Optimizing Inventory and Enhancing Profitability: A Data-Driven Approach to Sustainable Retail Growth for VASHU COMMUNICATION

A Mid-term report for the BDM capstone Project

Submitted by

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Contents

1   Executive Summary and Title

This project focuses on Vashu Communication (VC), a retail business located in Vardhman Mall, Bawana, New Delhi, specializing in consumer electronics and communication products. Established in 2013, VC caters to a diverse customer base through a B2C model, offering smartphones, accessories, and electronic devices. Despite its established market presence and steady foot traffic from the mall, VC faces operational challenges that hinder its profitability and growth.

The primary issue stems from inventory overstock, which ties up capital and increases storage costs, leading to financial constraints. Compounded by sales fluctuations driven by seasonal demand and stiff competition within the mall, VC struggles to align its inventory with market needs. These challenges often result in dead stock, cash flow constraints, and missed opportunities for growth.

This project adopts a data-driven approach to address these problems. By leveraging historical sales data, inventory turnover analysis, and forecasting techniques, the study aims to optimize stock levels, identify high-performing products, and implement a more efficient inventory management system. The anticipated outcomes include reduced overstock, improved cash flow, and streamlined operations, positioning VC for sustainable growth and enhanced profitability in a competitive market.

2 Proof of Originality of Data

2.1   Letter from the Organization

Image 1. Letter of consent, signed by the owner

3.2 Images from the Organization

Image 2. Main store where all transactions take place

Image 3. Visiting the store

Image 4. Pic for reference of name and location

Image 5. Picture of Vardhman mall where the business is situated

