycle times



Healthcare

Patient records, diagnostics



Finance

Transactions, risk analysis



Retail

Inventory, customer behavior



dataflow
analytics

Unlock your insights

When and Why Are Databases Crucial?

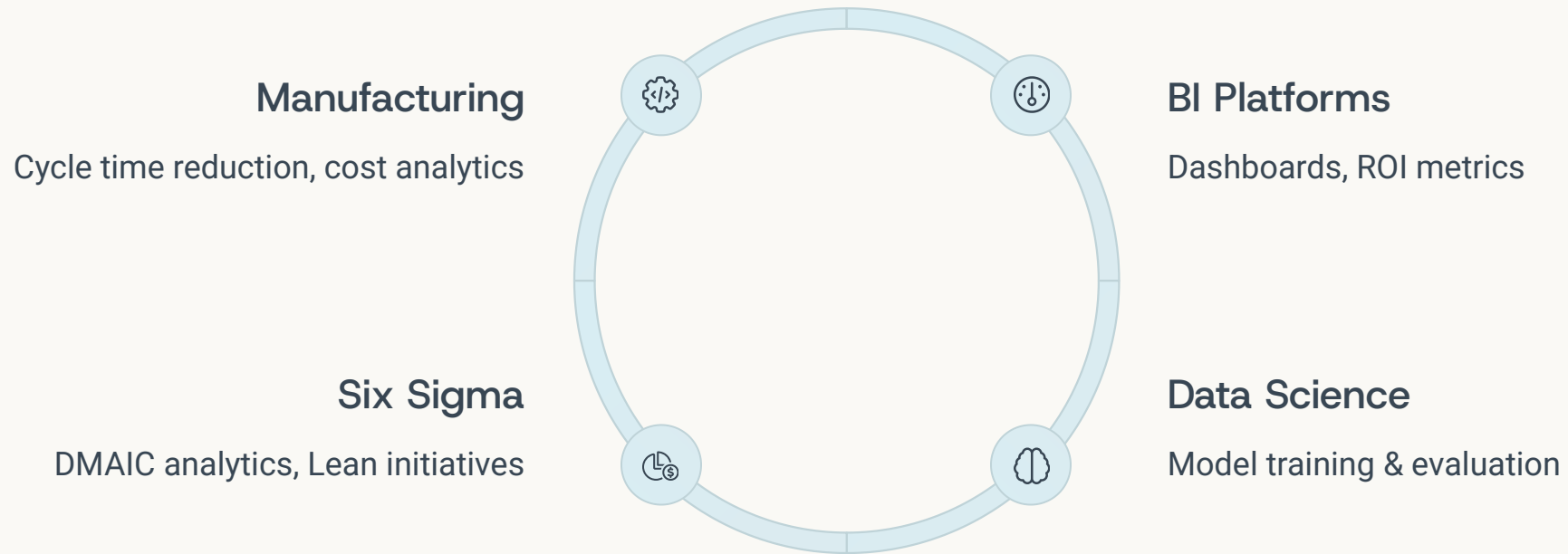
When?

- Process improvement initiatives
- During crises (COVID-19)
- Continuous quality monitoring

Why?

