Data-Driven Innovations In Supply Chain Management With Qlik Insights

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1.1 Overview: A brief description about the project

Project Overview

This project pioneers a data-driven approach to supply chain management, leveraging Qlik's advanced analytics to optimize logistics, forecasting, and inventory management. By harnessing the power of data insights, the project aims to significantly enhance operational efficiency and responsiveness.thereby increasing profits and customer satisfaction.
Project Objectives:

Implement a Qlik-based SCM system to provide real-time visibility into supply chain operations
Optimize inventory management, reducing stockouts and overstocking by 10-15%
Improve order fulfillment rates, reducing order fulfillment times by 20-30%
Enhance shipping and logistics operations, reducing shipping times and costs by 10-15%
Improve supplier management, increasing supplier quality and reliability by 10-15%
Enhance demand forecasting, improving forecast accuracy by 10-15%
Project Scope:

Design and implementation of a Qlik-based SCM system

1.2 Purpose: The use of this project. What can be achieved using this

inventory Management

Real-time inventory tracking and optimization, reducing stockouts and overstocking by 10-15%
Automated inventory replenishment and forecasting, ensuring accurate demand planning and reducing inventory costs by 5-10%
Improved inventory turnover, reducing warehousing costs and increasing revenue by 5-10%
Order Fulfillment

Real-time order tracking and monitoring, reducing order fulfillment times by 20-30%
Automated order routing and allocation, ensuring timely and efficient order fulfillment
Improved order accuracy, reducing returns and increasing customer satisfaction by 5-10%
Shipping and Logistics

Real-time shipment tracking and monitoring, reducing shipping times and costs by 10-15%
Optimized route planning and scheduling, reducing fuel consumption and lowering carbon emissions by 5-10%
Improved delivery accuracy, reducing failed deliveries and increasing customer satisfaction by 5-10%
Supplier Management

Real-time supplier performance monitoring and tracking, improving supplier quality and reliability by 10-15%
Automated supplier selection and procurement, reducing procurement costs and improving supplier relationships by 5-10%
Improved supplier collaboration and communication, reducing supply chain disruptions and improving overall efficiency by 5-10%
Demand Forecasting

Real-time demand forecasting and planning, improving forecast accuracy by 10-15%
Automated demand sensing and response, reducing stockouts and overstocking by 5-10%
Improved demand planning, reducing inventory costs and improving revenue by 5-10%

Operational Efficiency

Real-time visibility into supply chain operations, improving operational efficiency and reducing costs by 10-15%
Automated process optimization and workflow management, reducing manual errors and improving productivity by 5-10%
Improved supply chain agility and responsiveness, reducing supply chain disruptions and improving overall efficiency by 5-10%
Customer Experience

Real-time order tracking and monitoring, improving customer satisfaction and loyalty by 10-15%
Personalized customer recommendations and offers, improving customer engagement and increasing revenue by 5-10%
Improved customer service, reducing customer complaints and improving overall customer experience by 5-10%
By implementing Qlik-based Supply Chain Management, an Amazon-like business can achieve significant improvements in inventory management, order fulfillment, shipping and logistics, supplier management, demand forecasting, operational efficiency, and customer experience. These improvements can lead to increased revenue, reduced costs, and improved customer satisfaction.

DEFINE PROBLEM/PROBLEM UNDERSTANDING

2.1 Specify the business problem

business problem

Supply chain company must prioritize monitoring customer delivery performance in order to improve customer satisfaction, optimize productivity, and maintain competitiveness in the market. By closely tracking the delivery process and analyzing relevant metrics, company can gain valuable insights into their performance, identify areas for improvement, and proactively address any issues that may arise in the future.

Transformative Impact

This groundbreaking project seeks to revolutionize the supply chain management landscape by harnessing the transformative power of Qlik's data-driven insights. Through the application of cutting-edge analytics, the project strives to elevate key aspects of logistics, forecasting, and inventory management, ultimately achieving unprecedented levels of operational efficiency and responsiveness.

