Automated POS Analytics Platform — ETL to Power BI

🔍 Key Objectives

- End-to-end solution: **ingest → clean → validate → model → visualize**.
- Converts raw POS records (Timestamp, Store, Category, Product, Size, Price, Cost, Quantity, Discount, Payment Method) into reconciled KPIs (Total_Sale, Profit, Margin %).
- Built to support FP&A, Marketing and Operations with actionable, finance-grade insights.
- Reconcile and validate POS data to ensure finance-grade accuracy
- Provide interactive, executive-ready visuals to support FP&A, Marketing, and Ops decisions.

📈 Insights Explored

- Top-line **revenue & profit trends** (MoM) and forecastable seasonality.
- **Pareto analysis**: which SKUs (top ~20%) drive the majority of revenue.
- **Margin delta**: full-price vs discounted transactions and the financial impact of promotions.
- **Store & channel performance**: which locations and payment methods deliver the best unit economics.
- **Operational peaks**: hourly and weekday patterns for workforce planning.

🛠️ Report Features

- Executive **KPI panel** (Revenue, Profit, Avg Order Value, Margin %, Discount Penetration).
- Multi-page layout: **Executive Summary**, **Sales Performance**, **Product Analysis**, **Promotions & Operations**.
- Advanced visuals: **Pareto (cumulative %) chart**, **Decomposition Tree**, and **Small-multiple trends**.
- Reproducible ETL in **Power Query** + finance-grade DAX measures; Python used for prototyping/EDA.
- Designed for automation: scheduled refresh, email subscriptions, and easy integration with ERP/budget sources.

SAP

Dynamics 365

ERP systems

1

API data Pull /
Automated data download

Q1_POS.CSV

Q2_POS.CSV

2

Python script: combine the CSV files &
perform data cleaning

Combined_Clean.CSV

3

Automated upload the
cleaned data to
Google Drive or MS SharePoint

SharePoint

Connect clean files to Power BI

4

Power BI

Power Query

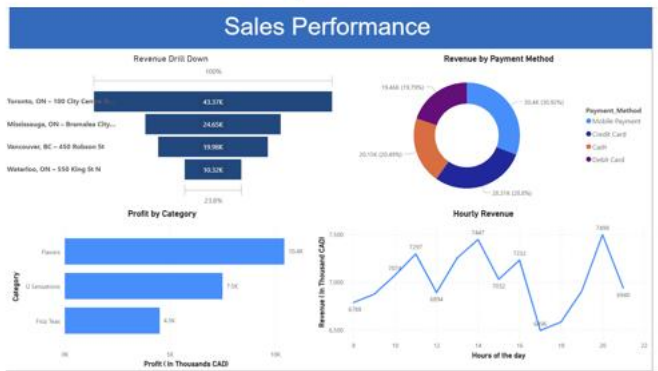
Transform data using power query

5

DAX

Build data Models using DAX

6



Develop interactive KPI dashboard

7

1. Starts with ERP data (SAP, NetSuite, Dynamics 365)
   → Simulated raw exports from ERP systems to reflect real-world business datasets.

2. Automates CSV merging and cleaning using Python
   → Scripted the consolidation of multiple files and applied transformations like calculating revenue and profit.

3. Outputs cleaned data to SharePoint or Google Drive
   → Stored the final dataset in a cloud location for easy integration with BI tools and refresh scheduling.

4. Connects to Power BI for transformation and modeling
   → Linked the cleaned dataset to Power BI for centralized reporting and further processing.

