Optimizing Sales and Services of a Leading Lab Equipment Firm
<u>Presentation for the BDM Capstone Project</u>

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BUSINESS OVERVIEW

- **Business Name:** Sigma Scientific Products Limited
- Established in 2015, headquartered in Chennai, India
- Leading B2B partnership firm specialized in manufacturing and selling scientific laboratory equipment
- **Portfolio:** Scientific laboratory equipments for institutions and companies.
- **Challenge:** Product Portfolio Rationalization, Comparative Pricing and Sales Intelligence , Customer Segmentation
- **Data analyzed:** Product data, Sales data from April 2024 to March 2025
- **Key insights:** Concentrated revenue on small number of products - Mid value customers

PROBLEM STATEMENTS

1. Product rationalization: As the portfolio of products has grown substantially ,the firm is struggling to rationalize, strategize and market those products effectively.

2. Customer & sales intelligence: Lack of comprehensive customer understanding and the corresponding products being sold across different time horizons results in ineffective marketing, customized offerings and potentially missing sales across market segments.

DATA COLLECTION AND METHODOLOGY

- **Data Duration:** April 2024 to March 2025
- **Source:** Primary data collected from internal Excel-based accounting system
- **Files Received:** Product Data(17 entries) and Sales Data(138 entries)
- **Key Fields:** Product Data - Category, Product Name, Approx. Price (₹), Usage, Sold By, Key Attributes, Product code. Sales Data - Date, Particulars, Credit, Vch No, Product code, Vch Type.

Data cleaning and Preprocessing

- Non-essential fields were dropped
- Presence of missing data was checked
- Standardized DATE formats & CUSTOMER NAMES
- Introduced LOCATION and QUANTITY columns for clearer categorization and Mapping
- Customer Name Extraction from PARTICULARS
- PRODUCT CODE was introduced in the sales dataset
- Merging the datasets using PRODUCT CODE

DATA COLLECTION & METHODOLOGY

Product Portfolio Analysis

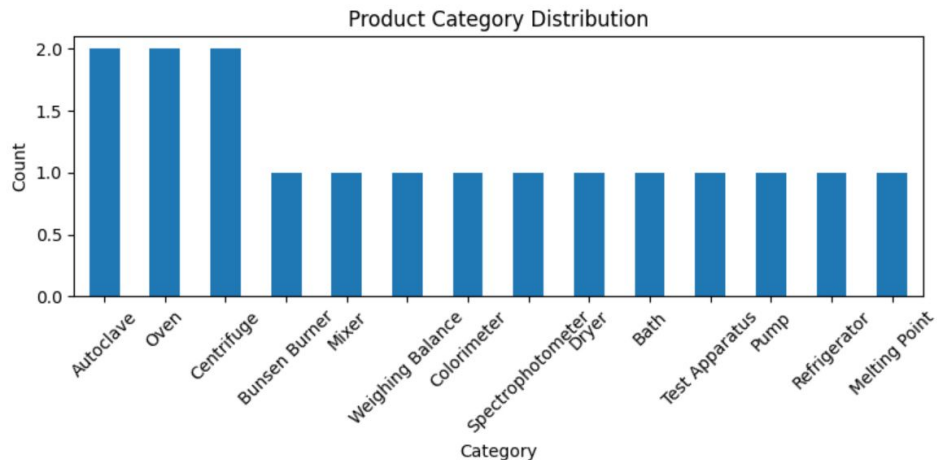- Category distribution analysis using a bar chart
- Product price spread

