

Data-Driven-Innovations-In-Supply-Chain-Management-With-Qlik-Insights

1 INTRODUCTION

1.1 Project Overview: Advanced Supply Chain Management with Qlik Analytics In today's competitive business landscape, optimizing supply chain management is essential for organizational success. Our project, "Advanced Supply Chain Management with Qlik Analytics," aims to leverage cutting-edge data analytics technologies to revolutionize supply chain operations.

Through this initiative, we will harness the power of Qlik's advanced analytics platform to extract actionable insights from complex supply chain datasets. Our focus areas include:

1.2- Data Integration: Aggregating data from diverse sources to create a comprehensive view of the supply chain ecosystem.

1.3- Visualization: Developing intuitive dashboards using Qlik Sense to visualize key supply chain metrics and facilitate informed decision-making.

1.4- Predictive Analytics: Implementing predictive models to forecast demand, optimize inventory levels, and proactively identify potential disruptions.

1.5- Root Cause Analysis: Leveraging Qlik's associative engine to perform in-depth root cause analysis and drive targeted process improvements.

1.6- Continuous Improvement: Establishing a culture of continuous improvement by monitoring performance metrics and identifying opportunities for optimization.

Through this project, we aim to empower organizations to enhance operational efficiency, reduce costs, and deliver superior value to customers. By harnessing the power of data-driven insights, organizations can gain a competitive edge in today's dynamic business environment.

2 PROBLEM UNDERSTANDING-

2.1-Literature Survey Insights

1. The Role of Data Analytics in Supply Chain Optimization Data analytics is pivotal in modernizing supply chain management. It enhances visibility across the supply chain, facilitating better decision-making and operational efficiency. Academic research underscores the importance of real-time data analytics in predicting demand accurately, optimizing inventory levels, and reducing overall operational costs.

2. Qlik Analytics: Transformative Potential Qlik's associative data model and advanced visualization capabilities stand out in the field of supply chain analytics. They enable businesses to uncover hidden patterns, gain deeper insights, and make data-driven decisions. Case studies reveal that companies using Qlik Analytics report substantial improvements in key performance indicators such as delivery accuracy and inventory turnover rates.

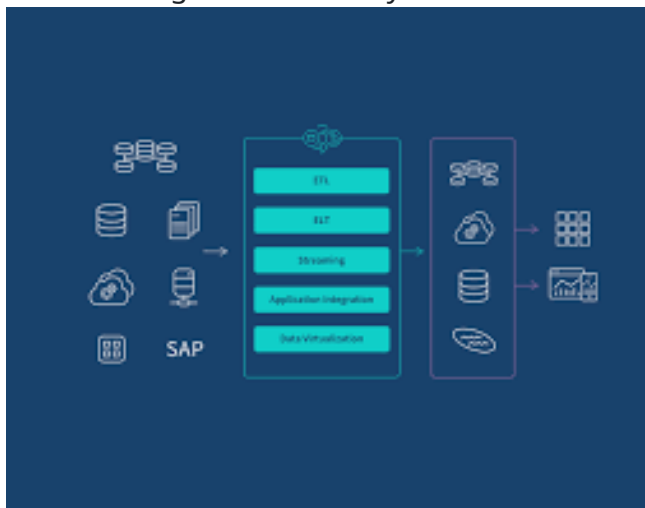


2.2 - Challenges

1. Data Integration Integrating diverse data sources remains a significant challenge. Companies must ensure data consistency and quality across different systems and platforms within the supply chain network. Overcoming data silos and achieving seamless data integration is critical for a holistic view of the supply chain.

2. Real-Time Processing Implementing real-time data processing requires robust IT infrastructure and significant investment. The challenge lies in handling large volumes of data and ensuring real-time analytics without compromising performance. Scalability is also a concern, as the system must efficiently manage increasing data volumes over time.

3. Organizational Resistance Adopting new technologies often faces resistance within organizations. Overcoming this requires comprehensive training programs and effective change management strategies to ensure smooth implementation and user acceptance. Additionally, protecting sensitive supply chain data from potential breaches is paramount, necessitating robust security measures.

