

# Data-Driven Innovations In Supply Chain

## 1. Introduction

### 1.1 Overview: A Brief Description about Your Project

This project aims to revolutionise supply chain management through data-driven insights using Qlik Sense. By leveraging advanced analytics, we seek to optimize logistics, forecasting, and inventory management, thereby enhancing operational efficiency and responsiveness. The goal is to harness Qlik Sense's powerful data visualisation and analytics capabilities to transform the supply chain landscape.

### 1.2 Purpose: The Use of This Project. What Can Be Achieved Using This.

The purpose of this project is to improve supply chain operations by providing clear, actionable insights from complex data sets. Achievements include:

- Enhanced visibility into supply chain processes.
- Improved decision-making through real-time data analytics.
- Optimization of logistics and inventory management.
- Reduction in lead times and transportation costs.
- Better responsiveness to market changes and customer demands.

### 1.3 Technical Architecture

The technical architecture of this project involves:

- **Data Source Integration:** Collecting data from various supply chain databases and systems.
- **Data Processing:** Cleaning and preparing the data for analysis.
- **Qlik Sense Platform:** Utilizing Qlik Sense for data visualisation and dashboard creation.
- **User Interface:** Interactive dashboards providing insights and facilitating making.

## 2. Define Problem / Problem Understanding

### 2.1 Specify the Business Problem

The project aims to revolutionise supply chain management by utilising data-driven insights to optimize logistics, forecasting, and inventory management. This will enhance operational efficiency and responsiveness, allowing businesses to meet market demands better and reduce operational costs.

### 2.2 Business Requirements

1. Implement a robust data integration strategy to centralise data from diverse sources.
2. Utilize Qlik's visualisation capabilities to create intuitive dashboards.
3. Analyse historical logistics data to optimize transportation routes.
4. Implement real-time tracking and monitoring solutions.
5. Enable quick decision-making through real-time analytics.

## **2.3 Literature Survey**

The literature survey highlights the growing importance of data analytics in supply chain management. Studies indicate that advanced analytics tools like Qlik significantly improve visibility, decision-making, logistics optimization, forecasting accuracy, and inventory management. Successful implementations demonstrate improved operational efficiency and responsiveness, with an emphasis on the necessity of robust data governance and a data-driven culture.

