Optimizing Inventory, Data Management and Branding Strategy at Music & Music through Data Driven Solutions

Final report for the BDM capstone Project

Submitted by

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1 Executive Summary

Music & Music, an existing Indore-based retail business founded in 1990 by Mr. Rajendra Prajapati, is weighed down by severe issues such as overstocking, poor-performing services, and manual record-keeping systems that are outdated, all of which affect profitability. The problems are compounded by having minimal storage capacity, local plastic ban regulations, and unclear branding policy, which affect efficiency in business growth and customer acquisition.

This project overcomes the above challenges by examining three months (April-June 2025) of inward and outward data, gathered through physical purchase bills and handwritten sales records. Google Sheets were used to conduct initial analysis and Python (Pandas, Matplotlib, Seaborn) for more in-depth descriptive statistics, following a pragmatic approach to bypassing the shop owner's digital stigma.

Major conclusions indicate that cold beverages and ice creams rule sales and profitability (16-18% margins), while rampant overstock creates huge gaps in profitability, reflected through meager profit realization ratios (69% for ice cream, 64% for cold drinks). Manual recording restricts detailed item-level data, while activities such as MB, MR, and D2H utilize resources for paltry returns. Additionally, non-seasonal products exhibit irregular sales, which reflect possible understocking, and dependency on a single key supplier (GJ's Scoopy Spoon) is risky.

The project suggests phased digitalization, beginning with a hybrid data collection system and Google Sheet-based inventory warning to enhance real-time decision-making. Long-term suggestions are data-driven decision making, data-driven forecasting of demand, strategic service optimization, diversified branding, and supplier management. The analysis itself is already yielding worthwhile visual insights for improved planning to the shop owner, indicating an observed business comprehension improvement and clear direction toward improved profitability and operational toughness.

2 Detailed explanation of analysis process

1.1 Overview of Data and Collection Process

The data for this analysis was gathered over a period of three months (April to June 2025) from a local retail shop. The dataset is composed of two major components:

- Incoming Data: This captures the inventory restocked by the shopkeeper, extracted from physical purchase bills.
- Outgoing Data: This represents the daily sales recorded by the shopkeeper in a handwritten register.

Other important information such as number of units per box, storage costs, item expiry concerns was collected through informal conversations with the shop owner.

Incoming data:

- **Item Name:** The name of the product restocked.
- **Category:** Broad classification of the item.
- **Supplier:** Name of the supplier who delivered the item.
- **Per Unit Price (MRP):** Maximum Retail Price of the item as printed on the packaging.
- **Wholesale Rate:** The cost per unit at which the shop owner purchased the item from the supplier.
- **Profit per Unit Item:** This indicates potential profit margin per item.

  Profit per Unit = MRP - Wholesale Rate
- **Daily Restocking Columns (1–30/31):** Each column represents the quantity of that item received on a specific date of the month

Outgoing data:

- **Day:** Represents the calendar day of the month.
- **Category Columns:** For each product category, 4 columns are maintained:
  → Category Name: Name of the category
  → Total Sale: Total money earned from sales of this category on that day.
  → Profit: Estimated or calculated profit for that category on that day.
  → Quantity Sold: Number of units sold from that category on that day.

Incoming data(Original format): Link
Outgoing data(Original format): Link

1.2 Data Transformation and processing

a. Transformation of incoming data

The raw incoming dataset was initially organized in a horizontal format, where each row represented a product and each column represented sales or stock information for a particular day. While this structure allowed quick monthly overviews, it became sparse and hard to analyze due to missing entries for days when stock wasn't received. These missing values were imputed with zero to ensure numerical consistency.

To enable meaningful aggregation and daily trend analysis, the data was reshaped into a vertical (long) format. In this new structure, each row represented a unique incoming stock transaction for a product on a particular day. Additional columns were created:

- *Total incoming quantity (aggregated monthly per item)*
- *Total cost (calculated as quantity × wholesale rate per unit)*

This vertical format made it easier to:

- Group data by item, supplier, category, or month
- Perform time-series analysis (daily/monthly incoming trends)
- Merge with outgoing data for profit and inventory comparison

Item	Category	Supplier	Per unit price	Per unit wholesal	Profit per unit item	Day	Quantity	Month
Mini Matka	Ice cream &	Shree Jain Kulfi	₹10	₹8.50	₹1.50	1	300	April
Maggi 2 min	Instant and	Kashi Jeet	₹15	₹12.29	₹2.71	1	96	April

b. Transformation of outgoing data

The outgoing sales data was also originally stored in a wide format, listing different categories across columns (e.g., Cold Drinks, Ice Cream, etc.). Each day had just one row, but category-wise metrics (like total sales, profit, and quantity sold) were split across multiple columns. This made it difficult to filter or analyze individual categories easily.
To resolve this, the dataset was melted into a vertical format as well. Each row now captured the sales performance of a single category on a given day

This transformation allowed:

- Daily tracking of sales quantity and profitability by category
- Easy joining with incoming data using date and category
- Enhanced granularity for calculating margins, trends, and mismatches

Day	Total Sale	Profit	Quantity Sold	Category	Month
29	0	300	0	MR	June
30	442	2780	83	Others	June

Processed data- Link

1.3 Analysis Process with Justification

1. Descriptive Statistics analysis

- Method: This involved calculating comprehensive summary statistics for various numerical columns across the entire dataset, grouped by 'Category'.

- Metrics & Formulas: Standard descriptive statistics such as count, mean, std (standard deviation), min, 25% (1st quartile), 50% (median), 75% (3rd quartile), and max values were computed for metrics like 'Per unit price (MRP)', 'Per unit wholesale rate', 'Profit per unit item', 'Day', 'Quantity', and 'Total Cost'. Various aggregated metrics were used such as:
  - *total_sales = Sum of 'Total sale' for each category.*
  - *total_profit = Sum of 'Profit' for each category.*
  - *avg_daily_sales = Mean of 'Total sale' for each category.*
  - *avg_profit_margin(%) = (total_profit / total_sales) * 100.*

- Use in deriving insights: Provided a foundational understanding of data distribution, central tendencies, and variability within the dataset. For instance, 'Ice cream & frozen' items showed a high standard deviation (60.60) in quantity, indicating a wide range in restocking quantities, while 'Instant and pantry items' had a higher average quantity (54.29) but a smaller standard deviation (31.23).

2. Profit and revenue analysis

- Method: Calculated total cost per item for incoming inventory and then derived potential revenue and potential profit based on MRP and profit per unit. This was extended to include realization ratios to assess how effectively potential revenue and profit were converted into actual sales and profit.