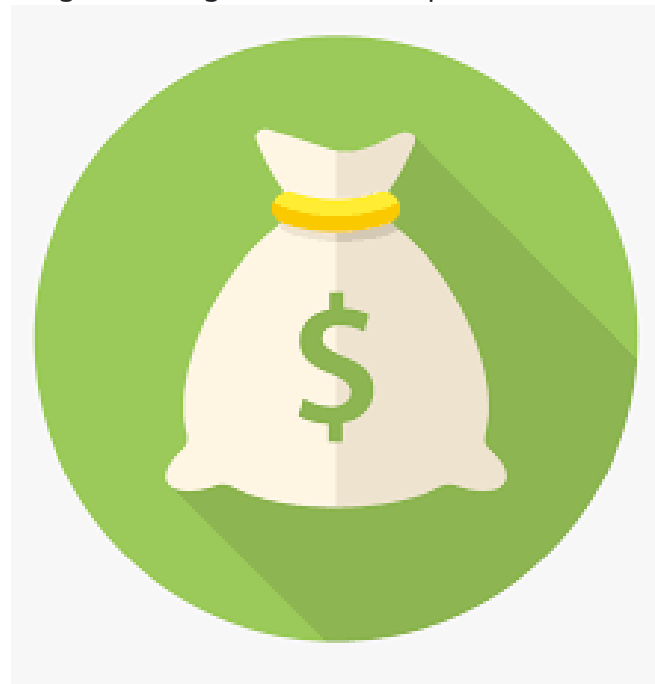


2.3- Business Requirements

1. Seamless Data Integration The analytics system must seamlessly integrate data from various sources, including ERP and CRM systems. Compatibility with existing IT infrastructure is essential to avoid disruptions.

2. Real-Time Analytics Capability The system should support real-time data processing to enable timely and informed decision-making. This includes the ability to handle large-scale data operations efficiently.

3. User-Friendly Interface The interface should be intuitive, offering customizable dashboards and visualization tools that cater to different user roles. Easy access to insights through interactive reports and alerts is crucial for effective use.

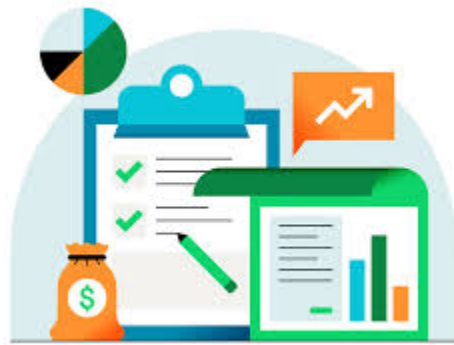


2.4- Business Impact

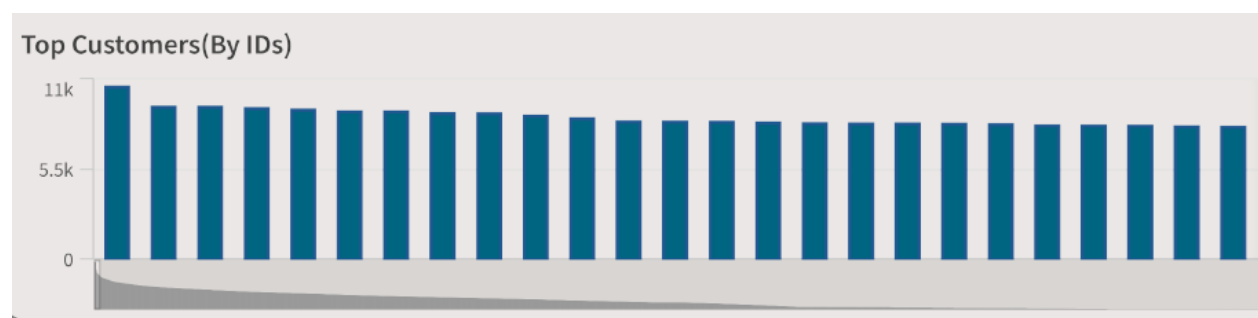
Cost Efficiency Enhanced demand forecasting through advanced analytics reduces the need for excess inventory, thereby lowering inventory holding costs. By optimizing inventory levels, businesses can significantly cut down on unnecessary expenses.

Operational Speed Optimizing logistics and routing through data-driven insights leads to faster delivery times and improved overall supply chain responsiveness. This not only enhances operational efficiency but also ensures that customer demands are met promptly.

