



OPTIMIZING INVENTORY MANAGEMENT AND SUPPLY CHAIN EFFICIENCY

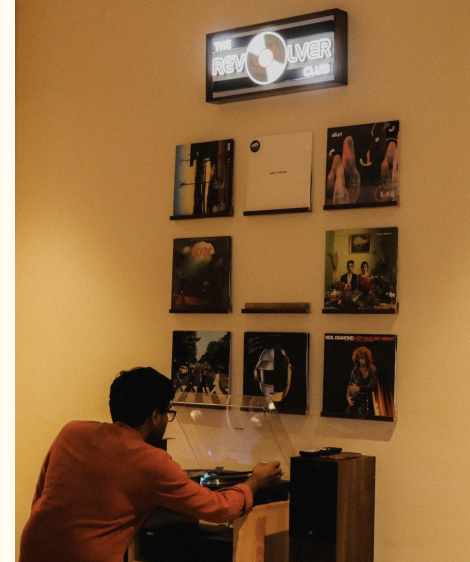
A PRESENTATION FOR THE BDM CAPSTONE
PROJECT

Submitted by

Name: Anirudh penumatcha
Roll Number: 21f1005022

Katha Coffee and BakeHouse

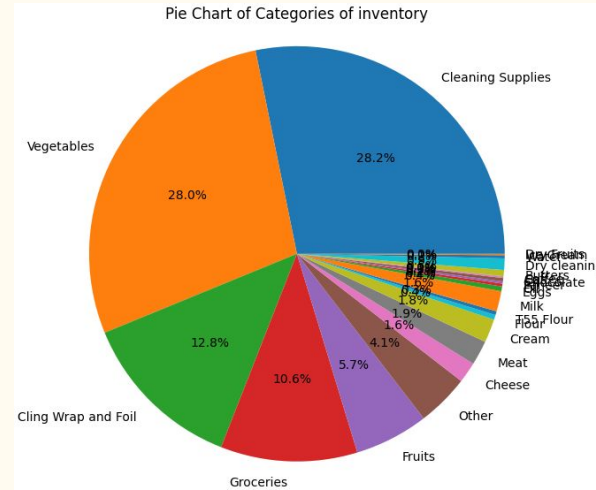
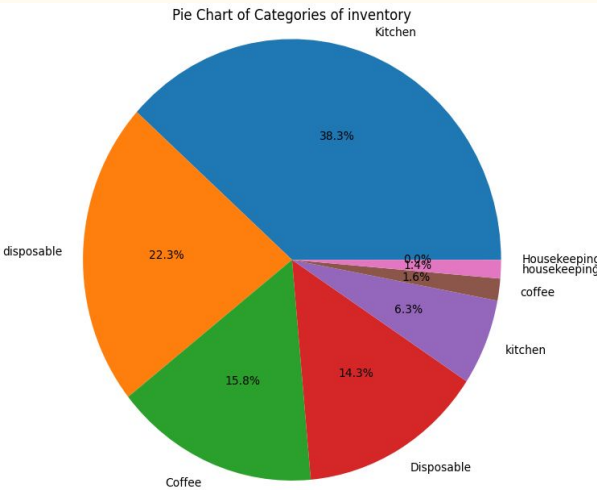
- Founded in September 2022 by Pravishtha Nadella and Aditya Jaiswal.
 - Speciality Coffee House with Artisanal menu.
 - Hub for budding music artists and Record enthusiasts.
-
- Katha is prone to stockouts or excess inventory.
 - Katha faces larger purchasing costs than industry standard.
 - They are not able to identify inefficiencies in the procurement process.
-
- Given Access to Purchase orders and Supplier information over a 6 month period.
-
- Inventory Management and Purchases Analysis
 - Grouped Bar Chart Analysis
 - Time Series Analysis
 - Supplier Performance and Comparison Analysis
 - Box Plot Analysis
 - Bar Chart analysis
 - Multi Line Chart



