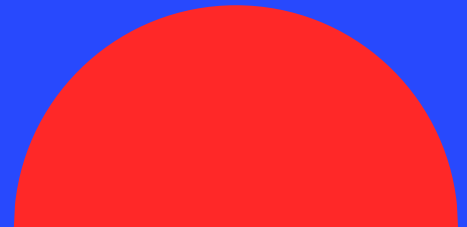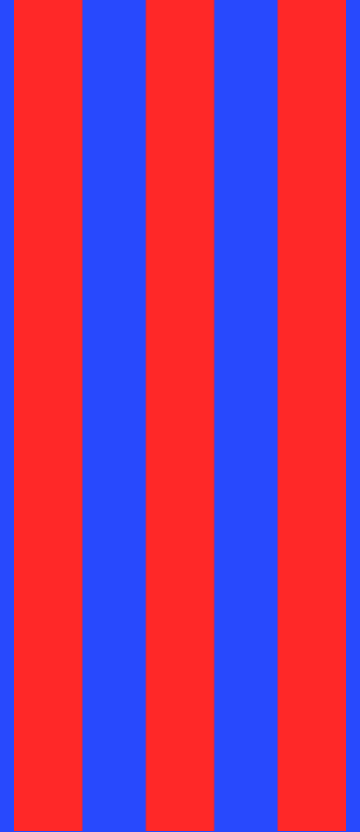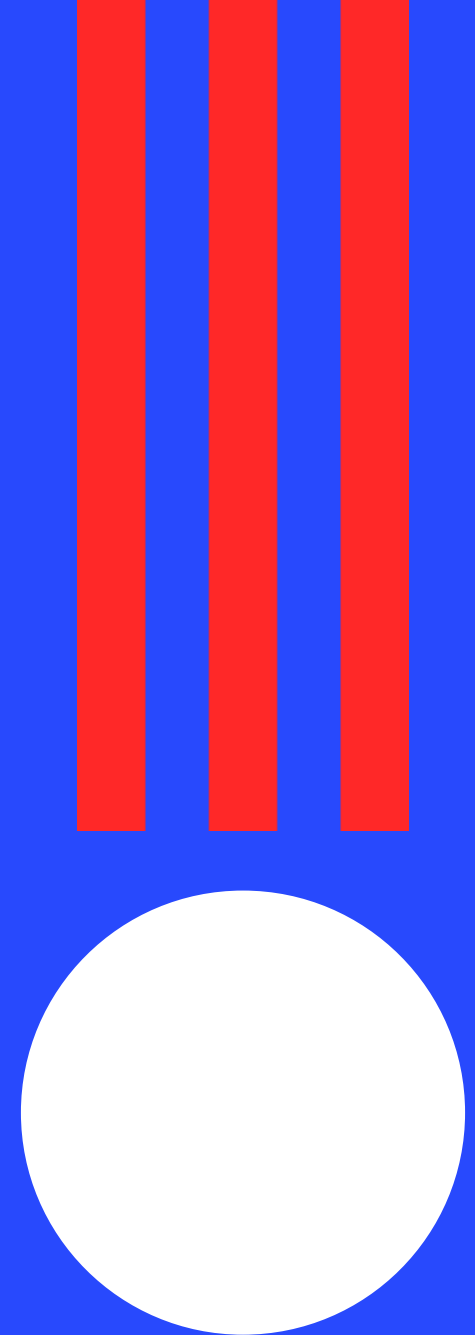# Purchasing Operational Dashboard

Data Analyst Team

Introduction

The Data Analyst Team was requested by the Purchasing Department to create an Operational Dashboard that provides managers a clear overview about purchasing performance to aid in decision-making and improve operational efficiency.
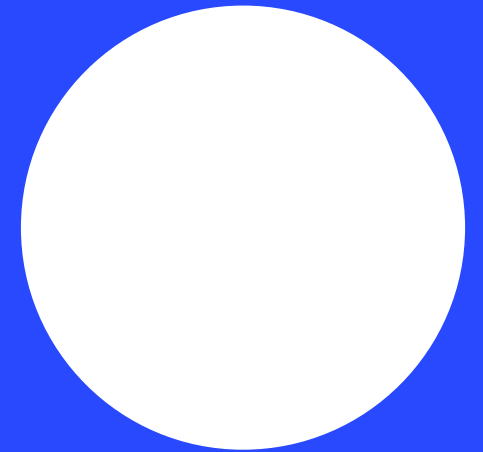
Agenda