Customer Satisfaction Improved demand management and increased transparency in the supply chain result in higher service levels and customer satisfaction. With better visibility and control, businesses can proactively address issues and improve the overall



customer experience.

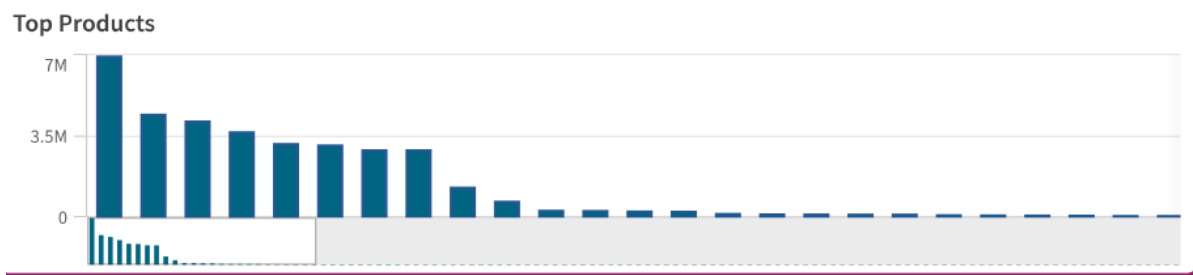


3 - DATA COLLECTION

3.1 - Data Collection: Structured and unstructured data from the DataCo SMART SUPPLY CHAIN dataset are collected for analysis. The dataset comprises information on logistics, inventory, and sales processes.

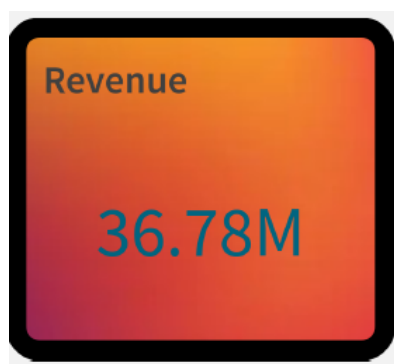
4 - DATA PREPARATION

4.1 - Data Preparation: Data preprocessing involves cleaning, structuring, and organizing the dataset for analysis. Unwanted columns are removed, missing values are handled, and data quality is ensured.