3.3   Interaction Video with Owner

Video 1. A conversation with Rakesh Saini about his business

Video link: https://youtu.be/XpFIG0kdtRg

3   Metadata and Descriptive Statistics

Data Link: Click here

The link contains the data of VC from 1st December 2023 to 31st March 2024. The data was recorded by the owner itself over the span of 4 months. The data given by the owner includes the sales register(Bill no., Date, total amount), purchase register (Bill no., Date, seller 'account, total amount), List of sales vouchers (Date, Bill no., item name, prize, units), List of purchase voucher (Date, Bill no, Particulars, item name, units) and inventory stock details.
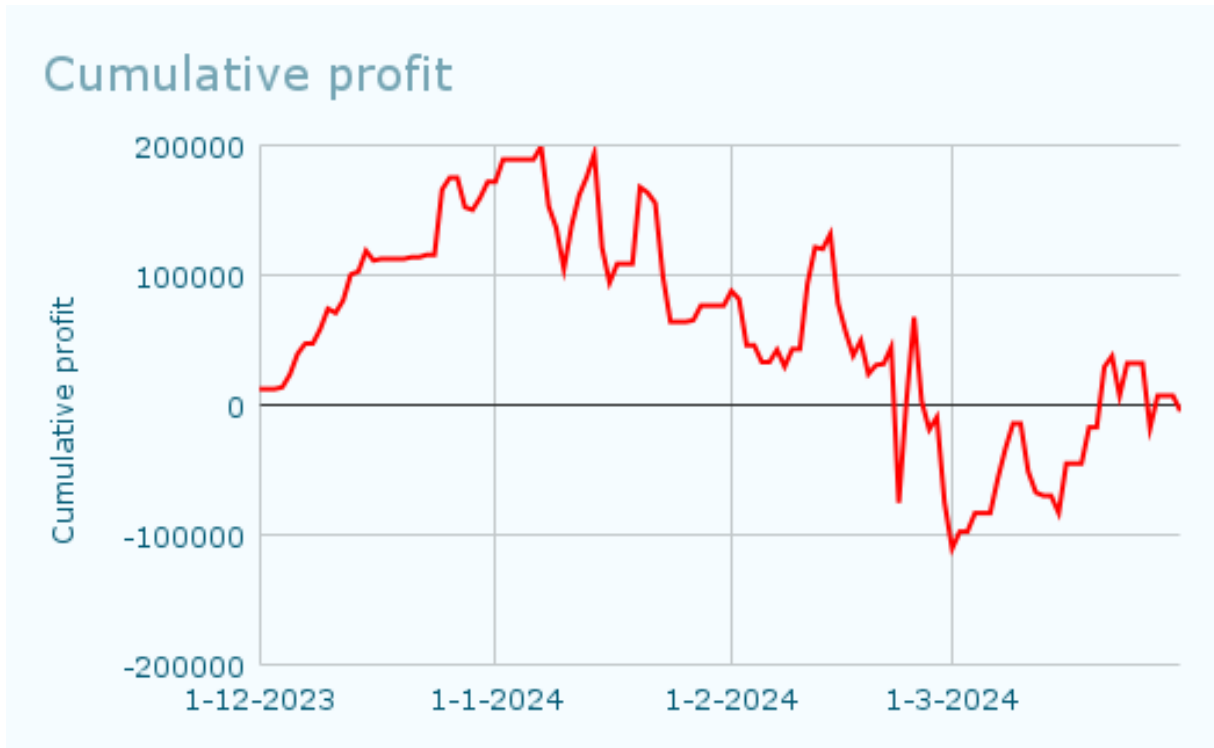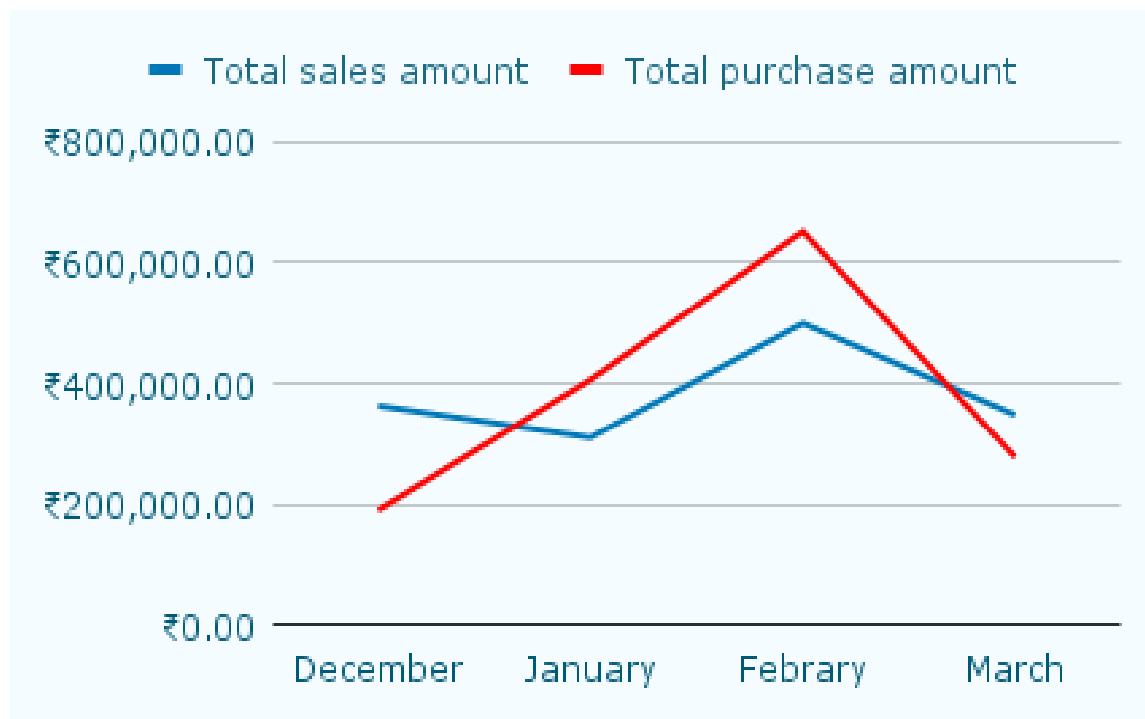
(3.1) Total Revenue Trend observed over four months
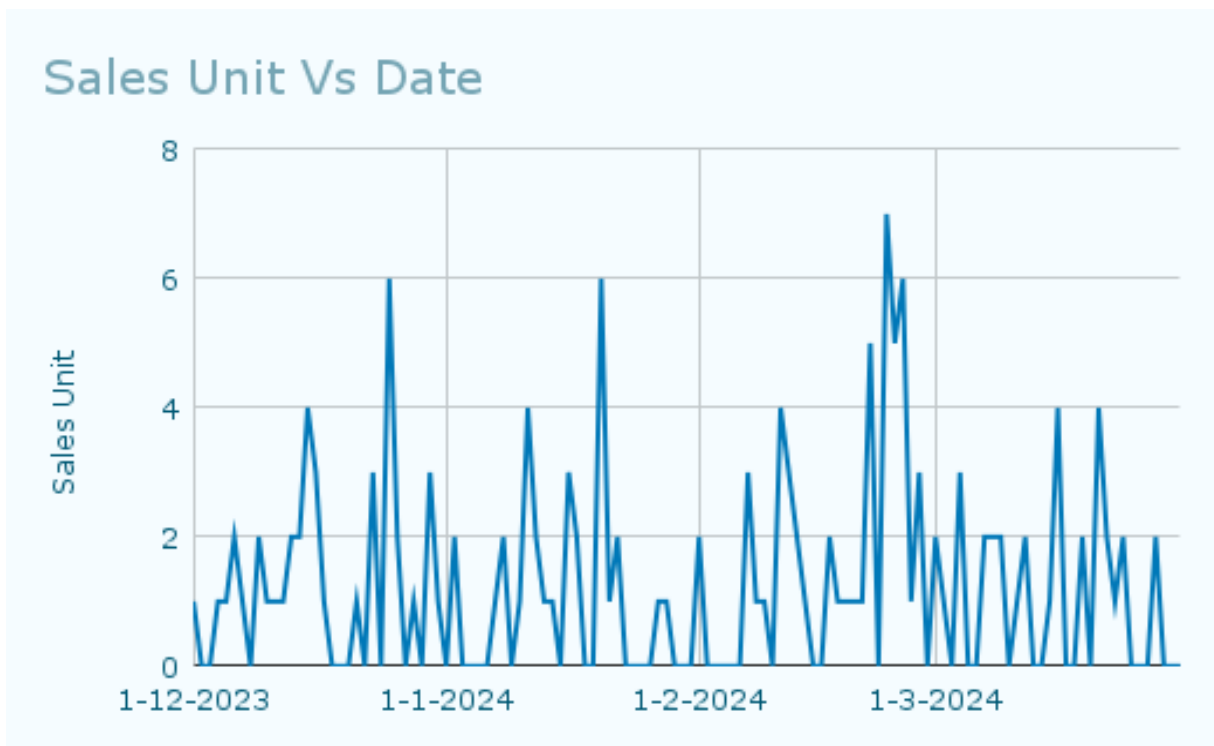
(3.2) Total Sales Trend observed over four month(date wise)
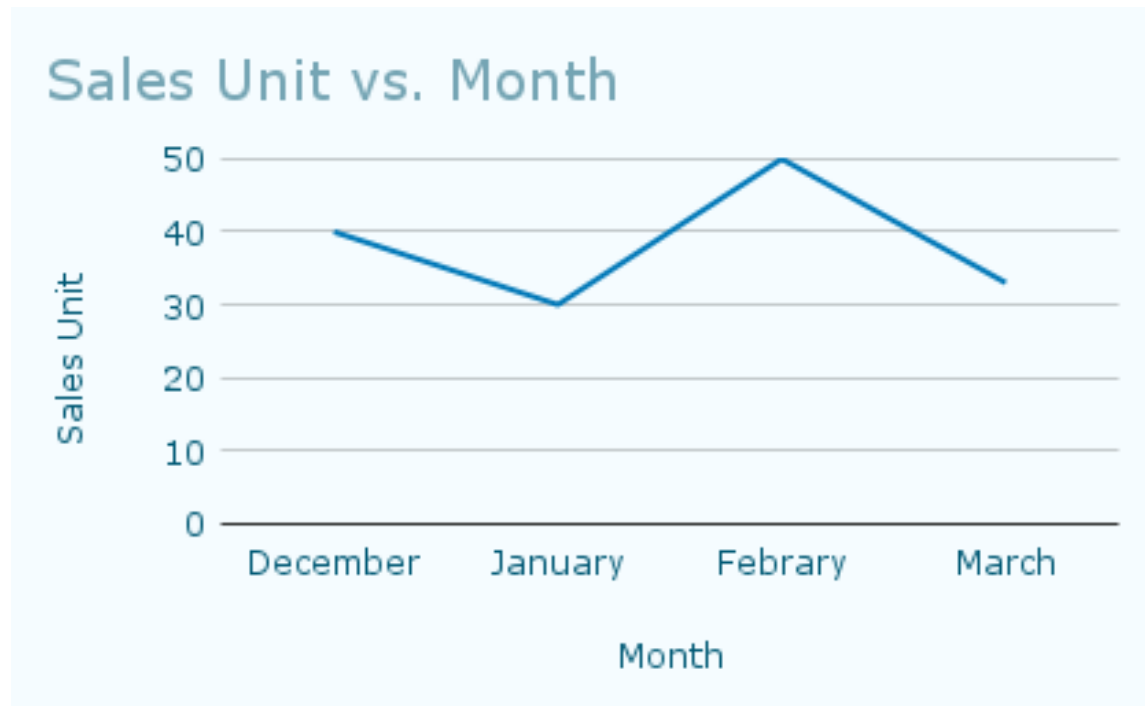
(3.3) Total Sales Trend observed over four months(monthwise)

