

Product Availability Dashboard: Enhancing Retail Inventory Analysis

Aravind Panchanathan

Information Science & Technology, George Mason University, apanchan@gmu.edu.

Abstract—The Product Availability Dashboard is designed to analyze and optimize retail inventory levels across categories, suppliers, days, and store regions. By leveraging data visualization techniques in Tableau, this project highlights areas with low availability, identifies missing distribution points, and provides actionable insights to enhance inventory performance. The dashboard integrates data from a MySQL schema with fictional datasets generated using ChatGPT.

I. INTRODUCTION

Ensuring the correct products are available at appropriate inventory levels in the right stores is one of the biggest challenges retailers face. Out-of-stock (OOS) situations lead to lost sales and customer dissatisfaction. This paper documents the creation of a Product Availability Dashboard aimed at solving these challenges by analyzing data on availability, stock levels, and distribution points.

II. SCHEMA DESIGN

The schema was designed to manage data efficiently, connecting suppliers, products, stores, and sales data. The following entities were used:

- **Suppliers:** Includes SupplierID, SupplierName, AvailabilityPercentage, MissingDistPts, and SKUsAffected.
- **Products:** Includes ProductID, ProductName, Category, and SupplierID.
- **Stores:** Includes StoreID, StoreName, Region, State, AvailabilityPercentage, and MissingDistPts.
- **SalesData:** Includes TransactionID, ProductID, StoreID, Date, QuantitySold, StockLevel, StockPoints, and MissingPoints.

The schema was implemented in MySQL and visualized using an Entity-Relationship (ER) diagram (Figure 1).

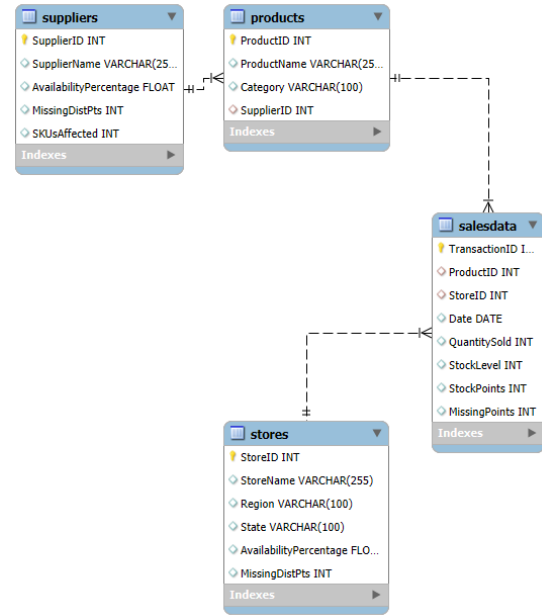


Fig. 1. Entity-Relationship Diagram of the Retail Sales Schema

III. DASHBOARD VISUALIZATION

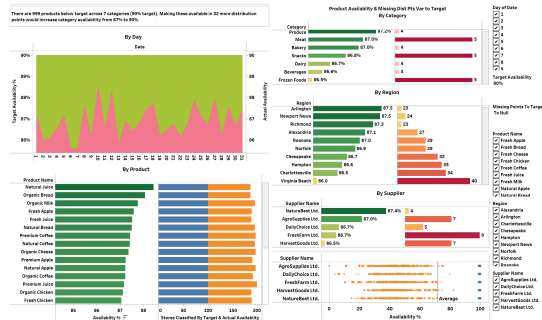


Fig. 2. Tableau Dashboard for Product Availability

The dashboard includes the following components:

- **Category-Level Analysis:** Highlights availability percentage and missing distribution points by category.
- **Supplier Analysis:** Identifies suppliers with the highest SKU impacts and missing distribution points.
- **Regional Availability:** Visualizes availability by store regions to pinpoint problem areas.

- **Daily Trends:** Tracks availability percentage and stocking points over time.

IV. INSIGHTS

- Categories and suppliers contributing to the largest availability gaps were identified.
- Regions requiring targeted restocking efforts were highlighted.
- Products with critical stock issues were flagged for immediate action.

V. REFERENCES AND ACKNOWLEDGMENTS

A. References

- Tableau Whitepaper: *Top 10 Retail Dashboards for Better Performance* [?].

B. Acknowledgments

- ChatGPT: For generating fictional datasets.
- Tableau: For visualization and dashboard creation.
- MySQL Workbench: For schema design and data management.