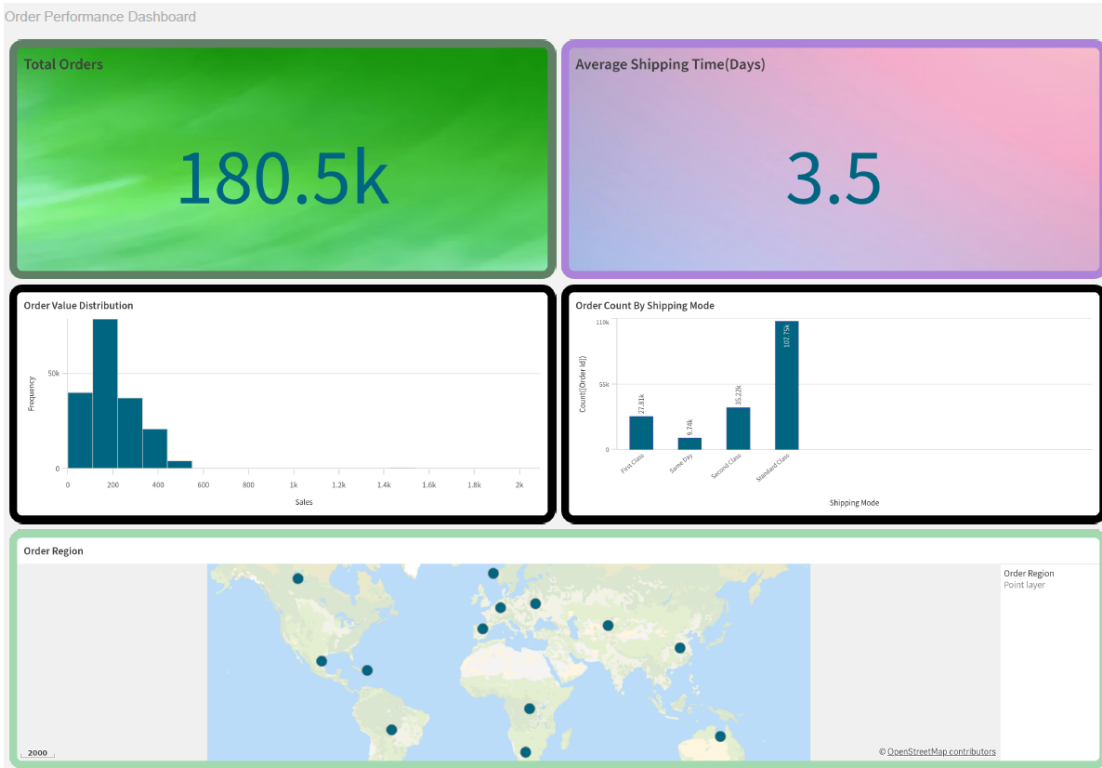
5 - DATA VISUALISATION

5.1 - Data Visualizations: Various visualization techniques, such as heatmaps, bar charts, and scatter plots, are employed to analyze and interpret supply chain data. Insights are derived from visualizations to optimize logistics, inventory, and sales processes.

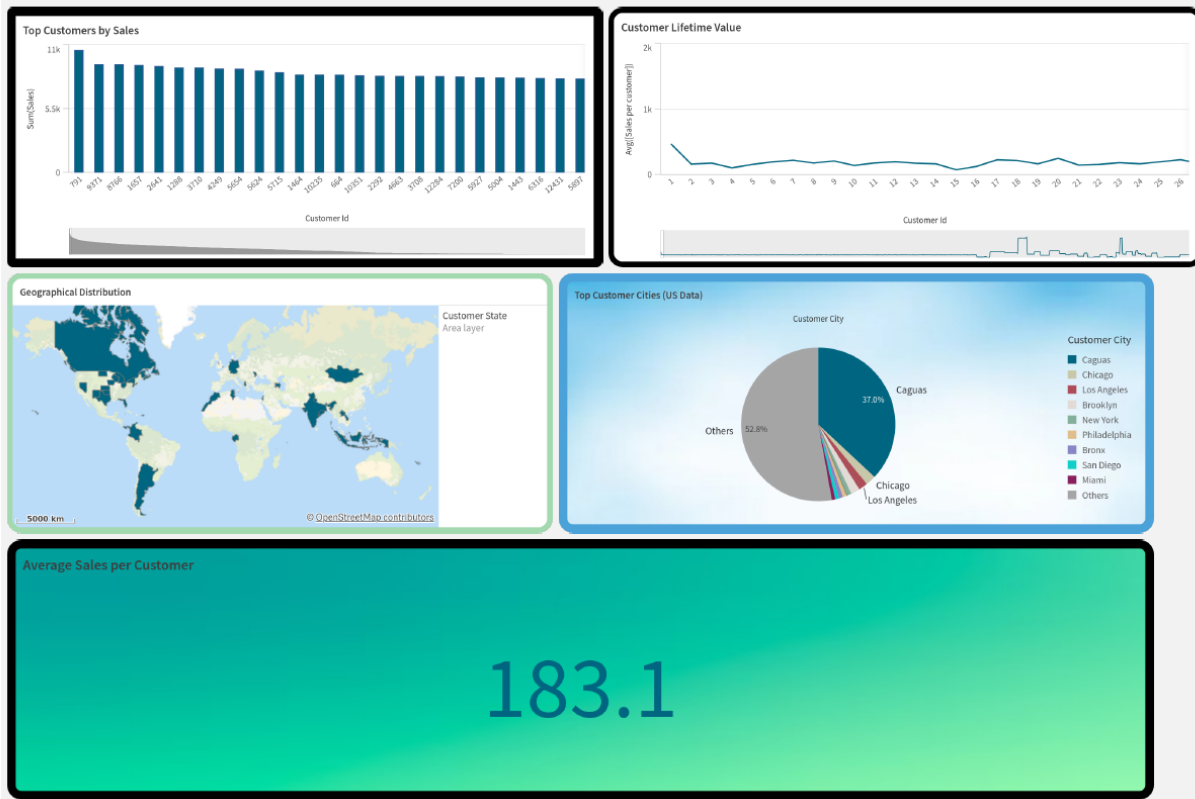


6 - DASHBOARD

6.1 - Dashboards: Interactive dashboards are created for inventory management, sales analysis, logistics performance, and overall summary insights. These dashboards provide real-time visibility and actionable insights for decision-making.