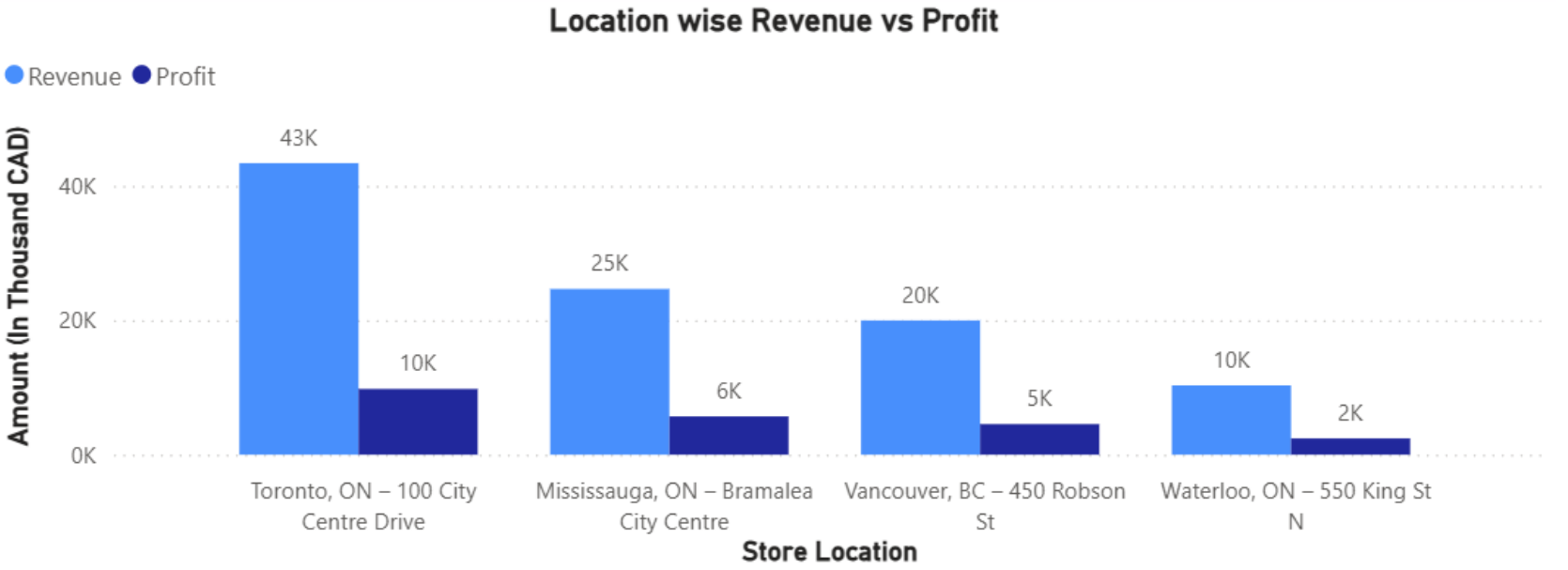
5. Uses Power Query and DAX for dynamic KPI dashboards
   → Applied data shaping and built custom metrics (e.g., margin %, top products) for stakeholder reporting.

6. Fully refreshable via Power BI Service
   → Enabled automatic data updates on a schedule, removing manual intervention.

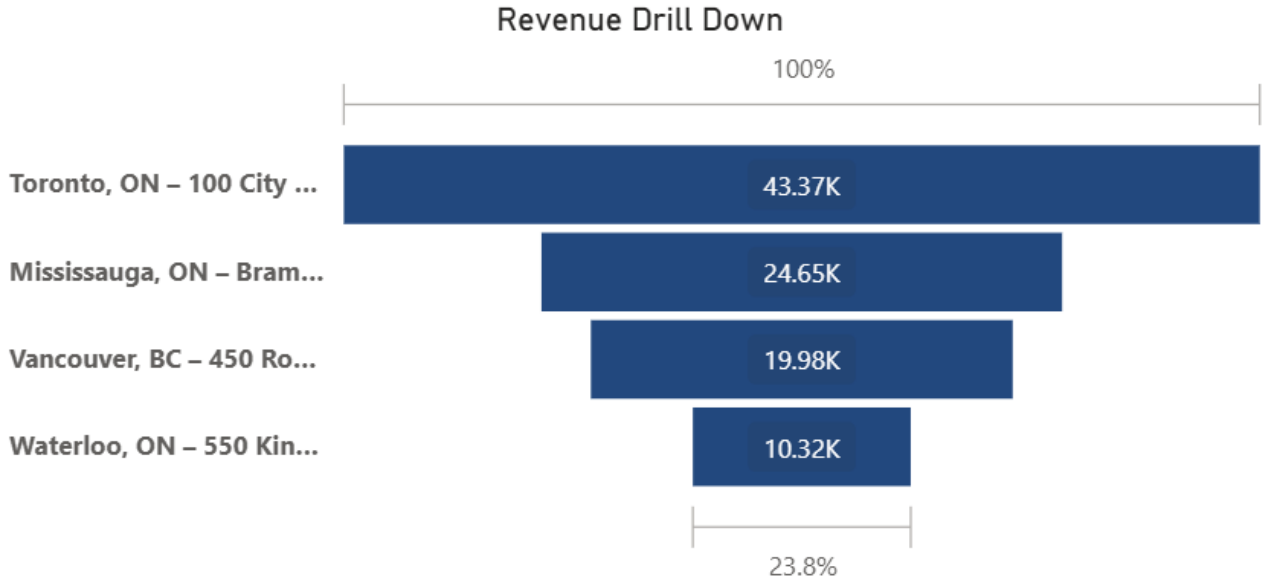
7. Designed for real-time financial and sales insights
   → Built an interactive dashboard to help decision-makers track key performance trends instantly.