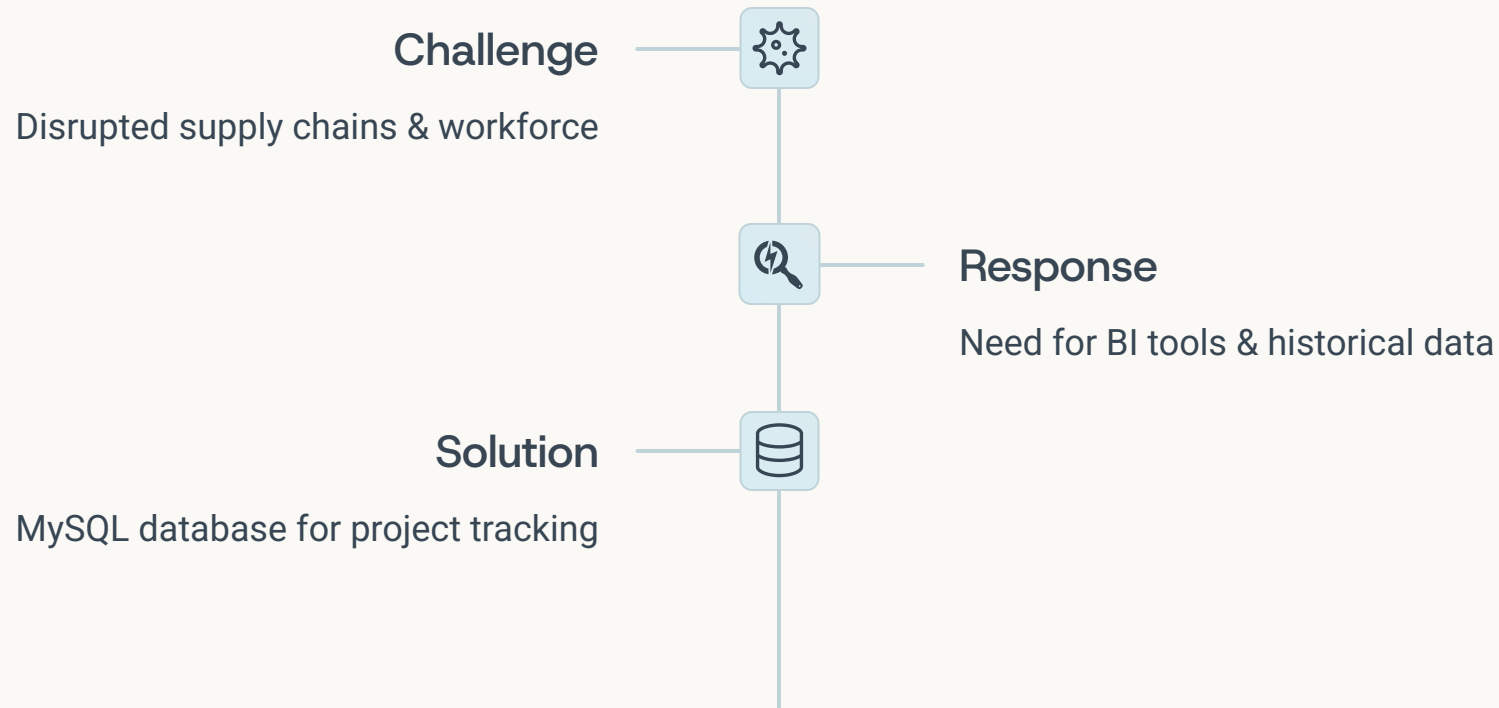
- Supports data-driven decisions
- Prevents data loss
- Enables trend detection

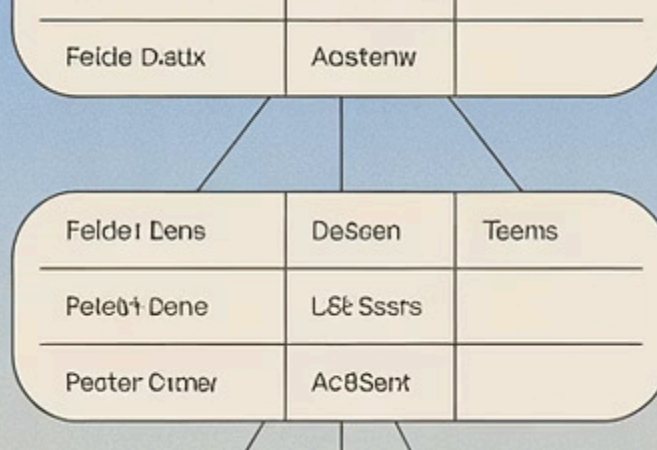
Where Do We See Major Importance?





