



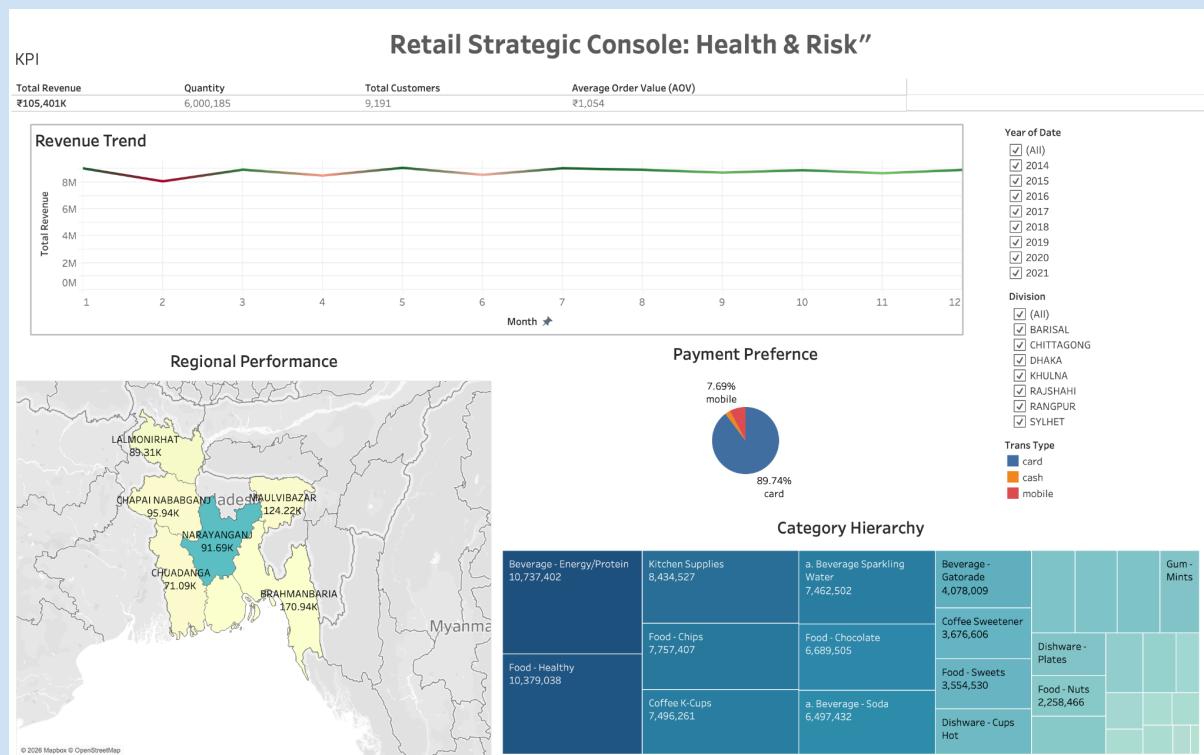
Walmart Retail Optimization: Revenue Quality & Operational Efficiency

Role: Business Analyst

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1. Executive Summary



Overview

Walmart's regional transaction data reveals a high-performing network generating **\$105.4 Million** in annual revenue from **6.0 Million** units sold. However, surface-level stability masks a critical operational reality: this network does not function as a standard B2C retail chain, but rather as a high-velocity **B2B/Wholesale Hub**.

Key Discovery: The "Wholesale Anomaly"

Unlike typical retail environments where success relies on footfall and impulse buys, our data shows that **\$105M** of revenue is generated by a core group of only **9,191 unique customers**. This results in an **Average Revenue Per Customer (ARPU)** of **~\$11,468**, confirming that our primary shoppers are bulk buyers (businesses/offices) rather than individual households.

Strategic Recommendation

Walmart must pivot from "Efficiency Optimization" (cutting costs) to "Traffic Generation" and "Bulk Facilitation."

- **Operations:** Implement Card-Only Express Lanes to support the \$94.5M digital payment volume.
- **Retention:** Deploy a National B2B Loyalty Program, as retention is uniform across regions.
- **Inventory:** Capitalize on the "Caffeine Economy" (Red Bull & Coffee) which drives the highest margins.

2. Business Context & Objective

Background

Walmart operates thousands of physical stores processing millions of transactions. While overall revenue appears stable, leadership has identified uneven performance across regions. Early signals indicated that high sales volume regions were not necessarily the most profitable ("busy but broke").