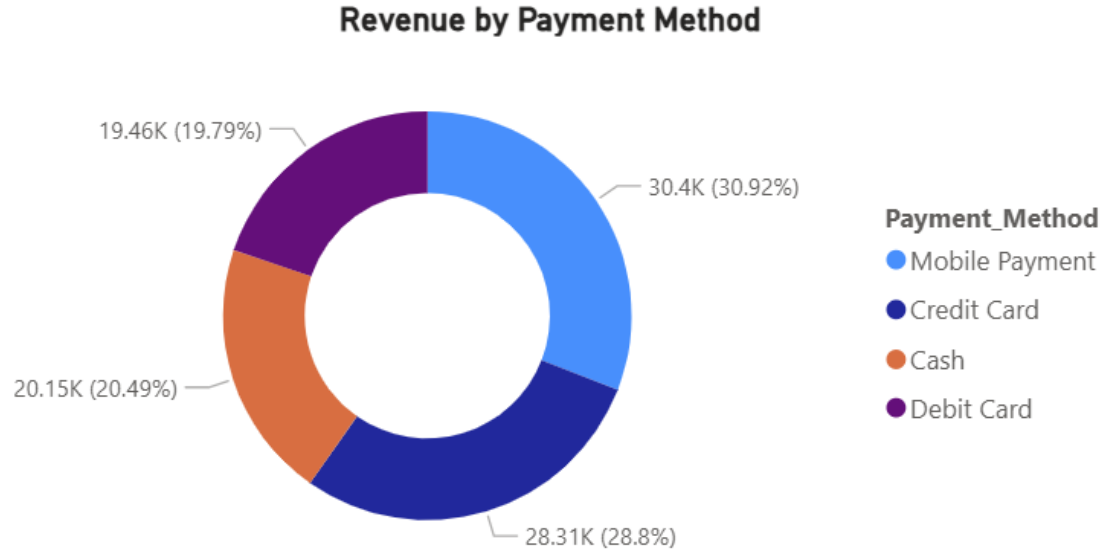
Executive Summary

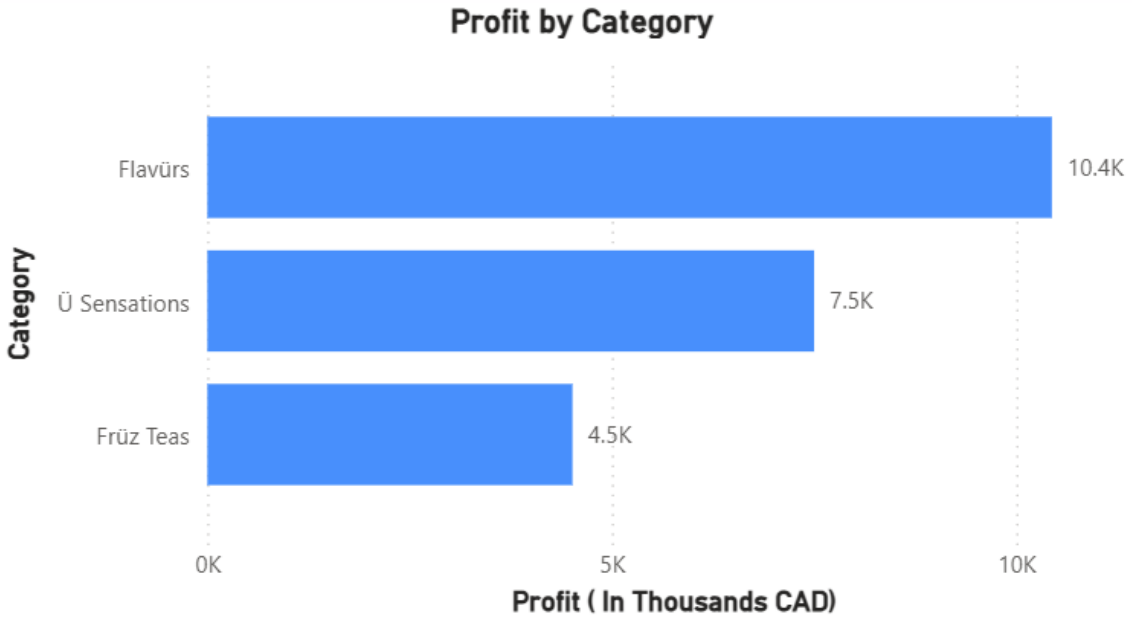
98.32K Total Revenue	0.23 Avg Profit Margin %
22.45K Sum of Profit	75.28 Discount Penetration %
8000 Transactions	27.67 Weekend Revenue %
12.29 Avg Order Value	30.92 Mobile Payment Rev %

