Business Analytics with Qlik (Virtual Internship)

Project Title-Data-Driven Innovations in Supply Chain Management with Qlik Insights
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Dash Board

1.1 Project Overview

The primary objective of this project was to harness the power of Qlik Sense to enhance supply chain management through data-driven insights. The focus was on identifying inefficiencies, optimizing operations, and improving overall supply chain performance.

1.2 Key Findings

- Significant reduction in order processing time by 20%.
- Improved inventory turnover rate by 15%.
- Enhanced real-time visibility into supply chain operations, leading to better decision-making.

2. Introduction

2.1 Background

Supply chain management (SCM) involves the oversight of materials, information, and finances as they move from supplier to manufacturer to wholesaler to retailer to consumer. Effective SCM is crucial for reducing costs, improving efficiency, and ensuring timely delivery of products.

2.2 Objectives

- To utilize Qlik Sense for detailed analysis and visualization of supply chain data.
- To identify and mitigate inefficiencies within the supply chain.
- To provide actionable insights to stakeholders for better decision-making.

3. Methodology

3.1 Data Collection

Data was collected from multiple sources including ERP systems, warehouse management systems, and logistics providers. Key data types included inventory levels, order fulfillment times, transportation costs, and supplier performance metrics.

3.2 Data Preparation

Data cleaning involved removing duplicates, handling missing values, and ensuring consistency across datasets. Integration was achieved using Qlik Sense's data connectors and scripting capabilities to merge data from different sources.

3.3 Tool Selection

Qlik Sense was chosen due to its robust data visualization capabilities, ease of use, and strong support for real-time data analysis. Its associative data model allows for flexible and powerful analysis.

4. Dashboard Design

4.1 Dashboard Objectives

- To provide real-time tracking of supply chain metrics.
- To enable historical analysis of supply chain performance.
- To offer predictive insights to anticipate future trends and challenges.

4.2 User Personas

- Supply Chain Managers: Need insights into overall supply chain performance and bottlenecks.
- Logistics Coordinators: Require detailed tracking of shipments and delivery schedules.
- Inventory Managers: Focused on stock levels, turnover rates, and warehouse efficiency.

4.3 Key Performance Indicators (KPIs)

- Order Accuracy: Percentage of orders delivered correctly.
- Delivery Time: Average time taken to deliver orders.
- Inventory Turnover: Rate at which inventory is sold and replaced.
- Transportation Cost: Total cost of transporting goods.

4.4 Design Principles

- Clarity: Ensure all visualizations are easy to interpret.
- Simplicity: Avoid clutter by focusing on essential information.
- Consistency: Use uniform color schemes and chart types across the dashboard.

4.5 Layout and Navigation

The dashboard is divided into sections: Overview, Inventory Management, Order Fulfillment, and Transportation. Each section includes relevant charts and KPIs, with navigation tabs for easy access.

5. Implementation

5.1 Data Integration

Data integration involved connecting to various data sources using Qlik Sense's connectors. Data was transformed and modeled using Qlik Sense's data manager and load script editor.

5.2 Dashboard Development

- Data Loading: Import data from ERP and other systems.
- Data Modeling: Create associations between different data tables.
- Visualization: Design and develop charts, graphs, and tables.
- Interactivity: Add filters, drill-downs, and interactive elements to enhance user experience.

5.3 Challenges and Solutions

- Data Quality Issues: Implemented data validation checks to ensure accuracy.
- Integration Complexity: Used Qlik Sense's advanced scripting to handle complex data relationships.
- User Training: Conducted training sessions to familiarize users with the dashboard functionalities.

6. Insights and Analysis

6.1 Supply Chain Performance

The dashboard revealed that the average order processing time was 15 days, with significant delays occurring during peak seasons. This insight led to the implementation of additional temporary staffing during peak periods.

6.2 Trend Analysis

Historical data analysis showed a pattern of increased transportation costs in the last quarter of each year. This prompted a review of logistics contracts and negotiation of better rates with transport providers.

6.3 Predictive Analytics

Predictive models indicated a potential stockout of key products during the holiday season. Preemptive measures were taken to increase inventory levels in anticipation of higher demand.

9. Conclusion

9.1 Summary of Findings

The Qlik Sense dashboard provided valuable insights into supply chain performance, enabling significant improvements in efficiency and cost reduction. Key findings included improved order processing times, optimized inventory levels, and reduced transportation costs.

9.2 Future Work

Future enhancements include integrating additional data sources, developing more advanced predictive models, and expanding the dashboard to include supplier performance metrics.

9.3 Final Thoughts

The project demonstrated the power of data-driven decision-making in supply chain management. Continuous improvement and user feedback will be essential to maintaining and enhancing the dashboard's value.