- Formulas:
  - *Total Cost = Quantity * Per unit wholesale rate.*

- *Potential revenue = Quantity * Per unit price (MRP)* (based on incoming data and MRP).
- *Potential total profit = Quantity * Profit per unit item* (based on incoming data).
- *Revenue Realization Ratio: actual_sales / potential_revenue.* This ratio indicates the percentage of potential revenue from stocked items that was actually generated through sales. A ratio greater than 1 implies selling old stock in addition to new, suggesting high demand.
- *Profit Realization Ratio: actual_profit / potential_total_profit.* This ratio measures the percentage of potential profit from stocked items that was actually realized. A lower ratio could indicate issues like unsold stock or spoilage.

- Use in deriving insights: The realization ratios offered nsights into inventory efficiency and the effectiveness of sales. For example, the analysis showed that profit realization for both cold drinks (64%) and ice cream (69%) was moderate, indicating about 30-35% of potential profit was not realized.

3. ABC Analysis

- Method: Categorized items into A, B, and C classes based on their cumulative contribution to Total Sales Revenue and Total Profit.

- Formulas & Classification Criteria:
  - *Cumulative % = (Cumulative Value / Total Value of all categories) * 100* (where Value is Revenue or Profit).
  - Class A: Up to 70% of total cumulative value.
  - Class B: >70% up to 90% of total cumulative value.
  - Class C: >90% up to 100% of total cumulative value.

- Use in deriving insights: Prioritize inventory management and resource allocation by identifying critical (A), moderately important (B), and least critical (C) categories for both revenue and profit. For instance, Ice cream belonged to Class A in terms of both revenue and profit (28% and 29% respectively) whereas Cold drink and Pan belonged to Class B and had (14-15%) contribution to revenue and profit. This analysis helped reveal the negligible contribution of services such as Mobile recharge and recording to both profit and revenue as they belonged to class C.

4. HML Analysis

- Method: Classified inventory items into High (H), Medium (M), and Low (L) value categories based on their mean unit price (MRP). The process involved:
  - Aggregating the mean Per unit price (MRP) and sum Quantity for each Item, along with its Category.
  - Sorting items by unit price in descending order.
  - Calculating a Cumulative % for classification based on the item's position in the sorted list:

    *Cumulative % = ((Item Index + 1) / Total Number of Items) * 100*

- Classification Criteria:
  - High (H) items: Items with Cumulative % up to 15%. These are the highest-priced items.
  - Medium (M) items: Items with Cumulative % between >15% and up to 50%.
  - Low (L) items: Items with Cumulative % above 50%. These are the lowest-priced items.

- Use in deriving insights: This analysis helped identify both premium-priced and affordable items. For instance, items like EY Choco swirl and CP Vanilla 700ml have their pricing above ₹180, a slight increase in sales of these items can lead to a huge increase in profit. In contrast, the low-priced items such as Matka Kulfi (₹10) need to be optimally restocked to minimize wastage and maintain a steady cash flow.

5. Trend Analysis

- Method: Visualized and analyzed changes in key metrics over specific periods to identify seasonality and performance shifts.

- Analysis Types & How it Helped:
  - Incoming vs. Outgoing Stock (3 months): Compared incoming inventory against outgoing sales quantities for categories like Ice Cream and Cold Drink to assess inventory efficiency.
  - Monthly Revenue and Profit Trend by Category: Tracked sales revenue and profit aggregated monthly per category to identify seasonal peaks, growth, or decline, informing stocking strategies.
  - Restocking Trends: Analyzed daily and monthly restocking patterns for top items, suppliers, and categories to optimize reorder frequency and quantity.
  - Monthly Total Cost Trend: Analyzed monthly total expenses to monitor cost of storage.

6. Other Key Analyses:

- Fast vs. Slow Movers Bubble Chart: Offered a quick visual classification of items based on their movement and volume, guiding decisions on inventory rotation and stock levels.
- Discounts Offered by Supplier Bar Chart: Enabled evaluation of supplier pricing strategies and negotiation potential by highlighting which suppliers offered better discount opportunities.
- Top 5 Items (Monthly): Revealed consistent high performers and shift of popularity of items with time, helping in strategizing for seasonal demands.
- Pivot Tables: Facilitated initial data exploration and high-level trend identification, providing flexible summaries before more detailed analysis.
- Ordering Costs per Supplier: Contributed to an understanding of supplier profitability and efficiency, informing strategic decisions on supplier relationships.

Justification of Tools:

- Google Sheets: Used for preliminary analysis and data entry (pivot tables, basic charts, VLOOKUP, SUMPRODUCT).
- Python (Pandas, Matplotlib, Seaborn, Plotly): Pandas for data manipulation; Matplotlib & Seaborn for static visualizations; Plotly for interactive plots.