Part 1: Preparation

Part 2: Dashboard & Insights

Part 3: Recommendations

Part 1: Preparation

1.1. Goals

- Providing overview of current purchasing performance for production and sales

- Tracking purchase value, quantity, vendor performance

- Tracking inventory to ensure sufficient stock for production and sales

- Supporting leadership make decisions on optimizing costs, timely purchasing and operational efficiency.
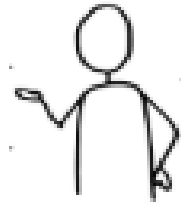
1.2. Design Thinking

1.2.1. Empathize

5W1H

| WHO wil watch this Dashboard?	WHAT problems does this Dashboard solve?	WHEN/WHERE will stakeholder view this Dashboard?	WHY do stakeholders need this Dashboard?	HOW do stakeholders achieve their goals?
Leaders include purchasing managers, operation managers, etc.	- Overview of purchasing for production - Tracking purchasing KPIs - Optimizing costs	Viewed by leadership in strategic meetings and the purchasing team during daily opeations	To gain an overview of purchasing performance, optimize costs and ensure a stable materials supply for production	This Dashboard helps track purchasing and inventory, supplier performance to optimize costs, prevent supply shortages

1.2.1. Empathize (cont)

Empathy Map

EMPATHY MAP

Thinking and feeling What does the stakeholder think and feel?	Seeing What does the stakeholder see?	Saying and doing What does the stakeholder say?
Concerned about whether materials are enough for production, maintaining a smooth flow of goods, managing purchasing efficiently while optimizing costs	Viewing different reports from different departments, lacking a complete overview for quick decision-making	Expressing the need for a better tool for tracking purchasing situation, vendor performance
Pains What are the biggest problems and challenges?	STAKEHOLDER	**Gains** What are the opportunities and benefits?
Difficulty obtaining an overview of purchasing, inventory and supplier performance		Wanting a visual dashboard, which provides reliable, easy-to-understand data about purchasing and inventory Faster decision-making with cost optimization and supplier management

1.2.2. Northstar Metric and POV

What VALUE you want to measure?
Net purchase: The total purchasing amount over a specified period

WHEN the value DELIVERY SUCCESS?
The net purchase does not exceed budget for purchasing, while optimizing inventory without over-purchasing or out of stock

Northstar Metric Name
Net Purchase

WHY do you choose this metric?
The Net purchase reflects purchasing perfomance and budget management of the company. It also affects inventory management, cost optimization and ability to meet product demands
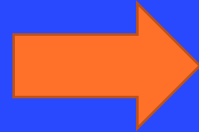
View	Description	Why
Purchasing Overview	Track purchasing patterns, identify fluctuations	Manage budget
Inventory	Track stock level	Align stock level with production needs, optimize inventory
Vendor	Show purchasing quantity, value with different	Maintain relationship with vendors, choose suppliers with

