Inventory Management System with PowerBI

This project delivers an Inventory Management System using Power BI, designed to assist Warehouse and In-Plant Inventory Managers in managing inventory levels efficiently while ensuring optimal service levels. The system leverages Power BI to create an interactive dashboard that provides actionable insights, improves inventory control, and optimizes inventory turnover.

The dataset and project files are available in the original repository: Inventory-Management_System

Project Overview

The Inventory Management System enhances stock management by automating inventory classification, calculating reorder levels, maintaining safety stock, and predicting future demand patterns. It provides real-time insights into stock status, turnover ratios, and demand variability, ensuring that inventory processes run smoothly.

Tools and Technologies

- Power BI for building the interactive dashboard
- Excel for data preprocessing and transformation
- SQL for data extraction and querying

Key Components of the Dashboard

- ABC Classification categorizes inventory into high, moderate, and low-value items.
- XYZ Classification groups inventory based on demand variability.
- Inventory Turnover Ratio measures how efficiently inventory is utilized and replaced.

- Safety Stock Levels calculate buffer stock to prevent stockouts.
- Reorder Level Estimation determines optimal reorder points and safety stock levels.
- Average Weekly Demand provides insights into demand trends over weekly periods.
- Stock Status displays real-time inventory status to avoid overstocking or understocking.
- Forecasting predicts inventory needs for upcoming periods, aiding in future planning.

Visualizations and Techniques

- Stack Area Chart displays trends and cumulative data for ABC classification.
- Cards, Gauges, and Slicers showcase key inventory metrics dynamically.
- Tables and Matrices present distribution trends and stock reports.
- Line Charts analyze turnover ratios and time-based trends.

DAX Formula for Sales Amount Calculation

- Sales Amount =
- LOOKUPVALUE(
-     Stock[Unit Price],
-     Stock[SKU ID],
-     'Weekly Demand Sheet'[SKU ID]
-) * 'Weekly Demand Sheet'[Weeks Demand]

This formula retrieves the Unit Price from the Stock table by matching the SKU ID from the Weekly Demand Sheet and multiplies it by the corresponding value in the Weeks Demand column to calculate the total sales amount.

Example Calculation

SKU ID	Unit Price	Weeks Demand	Sales Amount
101	$10	5	$50
102	$20	3	$60

Advanced Functionalities

- Calculated Columns and Rows perform date-based and conditional calculations.
- DAX Functions enable complex calculations and data modeling.
- Forecasting Models predict future inventory needs using historical data.

Project Setup Instructions

1. Clone the repository:
   - git clone
     https://github.com/Rahulshahu340/Inventory-Management_System.git

2. Open the `.pbix` file in Power BI Desktop.
3. Load the provided datasets into the Power BI environment.
4. Configure data source connections and refresh the data to update visualizations.
5. Explore the dashboard and analyze inventory data dynamically.

Contact and Contributions

Contributions are welcome. Suggestions for improvements, bug reports, and pull requests are encouraged to enhance the project further. For any questions, refer to the [GitHub Issues](#) section.

Future Enhancements

- Integrate machine learning models for more accurate demand forecasting.
- Develop automated alerts for low stock and reorder levels.
- Add drill-down functionality for detailed data analysis.