3 Results and Findings

3.1 Inventory Composition by Category and Price Band

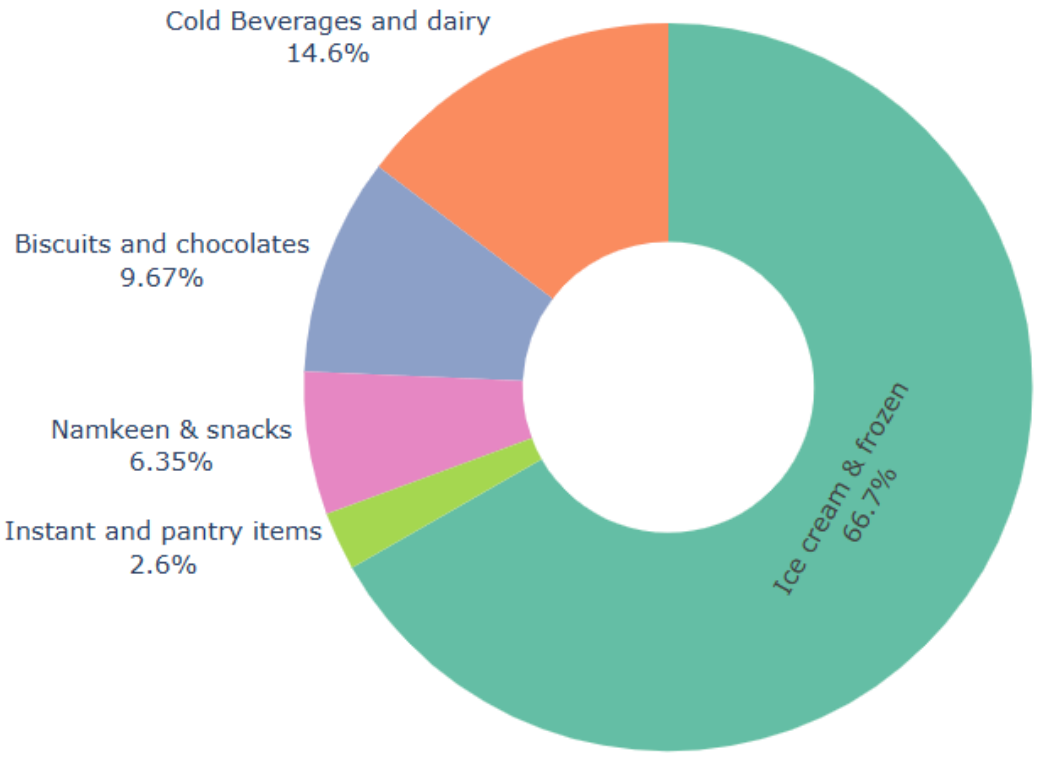

Fig 1: Category-wise distribution of SKUs

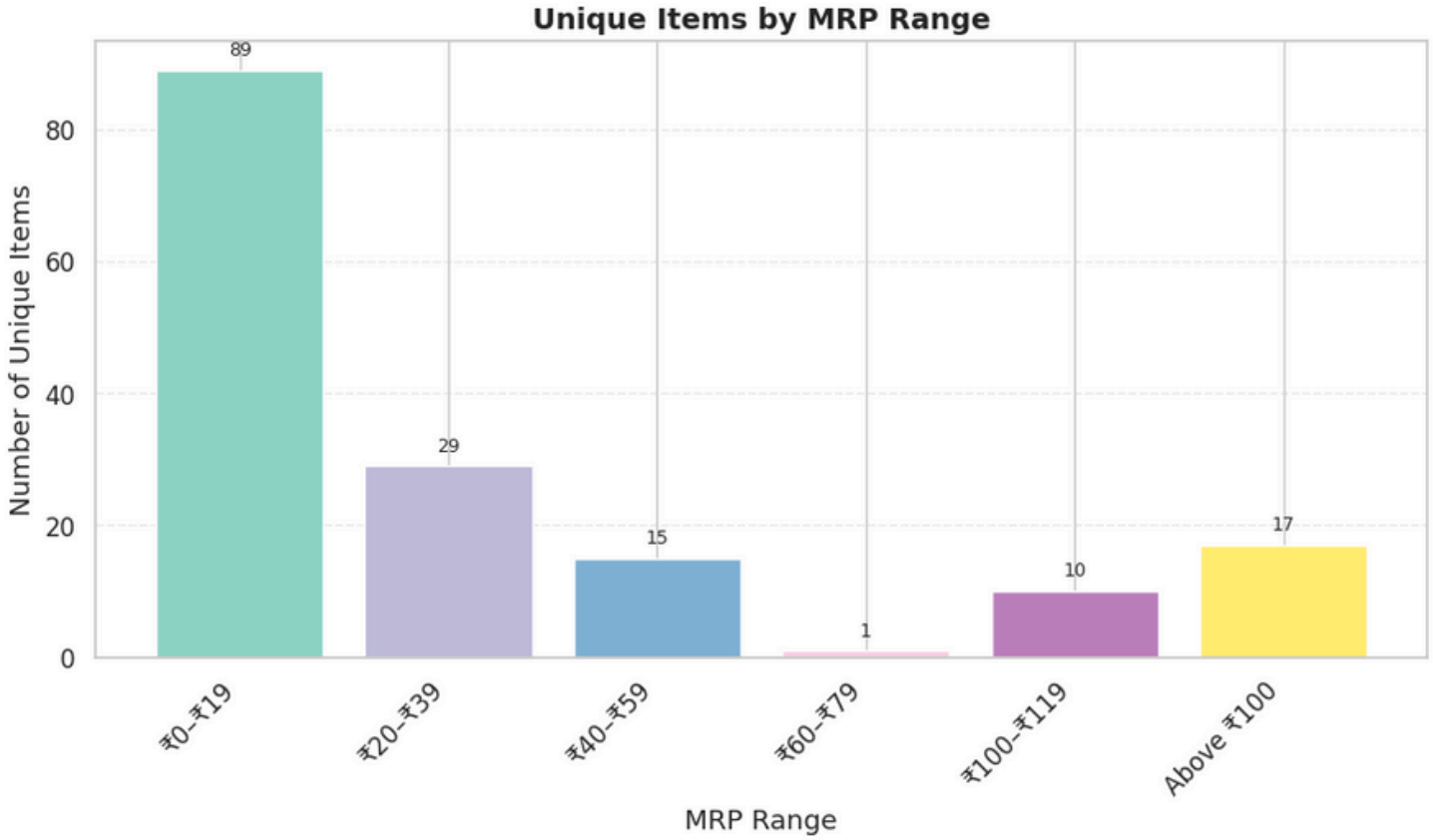

Fig 2: Breakdown of Unique SKUs Across MRP Segments

The donut chart (Fig 1) represents the percentage distribution of items across major product categories in the inventory, based on total quantity restocked obtained from 3 months of incoming data from April to June. Ice cream & frozen category dominates the inventory with 66.7%, indicating it is the most frequently restocked category .Other categories like Cold Beverages and Dairy (14.6%), Biscuits and Chocolates (9.67%), and Namkeen & Snacks (6.35%) represent a smaller but significant share. Instant and pantry items account for only 2.6%, suggesting either low demand or lower restocking needs.

The bar chart (Fig 2) shows segmentation of inventory items based on different MRP brackets. The majority of products (89 items) are priced in the ₹0–₹19 range. There's a sharp drop beyond ₹20, with only 29 items in ₹20–₹39, and very few beyond ₹60. However, there are a few high priced items (17) in the ₹100 and above bracket.

Music & Music has a neighborhood retail approach with focus on fast-moving and affordable SKUs, with a few premium ones. Majority of items priced below ₹20 indicates a low-ticket, high volume business model which needs high turover to maintain profitability. The shop heavily relies on frozen items during summers as well as during winters (confirmed by the shop owner), making freezer management crucial.