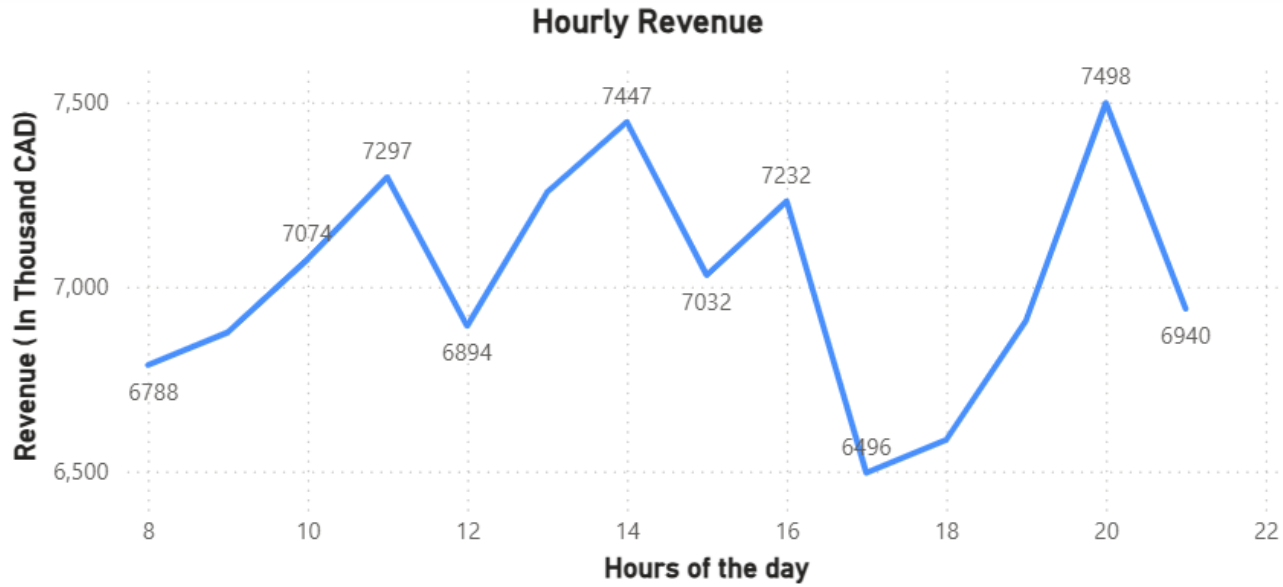


Sales Performance



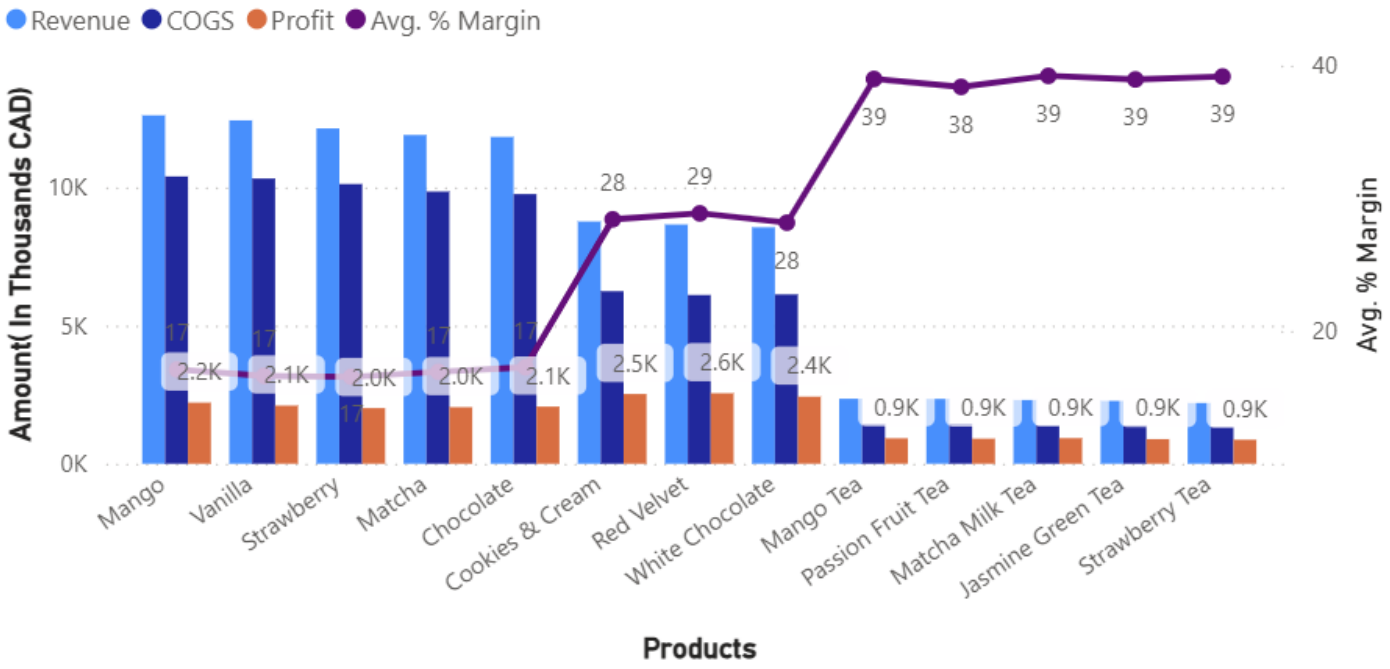




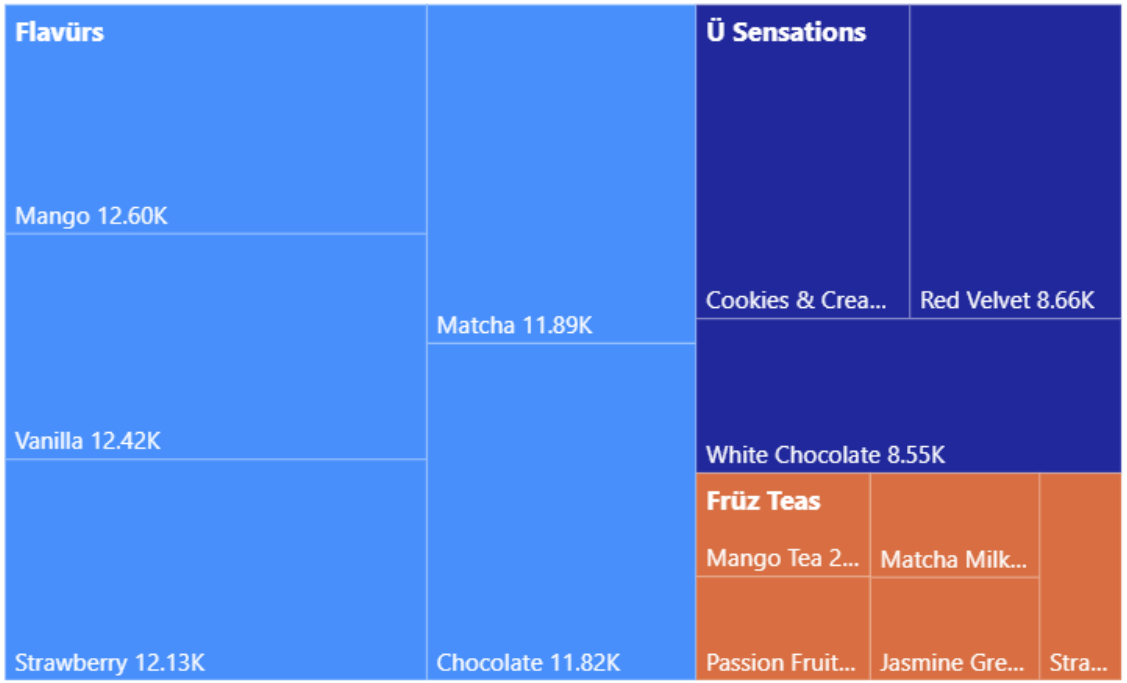