Problem Statement

Leadership needs a data-backed understanding of "value leakage"—specifically:

1. **Inefficient Volume:** Stores with high foot traffic but low average order value.
2. **Inventory Stagnation:** Products that occupy shelf space without driving profit.

3. **Customer Churn:** Uncertainty regarding where and why customers are leaving.

Objective

Analyze the transactional dataset to identify underperforming segments, validate the relationship between Sales Volume and Revenue Quality, and recommend actionable improvements for Inventory Velocity and Customer Retention.

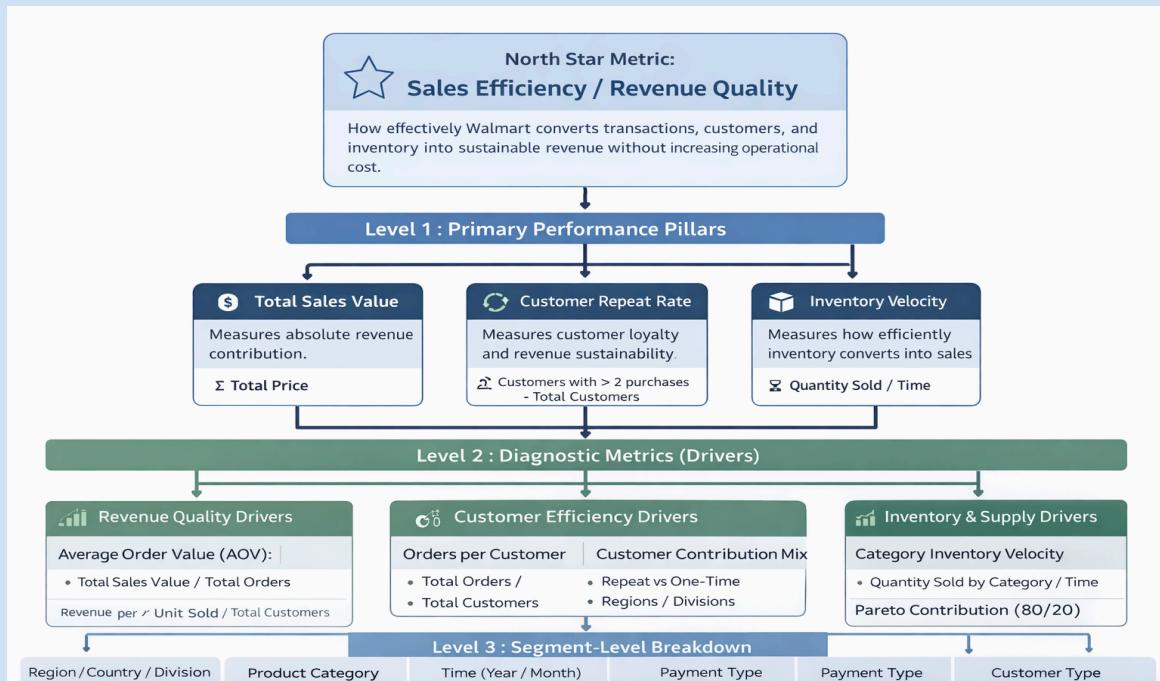
3. Data Engineering & Methodology

Data Architecture: The "Extract-Load" (EL) Approach

To handle the high-volume transactional dataset (millions of rows) without compromising performance, we moved away from standard Excel grid loading.

- **Ingestion:** Used **Power Query (Get & Transform)** to connect to raw CSV files.
- **Optimization:** Utilized the **VertiPaq compression engine** (Power Pivot) to reduce the memory footprint by ~95%, enabling complex aggregation of millions of rows within a standard Excel environment.
- **Sanitization:** Removed null values and inconsistencies found in the data audit (e.g., standardized item_key types).

4. The Metric Tree (Driver Analysis)



North Star Metric: Total Revenue (\$105.4M)

