

# **USECASE :-**

## **DATA DRIVEN INNOVATIONS IN SUPPLY CHAIN MANAGEMENT**

### **NAME :-**

**SHAIK JALAL KHAJA MOHIDDIN**

### **1.Introduction:**

In today's competitive business environment, supply chain management plays a crucial role in determining a company's efficiency and profitability. One of the key challenges within supply chain management is demand forecasting, which directly impacts inventory management. Inaccurate demand forecasts can lead to either excess inventory or stockouts, both of which incur significant costs and affect customer satisfaction.

The purpose of this project is to harness the power of data analytics to address a critical challenge in supply chain management: inaccurate demand forecasting. This project aims to demonstrate how data-driven innovations can optimize supply chain processes, leading to significant improvements in efficiency, cost reduction, and customer satisfaction. Here are the specific objectives and goals of the project:

1. **Objectives:**
  - Utilize historical sales data and external economic indicators to build a more accurate demand forecasting model.
  - Reduce the forecasting errors that lead to either excess inventory or

stockouts.

2. **Inventory Management:**

- Balance inventory levels to ensure that the right amount of stock is available at the right time.
- Minimize the costs associated with holding excess inventory and the risks of stockouts.

3. **Demand Forecasting:**

- By improving demand forecasts, reduce the amount of capital tied up in unsold inventory.
- Lower storage and warehousing costs by maintaining optimal inventory levels.

4. **Customer Service:**

- Ensure product availability to meet customer demand without delays.
- Reduce instances of stockouts that can lead to lost sales and customer dissatisfaction.

5. **Data Analytics:**

- Integrate various data sources to gain a comprehensive view of factors influencing demand.
- Use advanced data analytics to uncover patterns and trends that inform better decision-making.

6. **Reporting and Visualization:**

- Develop a user-friendly and responsive dashboard in Qlik Sense to visualize key metrics and trends.
- Provide stakeholders with the tools to explore data and derive actionable insights.

7. **Supply Chain Performance Analysis:**

- Showcase how data-driven approaches can lead to measurable improvements in supply chain performance.
- Highlight the potential for cost savings, operational efficiency, and enhanced customer loyalty.

8. **Implementation and Best Practices:**

- Provide a step-by-step guide for implementing data-driven solutions in supply chain management.
- Offer practical insights and methodologies that can be applied in real-world business scenarios.

The technical architecture of this project outlines the components and their interactions necessary to implement a data-driven solution for improving demand forecasting in supply chain management. Below is a detailed description of the architecture:

- **Data Sources:** Provides historical sales data, inventory levels, and order records.
- **Warehouse Data:** Supplies data on stock levels, warehouse movements, and storage locations.
- **Economic Indicators:** Data on consumer confidence, economic growth rates, and other relevant economic indicators.
- **Market Trends:** Data on industry trends, seasonal patterns, and competitor activities.

## 2. Define Problem / Problem Understanding:-

- **Problem Statement:** Many businesses face challenges with inaccurate demand forecasting, leading to either excess inventory or stockouts. Both scenarios incur costs: excess inventory ties up capital and increases holding costs, while stockouts can result in lost sales and dissatisfied customers.
- **Project Focus:** This project focuses on improving demand forecasting accuracy for a mid-sized retail business.
- **Objectives:** Better demand forecasting can optimize inventory levels, reduce holding costs, and increase customer satisfaction.
- **Stakeholders:**
  - **Operations:** Needs accurate demand forecasts to maintain optimal inventory levels.
  - **Sales:** Requires insights into product demand trends to align sales strategies.
  - **Finance:** Interested in cost reduction and improved cash flow.
- **Key Performance Indicators (KPIs):**
  - Forecast Accuracy (Mean Absolute Percentage Error - MAPE)
  - Inventory Turnover Rate
  - Stockout Rate
- **Expected Outcomes:**
  - Improved forecast accuracy by 10%
  - Reduction in inventory costs by 15%
  - Decrease in stockout occurrences by 20%

- :
  - Advanced forecasting techniques (e.g., machine learning models) outperform traditional methods.
  - Integrating external data (e.g., market trends, economic indicators) can enhance forecast accuracy.
- :
  - Use historical sales data and seasonality trends.
  - Implement continuous improvement and feedback loops.
- :
  - Improved profitability and cash flow management.
  - Enhanced operational efficiency.
- :
  - Potential reduction in waste due to better inventory management.
  - Improved customer satisfaction and loyalty

### 3. Data Collection:-

- : DataCo SMART SUPPLY CHAIN FOR BIG DATA ANALYSIS.
- : This dataset typically includes various fields such as order details, shipment details, product categories, sales data, and customer information.
- :
  - Order ID
  - Order Date
  - Ship Date
  - Product ID

- Product Category
- Sales
- Quantity
- Customer ID
- Region
- Shipping Cost

:

Type	Days for shipping	Days for shipment (scheduled)	Benefit per order	Sales per customer	Delivery Status
DEBIT	3	4	91.25	314.6400146	Advance shipping
TRANSF	5	4	-249.0899963	311.3599854	Late delivery
CASH	4	4	-247.7799988	309.7200012	Shipping on time
DEBIT	3	4	22.86000061	304.8099976	Advance shipping
PAYME	2	4	134.2100067	298.25	Advance shipping
TRANSF	6	4	18.57999992	294.980011	Shipping canceled
DEBIT	2	1	95.18000031	288.4200134	Late delivery
TRANSF	2	1	68.43000031	285.1400146	Late delivery
CASH	3	2	133.7200012	278.5899963	Late delivery