(3.4) Comparison of Sales and Purchase Amount on monthly basis

9

No. of items sold. vs. Item Name
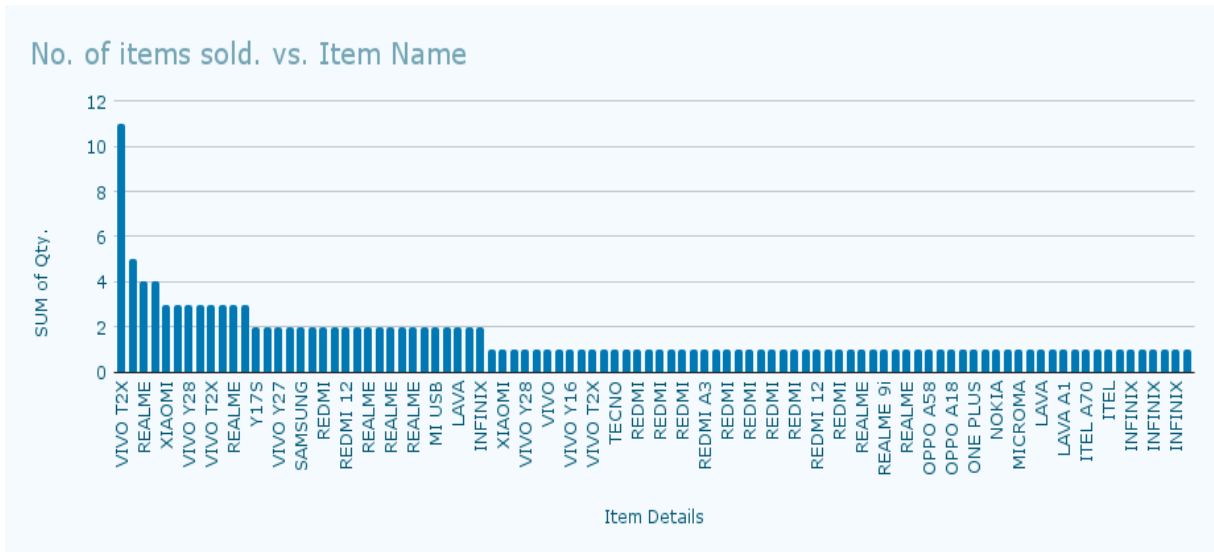
(3.5) Total sales unit of each product over four months