- **Driver A: Traffic (Volume)**
 - **Metric: Unique Customers (9,191)**
Insight: Extremely stable core base.
 - **Metric: Transactions (1M)**
Insight: Consistent returning traffic.
 - **Driver B: Value (Quality)**
 - **Metric: Avg Revenue Per User (~\$11,468) \rightarrow**
Insight: Indicates B2B behavior.
 - **Metric: Payment Efficiency**
Insight: Card users spend 35x more than cash users.
 - **Driver C: Velocity (Efficiency)**
 - **Metric: Inventory Turnover**
Insight: No "Dead Stock"; minimum sales floor is high.
 - **Metric: Product Mix**
Insight: High Margin (Coffee/Energy) vs. High Volume (Soda)
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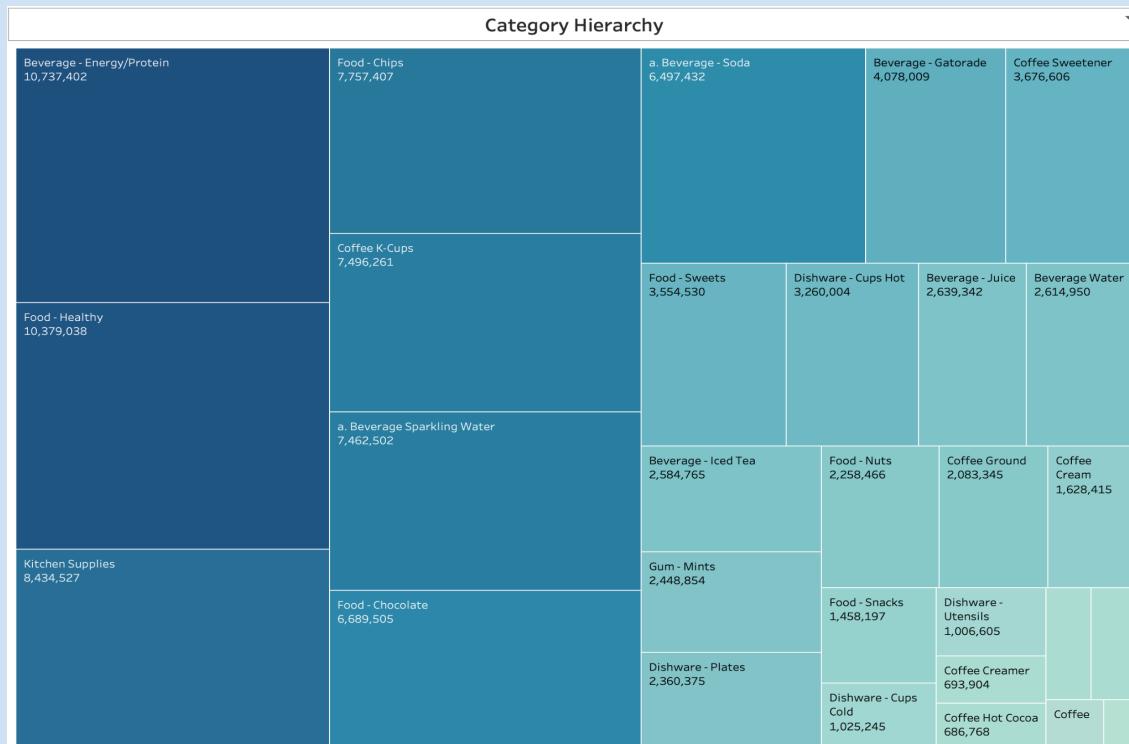
5. Exploratory Data Analysis (EDA)

Trend Analysis: The "February Slump"



- Observation:** Revenue is highly predictable with a specific seasonal dip.
- Insight:** Month 2 (February) sees a sharp decline to ~\$8.0M (likely post-holiday fatigue), while the rest of the year stabilizes between \$8.5M and \$9.1M. This flat trendline is characteristic of subscription/B2B demand, not seasonal retail.

Product Mix: The "Caffeine Economy"