- Collected Unorganised book entries manually
- Collected Organized book entries through adobe scan and extracted through adobe acrobat
- Data Processing and Modelling does in Google sheets and Google Colab.
- September - November 2023 | Data entries: Date, Invoice number, Category, Item Description, Units, quantity.
- January - March 2024 | Data entries: Company, GST No, State, State Code, City, Address, Zip Code, PAN, CIN, Vendors, Customer Address, GST No, Phone, Email, Type, Invoice No., MRN/PO No., Invoice Date, Raw Material, Category, Sub Category, Unit, Quantity, Raw Material, ID, Description

MetaData

*Manual
Bookkeeping
/
Excel Sheets
/
PaidPooja (POS)
service*



- Total Purchase orders over 6 months = 4194

- Main Order Categories: Kitchen items , Cleaning Supplies, Vegetables

- Cost Increase over 6 months = 1116.9%

- Revenue Increase over 6 months = 450%

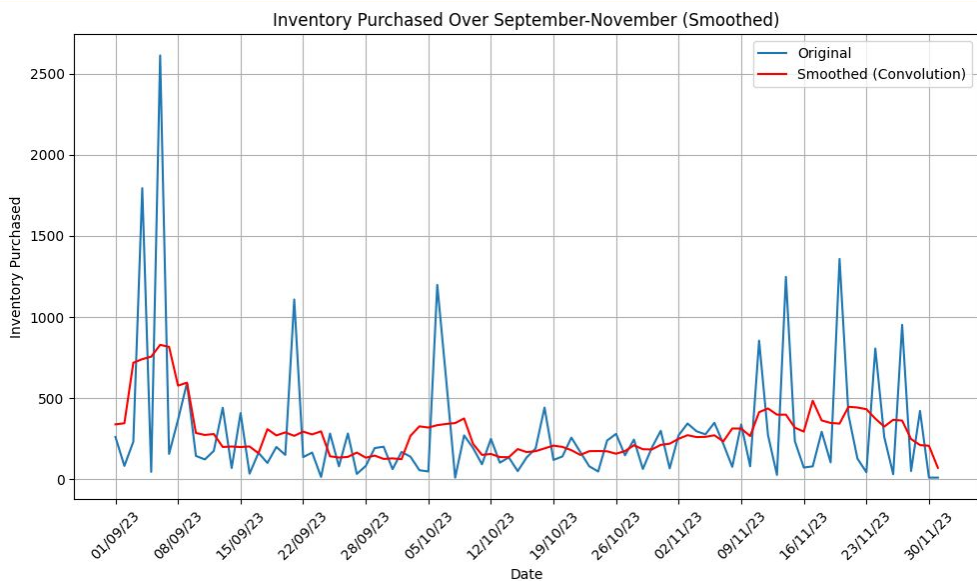
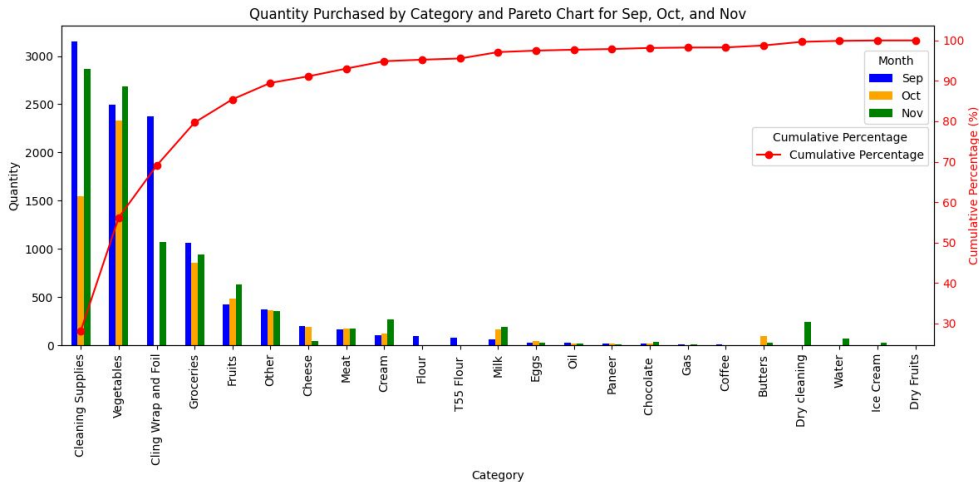
September - November 2023 Analysis

Plot 2A: Grouped Bar Chart for Inventory Distribution across categories.