## 3. Data Collection

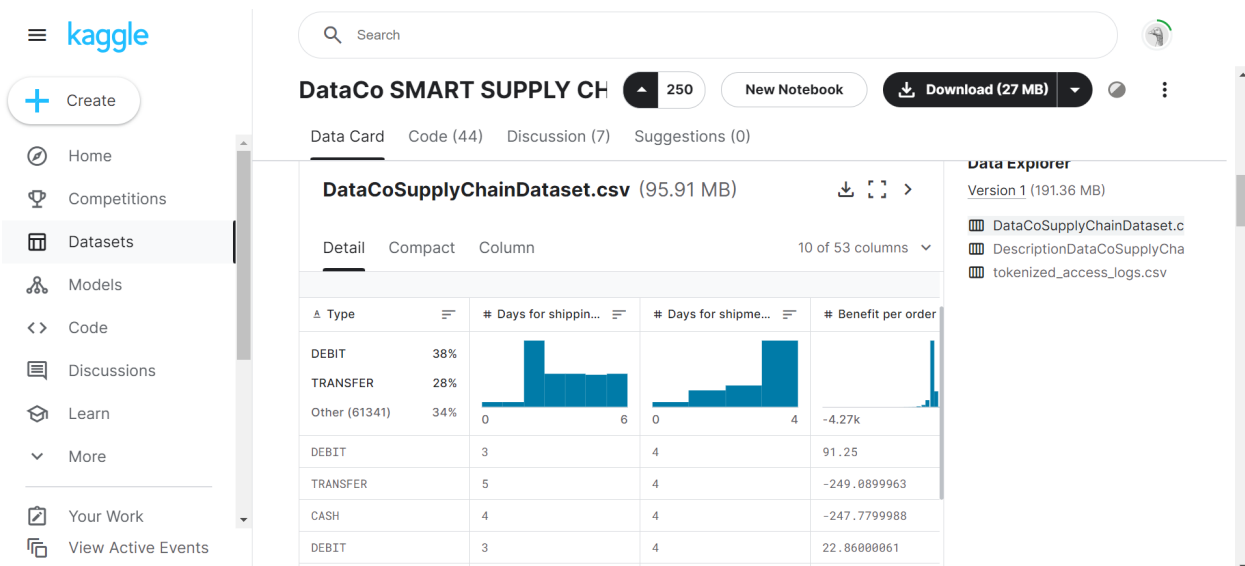
### 3.1 Collect the Dataset

The dataset was collected from various supply chain sources, containing detailed information on product shipment, customer demographics, sales, order details, and more.

link - <https://www.kaggle.com/datasets/shashwatwork/dataco-smart-supply-chain-for-big-data-analysis/data>

### 3.2 Connect Data with Qlik Sense

The collected dataset was loaded into Qlik Sense for analysis. This involved importing the data files and ensuring proper data integration within the Qlik Sense environment.



## 4. Data Preparation

### 4.1 Prepare the Data for Visualization

Data preparation involved:

- Cleaning the data by handling missing values and correcting data types.
- Transforming the data to ensure consistency.
- Creating calculated fields and aggregations needed for visualisations.

Qlik ... Prepare Data manager Analyze Sheet Narrate Storytelling supplychain

+ Add data Concatenate or join

tokenized\_access\_logs DataCoSupplyChainDataset

Recommended associations

Preview all Apply all

DataCoSupplyChainDataset DataCoSupplyChainDataset.csv Fields: 54

Type	Days for shi...	Days for shi...	Benefit per o...	Sales per cu...	Delivery Status	Late_deliver...	Category Id	Category Name	Customer City	Customer
CASH	0	0	-1088.949951	395.980011	Shipping on time	0	45	Fishing	Winter Park	EE. UU.
CASH	0	0	-854.960022	379.980011	Shipping on time	0	45	Fishing	Buena Park	EE. UU.
CASH	0	0	-652.7700195	383.980011	Shipping on time	0	45	Fishing	West Haven	EE. UU.
CASH	0	0	-595.1699829	383.980011	Shipping on time	0	45	Fishing	Princeton	EE. UU.
CASH	0	0	-594.9699707	339.980011	Shipping on time	0	45	Fishing	Caguas	Puerto Rico
CASH	0	0	-443.6300049	260.9599915	Shipping on time	0	17	Cleats	Caguas	Puerto Rico

Hide data preview

## **5. Data Visualizations**

### **5.1 Visualizations**

The following visualisations were created to analyze various aspects of supply chain performance:

#### **1. Total Items Placed by Customers in Different Countries:**

- Vertical Bar Chart
- Dimension: Customer Country
- Measure: Sum([Order Item Quantity])
- Insights into regional demand.

#### **2. Total Items Placed by State:**

- Vertical Bar Chart
- Dimension: Customer State
- Measure: Sum([Order Item Quantity])
- Insights into state-level demand.

#### **3. Analysis on Customer Segment:**

- Pie Chart
- Dimension: Customer Segment
- Measure: Count([Customer ID])
- Distribution of customer segments.

#### **4. Mode of Payment:**

- Pie Chart
- Dimension: Mode of Payment
- Measure: Count([Order ID])
- Distribution of payment methods.

#### **5. Customer Purchase by City:**

- Vertical Bar Chart
- Dimension: Customer City
- Measure: Sum([Order Item Quantity])
- Insights into urban demand patterns.

#### **6. Delivery Status of Orders:**

- Pie Chart
- Dimension: Order Status

- Measure: Count([Order ID])
- Distribution of orders across regions.