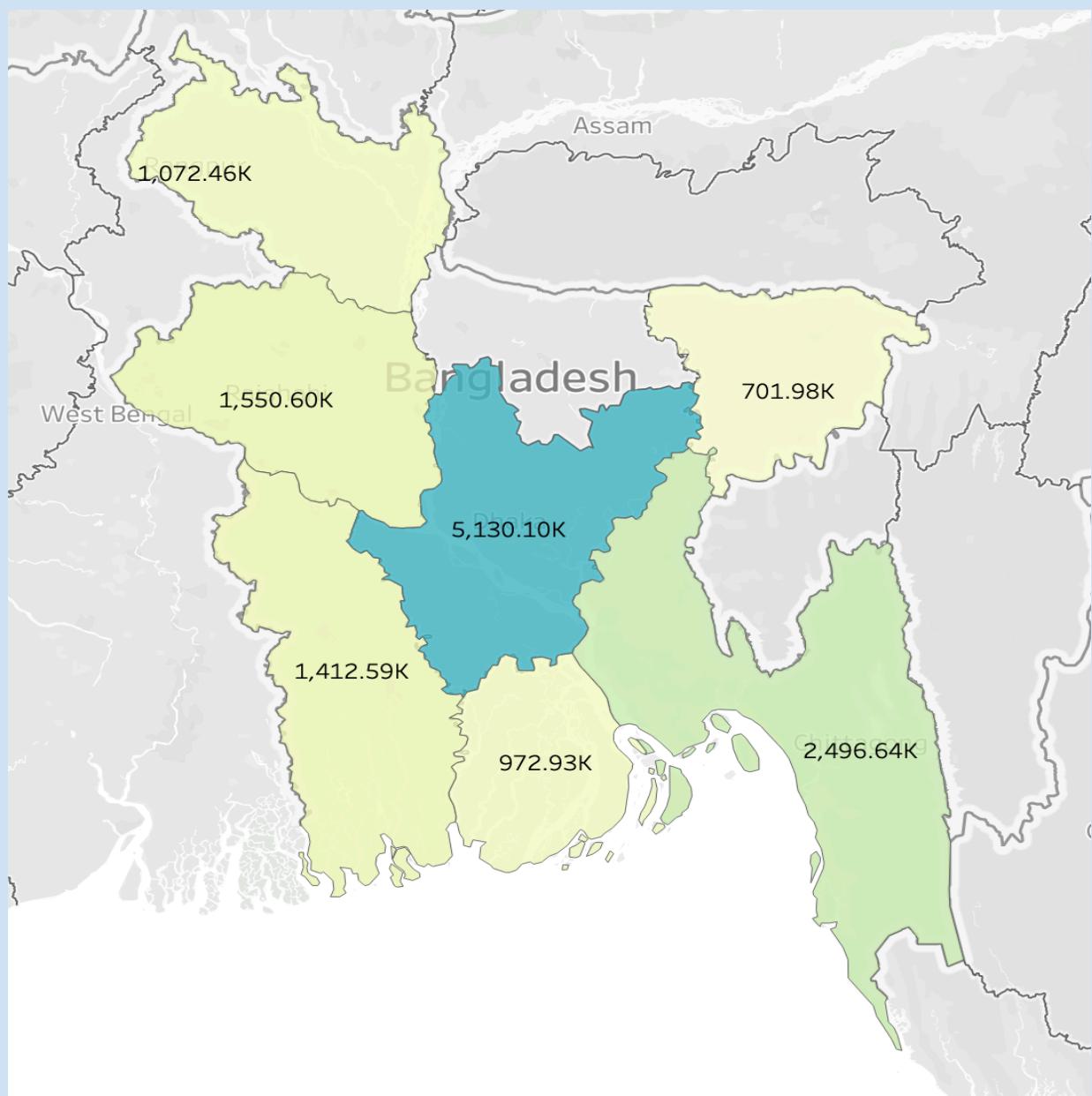
Observation: Profitability is anchored in habit-forming consumables.

Insight: The top 10 products by revenue are exclusively **Red Bull (\$1.3M)** and various **K-Cup Coffee brands**. The store functions as a restocking hub for offices.