Comparative Pricing and Sales Intelligence

- Price vs Quantity Correlation using scatter plot
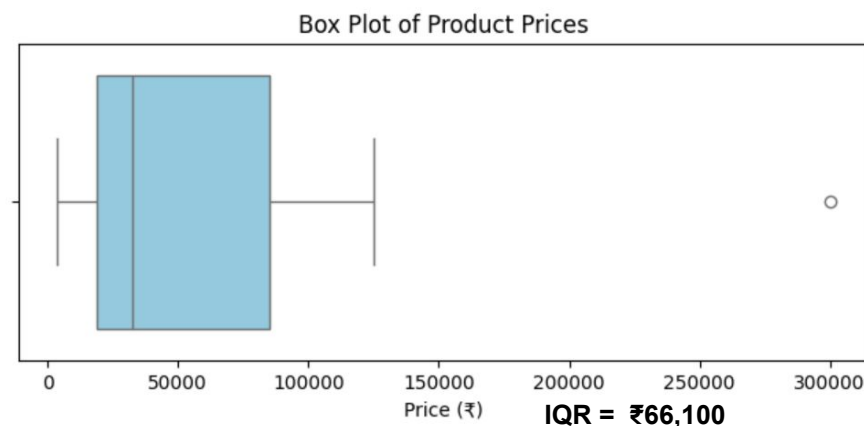- Analyzing repricing strategies using bar chart

Customer Segmentation

- Using K-Means on sales data
- RFM Analysis

Results and Findings
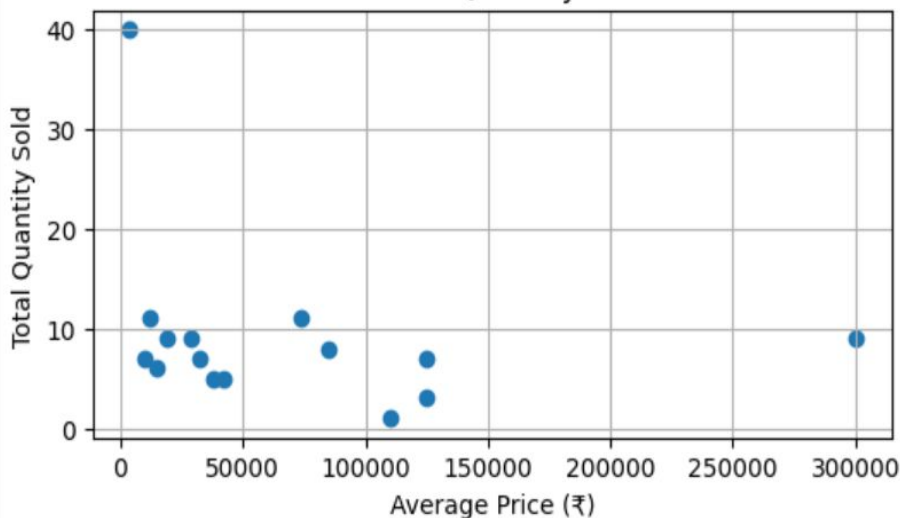

Product Category Distribution

Box Plot of Product Prices

IQR = ₹66,100

Variable	Minimum price	Q1	Median (Q2)	Q3	Maximum price	Mean
Value (₹)	3,600	18,900	32,500	85,000	3,00,000	63,111

- Product catalog is **broad but shallow**
- Autoclave, Ovens and Centrifuge form the **bulk** of the product portfolio **(11.8% each)**
- **Top categories** - product complexity, potentially sales effort
- **Long tail** of Product category, may not contribute meaningfully to sales, reviewed **(5.6% each)**

- **High IQR** - high inconsistency in pricing - within same product category, broad spread of prices
- **Mean** - heavily influenced
- **High-ticket items -** extreme outliers

Price vs Quantity Sold

Product code	avg_price	Category	total_count
BB-E01	3600	Bunsen Burner	40
VO-300	74000	Oven	11
CL-51	11800	Colorimeter	11
JTA-4	29000	Test Apparatus	9
LR-1355	300000	Refrigerator	9
UB-3L	18900	Bath	9
C24BL	85000	Centrifuge	8
SVP-01	32500	Pump	7
CM101P	10000	Mixer	7
TD-12	125000	Dryer	7

corr(X,Y) = -0.24

Negative relationship - bulk of high-volume sales come from lower-priced items, higher-priced items typically sell fewer units.