2.2 Business requirements

Data Integration and Visualization

Implement a robust data integration strategy to unify and centralize disparate supply chain data sources, providing a single source of truth. Leverage Qlik's advanced visualization capabilities to create interactive and dynamic dashboards, offering stakeholders a comprehensive view of the entire supply chain ecosystem.

Advanced Analytics and Optimization

Harness Qlik's advanced analytics features to analyze historical logistics data, uncover hidden patterns, and optimize transportation routes for enhanced efficiency. Apply predictive analytics to forecast demand and proactively adjust supply chain operations.

Real-Time Visibility and Agility

Implement real-time tracking and monitoring solutions to gain end-to-end visibility into the movement of goods, reducing lead times and minimizing transportation costs. Utilize real-time analytics to facilitate swift decision-making in response to unforeseen events or changes in demand, ensuring a proactive and responsive supply chain.

2.3 Literature Survey

The Power of Data Analytics in Supply Chain Transformation

Numerous studies have underscored the critical role of data analytics in revolutionizing traditional supply chain processes. Research has consistently shown that leveraging advanced analytics tools, such as Qlik, can significantly enhance visibility and decision-making in supply chain operations. The benefits are multifaceted, with notable improvements in logistics optimization, forecasting accuracy, and inventory management efficiency.

Data-Driven Supply Chain Transformations

This study delves into the broader landscape of data-driven supply chain transformations, exploring a range of analytical techniques and technologies. The findings highlight successful implementations across various industry sectors, demonstrating significant gains in operational efficiency and responsiveness. Furthermore, the research examines the challenges and opportunities associated with adopting data-driven insights in supply chain contexts.

Unlocking the Full Potential

The literature emphasizes the importance of developing robust data governance frameworks and cultivating a data-driven culture to fully unlock the potential benefits of data analytics in supply chain management. By doing so, organizations can harness the power of data to drive meaningful transformations and stay ahead in an increasingly competitive landscape.

3. DATA COLLECTION
3.1 Collect the dataset

you can collect the dataset from the following link .
https://www.kaggle.com/datasets/shashwatwork/dataco-smart-supply-chain-for-big-data-analysis/data

make sure to understand the the data fully before connecting it with QLik

here's some info you can read for better understanding -

Data contains all the meta information regarding the columns described in the CSV files
Column Description of the Dataset:

- Type: Type Count
- Days for shipping (real): Product shipment days
- Days for shipment (scheduled): product getting prepared for shipment
- Benefit per item: profit earned per product
- Sales per customer: No of products purchased by the customer
- Delivery: Products delivery date.
- Late_delivery_risk: percentage of late delivery risk
- Category Id: product category ID
- Category: product category
- Customer City: Customer purchase city
- Customer Country: Customer purchase country
- Customer Email: Customer purchase Email
- Customer Fname: Customer First name.
- Customer ID: Customer order ID
- Customer Lname: Customer's last name
- Customer Segment: Types of Customer
- Customer State: Customer order state
- Customer Street: Customer address
- Customer Zipcode: Customer area code.
- Market: top 10 country Market
- Order City: Customer purchase city
- Order Country: Customer purchase country
- Order Customer ID: Customer

- order date (DateOrders): Customer order date
- Order Item Product Price: product price
- Order Item Profit Ratio: profit ratio
- Order Item Quantity: No of orders placed
- Sales: total no of sales
- Order Item Total: total price of the order placed
- Order Profit Per: product
- Order Region: order placed region
- Order State: order placed State
- Order Status: order delivery status
- Order Zipcode: customer area code
- Product Card ID: product number
- Product Category Id: a product whose category belongs to
- Product: what product
- Product Image: image of the product
- Product Price: Price of the product.

3.2 Connect Data with qlik

you can connect the data to qlik by following the folling steps : -

Step 1: Prepare Your Data
Make sure your dataset is in a compatible format, such as CSV, Excel, or JSON. Ensure that the data is clean, and any unnecessary columns or rows are removed.

Step 2: Launch Qlik Sense
Open Qlik Sense and log in to your account. If you don't have an account, create one or contact your organization's Qlik administrator.

Step 3: Create a New App
Click on the "Create a new app" button to start a new project. Give your app a name, and optionally, add a description.