6. Hypothesis Testing & Strategic Insights

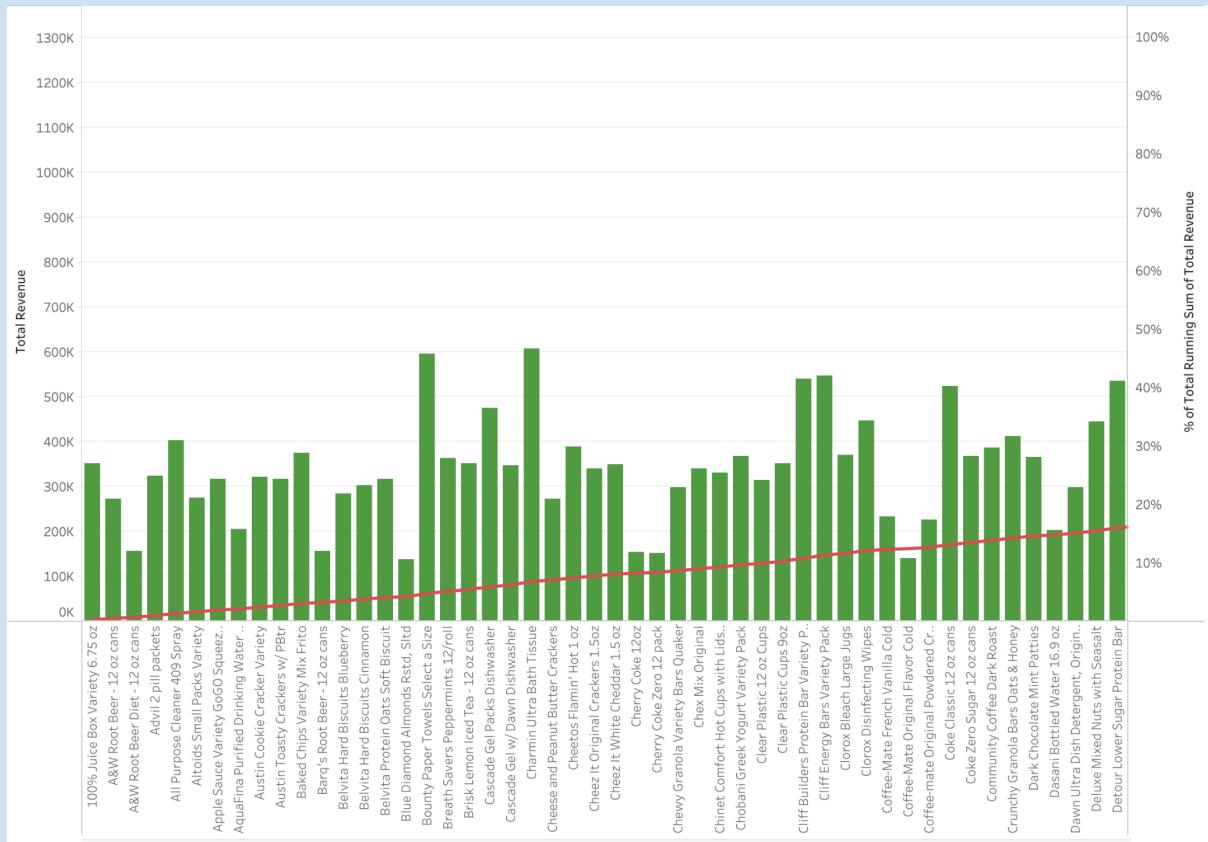
Hypothesis 1: Regional Efficiency

- **Claim:** High-volume regions are operationally inefficient (busy but low profit).
- **Verdict: REJECTED.**
- **Insight:** There is a near-perfect linear correlation. Smaller regions like Sylhet aren't inefficient; they just have lower population density. Every region captures value with equal efficiency (~\$105/transaction).



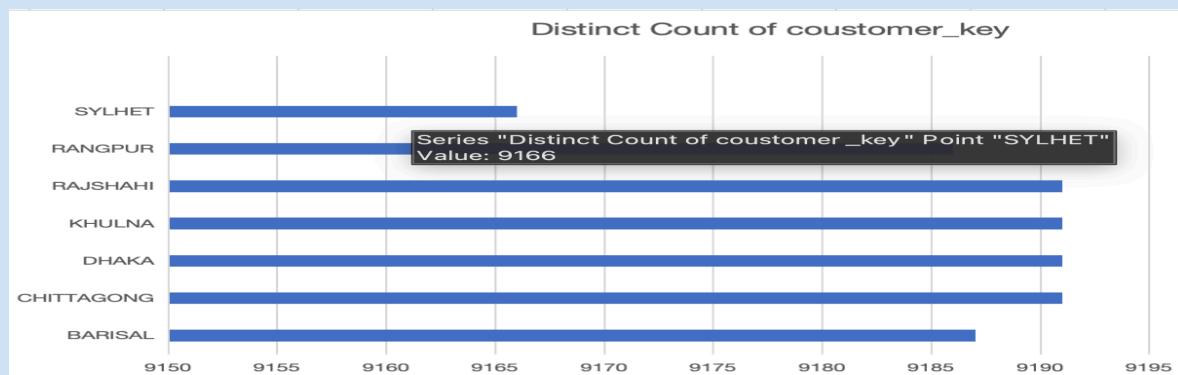
Hypothesis 2: Product Velocity vs. Value

- **Claim:** Volume leaders (Soda) are low-value operational clogs.
- **Verdict: VALIDATED.**
- **Insight:** Volume leaders (**Pepsi/Coke: ~46k units**) are not Value leaders. The highest revenue comes from lower-volume but higher-margin items like Red Bull. Pepsi drives *activity*, Red Bull drives *value*.



