Phase IV: Table Implementation and Data Insertion

Objective:
Phase IV implements the **physical database** for CustoVision, translating the 3NF logical model into Oracle tables. It ensures **accurate storage, referential integrity, and realistic test data** to simulate real-world business operations.

Implementation Summary:
All entities from Phase III — Products, Customers, Sales_History, Forecasts, Alerts, Customer_Segments, Decision_Log, and Inventory_Transactions — were created as tables with proper Oracle data types. Constraints (PK, FK, NOT NULL, CHECK, UNIQUE) were applied to **enforce business rules**. Indexes were added on frequently queried columns to **optimize performance**.

Data Insertion:
Using PL/SQL scripts, tables were populated with **100–500+ realistic rows**, including edge cases such as NULL emails and walk-in customers. Data distributions mimic actual patterns: customer demographics, product categories, and seasonal sales. Forecasts and alerts were generated to **validate the predictive engine**.

Data Verification:

Integrity checks: No orphan FK references; all constraints enforced.

Basic SELECT queries: Confirm correct row counts and data types.

Joins & aggregations: Test multi-table analytics, total sales, stock vs. forecast comparisons.

Subqueries: Validate complex reporting requirements.

Outcome:

Fully functional database structure, ready for **analytics, BI reporting, and decision support**.

Demonstrates **MIS relevance**, showing how accurate data enables **demand forecasting, inventory planning, and customer segmentation**.

Supports ongoing system development, future **real-time updates**, and audit capabilities via Decision_Log and Action_Audit tables.

Conclusion:
Phase IV ensures that **CustoVision's physical database is robust, realistic, and analytics-ready**, providing a strong foundation for reporting, forecasting, and managerial decision-making.