1.2.3. Ideate

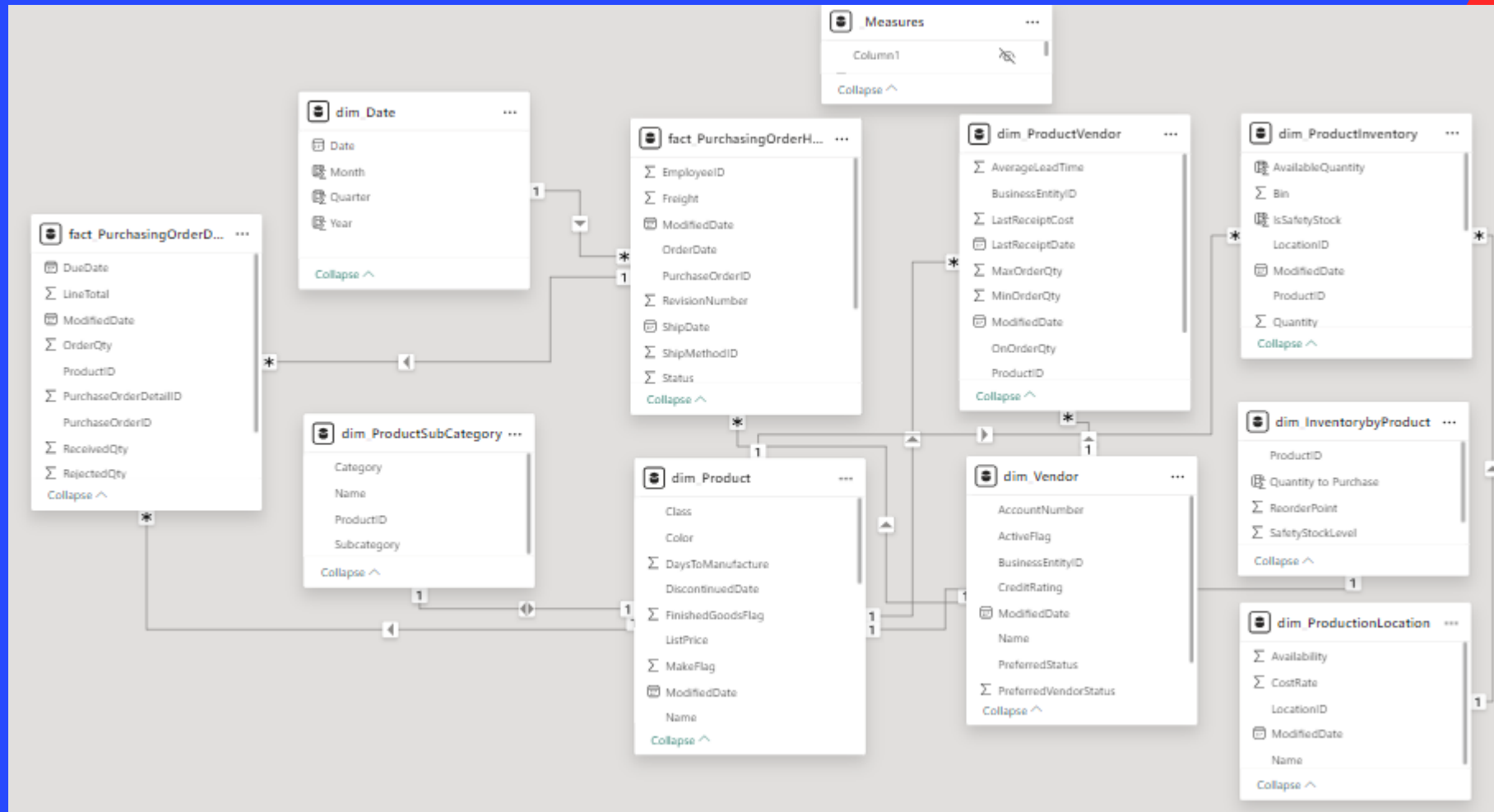| Idea Name	Purchasing Overview	Inventory	Vendor
Layer 0 dimension	- Total Net Purchase - Total Orders - Total Quantity Ordered	- Total Inventory Value - Total Inventory Quantity	Vendor infomation such as ID, name, credit rating, etc.
Layer 1 dimension	- Net Purchase over time - Number of orders over time - Net purchase by preferred vendors - Net purchase by product category - Net purchase by vendor credit rating	- Inventory value by product - Inventory value by location	- Quantity Ordered - Rejected Rate - Purchase value
Layer 2 dimension .		- Understock product - Quantity to purchase	

