# <u>Report</u>

## Data-Driven Innovations in Supply Chain Management with Qlik Insights

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# Abstract

This project aims to revolutionize supply chain management through data-driven insights using Qlik. Leveraging advanced analytics, it seeks to optimize logistics, forecasting, and inventory management, enhancing operational efficiency and responsiveness. This transformative project endeavors to reshape the landscape of supply chain management by harnessing the power of Qlik's data-driven insights. Employing cutting-edge analytics, it strives to revolutionize key facets such as logistics, forecasting, and inventory management, with the overarching goal of elevating operational efficiency and responsiveness to new heights.

# Introduction

In today's fast-paced global market, efficient supply chain management is essential for maintaining a competitive edge. Traditional methods are increasingly being replaced by data-driven strategies, offering real-time insights and predictive analytics for agile decision-making. Qlik Insights, powered by Qlik Sense, stands at the forefront of this transformation, providing comprehensive visibility, predictive capabilities, and seamless data integration. This enables businesses to monitor performance, predict future trends, and optimize resources. The customizable dashboards and scalable nature of Qlik Sense ensure that organizations can reduce costs and enhance efficiency, making data-driven innovations a critical component of modern supply chain management.

# Setup and Installation

Creating an Account and Downloading Qlik Sense Desktop

**Login and Account Creation:**
1. Access the Qlik Sense website(https://www.qlik.com/us/try-or-buy/download-qlik-sense) and create a
new account.
2. Download the Qlik Sense Desktop unlock file.

**File Placement:**
1. Navigate to the directory: `C:\Users\Harshika\Documents\Qlik\Sense\trial`.
2. Paste the downloaded desktop unlock file in this directory.

**Launching Qlik Sense Desktop:**

1. Open the Qlik Sense Desktop application.

2. App Creation and Data Upload

# Create a New App and Upload Data:

**Create a New App:**

1. Click on the "Create App" button to start a new project.

**Upload the Data File:**

1. Go to Skill Wallet and download the project flow data set.

2. In Qlik Sense, upload this data set into the new app.Ensure the dataset is embedded correctly to use the

first row as headers if it is not done automatically.