Step 4: Select Data Source
Click on the "Data" tab and then select "Load data" from the top-right corner. Choose the type of data source you want to upload from, such as a file, database, or cloud storage.

Step 5: Upload Your Dataset
Select the file or dataset you want to upload and click "Open". Qlik Sense will then upload and process the data.

Step 6: Configure Data Load
In the "Data load" screen, you can configure the data load settings, such as selecting the table, choosing the load method, and setting the data type.

Step 7: Review and Transform Data
Review the uploaded data and transform it as needed. You can use Qlik's data transformation tools to clean, aggregate, or manipulate the data.

Step 8: Load Data to Qlik
Click "Load" to load the data into Qlik Sense. The data will be stored in the Qlik Sense repository.

4. DATA PREPARATION

4.1 Prepare the Data for Visualization

it's essential to prepare the data by cleaning it to eliminate irrelevant or missing information, converting it into a suitable format, and exploring it to uncover patterns and trends. This process also involves filtering the data to focus on specific subsets, preparing it for visualization software, and verifying its accuracy and completeness. By doing so, the data becomes easily interpretable and ready for visualization, enabling us to gain valuable insights into performance and efficiency. Now that the data is clean, we can proceed to the visualization stage.

5. DATA VISUALISATION

5.1 Visualisation

The versatility of a dataset is measured by the number of unique visualizations that can be created from it. In the context of analyzing the performance and efficiency of banks, various visualization types can be employed to uncover valuable insights. These include:

Bar charts to compare performance metrics
Line charts to track changes over time
Heat maps to identify patterns and correlations
Scatter plots to reveal relationships between variables
Pie charts to illustrate the breakdown of revenue and customer demographics
Maps to visualize the geographic distribution of banks and their resources
These visualizations enable banks to gain a deeper understanding of their operations, including workload, resource allocation, and location-based performance. By leveraging these visualizations, banks can make data-driven decisions to optimize their efficiency and improve overall performance.

here the link of visualisations from my project -

https://drive.google.com/file/d/1hqryFbs3JbaA4st0_MIwiAO9N7Uta4U4/view?usp=sharing

6. DASHBOARD

6.1 Responsive and Design of Dashboard

Dashboards: A Visual Command Center

A dashboard is a graphical user interface (GUI) that presents complex information and data in a clear, concise, and organized manner. Designed to facilitate real-time monitoring and analysis, dashboards are tailored to specific purposes or use cases, making them an essential tool across various industries, including:

Business
Finance
Manufacturing
Healthcare
And many others
Dashboards empower users to track key performance indicators (KPIs), monitor performance metrics, and visualize data through a range of interactive charts, graphs, and tables. By providing a centralized and intuitive interface, dashboards enable users to make informed decisions, identify trends, and optimize performance in real-time.

7. REPORT

7.1 Report Creation

Report creation involves the following steps:

Define the report's purpose and scope: Determine the report's objective, target audience, and the type of data to be included.

Gather and prepare data: Collect and clean the data, ensuring it is accurate, complete, and relevant to the report's purpose.

Design the report layout and structure: Organize the content, choose a layout, and select the visual elements, such as charts, tables, and graphs.

Create the Qlik content: Write the narrative, add data visualizations, and include any additional elements, such as images or charts.

Format and style the Qlik: Apply a consistent design, font, and color scheme to make the Qlik visually appealing and easy to read.

Review and edit the Qlik: Check for accuracy, completeness, and clarity, making any necessary revisions.

Publish and distribute the Qlik: Share the Qlik with the intended audience, either in print or digital format.