1.3. Data Preparation

Dataset: adventureworks2019 (public Google BigQuery dataset)
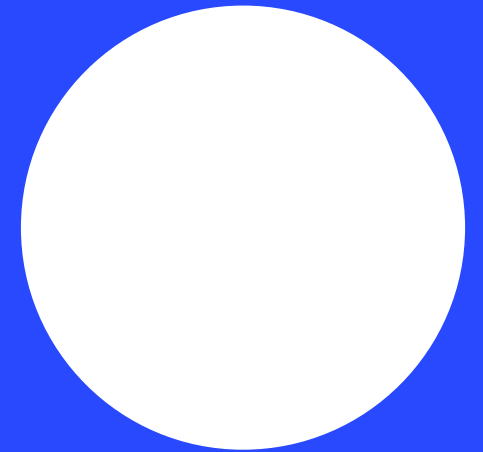
Data Dictionary:

https://dataedo.com/samples/html/AdventureWorks/doc/AdventureWorks_2/home.html

1.3.1. Data Modelling

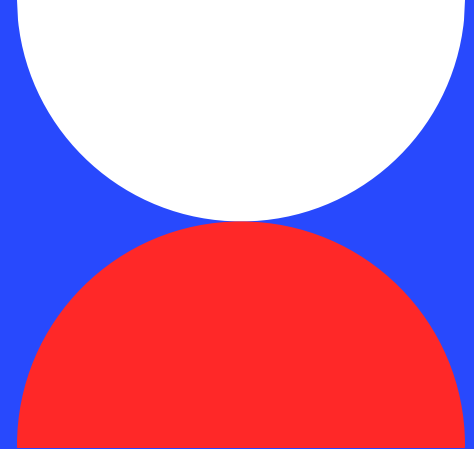Connect relevant tables of dataset from BigQuery to Power BI, clean and model data

Part 2: Dashboard & Insights

2.1. Overview

3 Pages:

- Purchasing Overview
- Inventory Report
- Vendor Detail

2.1.1. Purchasing Overview

Overview of Purchasing performance with some important statistics

- The Net purchase witnessed an increase over time, from Q1 2012 around 1.7 million USA before reaching a peak at approximately 17 million USA in Q2 2014 (Note: Q3 2014 data is unavailable, so no conclusion about a significant decline)
- A majority of purchase is from preferred vendors, accounts for over 90%
- Rejected Rate is quite low and stable
- Purchase from vendor with low credit ratings is at acceptable level