XIAOMI
VIVO
REALME
LAVA
INFINIX
ITEL
OPPO
NOKIA
SAMSUNG
MICROMAX
ONEPLUS
TECHNO

30.1%
22.2%
17.0%
9.2%
5.2%
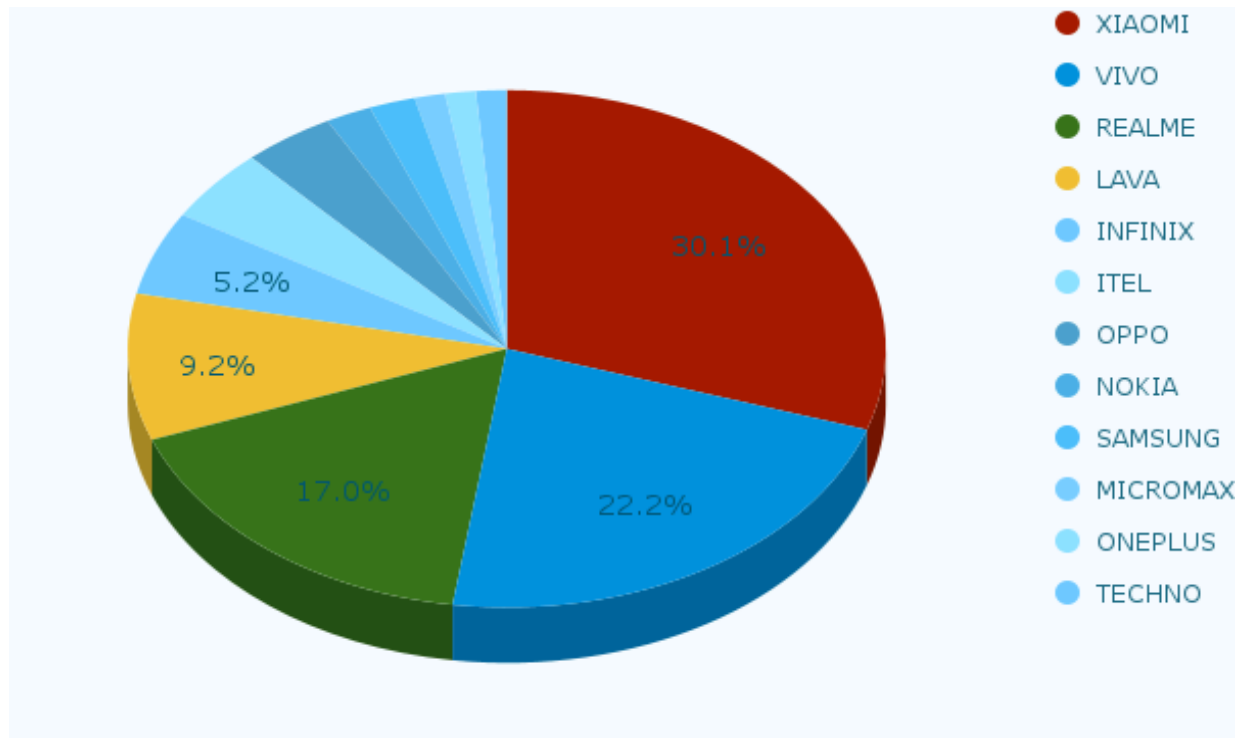
(3.6) Proportion of Sales Unit for each brand