- Reorders quantities vary each month.
- Overstocked Cleaning Supplies and Cling Wrap

Plot 2B: Time series line chart for Inventory Purchases

- Reorder points (peaks) distributed irregularly in September and October
- More even/ regular in month of November.



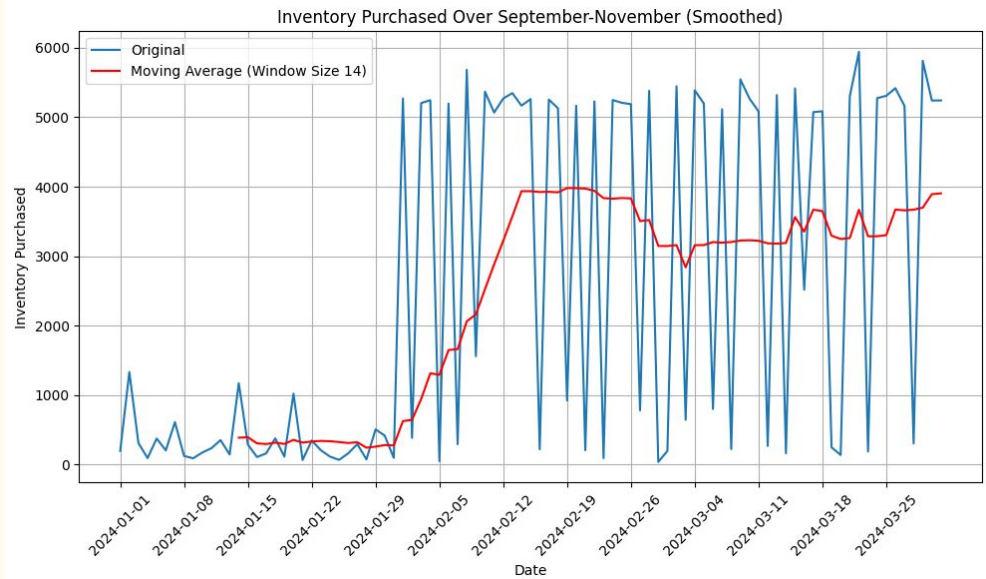
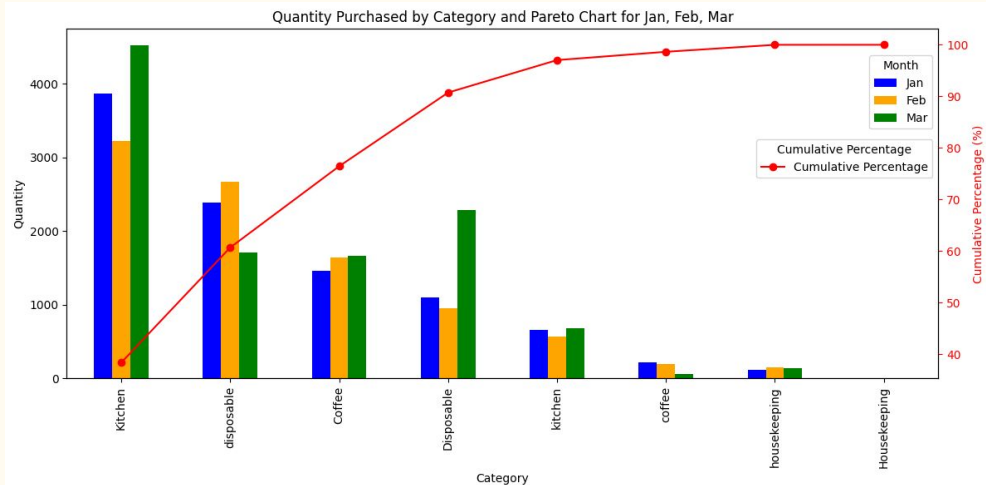
January - February 2024 Analysis

Plot 3A: Grouped Bar Chart for Inventory Distribution across categories.