3.2 Procurement vs Consumption trend: Ice-cream and Cold drinks

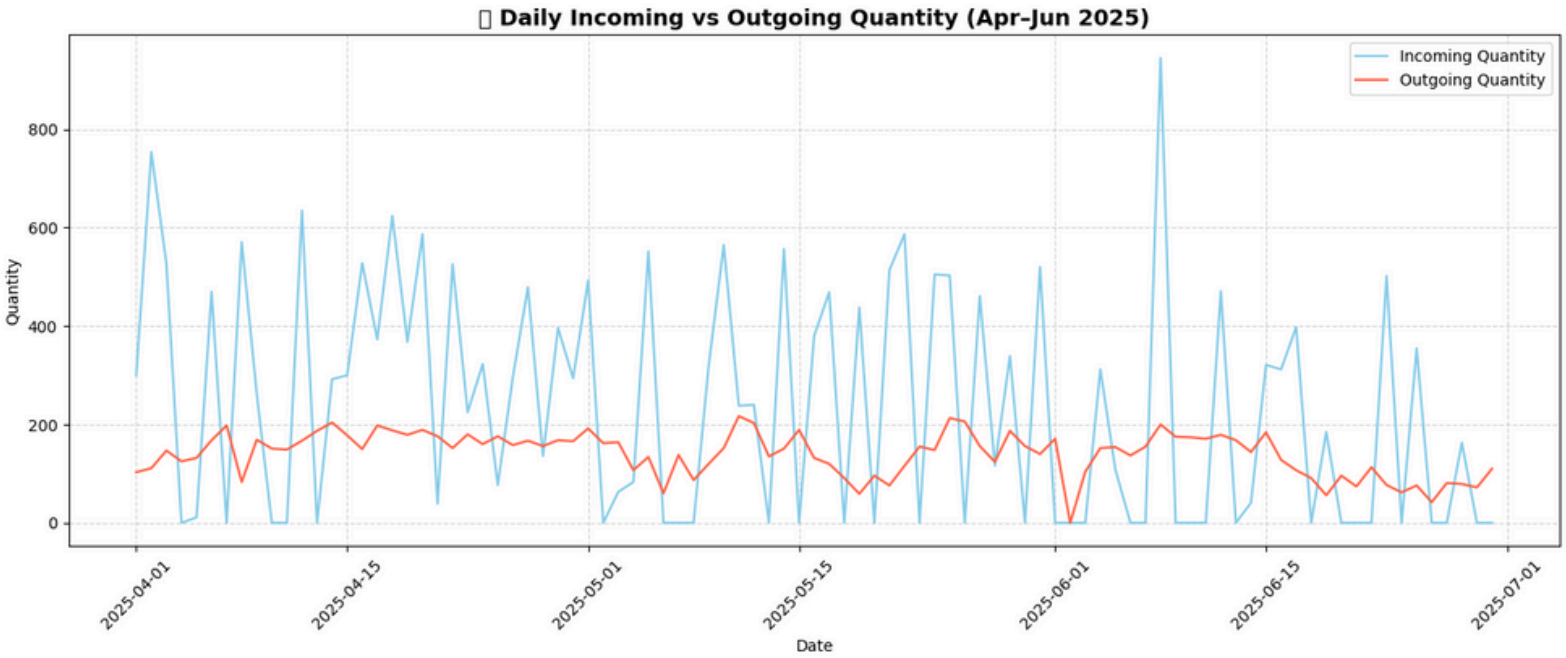

Fig 3: Daily Stock movement v/s sales trend

The line chart(Fig 3) visualizes the quantity of stock received and sold on each day over a three-month period. The incoming line shows significant fluctuations, with multiple sharp spikes exceeding 500 to 800 units, particularly in April and May. In contrast, the outgoing quantities are relatively stable, mostly ranging between 100 to 220 units per day throughout the period.

The analysis reveals a clear mismatch between supply and demand. This is evident from the many days where large quantities are received but sales remain relatively flat. The high frequency of incoming stock and irregular spikes reflects lack of forecasting and overestimation of demand. On further trend analysis of individual categories, it was found that the mismatch is mainly driven by the 'Ice Cream and Frozen category'. While outgoing sales of ice-cream remains steady (typically 100-200 units per day), the incoming quantity exceeds beyond 600 units. The Ice Cream category alone accounted for more than 70% of all restocking spikes above 500 units during the period, despite its outgoing levels rarely crossing 150 units/day. Other categories such as 'Cold beverages and dairy' demonstrated better alignment between stocking and sales.

This analysis is crucial for enhancing cost control and strategic decision-making. By leveraging this information, Music & Music can reduce holding costs for ice-creams and avoid inventory pile-ups.