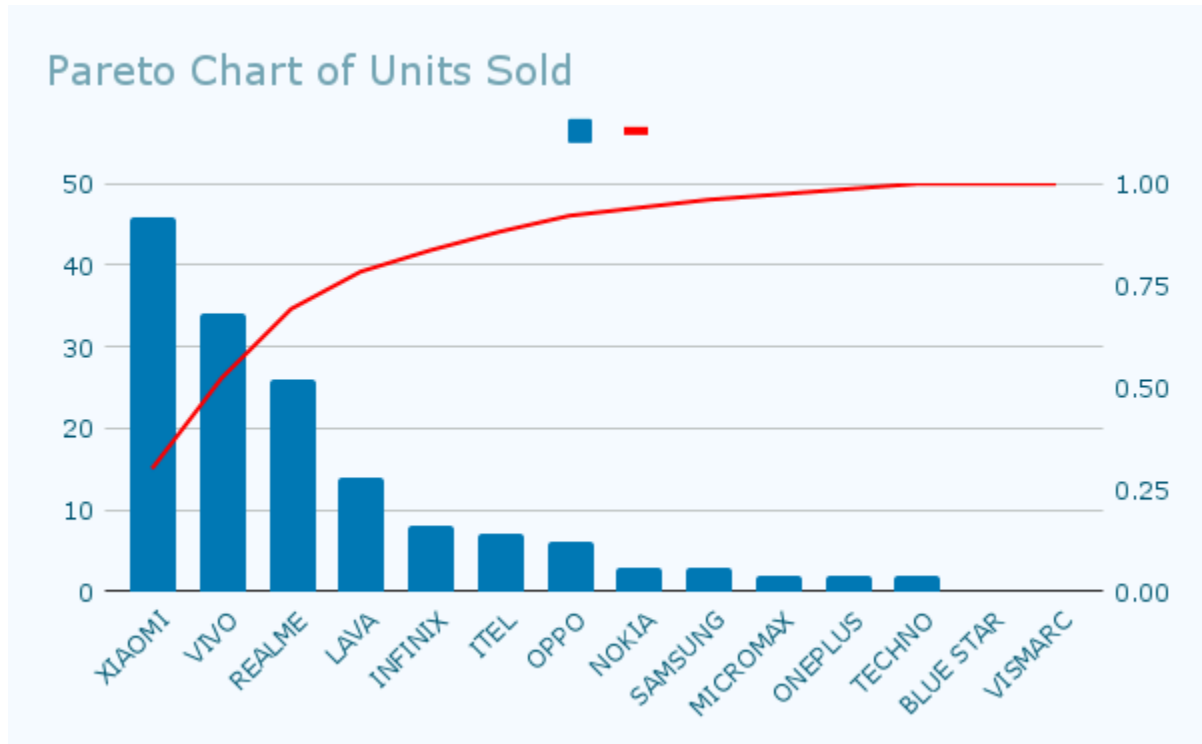
(3.7) Pareto chart of sales unit of each brand
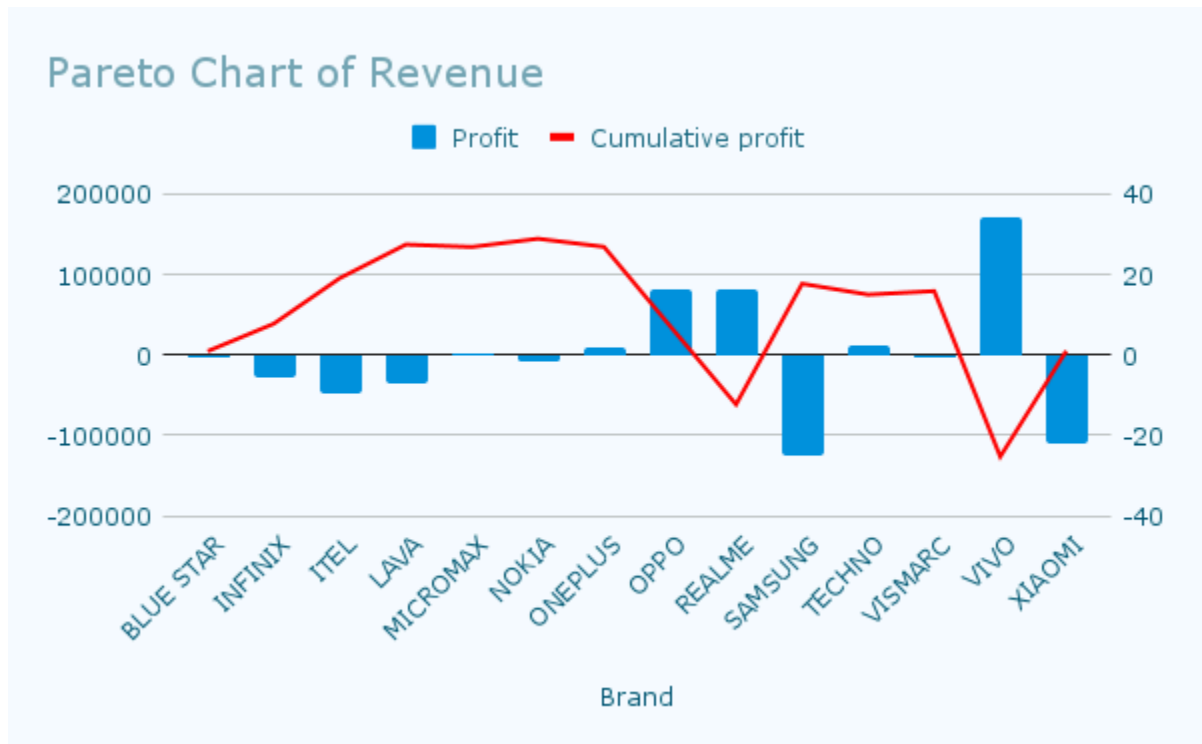
(3.8) Pareto chart of revenue of each brand