- **Low-price outlier, high-volume items** - promote, inelastic
- **Low-price, low-volume items** - poor performers, revaluation
- **mid-price items cluster** - moderate sales
- **High-price, low-volume items** - source of revenue, marketing

- Extreme revenue **concentration** by LR-1355 - protected
- Mid range products - **balance** the portfolio, reliable income even if the top products become volatile.
- **Consistent low revenue** - both charts, VA-205S, HTO-450 , inconsistent performance
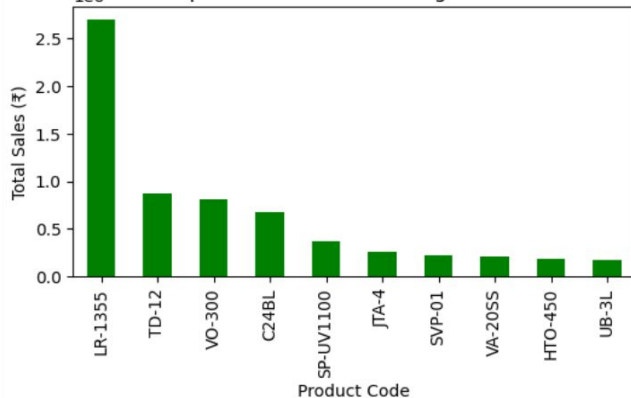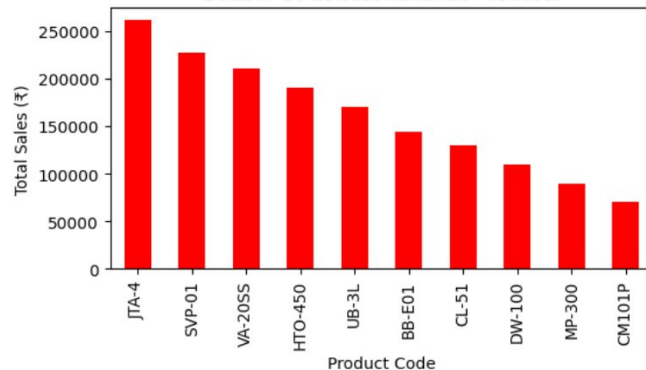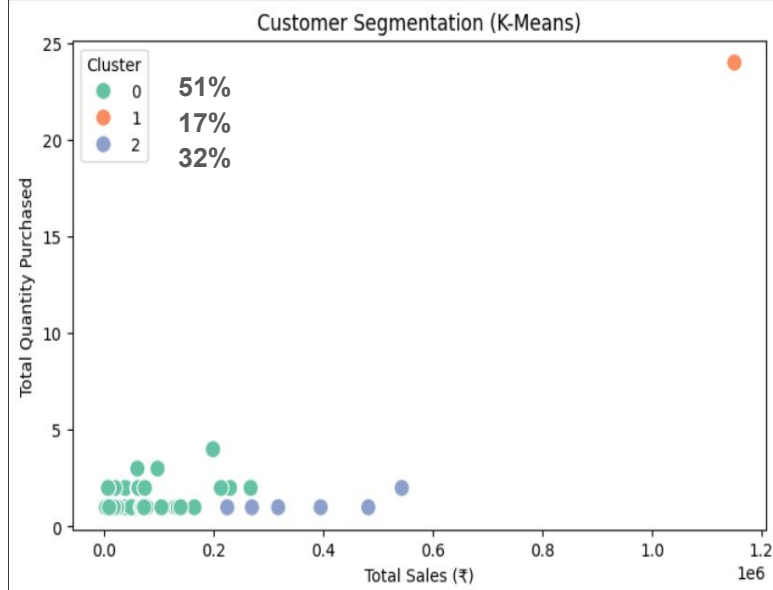- **Poor turnover** - MP-300 and CM101P, discontinuation

Top 10 Revenue Generating Products

Bottom 10 Lowest Revenue Products

Customer Segmentation (K-Means)

Cluster 0 (92.31%): High Value Customers, Large and frequent orders, Target for premium offerings
Cluster 1 (1.10%): Medium Value Customers, Moderate sales contribution, Good candidates for upselling
Cluster 2 (6.59 %): Low frequency, Very small order sizes