3.3 Total revenue and profits by category

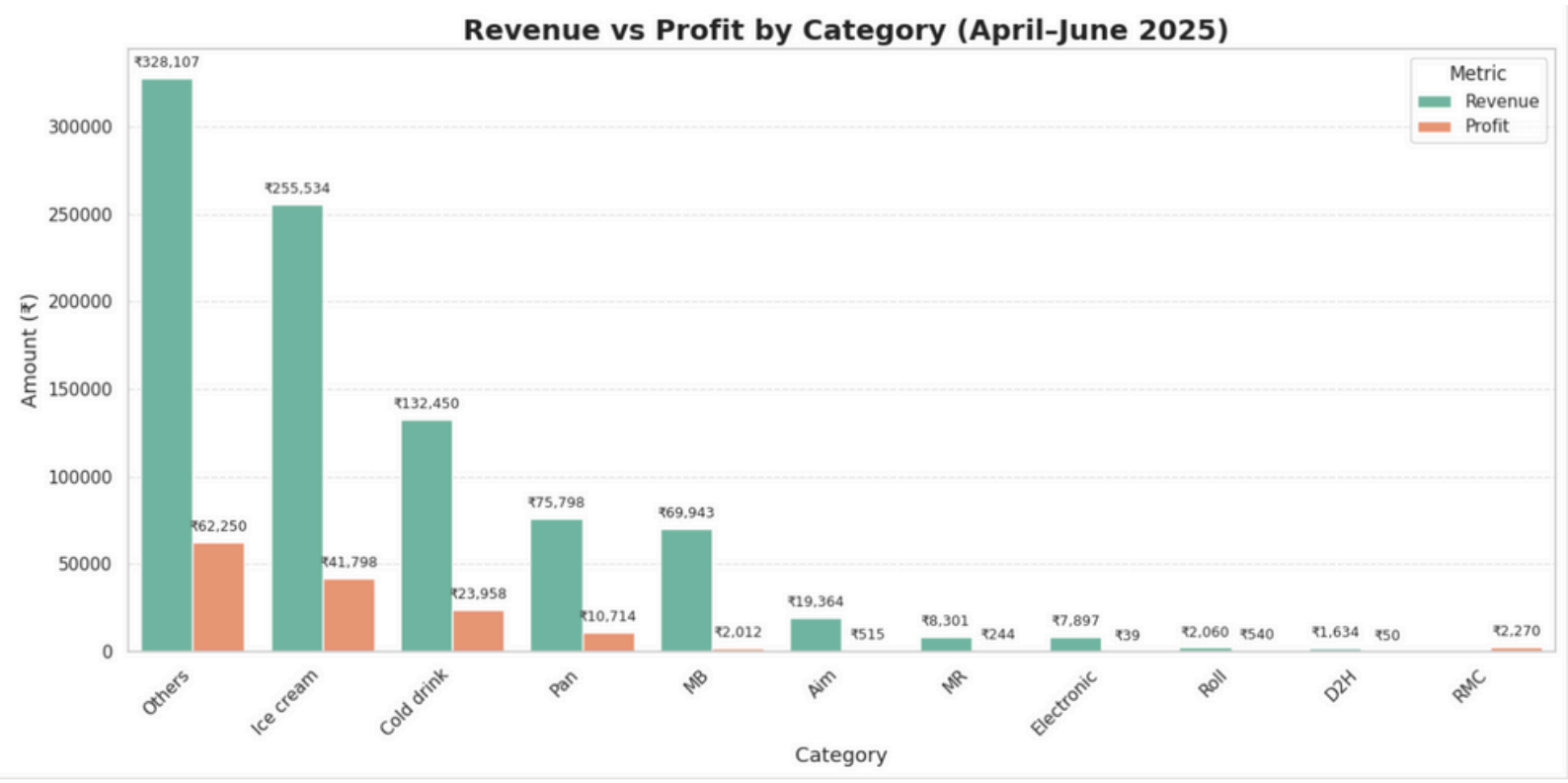

Fig 4: Revenue vs Profit Across Product and Service Categories

The bar chart (Fig 4) compares revenues and profits across both product and service categories. The 'Others' category(comprising of biscuits, namkeen and chocolates) leads with the highest revenue of ₹3,28,107 and profit of ₹62,250, followed by Ice Cream at ₹2,55,534 in revenue and ₹41,798 in profit. Cold Drinks come third, contributing ₹1,32,450 in revenue and ₹23,958 in profit.

In contrast, service categories- MB(Mobile Balance), Aim(Airtel money), RMC(Microchip recording) and others show much lower financial impact. For instance, D2H records only ₹1,634 in revenue and ₹50 in profit, while RMC and Roll earn under ₹2,000 with negligible profits. An exception is AIM, which shows relatively high revenue (₹15,000), but almost no profit, indicating very low margins. This creates a clear distinction between high-performing product categories and low-performing service segments.

This chart enables a critical evaluation of the services offered by the shop and highlights opportunities for improving profit margins across product categories. Such analysis is crucial, as services like mobile recharge and chip recording, despite generating minimal revenue and profit, consume a considerable amount of shop's time, especially during peak hours (6-9pm)

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3.4 Monthly Revenue Trends by Category

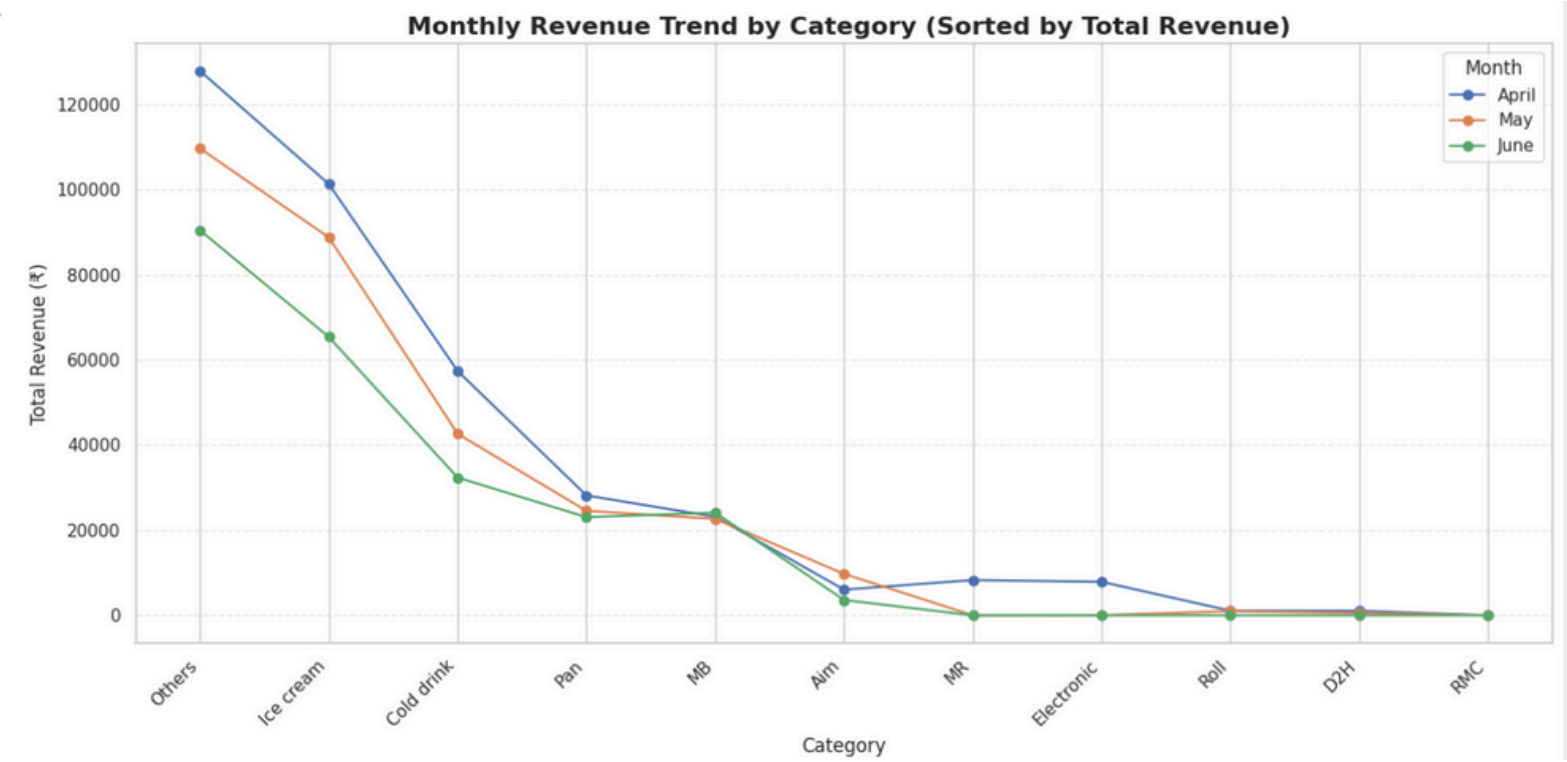

Fig 5: Monthly Revenue Trend by Category

The line chart displays how revenues have fluctuated across various categories over 3-months. The top three product categories show a notable decline over the three months. Ice Cream fell from ₹96,178 to ₹65,368 (32% decline), while Cold Drink revenue dropped from ₹50,024 to ₹32,741 (34.5% decline). In contrast, Pan showed remarkable stability, maintaining revenue between ₹16,197 and ₹17,482 across all three months, this shows that despite being a low-revenue item, it has high sales and is a consistent performer. This is likely due to habitual consumption.