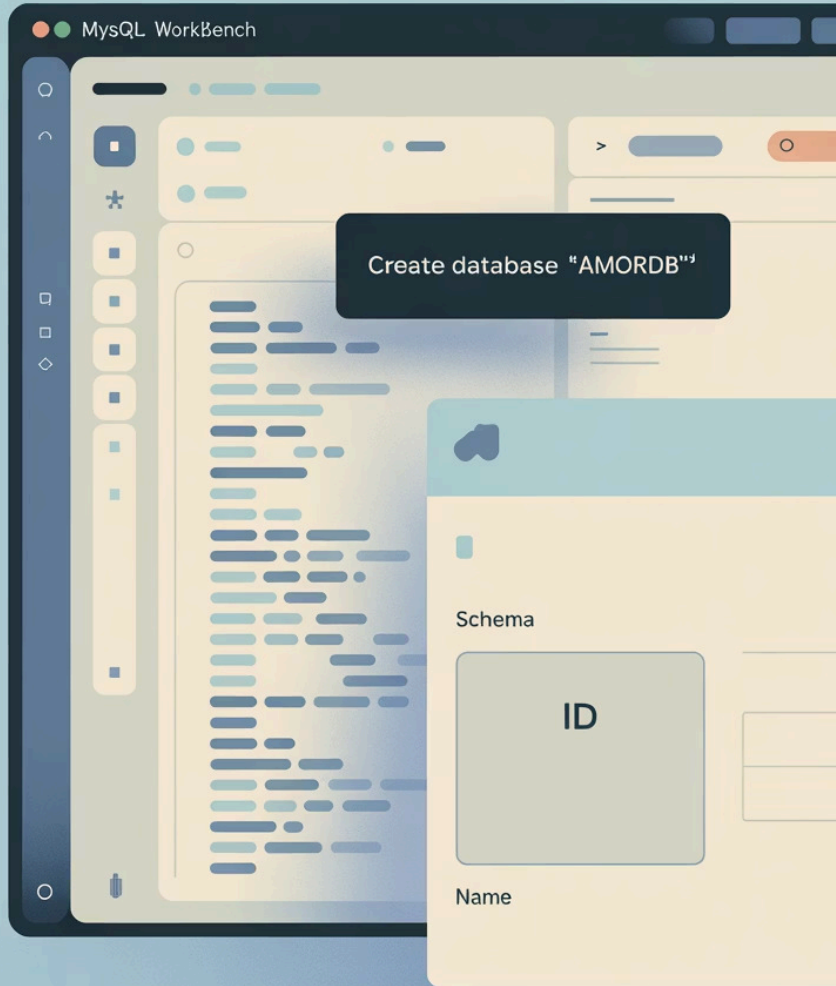
COVID-19 and Data-Driven Systems





Overview of the Database Created

Schema	mydatabase
Table 1	Projects: project_id, name, manager, dates
Table 2	KPI_Tracking: kpi_id, project_id (FK), values
Table 3	Cost_Savings: saving_id, project_id (FK), ROI
Features	Foreign keys, normalization, mixed data types