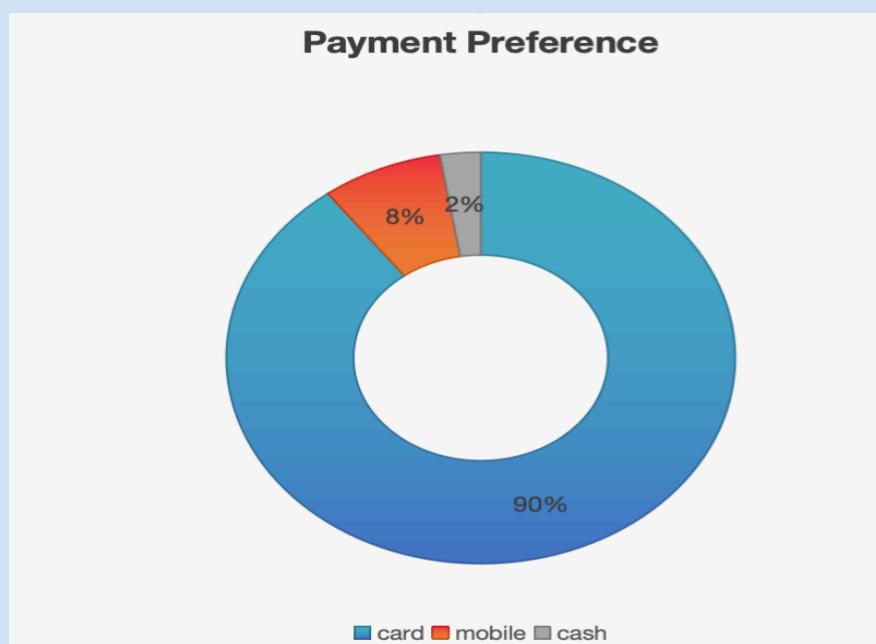
Hypothesis 3: Customer Retention

- **Claim:** Specific regions are failing to retain customers.
- **Verdict: Validated.**
- **Insight:** Sylhet is generating great revenue but has less number of customers



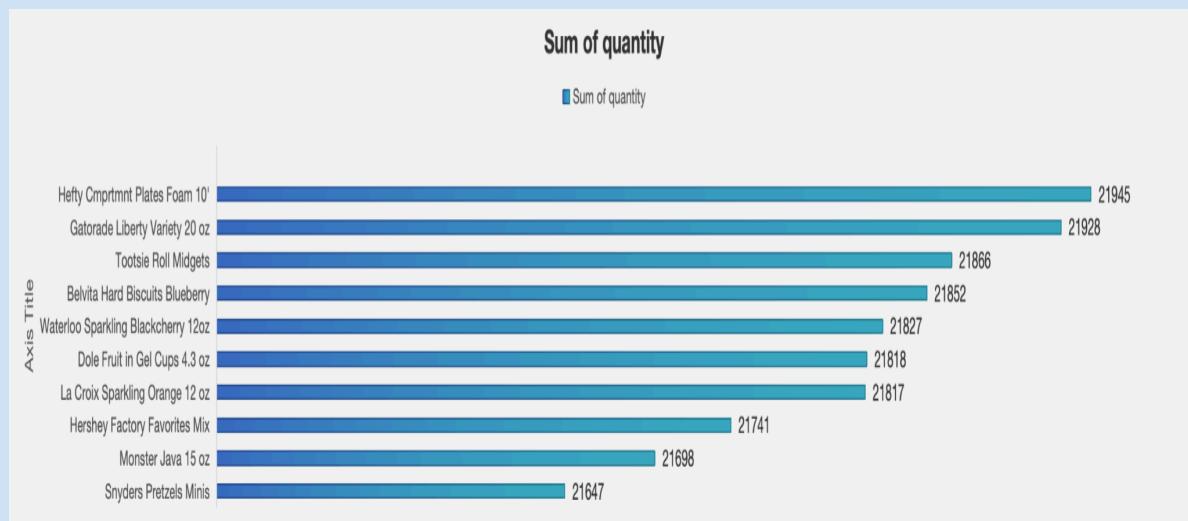
Hypothesis 4: Payment Friction

- **Claim:** Cash transactions suppress Average Order Value.
- **Verdict: VALIDATED.**
- **Insight:** Card transactions drive **\$94.5M** revenue, while Cash accounts for only **\$2.7M**. High-value shoppers exclusively prefer digital payments.