Despite comprising non-summer-specific items like packaged food, biscuits, and stationary, the 'Others' category also experienced a sharp decline in revenue (30% decline) from April to June. This trend needs to be further inspected since 'Others' category contributes to highest revenue of the shop. Meanwhile, service-based categories such as Mobile Recharge (MR), DTH and Chip Recording remain consistently low in revenue. For example, MR generated between ₹2,620 and ₹3,359 per month, and Chip Recording contributed under ₹700 monthly. These services, although financially insignificant, consume considerable time and manual effort.

This trend analysis is especially useful in distinguishing between season-driven and consistently performing categories. Categories like Pan and Mobile Recharge (₹16,197 to ₹17,482 and ₹4,271 to ₹4,308, respectively) show stable revenue trends, suggesting steady, year-round demand.

3.5 Inventory Segmentation by HML Classification

HML_Class	Item_display	Max Unit Price (₹)	Total Qty Restocked
H	EY Choco Swirl	300	15
	CP Vanilla 700ml	230	12
	SP7 Mawa Badam 700ml	180	5
	SP7 Kesar Pista 700ml	180	13
	SP7 Swiss Cake 700ml	180	2
	...others		
L	135ml Maaza refresh	10	360
	Lays MM 35g	10	10
	M10000 Kulfi	10	840
	Smoodh Chocolate 70ml	10	210
	Smoodh Hazelnut 80ml	10	42
	...others		
M	2.25L Coke	100	18
	Sprite Cold drink Lime n Lemon 2.25L	100	54
	Thums Up Cold Drink 2.25L	100	9
	Amul butter 100g	60	10
	850ml Maaza Mango	55	45
	...others		

Fig 6: HML Classification per item

The table uses HML (High-Medium-Low) classification, a method of inventory segmentation that ranks items based on their unit cost or price. High-value (H) items like EY Choco Swirl and CP Vanilla 700ml fall into the premium pricing category, with unit prices above ₹180 but relatively lower restocking frequency. These products require cautious inventory management as they involve higher holding costs and slower turnover. However, they can offer higher profit margins per unit if marketed effectively to the right customer segment.

In contrast, low-value (L) items such as M100000 Kulfi, 135ml Maaza Refresh, and Smooth Chocolate are priced around ₹10 and restocked in large quantities—some reaching up to 840 units. These items are essential for maintaining a steady cash flow and meeting frequent demand.

Medium-value (M) items like 2.25L soft drinks, Amul butter, and 850ml Maaza Mango serve as consistent mid-range products, balancing affordability with reasonable margins and turnover.

This classification offers strategic insight into customer purchasing behavior, enabling Music & Music to tailor its marketing strategy effectively. This table also serves as foundation for demand and forecasting models which will be particularly useful to tackle previously mentioned problems.

3.6 ABC Analysis

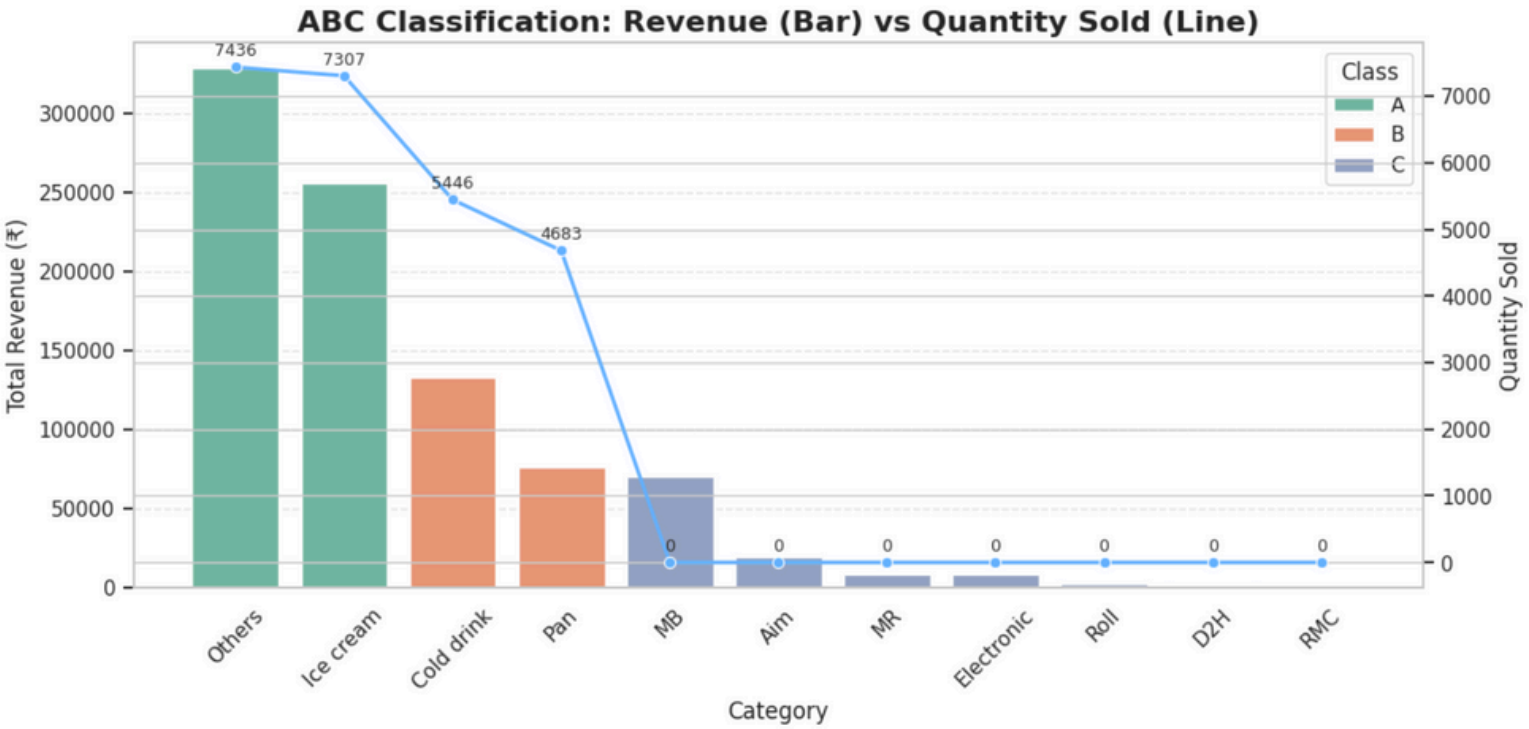

Fig 7: ABC Classification: Revenue (Bar) vs Quantity Sold (Line)