4   Detailed Explanation of Analysis Method

For this project, I conducted a structured analysis of VASHU COMMUNICATION's sales, inventory, and cash flow data using a data-driven approach. The analysis was performed in multiple stages to ensure accuracy and meaningful insights.

1. Data Collection and Cleaning

The primary data sources included:

- **Sales and Purchase Register**: Contained transaction-level sales and purchase data, including amount, bank account, taxes, and store location.
- **Inventory Records**: Provided stock movement data, showing product-wise daily sales trends.
- **Daily Sales and Purchase Logs**: Captured daily revenue, purchase expenses, and cumulative profit growth over time.

The data was first loaded into Google Sheets, where it was reviewed for inconsistencies such as missing values, duplicate entries, and formatting errors. Date columns were standardized, and numerical fields were formatted correctly to ensure consistency in calculations.

2. Statistical Analysis and Key Metrics Calculation

To gain insights into inventory performance and sales trends, several statistical techniques were applied:

- **Descriptive Statistics**: Calculated key metrics such as total revenue, average sales per day, cumulative profit, and inventory turnover rate.
- **Inventory Turnover Analysis**: Evaluated how frequently inventory was sold and replaced, highlighting slow-moving items that needed promotional strategies.
- **Reorder Point Analysis**: Determines the optimal stock level for key products to prevent overstocking and stockouts.

3. Data Visualization for Insights

To better interpret the data, various charts were used:

- **Column and Bar Charts**: Displayed the total sales amount for different SKUs, helping identify high-revenue and underperforming products.
- **Line Charts**: Showed daily and monthly sales fluctuations, revealing peak sales periods and seasonal trends.

- **Pie Charts**: Illustrated the sales distribution across different SKUs, highlighting which products contributed most to profitability.
- **Pareto Chart (80/20 Rule Analysis)**: Combined bar and line charts to show cumulative revenue contribution per SKU, helping identify the most profitable products.

5   Results and Findings

Following are the major results and key finding based on the analysis conducted using the graphs and charts:

1. Xiaomi (Redmi & MI), Vivo, and Realme collectively account for approximately 70% of total sales units.
2. Despite having the highest sales volume, Xiaomi is operating at a loss, indicating potential issues with pricing, cost management, or excessive discounting.Samsung also falls into the loss-making category.
3. Vivo stands out as the most profitable brand.
4. Revenue increased in December but declined in January and dropped further in February. March saw a slight recovery but still ended in a net loss.
5. In January, sales declined while purchases increased. February saw peaks in both sales and purchases, but purchases exceeded sales, affecting profit margins. In March, purchases dropped sharply, likely as a cost-cutting measure, while sales remained low.

In summary, the analysis highlights that while Xiaomi, Vivo, and Realme dominate sales, Xiaomi and Samsung face losses, whereas Vivo remains the most profitable. Fluctuating revenue and imbalanced purchases indicate a need for better inventory and cost management to improve profitability.