Implementation Walkthrough

Create Schema

File > New Query Tab > CREATE SCHEMA mydatabase

Build Tables

Create tables with fields and types

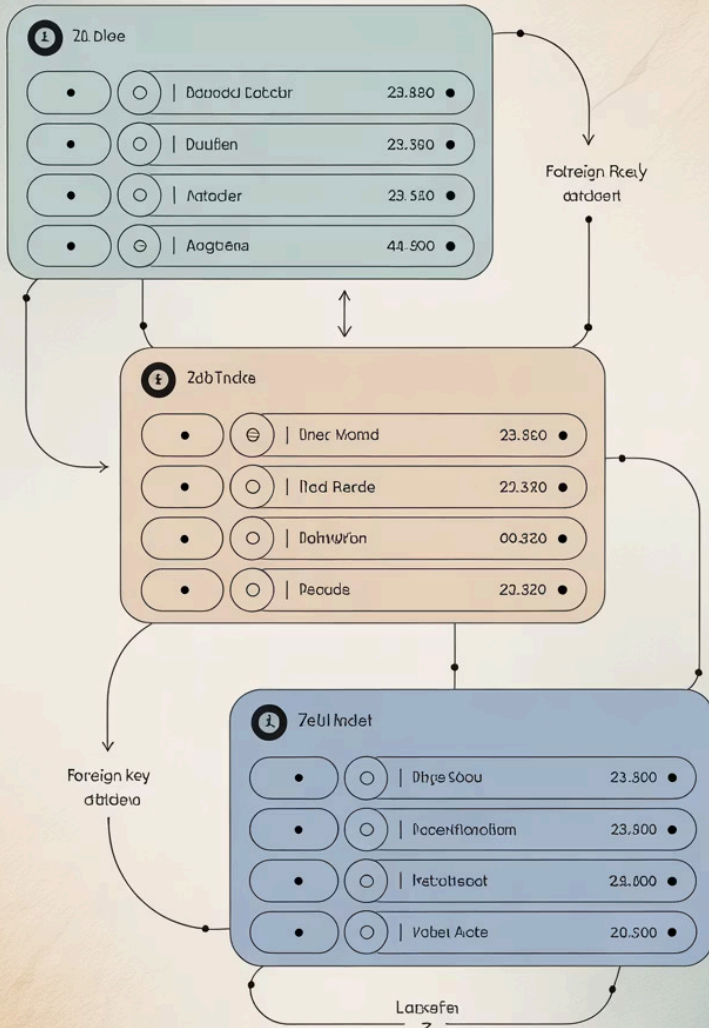
Define Relationships

Set foreign keys between tables

Generate Diagram

Database > Reverse Engineer > EER Diagram

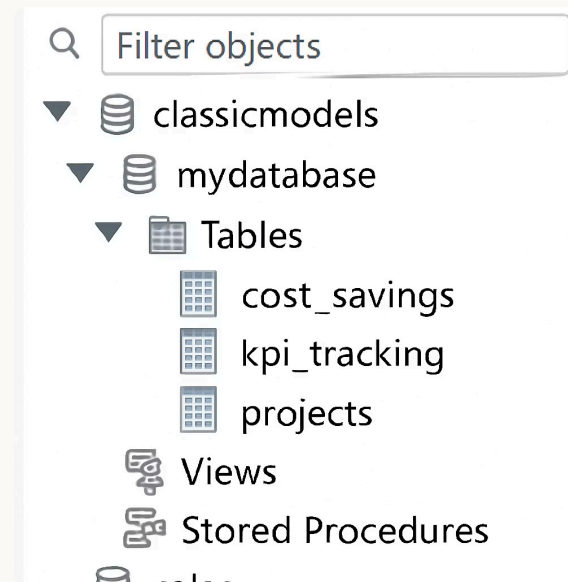
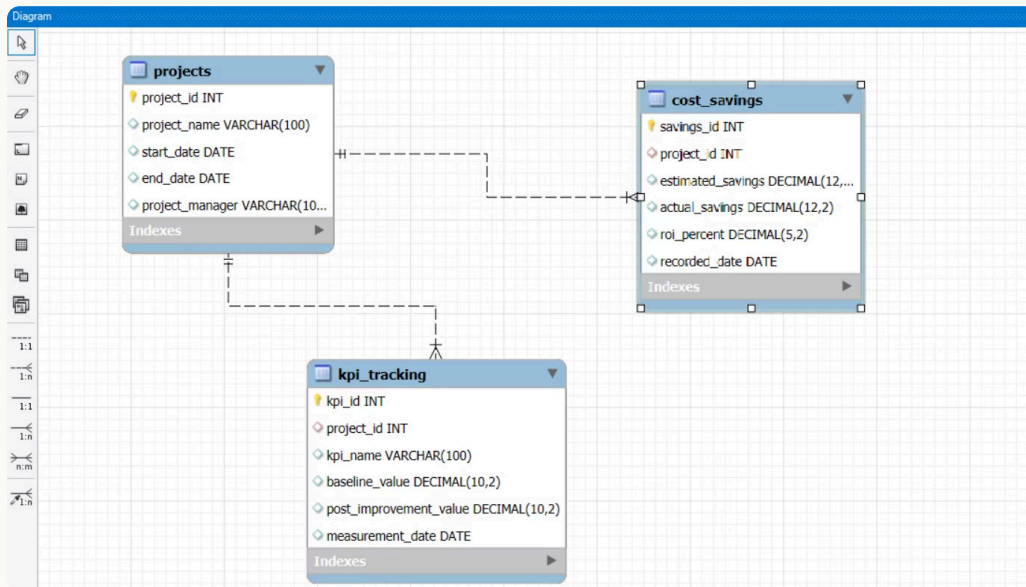
Enhanced Entity Relationship Diagram



EER Diagram & Relational Model

Shows relationships between tables using foreign keys

Highlights normalized structure to reduce redundancy



Navigator: SQL File 12" x

SCHEMAS

Filter objects

- classicmodels
- mydatabase
 - Tables
 - cost_savings
 - kpi_tracking
 - projects
 - Views
 - Stored Procedures
 - Functions
- sales
- sys