Class	Category	Actual Revenue (in rupees)	% of Total Revenue
A	Others	328107	36.41
	Ice cream	255534	28.36
B	Cold drink	132450	14.7
	Pan	75798	8.41
C	MB	69943	7.76
	Aim	19364.44	2.15
	MR	8301	0.92
	Electronic	7897	0.88
	Roll	2060	0.23
	D2H	1634	0.18
	RMC	0	0

Fig 8: ABC Classification of Categories Based on Revenue Contribution

These charts present an ABC classification analysis that helps Music & Music understand which product categories contribute most significantly to their revenue. The tabular representation divides categories into Class A, B, and C based on their revenue share, while the bar chart visualizes the actual revenue (bars) alongside the quantity sold (line), offering a dual-perspective on both profitability and sales volume.

Class A categories (Others and Ice cream) together account for more than 60% of the total revenue, making them critical for the business. These should be prioritized in terms of stock availability and promotional strategies.

Class B items (Cold drink, Pan) contribute to 20% of total revenue and should be monitored closely for performance improvement. Class C items, despite their diversity, contribute little to overall revenue and may be re-evaluated for cost-benefit efficiency.

This analysis helps Music & Music optimize inventory, improve margin management, and streamline services. For instance, low-revenue categories like D2H or Chip recording (C category) may consume valuable time during peak hours without adding much financial value.

3.7 Restocking Insights Using Item Frequency and Quantity

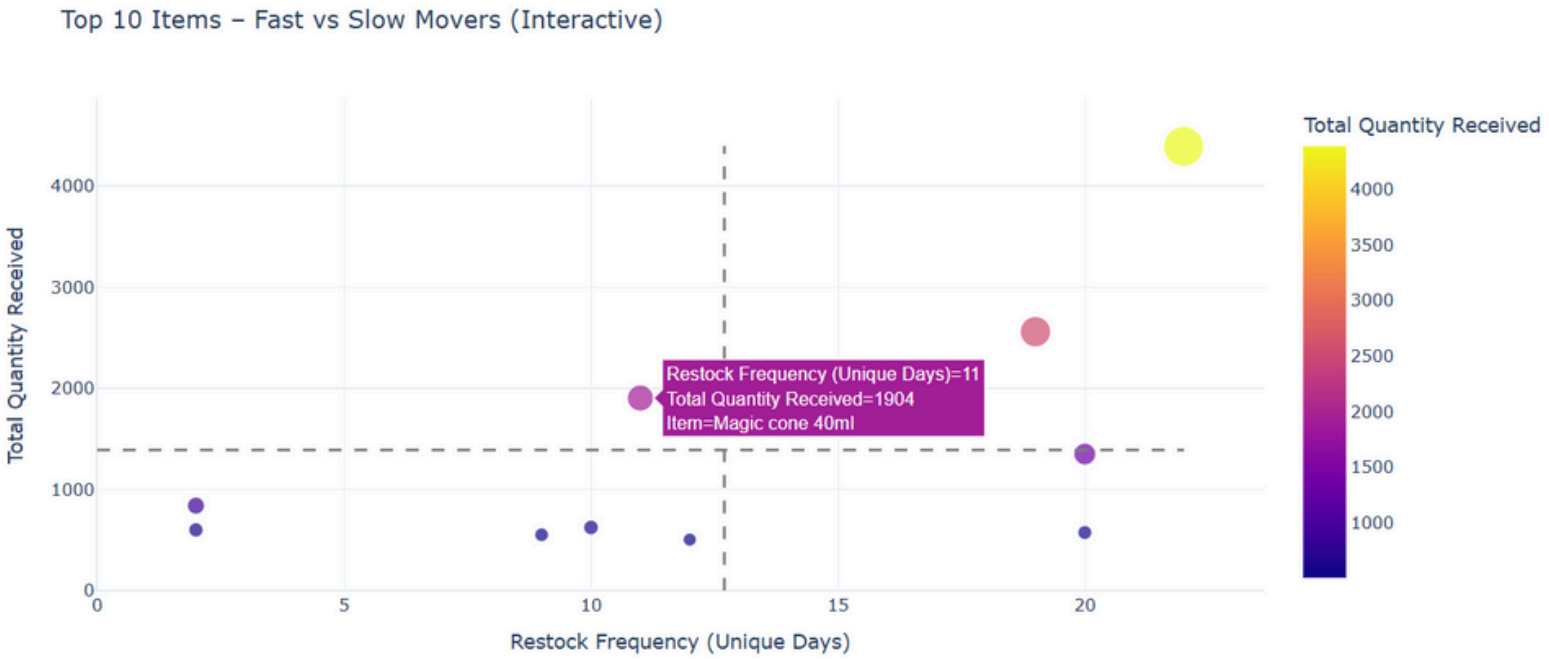

Fig 9: Fast and Slow Moving Items Based on Quantity and Restock Days

This interactive scatter plot visualizes the top 10 most restocked items between April and June 2025 based on two key metrics: the total quantity received (y-axis) and the restocking frequency (i.e., the number of unique days an item was restocked) (x-axis). Each dot represents an individual item, where its size and color reflect the total quantity received.

The chart is divided into four quadrants using average values for quantity and frequency, allowing for categorization into fast and slow movers. On hover, the chart displays item-specific details like the product name, total quantity, and restocking frequency, making it interactive and insight-rich.

After extending this analysis to Top 20, 30, 40 items and so on, it is clear that most items are both low in demand and infrequently restocked. 150 items fall under Fast-Moving & Low Volume, meaning they are replenished often but in small quantities. 8 items are Slow-Moving & Low Volume, reflecting low turnover and low sales, possibly deadstock.

Only 2 items are Slow-Moving & High Volume, hinting at overstocking without consistent demand. A single item- 'CY Crunchy Fun Chocobar' qualifies as Fast-Moving & High Volume, along with a few close contenders like MC Choco Vanilla and Magic Cone 40ml (4392, 2560, and 1932 units respectively). These clearly outperform the rest in both demand and turnover.