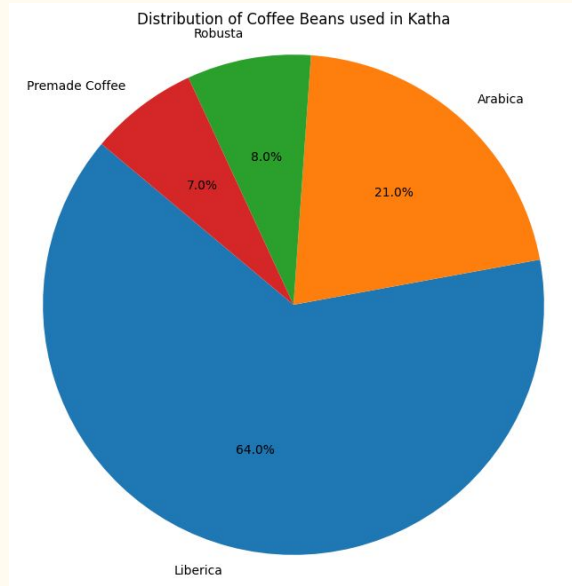
- Increased expenditure in February and March that is not proportionally shown
- Lower Purchase orders than expected in February

Plot 3B: Time series line chart for Inventory Purchases

- Reorder points more consistent throughout
- Stark increase in Katha's popularity in February

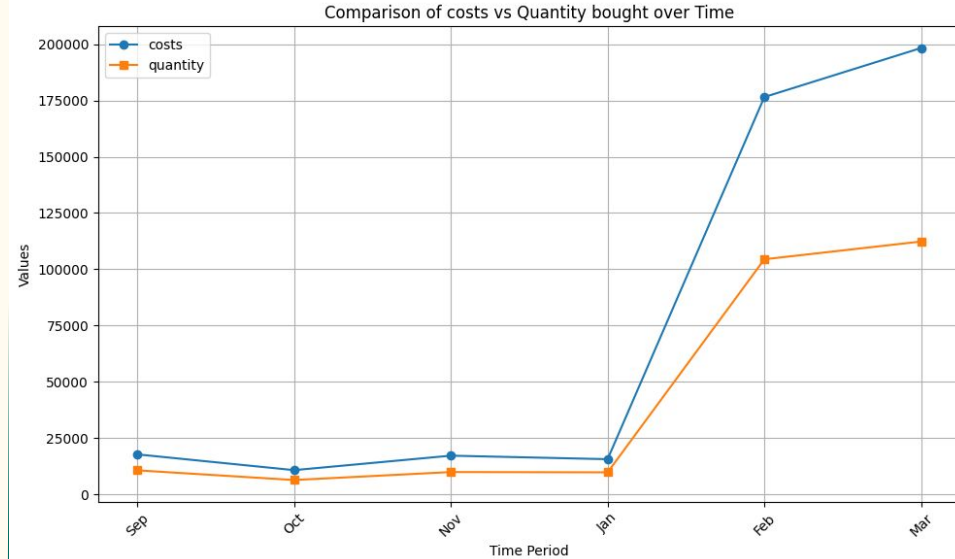


Distribution of Coffee beans Used

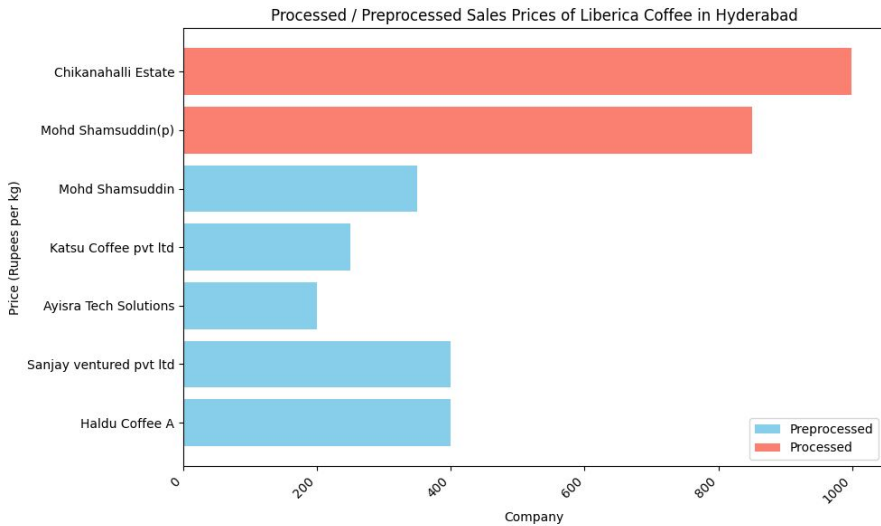


- Katha Makes most of their Speciality Coffee with Liberica beans
- Mainly produced in the region of Coorg