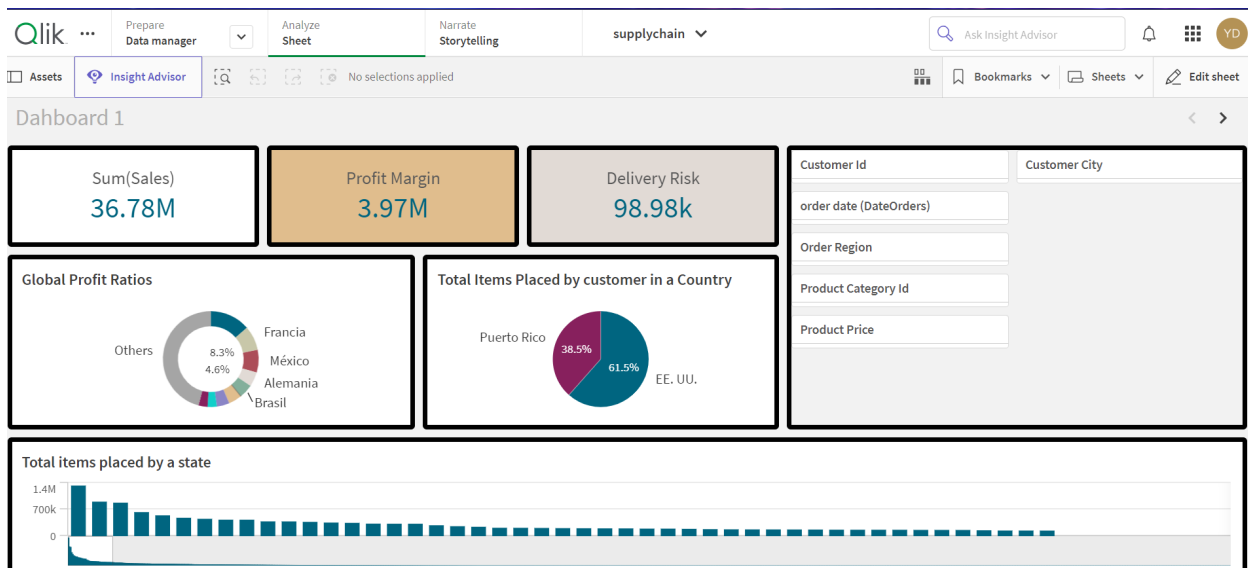
## 6. Dashboard

### 6.1 Responsive and Design of Dashboard

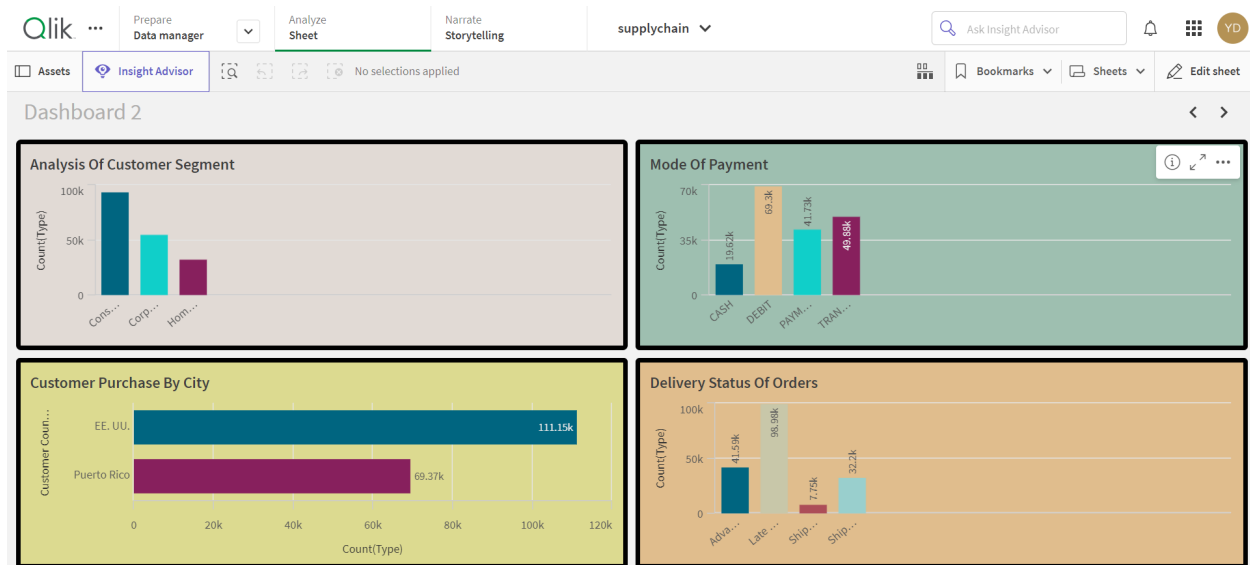
The dashboard was designed to be user-friendly and responsive. It includes:

- Interactive visualisations.
- Filter panes for dimensions like Customer Country, Order Date, and Product Category.
- Clear layout to ensure easy navigation and data interpretation.

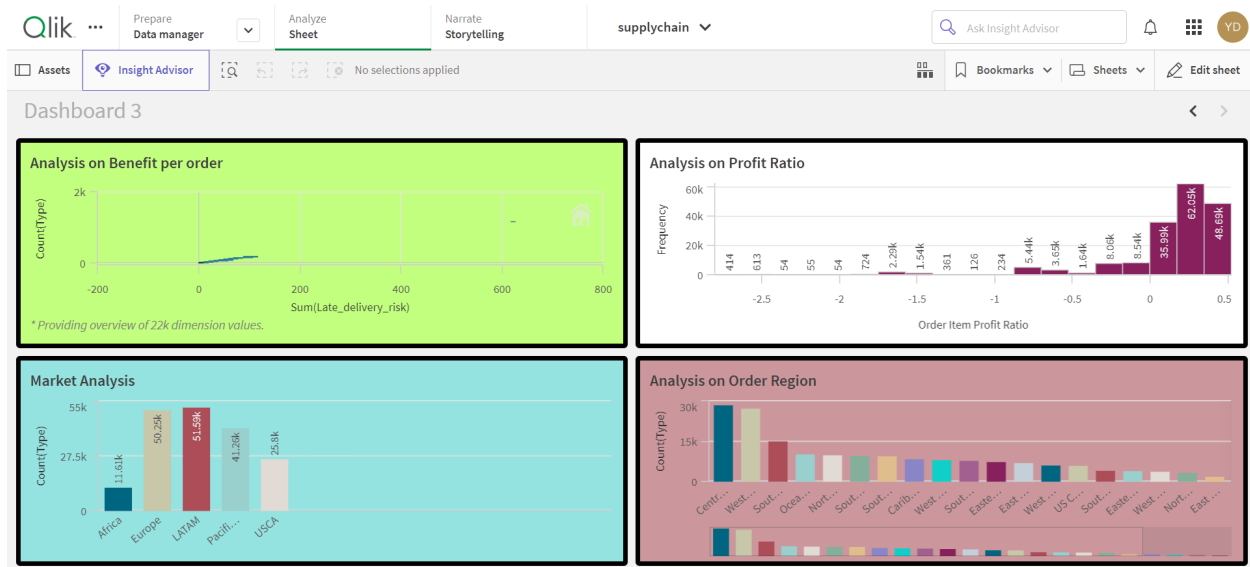
#### Dashboard 1-



#### Dashboard 2-



## Dashboard 3-



## **7.Report**

### **7.1 Report Creation**

The project report includes:

- Detailed documentation of each step.
- Explanation of the business problem, data collection, preparation, and visualisation processes.
- Insights derived from the data analysis.

## **8. Performance Testing**

### **8.1 Amount of Data Rendered**

The amount of data rendered to the database was optimised to ensure quick loading times and efficient performance.

### **8.2 Utilization of Data Filters**

Data filters were implemented to allow users to explore the data interactively without compromising performance. The use of filters enhances the user experience by enabling customized views of the data.

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