# Tableau-Project-User-Story-Inventory-Management

## Overview:

The goal of this project is to provide a comprehensive inventory management dashboard that enables warehouse managers, supply chain teams, and inventory analysts to monitor product availability, reorder levels, and stock movements. The dashboards will help in tracking inventory health, managing stock-out risks, and optimizing product replenishment.

## Practice Dataset (Uncleaned)

For this project, you'll work with an uncleaned dataset that contains product names, product categories, stock levels, sales data, reorder levels, and suppliers. The dataset may include inconsistencies such as:

* Missing values for stock levels and reorder points
* Duplicate product names or categories
* Incorrectly formatted dates for stock movement or sales events
* Outliers in inventory levels or product sales

### Example Dataset Fields:

* Product ID
* Product Name
* Product Category
* Sales Quantity (for each product)
* Inventory Level (current stock quantity)
* Reorder Level (minimum stock level)
* Stock Movement Date
* Supplier ID
* Warehouse Location
* Sales Date
* Sales Revenue

## Stakeholders & Requirements:

### Warehouse Manager:

* Needs to know the real-time stock levels of each product to manage the warehouse efficiently.
* Should be able to track products that are below the reorder level to prevent stockouts.
* Wants to monitor historical sales trends to predict future demand and reorder products in advance.

### Supply Chain Manager:

* Needs visibility into stock movement and sales trends to optimize the supply chain.
* Wants to identify fast-moving and slow-moving products to plan the procurement process.
* Should be able to filter data by warehouse location, product category, and supplier to track shipments and manage replenishment schedules.

### Inventory Analyst:

* Requires historical inventory analysis to identify patterns in product consumption and supply chain disruptions.
* Wants to receive automated alerts when inventory levels drop below the reorder point.
* Needs to monitor the performance of suppliers and evaluate which suppliers consistently meet stock requirements.

## Dashboard Requirements:

### 1. Inventory Overview:

* Show an overall summary of inventory levels across all products.
* Highlight products that are understocked and those near their reorder level.

### 2. Sales & Inventory Trends:

* Track monthly sales and inventory levels for the past 12 months.
* Use line graphs to show how sales and stock levels evolve over time, helping identify patterns and correlations.

### 3. Stock Movement:

* Visualize stock inflows and outflows through time using bar or area charts.
* Track reorder levels and highlight products that need restocking.

### 4. Product Performance:

* Compare product performance by sales and stock levels, especially focusing on slow-moving vs. fast-moving products.
* Highlight products that are often out of stock or have excessive stock.

### 5. Supplier Comparison:

* Show a comparison of inventory fulfillment rates by supplier.
* Create a KPI table displaying supplier performance metrics like average delivery time, stock accuracy, and order consistency.

### 6. Alerts for Low Stock:

* Set up dynamic alerts that notify users when a product's inventory drops below the reorder level.
* Display these alerts on the dashboard.

## Steps for Data Cleaning in Tableau Prep

1. **Identifying Null Values:**
   * Filter out or replace null values in critical fields like sales, impressions, and inventory levels.
   * For fields with categorical data (e.g., product category, campaign type), consider creating default categories for missing values.
2. **Fixing Duplicate Records:**
   * In both datasets, find duplicates (e.g., by matching on Campaign ID or Product ID) and decide whether to keep the first entry or aggregate the duplicates.
3. **Date Formatting:**
   * Ensure that dates such as campaign start and end dates, stock movement dates, etc., are in a consistent format. Use Tableau Prep’s "date" functionality to correct formats.
4. **Handling Outliers:**
   * In sales and revenue data, check for any extreme values that could skew analysis (e.g., a campaign that reported millions in revenue with only a small budget).
   * Use Tableau Prep’s filter or calculated fields to exclude extreme values if needed.
5. **Reformatting Data:**
   * Standardize categorical data for regions, customer segments, and campaign names. Use Tableau Prep's "Clean" step to fix inconsistencies.

## Final Steps:

* **Tableau Prep**: Prepare the data by cleaning and transforming the raw data into a usable format.
* **Tableau Desktop**: Create the visualizations and dashboards based on stakeholder requirements.
* **Publish**: After finalizing the dashboards, publish them on Tableau Server or Tableau Public for easy access and sharing.