# Data Preparation

**Removing Duplicates and Null Values**

**Data Load Editor:**

1. Go to the 'Prepare' tab and open the Data Load Editor.

2. Modify the default Qlik script to handle duplicates and null values as per the requirements.

**Sample Code:**

Use the following Qlik Script to pre-process the supply chain dataset:

```
```
// Load data from the source
[DataCoSupplyChainDataset]:
LOAD
        [Type],
        [Days for shipping (real)],
        [Days for shipment (scheduled)],
        [Benefit per order],
        [Sales per customer],
```

[Delivery Status],

[Late_delivery_risk],

[Category Id],

[Category Name],

[Customer City],

[Customer Country],

[Customer Email],

[Customer Fname],

[Customer Id],

[Customer Lname],

[Customer Password],

[Customer Segment],

[Customer State],

[Customer Street],

[Customer Zipcode],

[Department Id],

[Department Name],

[Latitude],

[Longitude],

[Market],

[Order City],

[Order Country],

[Order Customer Id],

Timestamp(Timestamp#([order date (DateOrders)], 'M/D/YYYY h:mm') ) AS [order date (DateOrders)],

[Order Id],

[Order Item Cardprod Id],

[Order Item Discount],

[Order Item Discount Rate],

[Order Item Id],

[Order Item Product Price],

[Order Item Profit Ratio],

[Order Item Quantity],

[Sales],

[Order Item Total],

[Order Profit Per Order],

[Order Region],

[Order State],
        [Order Status],
        [Order Zipcode],
        [Product Card Id],
        [Product Category Id],
        [Product Description],
        [Product Image],
        [Product Name],
        [Product Price],
        [Product Status],
        Timestamp(Timestamp#([shipping date (DateOrders)], 'M/D/YYYY h:mm') ) AS
[shipping date (DateOrders)],
        [Shipping Mode],
        APPLYMAP( '__cityKey2GeoPoint', APPLYMAP( '__countryCodeAndCityName2Key',
APPLYMAP( '__countryName2IsoThree', LOWER([Order Country])) & LOWER([Customer
City])), '-') AS [DataCoSupplyChainDataset.Customer City_GeoInfo],
        GeoMakePoint([Latitude], [Longitude]) AS [Longitude_Latitude],
        APPLYMAP( '__cityKey2GeoPoint', APPLYMAP( '__countryCodeAndCityName2Key',
APPLYMAP( '__countryName2IsoThree', LOWER([Order Country])) & LOWER([Order
City])), '-') AS [DataCoSupplyChainDataset.Order City_GeoInfo],
        APPLYMAP( '__countryCodeIsoThree2Polygon', APPLYMAP(
'__countryName2IsoThree', LOWER([Order Country])), '-') AS
[DataCoSupplyChainDataset.Order Country_GeoInfo]
 FROM [lib://DataFiles/DataCoSupplyChainDataset.csv]
(txt, codepage is 28591, embedded labels, delimiter is ',', msq);

[tokenized_access_logs]:
LOAD
        [Product],
        [Category],
        Timestamp(Timestamp#([Date], 'M/D/YYYY h:mm') ) AS [Date],
        [Month],
        [Hour],
        [Department],
        [ip],
        [url]
 FROM [lib://DataFiles/tokenized_access_logs.csv]

(txt, codepage is 28591, embedded labels, delimiter is ',', msq);

# **Visualization Creation**

### **Key Performance Indicators**

**Sales:**
Measure: `Sum([Sales])`

**Profit Margin:**
Measure: `Sum([Order Profit Per Order])`

**Delivery Risk:**
Measure: 'Sum([Late_delivery_risk])'

# **Dashboard and Storytelling**

### **Dashboard Creation**

### **Design Dashboards:**

1. Create two dashboards, aligning the visualizations and key performance indicators effectively.

### **Storytelling**

### **Create a Story:**

1. Use the storytelling feature in Qlik Sense to create a presentation (PPT).
2. Include the visualizations and narrative to explain the insights derived from the data.

# **Project Analysis and Scope**

### **Project Analysis:**

The "Data-Driven Innovations in Supply Chain Management with Qlik Insights" project aims to revolutionize supply chain operations through the integration of Qlik Sense analytics. The

analysis focuses on identifying key areas within the supply chain that can benefit from enhanced data visibility and predictive analytics. The project will assess current supply chain processes, pinpoint inefficiencies, and determine the potential for improvement through data integration and real-time insights. Key performance indicators (KPIs) such as profit margin, sales, and deliver risks will be monitored to measure the impact of the implementation.

**Scope:**

1. **Data Collection and Integration**:
   - **Sources**: Collect data from various sources including inventory management systems, sales records, supplier databases, and logistics platforms.
   - **Integration**: Use Qlik Sense to integrate this data into a unified platform, ensuring seamless data flow and consistency.
2. **Dashboard Development**:
   - **Customization**: Develop tailored dashboards that present critical KPIs and metrics in an intuitive and actionable format.
   - **Real-Time Analytics**: Implement real-time data processing to provide up-to-date insights and facilitate immediate decision-making.
3. **Predictive Analytics**:
   - **Trend Analysis**: Utilize Qlik Sense's predictive capabilities to forecast demand, anticipate supply chain disruptions, and optimize inventory levels.
   - **Risk Management**: Identify potential risks and develop strategies to mitigate them before they impact operations.
4. **Training and Adoption**:
   - **User Training**: Conduct comprehensive training sessions for key personnel to ensure effective use of Qlik Sense tools.
   - **Change Management**: Promote a culture of data-driven decision-making across the organization to maximize the benefits of the new system.
5. **Continuous Improvement**:
   - **Feedback Loop**: Establish mechanisms for continuous feedback and improvement, regularly updating dashboards and analytical models based on evolving business needs.
   - **Performance Monitoring**: Continuously monitor the impact of Qlik Insights on supply chain performance, making adjustments as necessary to optimize outcomes.
6. **Scalability and Expansion**:
   - **Future-Proofing**: Ensure the system is scalable to accommodate business growth and increasingly complex supply chain operations.

- **Expansion**: Explore opportunities to extend the use of Qlik Insights to other areas of the business, such as procurement and customer relationship management.

## Conclusion

The implementation of Qlik Insights powered by Qlik Sense marks a significant advancement in supply chain management, transforming it from traditional, reactive methods to a proactive, data-driven approach. By providing comprehensive visibility, real-time analytics, and predictive capabilities, Qlik Insights empowers businesses to make informed decisions, optimize resources, and respond swiftly to market changes. This project not only enhances operational efficiency and reduces costs but also positions the organization for long-term success in an increasingly competitive and dynamic market. Embracing these innovations ensures that the supply chain is more agile, resilient, and capable of meeting the demands of the future. As businesses continue to evolve, those leveraging the full potential of data-driven tools like Qlik Insights will lead the way in operational excellence and customer satisfaction.