Product Analysis

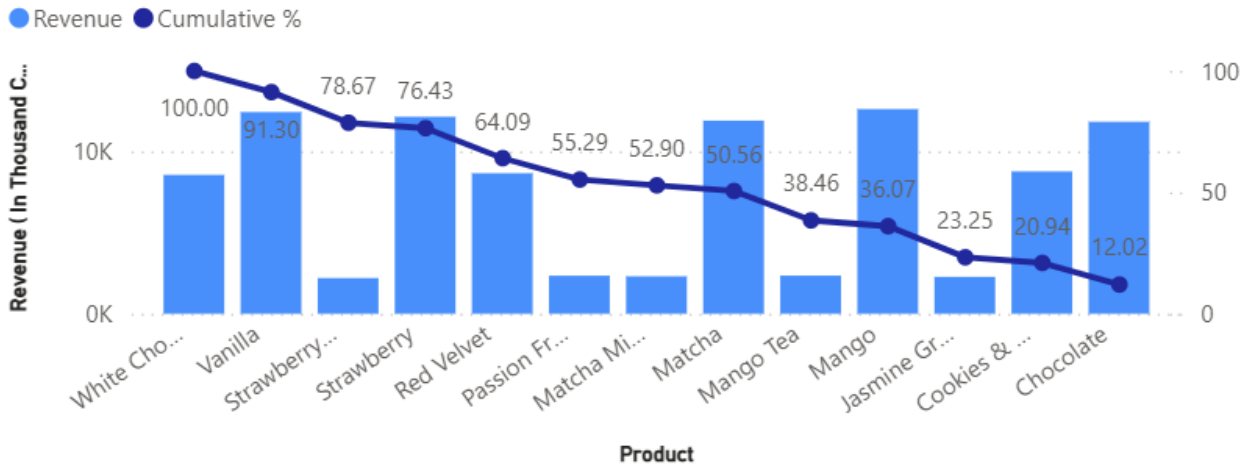
Revenue, COGS, Profit and Avg. % Margin by Product



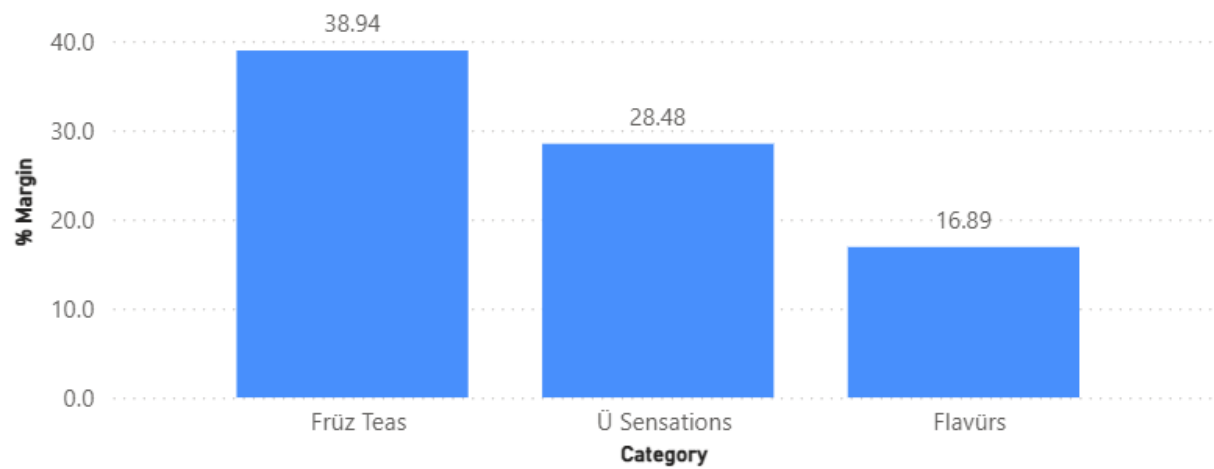
Tree Map (Revenue by Category & Product)



Revenue and Cumulative % by Product



Category wise Avg % Margin



Promotion & Operations