Administration Schemas Information

```
1 -- Step 1: Drop and Recreate Schema
2 DROP DATABASE IF EXISTS mydatabase;
3 CREATE DATABASE mydatabase;
4 USE mydatabase;
5
6 -- Step 2: Create Projects Table
7 CREATE TABLE Projects (
8     project_id INT AUTO_INCREMENT PRIMARY KEY,
9     project_name VARCHAR(100),
10    start_date DATE,
11    end_date DATE,
12    project_manager VARCHAR(100)
13 );
14
```

```
37 -- Step 5: Insert Sample Data into Projects
38 INSERT INTO Projects (project_name, start_date, end_date, project_manager) VALUES
39 ('Lean Line Balancing', '2023-01-15', '2023-06-30', 'Alice Johnson'),
40 ('Waste Reduction Initiative', '2023-03-01', '2023-08-15', 'Bob Smith'),
41 ('Cycle Time Optimization', '2023-04-10', '2023-12-01', 'Claire Adams');
42
43 -- Step 6: Insert Sample Data into KPI_Tracking
44 INSERT INTO KPI_Tracking (project_id, kpi_name, baseline_value, post_improvement_value, measurement_date) VALUES
45 (1, 'Production Rate (units/hr)', 120.00, 150.00, '2023-07-01'),
46 (2, 'Defect Rate (%)', 5.50, 2.30, '2023-08-20'),
47 (3, 'Cycle Time (min)', 45.00, 30.00, '2023-12-10');
48
49 -- Step 7: Insert Sample Data into Cost_Savings
50 INSERT INTO Cost_Savings (project_id, estimated_savings, actual_savings, roi_percent, recorded_date) VALUES
51 (1, 50000.00, 52000.00, 18.50, '2023-07-05'),
52 (2, 30000.00, 28000.00, 12.00, '2023-08-25'),
53 (3, 70000.00, 74000.00, 25.00, '2023-12-15');
```

Navigator: SQL File 12" x

SCHEMAS

Filter objects

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- sys

```
15 -- Step 3: Create KPI_Tracking Table
16 CREATE TABLE KPI_Tracking (
17     kpi_id INT AUTO_INCREMENT PRIMARY KEY,
18     project_id INT,
19     kpi_name VARCHAR(100),
20     baseline_value DECIMAL(10,2),
21     post_improvement_value DECIMAL(10,2),
22     measurement_date DATE,
23     FOREIGN KEY (project_id) REFERENCES Projects(project_id)
24 );
```