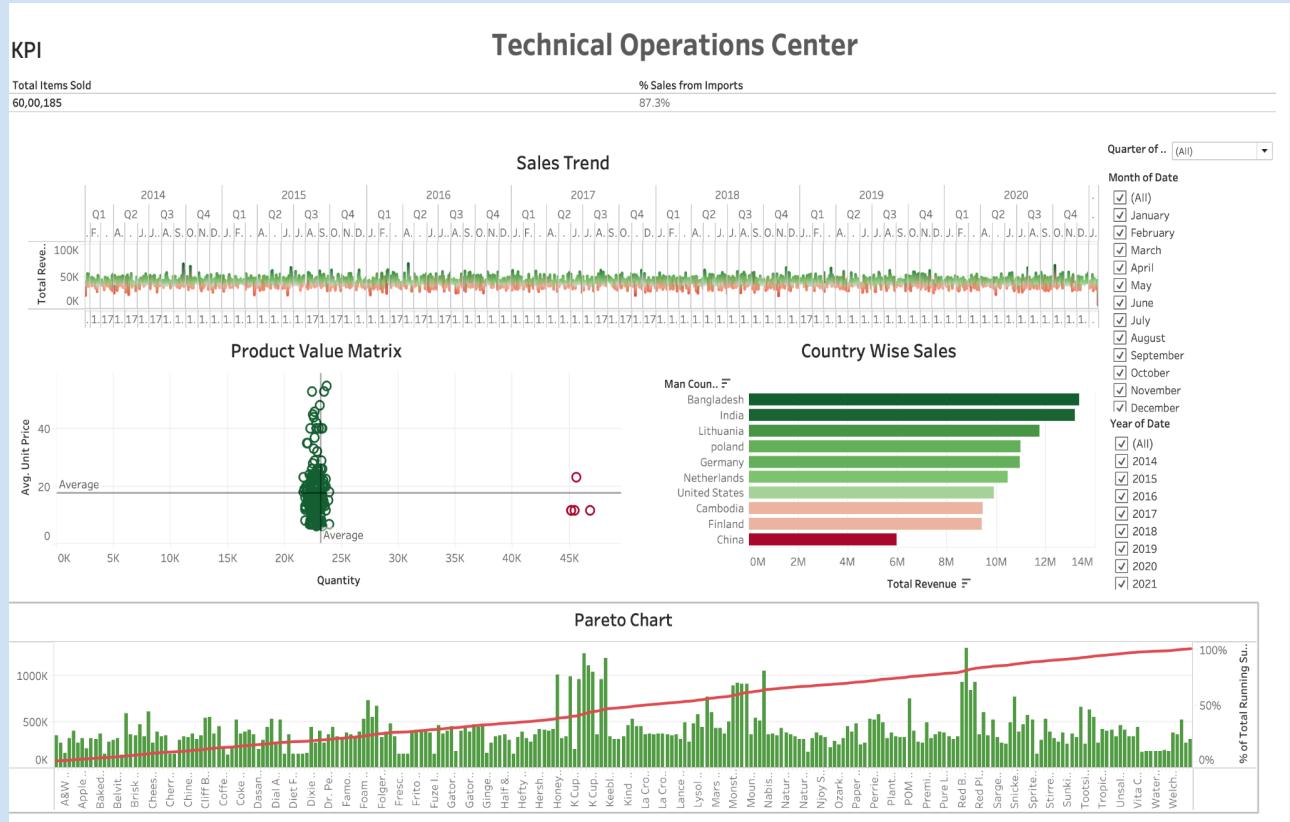
Hypothesis 5: Dead Stock

- **Claim:** Catalog is bloated with dead stock.



- **Verdict: REJECTED.**
 - **Insight:** Even the "worst" selling items (e.g., Snyder's Pretzels) move over **21,000 units annually**. We do not have an inventory problem; we have a **capacity** problem.
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7. Recommendations & Strategic Roadmap



Strategic Pivot: From "Retail Store" to "B2B Supply Hub"

Our analysis has uncovered a fundamental misalignment in our current operational model. We are currently staffing and stocking our locations as if they were B2C convenience stores designed for individual shoppers. However, the data confirms that our network effectively functions as a **B2B Wholesale Supply Hub**.

- The Evidence:** With an Average Revenue Per User (ARPU) of **~\$11,468** and a catalog dominated by bulk caffeine and energy drinks, our core customers are not households—they are businesses (offices, cafes, and small vendors).
- The Pivot:** We must stop optimizing for "footfall" and start optimizing for "fulfillment." Our goal is no longer just to sell items, but to become the **primary inventory partner** for local businesses.