Customer Insights Dashboard



Product Performance Dashboard



Supply Chain Efficiency Dashboard



Summary Dashboard

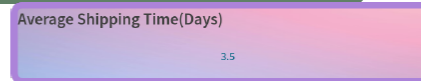


7- REPORT

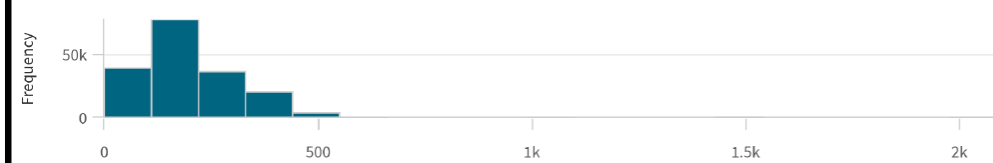
7.1 - Storytelling: The project narrative includes insights from each dashboard, highlighting trends, challenges, and improvement opportunities in supply chain management. Visualizations and analysis reports are used to communicate key findings effectively.



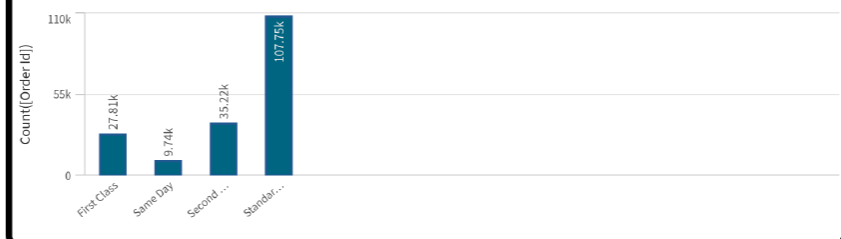
Order Performance Insights



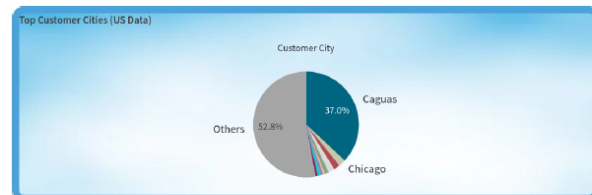
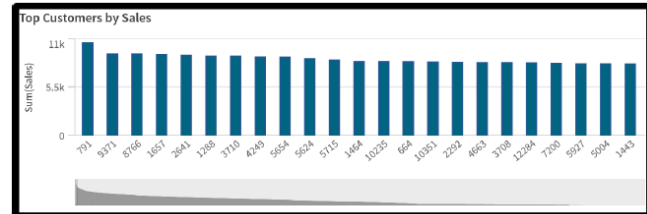
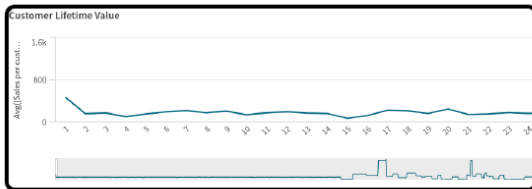
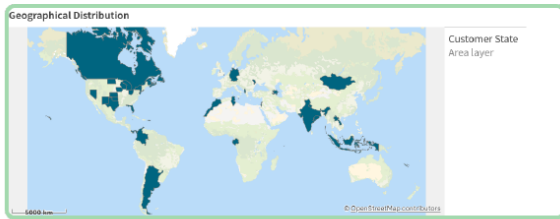
Order Value Distribution