Navigator: SQL File 12" x

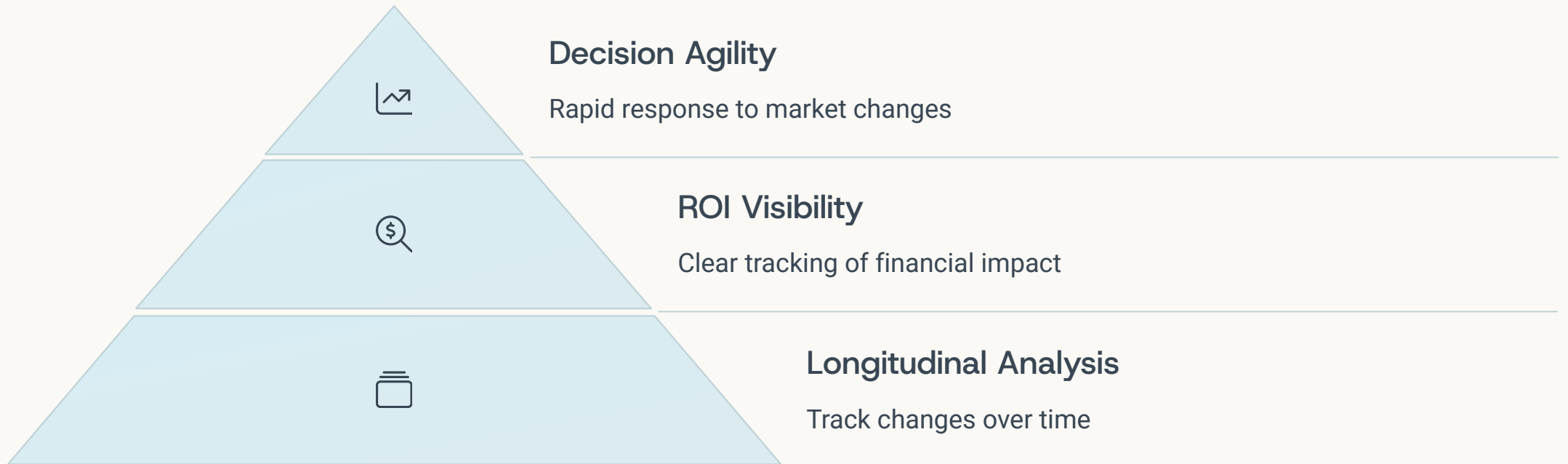
SCHEMAS

Filter objects

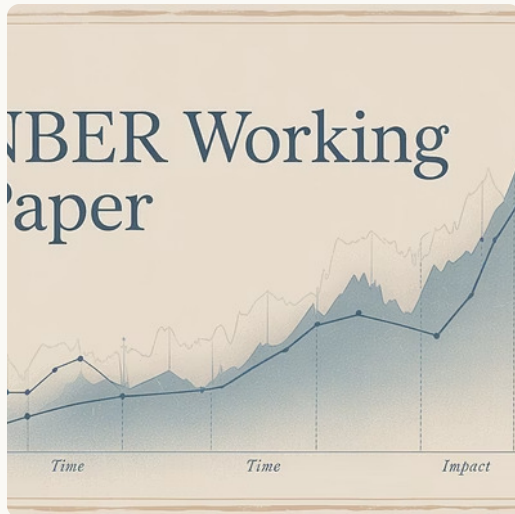
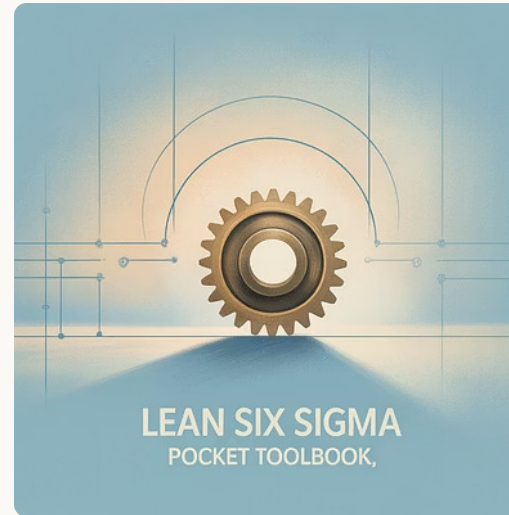
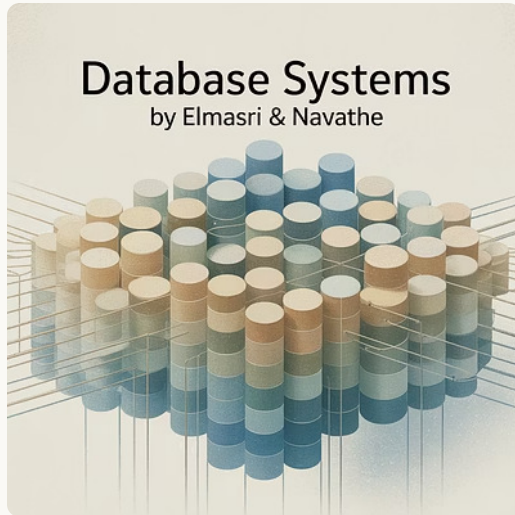
- classicmodels
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```
27 CREATE TABLE Cost_Savings (
28     savings_id INT AUTO_INCREMENT PRIMARY KEY,
29     project_id INT,
30     estimated_savings DECIMAL(12,2),
31     actual_savings DECIMAL(12,2),
32     roi_percent DECIMAL(5,2),
33     recorded_date DATE,
34     FOREIGN KEY (project_id) REFERENCES Projects(project_id)
35 );
36
```

Strategic Importance of the Database



Scholarly and Industry Relevance



Key references supporting database design principles and business intelligence applications



Final Thoughts



Foundation

MySQL database enabled
meaningful BI



Visibility

Enhanced pre/post-COVID
comparisons



Strategy

Informed data-driven decision-
making

Contact and Acknowledgment



Jemael Nzihou

Process Engineer, Data Scientist



Portfolio

Zabatissu | jemael.modelingfolio.com



Contact

jemaelnzihou@gmail.com | 402-430-5219