2.1.2. Inventory Report

Overview of current inventory, indicating products that need replenishment

- Subassembly and Miscellaneous Storage are two locations that have the highest inventory quantity (95K units and 83K units) but have low inventory value ($3.3M and $1.5M respectively). There are many items stored but have low value
- Some product quantities are under safety stock level that they need purchasing
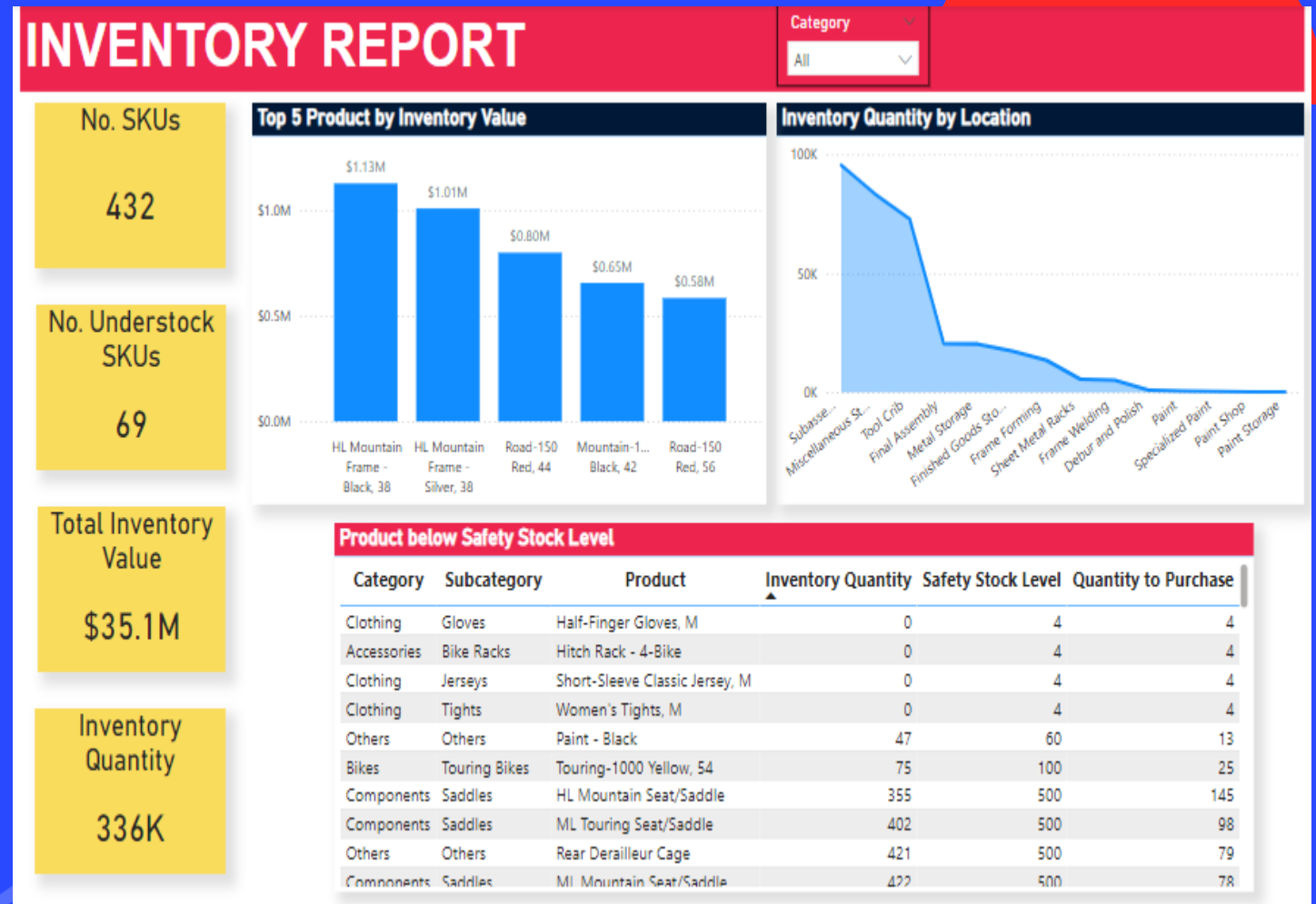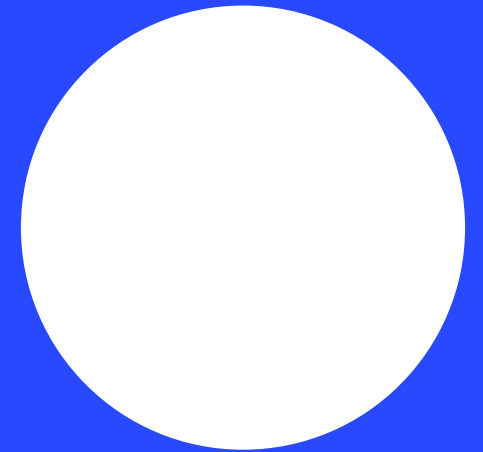
2.1.3. Vendor Detail