RFM score Range : 3 to 12

Customer Segments Based on RFM Score

- **High RFM Scores (8 -12)** : Loyal and high-value customers - **36.26%**
- **Medium RFM Scores (5-7)** : Targeted with regular engagement marketing - **40.66%**
- **Low RFM Scores (3-4):** Stopped buying or buy very rarely - **23.08%**
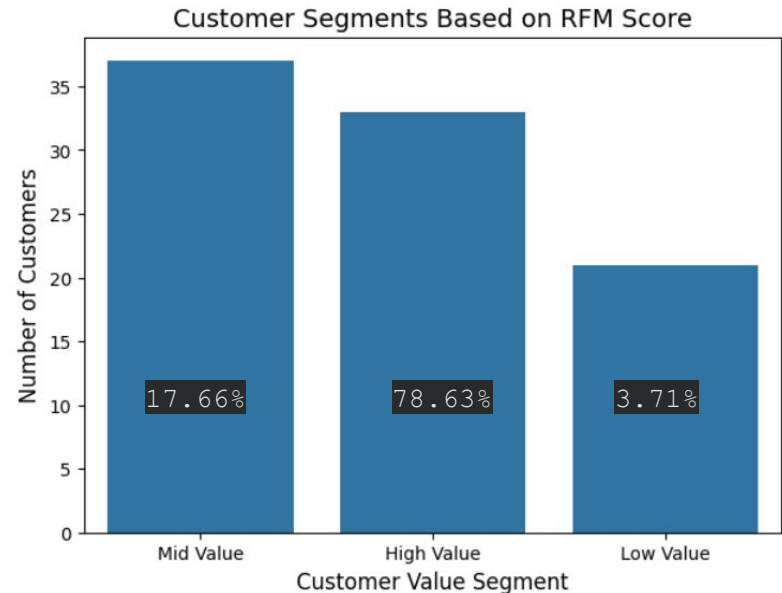
INTERPRETATION OF RESULTS AND RECOMMENDATIONS

1. Interpretation

Top categories concentrate product complexity and potentially sales effort. If many SKUs in a category are very similar, internal cannibalization and unnecessary inventory cost might happen.
Long-tail categories, that is single SKU categories may not contribute materially to revenue but increases catalog maintenance and SKU management overhead.

2. Recommendations

Unit feature matrix: Side by side matrix - key attributes Label SKUs as "distinct tier" vs "overlap candidate". Reduce duplicate products, simplify marketing, manage inventory better.

Flag long-tail SKUs for review: products sell very rarely- spends money managing, Either keep it only when a customer specifically asks for it, or stop selling it altogether. Reduce unnecessary stock and frees up resources

1. Interpretation

High priced outliers drive mean and may tie up capital that is inventory risk if they sell slowly. There are distinct clusters which include fast moving low price items which are volume drivers and high value low volume items which may be for project or institution sales. Some high-price SKUs such as LR-1355 are revenue critical but risky as the company is heavily dependent on that product. A Negative relationship exists as low priced items sell more units while high priced items sell fewer units.

2. Recommendations

Inventory policy by SKU class:**Fast-moving (core) products** -Keep sufficient stock, Assign higher priority in inventory planning
Long-tail / niche products - Keep minimal or no stock, review for discontinuation
Bundling fast-moving products with mid-range SKUs
Production by SIGMA - Centrifuge currently sold by SIGMA is a white-label

INTERPRETATION OF RESULTS AND RECOMMENDATIONS

1. **Interpretation**
   - High-value->few customers, large purchases
   - Medium-value -> steady
   - Low-value / one-timers
   - **Mid Value** is the largest customer base (RFM)

2. **Recommendations**

Account based plays for high-value clusters: Ensuring prioritized outreach, customized bundles - intact.

Automate for low-value cluster : mail nurtures, low cost remarketing

Mid Value: high chance of becoming high value, or low

High RFM customers: priority service, exclusive offers, personalized attention

Win-back & nurturing for Low-RFM: targeted discounts, personalized messages, re-activate these inactive customers before they are permanently lost.

Business Impact

Reduced inventory cost and risk by prioritizing fast-moving SKUs and limiting stock for slow-moving and niche products.

Improved revenue and margins through product bundling and selective in-house manufacturing of high-demand items.

Higher customer retention and lifetime value achieved via segment-based marketing and reactivation of inactive customers.