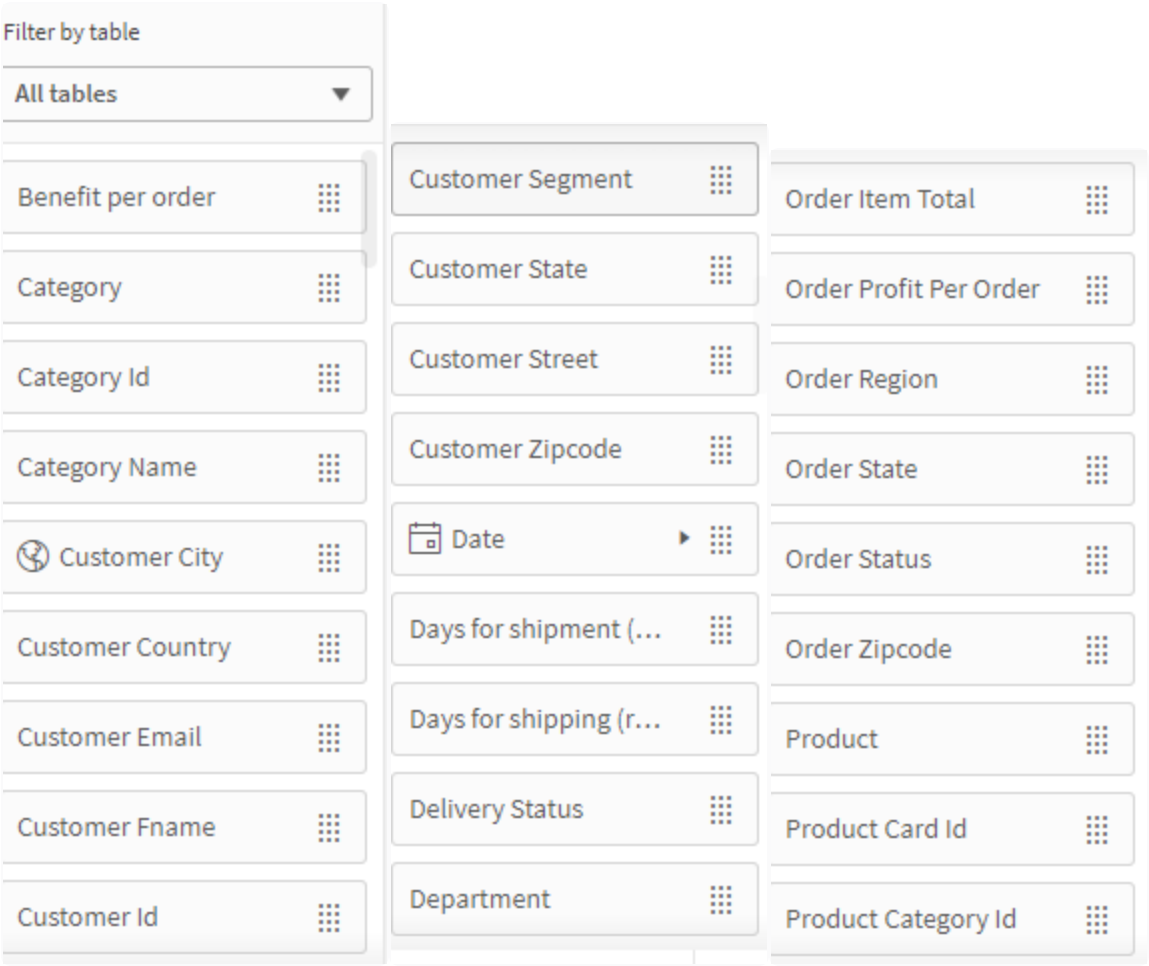
Effective Qlik creation requires a combination of technical skills, data analysis, and communication expertise to present complex information in a clear and actionable way.

8. PERFORMANCE TESTING

8.1 Amount of Data Rendered

Data Load Volume

The "Amount of Data Loaded" metric represents the total quantity or volume of data that has been successfully imported, retrieved, or loaded into a system, software application, database, or any other data storage or processing environment. This key metric measures the extent to which data has been effectively processed and made available for analysis, manipulation, or utilization within the system, providing a snapshot of the data's readiness for use..



8.2 Utilization of Data filters

Filter Utilization

The "Utilization of Filters" metric measures the extent to which filters are applied within a system, software application, or data processing pipeline to precision-target specific data subsets. By selectively extracting, manipulating, or analyzing data based on predefined criteria or conditions, filters enable users to distill complex data sets down to their most relevant and actionable components, streamlining data analysis and decision-making processes.

It can be seen in sheet 1 of my visualisation