Inventory Expenditure Vs Purchase Order quantities



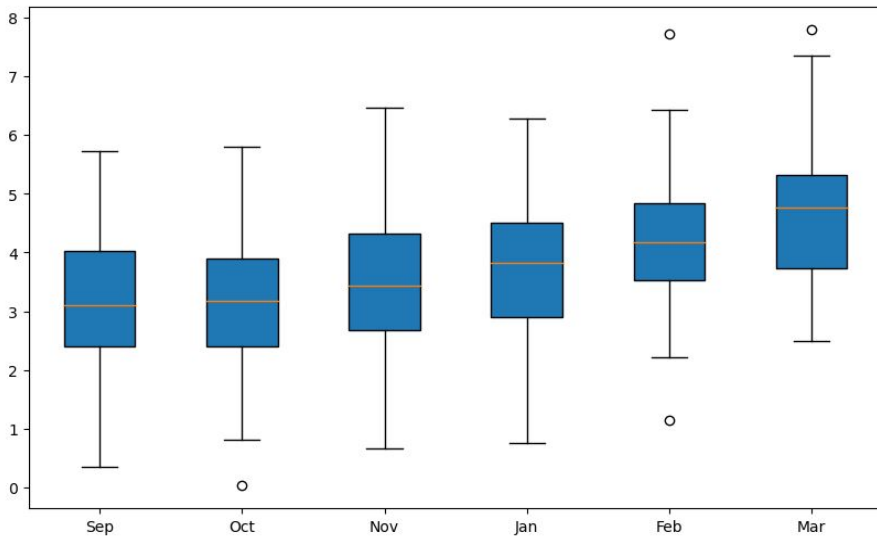
- Increased expenditures in February and March
- Increased profits in these months, however not proportionally.



Supplier Performance Analysis

Plot 4A: Bar Chart for Liberica Supplier Price Comparison across Hyderabad speciality Coffee shops

- Katha's supplier: Mohd Shamsuddin
- Best - value for money supplier of Liberica beans in Hyderabad.
- Major non exclusive supplier of Liberica beans



Plot 4B: Box Plot for supplier lead times analysis

- Lead times consistently increasing
- Higher rate of growth in lead times from January

Analysis Summary

- Katha has stock shortages and excesses as evident of the erratic stock levels and irregular reorder points. This can be attributed to the disjointed data collection systems in place. Due to these systems, any diagnostics or fixes end up being futile.
- Katha created a huge increase in operations due to their marketing campaigns, which was not perfectly reflected in their revenue to the hike in supply prices. This is partly due to their increased expenditure for the same, and due to the rise in Supplier prices.
- Katha has little to no negotiating power with their main Liberica beans supplier. This is shown in the constantly increasing lead times and supplier unreliability. Their supplier is one of the only non-exclusive suppliers of the processed beans in the city, gaining a hold over this niche market.

Recommended Solutions

Data Collection

- Katha needs to upgrade its data collection method for better reliability and analysis. I suggest transitioning to a software service like PaidPooja for automated inventory and procurement data collection at POS.
- Alternatively, outsourcing a simplified data collection process is viable.
- Regular audits can ensure accuracy and reconcile stock levels with recorded data.

Reorder Points

- Implement an automated system to detect low stock levels and notify relevant staff

Alternate Suppliers

- Katha can collaborate with other specialty coffee shops using Liberica beans, offering a commission for their suppliers' beans at a favorable rate compared to current costs.
- Alternatively, investing in roasting equipment and personnel, despite initial expense, aligns with expansion plans, reducing long-term costs and potentially creating additional revenue streams by selling excess beans.

End

—