FUELING STRATEGY WITH DATA

VALUE LUBRICANTS

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About Value Lubricants

Value Lubricants is the established leader in lubricant and fuel sales, distribution, equipment reliability services, and value-added services. Its core business, focused on lubrication excellence, is accomplished through offering unmatched products and services in which they improve the reliability and efficiency of their customer's equipment for increased profitability of their business. Through an understanding of each customer's specific needs, their team of dedicated Associates become a valued extension of their operations.

Abstract

This analysis examines sales patterns for lubricants and diesel exhaust fluid across selected branches to support strategic decision-making at Value Lubricants (VL). Key objectives include identifying high-volume customers suitable for long-term contracts with locked-in pricing and recommending candidates for vendor-managed inventory (VMI) through bulk storage tank installation. The analysis also evaluates historical sales data to determine top-selling product code descriptions by sales representative and customer, and highlights the most popular brands. These insights aim to enhance customer targeting, streamline inventory management, and optimize product offerings.

Methodology

The original dataset was delivered as a Power BI (.pbix) report by the company's subject matter expert. Due to data flow restrictions and limited export functionality within Power BI, the data was extracted using DAX Query Language and exported as a CSV file for external analysis.

The CSV dataset was then imported into the Databricks platform, where PySpark was used to read and verify the schema. A temporary SQL view was created to enable efficient querying using Spark SQL.

The analysis followed these key steps:

1. **Data Acquisition**: Conversion from .pbix to .csv via DAX, with coordination from the company's SME.
2. **Data Translation**: CSV loaded into Databricks with inferred schema and header recognition.
3. **Querying & Aggregation**: SQL queries conducted to identify customer sales patterns, focusing on:
   - Candidates for locked-in pricing based on volume
   - Bulk buyers (via product code suffix "BU") for VMI recommendation
   - Top product descriptions and brand trends
4. **Outcome**: Actionable segmentation and product-level insights supporting sales and operational strategy.

Results / Discussion

The analysis provided actionable insights into customer behavior and product trends across lubricant and diesel exhaust fluid sales. Customers were segmented based on purchase volume and product type to inform two key business strategies: contract pricing and vendor-managed inventory (VMI).

```sql
%sql
SELECT
    CustomerNameAlias,
    CustomerNo,
    COUNT(DISTINCT InvoiceNo) AS total_orders,
    COUNT(DISTINCT SalesOrderNo) AS total_sales_orders,
    ROUND(SUM(Gallons), 0) AS total_gallons,
    COUNT(DISTINCT DATE_TRUNC('MM', InvoiceDate)) AS active_months,
    ROUND(SUM(GMExt), 2) AS total_margin,
    ROUND(AVG(GMperUnit), 2) AS avg_margin_per_unit
FROM sales_detail
GROUP BY CustomerNameAlias, CustomerNo
HAVING total_gallons > 10000 AND active_months >= 3
ORDER BY total_gallons DESC, active_months DESC;
```
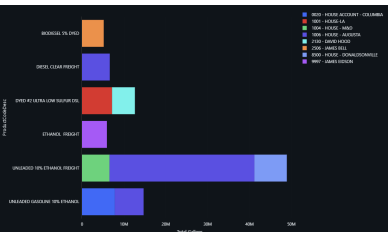
Contract Pricing Opportunities
A subset of customers exhibited consistent, high-volume purchases over time. These customers represent prime targets for pricing contracts, which may increase loyalty and reduce churn. By offering fixed rates, Value Lubricants can improve budget predictability for both parties.

```sql
%sql
SELECT
    CustomerNameAlias,
    CustomerNo,
    COUNT(DISTINCT SalesOrderNo) AS total_orders,
    ROUND(SUM(Gallons), 0) AS total_bulk_gallons,
    COUNT(DISTINCT DATE_TRUNC('MM', InvoiceDate)) AS active_months,
    ROUND(AVG(Gallons), 0) AS avg_gallons_per_order,
    ROUND(SUM(GMExt), 2) AS total_margin
FROM sales_detail
WHERE ProductCodeDesc LIKE '%BU'
GROUP BY CustomerNameAlias, CustomerNo
HAVING total_bulk_gallons > 10000 AND active_months >= 3
ORDER BY total_bulk_gallons DESC, avg_gallons_per_order DESC;
```
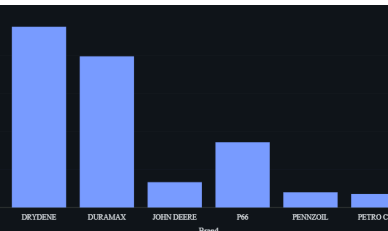
Vendor-Managed Inventory Candidates
Customers whose purchases included bulk product codes (specifically those ending in "BU") were identified as candidates for VMI. These customers likely have the infrastructure or demand to support onsite storage. Installing tanks can reduce delivery frequency and support proactive replenishment, enhancing operational efficiency.

Top Product and Brand Trends
The analysis also surfaced the most popular product descriptions by customer and sales representative. This visibility can inform marketing focus, optimize inventory, and improve targeting for cross-selling. Brand analysis revealed that a small number of brands account for the majority of volume sold, highlighting opportunities for supplier negotiations or promotions.

Strategic Implications
The segmentation and sales pattern insights derived from this dataset offer practical applications for sales strategy, operational planning, and customer engagement. Sales teams can be empowered with this intelligence to foster stronger relationships and deploy services more strategically.

Conclusions / Recommendations

The analysis successfully segmented customers based on sales volume, purchase patterns, and profitability. Customers meeting high-volume and multi-month activity thresholds were identified as optimal candidates for fixed-price contracts. Bulk purchase patterns indicated strong suitability for vendor-managed inventory solutions. In contrast, a subset of accounts showed consistent negative unit margins, suggesting potential inefficiencies in service delivery.

- **Contractual Engagement:** Engage with customers purchasing over 10,000 gallons across at least three active months for potential locked-in pricing agreements to increase retention and streamline forecasting.
- **Inventory Optimization**: Recommend vendor-managed inventory solutions, including storage tank installation, for customers purchasing unpackaged bulk products.
- **Profitability Review**: Perform targeted reviews of accounts with negative average margin per unit to assess pricing, service models, or potential account reclassification.
- **Sales Strategy Alignment**: Leverage insights on top-performing brands and product codes to inform strategic sourcing, inventory allocation, and promotional efforts.