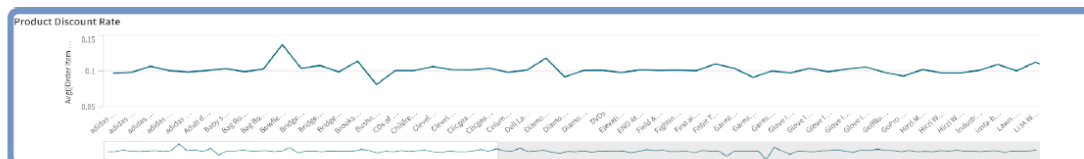
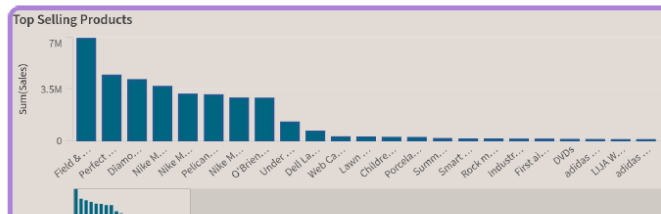
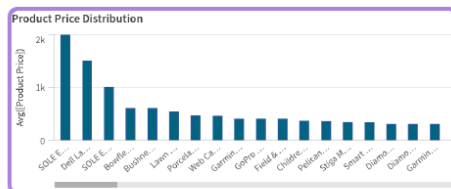
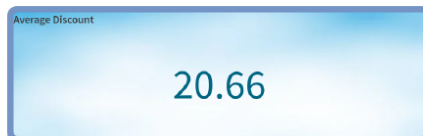
Order Count By Shipping Mode

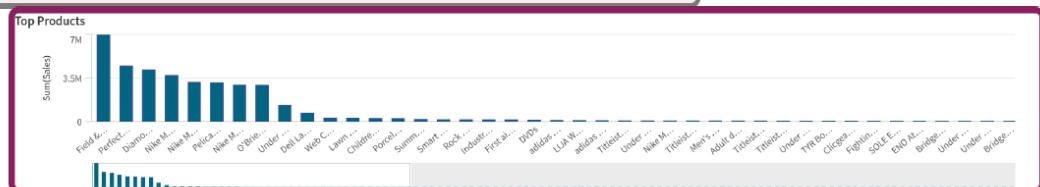


Customer Insights



Product Performance Insights





8-PERFORMANCE TESTING AND FILTERS-

8.1- Performance Testing: It evaluates the volume of information successfully ingested into a system or database. The metric of "Data Loaded" quantifies the availability of processed data for analysis and manipulation. A higher value for "Data Loaded" signifies a richer pool of information, potentially leading to more robust and valuable discoveries. Thus, both filters and performance testing play crucial roles in optimizing data analysis processes and facilitating informed decision-making.

8.2- Filters: Utilizing filters strategically within a system or data analysis pipeline enhances the efficiency and effectiveness of data exploration. Filters act as a net, carefully extracting relevant data subsets based on set criteria. This targeted approach allows for deliberate extraction, manipulation, and analysis of specific data subsets, leading to more valuable insights.

For example, in the context of dashboards with customer city filters, the application of filters enables a focused analysis of specific city performances. By analyzing data at the city level, businesses can optimize inventory management, delivery schedules, and advertising strategies tailored to each city's preferences. This targeted approach ultimately leads to higher profitability, margins, customer satisfaction, and operational efficiency.

Customer City

Customer Id

Customer State

Order Item Quantity

Order Profit Per Order

Product Name

Sales

Product Price

8.3 - No. of Visualisations:

1. Total Orders
2. Average Shipping Time(Days)
3. Order Count By Shipping Mode
4. Order Region
5. Order Value Distribution
6. Top Customers By Sales
7. Geographical Distribution
8. Average Sales per Customer
9. Top Customer Cities (United States Data)
10. Customer Lifetime Value
11. Average Discount
12. Product Discount Rate
13. Average Benefit Per Order
14. Top Selling Products
15. Product Price Distribution
16. Shipping Methods
17. Order Volume By Month
18. Order Volume By Week
19. Order Volume By Product Category
20. Top Product By Sales
21. Revenue
22. Total Sales
23. Total Quantity
24. Top Customers(By IDs)
25. Top Products

Conclusion:

The "Advanced Supply Chain Management with Qlik Analytics" project aims to revolutionize supply chain operations by leveraging data-driven insights and real-time analytics. By addressing integration, real-time processing, and organizational resistance challenges, businesses can significantly enhance their supply chain efficiency, reduce costs, and improve customer satisfaction. Implementing Qlik Analytics fosters a more agile, responsive, and competitive supply chain environment.