Provide detailed information and performance of each vendor.
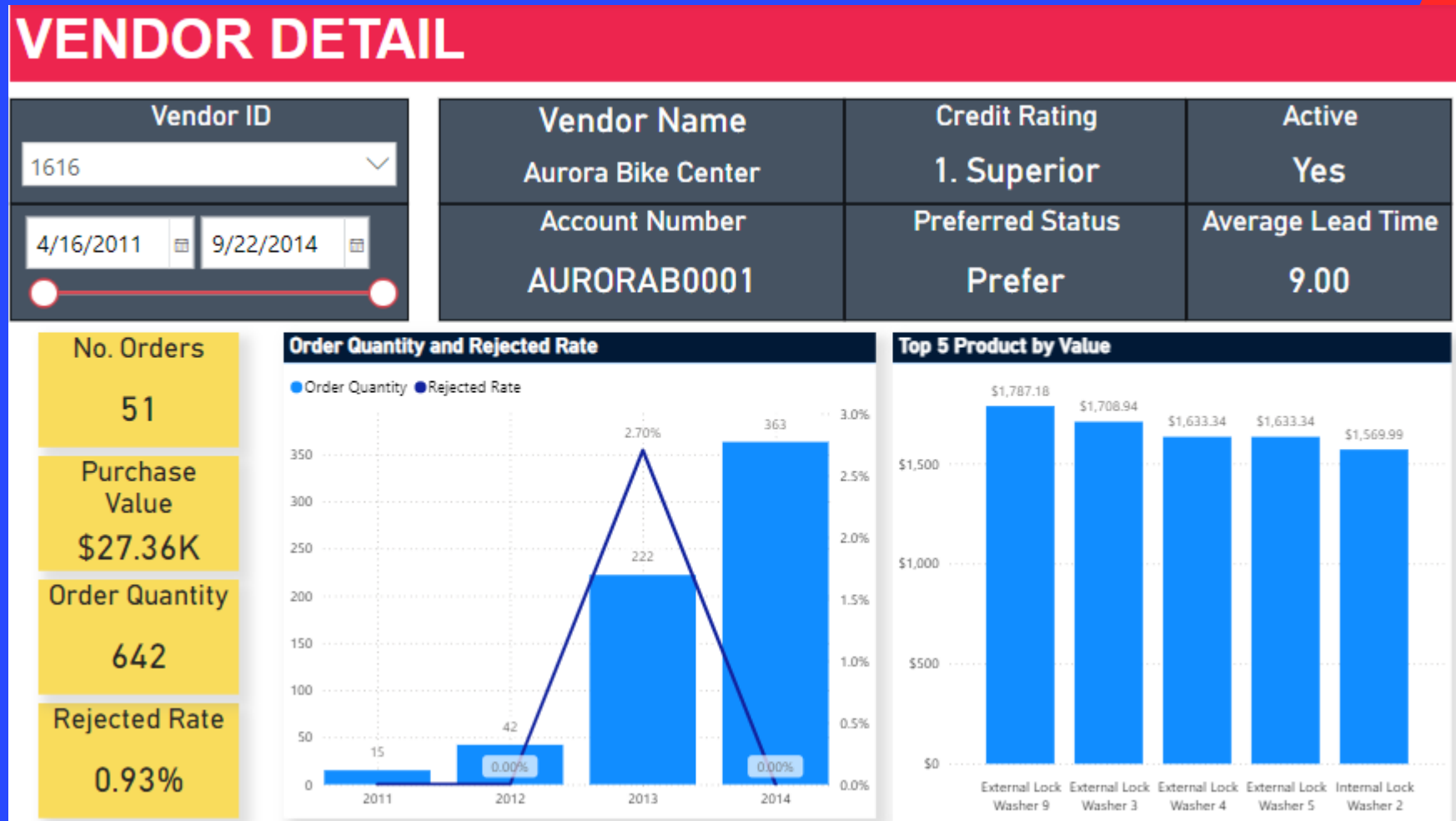
Part 3: Recommendations

Recommendations

- **Vendor selection:** Remain the current situation with purchasing focuses on preferred vendors and vendor with high credit rating. Try to reduce lead time in order to get purchasing on time.
- **Improve inventory replenishment:** Address 69 SKUs below safety stock level immediate to prevent shortages for production and sales.
- **Inventory tracking over time:** The information about inventory is not updated regularly; therefore, it is essential to build a system for tracking inventory over time to enable analysis, better inventory management decisions.
- **Inventory Management:** Need to balance inventory across locations to avoid overstock and maintain optimal stock levels.

Thank you

Thu Phuong Nguyen