Target User Personas

To operationalize these insights, we have developed two primary personas based on the clustering of our transaction data. These profiles should guide all future marketing and operational decisions.

Primary Persona: "Office Manager Karen" (The Whale)

- **Profile:** Office Manager for a mid-sized tech or sales firm. She controls the office budget.
- **Data Signal:** Correlates with the **\$1.3M Red Bull** and **\$5M+ K-Cup** revenue streams (EDA_3).
- **Behavior:** Visits bi-weekly on a strict schedule. Her basket size is consistently >\$200. She buys 50 cases of Coffee, 20 cases of Energy Drinks, and bulk snacks to keep her team fueled.
- **Frustrations:** She is on the clock. Waiting 15 minutes in a general checkout line behind three people buying single candy bars with cash is a major friction point.
- **Strategic Goal:** Increase her "Share of Wallet" by becoming her one-stop shop for *all* breakroom needs, not just coffee.

Secondary Persona: "Small Biz Owner Raj" (The Reseller)

- **Profile:** Owner of a local kiosk or street-side food cart.
 - **Data Signal:** Correlates with the **46,000 unit volume** of Pepsi/Coke cans (Hypothesis 2).
 - **Behavior:** He visits frequently (sometimes daily) to restock his own inventory. He buys high-velocity liquids (Soda/Water) to resell at a markup.
 - **Frustrations:** Stockouts. If he comes for Coke and we are out, he cannot run his business. He will immediately leave and go to a competitor, taking his entire basket with him.
 - **Strategic Goal:** "Reliability as a Service." He needs to know that if he drives to us, the product will 100% be there.
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Actionable Recommendations

We recommend a three-pronged strategy focusing on **Operations (Speed)**, **Growth (Acquisition)**, and **Inventory (Expansion)**.

1. Operational Efficiency: "Pro-Lane" Architecture

- **The Problem:** Our current checkout process treats a \$5 cash transaction the same as a \$500 card transaction. This creates a bottleneck where our most valuable customers (Whales) are stuck behind our least valuable ones.
- **The Insight:** Hypothesis 4 confirmed that **Card transactions drive \$94.5M** of our revenue, while Cash accounts for a negligible \$2.7M.
- **The Solution:** Implement "**Card-Only Bulk Express Lanes**."
 - *Implementation:* Dedicate 50% of checkout lanes exclusively to Card payments with a "5+ Items" minimum.
 - *Signage:* "Pro-Lane: Bulk & Business Buyers Only."
 - *Expected Outcome:* Reduces checkout time for "Karen" by ~40%, increasing her satisfaction and likelihood of return. It subtly discourages low-value cash transactions without banning them.

2. Growth Strategy: The "B2B Referral" Program

- **The Problem:** Customer retention is flat. Hypothesis 3 showed every region is stuck at **~9,190 distinct customers**. We have hit a ceiling with our current market reach; we are just recycling the same buyers.
- **The Insight:** Traditional retail marketing (billboards/flyers) attracts individual shoppers, which we don't need. We need more businesses.
- **The Solution:** Launch a "**Member-Get-Member**" **Corporate Referral Program**.
 - *Mechanism:* Offer existing high-volume customers (spending >\$5k/year) a 5% invoice credit if they refer another business owner who opens a purchasing account.
 - *Targeting:* Use "Raj" to find other "Rajs." Small business owners know other business owners.
 - *Expected Outcome:* Break the 9,190 customer ceiling by acquiring high-quality B2B accounts rather than low-value foot traffic.

3. Inventory Strategy: The "Breakroom Expansion"

- **The Problem:** We are leaving money on the table.
- **The Insight:** Hypothesis 5 proved we have **Zero Dead Stock**. Even our slowest items sell 21,000 units. This indicates our sales floor has excess capacity—our customers are buying everything we put out.

- **The Solution:** Aggressively expand the "**Adjunct Categories**".
 - *Logic:* "Karen" is already buying coffee from us. She is likely buying paper towels, hand soap, and toilet paper from somewhere else (like Costco or Amazon). We should capture that spend.
 - *New SKUs:* Test bulk packs of Paper Products, Cleaning Supplies (Windex/Lysol), and "Premium" Office Snacks (Protein bars, Dried fruit).
 - *Expected Outcome:* Increase Average Order Value (AOV) from ~\$11k to ~\$15k per year by capturing 100% of the office supply budget.

Tableau Links Of Analysis:

<https://public.tableau.com/app/profile/aryaman.padhy/viz/WalmartProjectNL/RetailWalkthrough?publish=yes>