Music & Music can leverage many insights from this to mitigate the main problem of inventory management. The table below summarizes all the SKUs into four categories:

Category	Frequency	Analysis
Fast-Moving & Low Volume	150	These products are the top performers. They have consistent demand and contribute significantly to overall sales and customer satisfaction.
Slow-Moving & Low Volume	8	These items might be perishable, space-restricted, or niche demand products. The shop keeps minimal stock due to limited shelf life or lower daily sales.
Slow-Moving & High Volume	2	These might be seasonal or non-perishable bulk items. Large one-time purchases could be driving their high volume.
Fast-Moving & High Volume	1	These are the least performing items. They occupy space and capital without contributing much to revenue or customer draw.

Fig 10: Restocking Pattern Classification and Insights

4 Interpretation of results and Recommendations

4.1 Interpretation of results

- Dominance of High-Turnover Categories: Cold drinks and ice creams lead in sales and profit during summer (16-18% margins), highlighting their critical importance to revenue.
- Significant Overstocking in Key Categories: Ice cream is heavily restocked (~500 units) but only 60-130 units sell, leading to a large profit gap. Profit realization ratios are low (69% for ice cream, 64% for cold drinks), indicating missed opportunities.
- Inefficient Record Keeping Impacts Decisions: Manual, category-level sales data lacks item-level detail, limiting precise analysis of sales and customer preferences.
- Underperforming Services Consume Resources: Services like MB, MR, and D2H yield negligible revenue and profit and are occasional sellers, consuming shop time and space disproportionately.

- Weak Branding and Unclear Service Vision: The shop is primarily seen as a "general store," obscuring its diverse service offerings. Past branding efforts failed to attract a larger customer base for services.
- Inconsistent Sales for Non-Seasonal Items: Biscuits, chocolates, namkeen and snacks show sales declines similar to seasonal items despite being non-seasonal items, suggesting potential understocking or missed opportunities.

4.2 Recommendations with implementation

a. Short term recommendations (Next 3 Months)

1. Initiate a Hybrid Data Collection System: Tally Marks + Daily Google Sheet Log
   - Implementation:
     - The shopkeeper will maintain 4-5 separate, simple, table-like tally sheets, each dedicated to a major product category (e.g. Ice cream sales, Cold drink sales). On each sheet, list the item names, and for every sale, the shopkeeper simply adds a tally mark next to the item. The table can also contain a simple ‘tick’ column to indicate the mode of payment. This is familiar and quick.
     - At the end of each day, the shopkeeper or a designated person will spend 5-10 minutes to transfer the summarized data to Google Sheet to initiate digitization of data. The format of google sheet will be similar to the one used for recording data during this project.

   - Expected Outcomes:
     - Tracking exact item sales will eliminate the need to record detailed sale-by-sale information.
     - By starting with familiar tally marks and dedicating only 5-10 minutes for digital logging, the system provides a smooth transition to digital data management and reduces the ‘digital stigma’. It also saves many hours per day that the shop owner spends on manual logging.
     - Reduction of missed records during rush hours as the shop owner doesn’t need to write details about sale.

2. Basic Promotional Efforts for Underperforming Services
   - Implementation: Focus on simple, visible strategies to promote services like MB, MR, and D2H, acknowledging their low current profitability.

- Create simple, eye-catching laminated signs displaying available services and their exact costs. Place these prominently near the counter or shop entrance. For now, the shop should focus on top 1-2 services such as Mobile recharge and Mobile balance.
- Introduce a very simple bundling initiative for the next three months focused on high-turnover items. For example, get ₹5 off your next Mobile Recharge with any ice cream purchase over ₹100.

- Expected Outcomes:
  - Increased awareness among customers and incremental transactions for underperforming categories.
  - Increased cross-selling opportunity which leverages popular items to sell less popular services.

b. Long term recommendations (6-12 months)

1. Understock or Phase Out Slow-Moving and Low Volume Items

- Implementation:
  - Items that are slow moving and restocked in low volumes like 'Maggi Tom Pichkoo' (16 units), 'Real Orange 200ml' (48 units) and 'Coke Pet Bottle 250ml' (24 units). should either be discontinued or stocked only 20-30 units per month.
  - Slow-moving items can be replaced with fast moving variants. For example, 'Real Orange 200ml' can be replaced with 'Fanta Orange 250ml bottle'.
- Expected Benefits:
  - Reduction of ₹1000–₹1500/month in holding costs and also frees storage for better revenue generating items.

2. Maintain High Stock for Top-Selling Fast Movers

- Implementation:
  - 'CY Crunchy Fun Chocobar', 'MC Choco Vanilla' and ' Magic Cone 40ml'- These items are the highest selling and restocked ones. This is clearly visible through Fast vs Slow movers analysis and ABC Analysis.
  - To avoid frequent stockouts and capitalize on their strong demand, it is recommended to maintain at least 80% of the previous month's demand as starting stock for these items.
  - This buffer stock accounts for the observed seasonality, where ice-cream sales consistently drop by 17–18% month-over-month.

- Expected Benefits:
    - Avoids ₹5000–₹6000/month in lost revenue from stockouts (assuming ₹10–₹12/unit price and 10–15% lost sales)

3. Diversify Supplier Base to Mitigate Risk and maximize profit
    - Implementation:
        - Music & Music exhibits a significant reliance on a single supplier, 'GJ's Scoopy Spoon' which accounts for a dominant 54.20% of the total inventory cost. This confirms the previous observation regarding bulk restocking of ice cream varieties from this main supplier.
        - Leverage this large volume to negotiate better wholesale rates to improve overall profit margins.
        - Actively seek out and onboard at least one to two alternative suppliers or shift towards other suppliers of frozen goods like 'Anvi Enterprises' who offer a better profit margin.

    - Expected benefits:
        - Reduces the shop's vulnerability to supply chain disruptions and overstocking.
        - Improves product diversity, potentially increases profit margins in less profitable categories

4. Reduction of Large SKUs of Cold drinks:
    - Implementation:
        - Over 40+ variants of cold drinks are being stocked from multiple suppliers (SD World, Udaan, Let's Move Services), but sales are concentrated on smaller SKUs like: Frooti 60ml / 125ml, Thums Up 250ml / 600ml, Maaza 250ml, Sprite, Coke, Fanta (250ml–600ml).
        - Limit stocking of 2.25L and 1L variants of cold drinks unless demand picks up. Keep 600ml and 250ml SKUs in stock, particularly during hot months. Maintain 70–80% of April stock levels during May and 50% during June.
        -
    - Expected benefits:
        - Significant reduction in storage costs while capturing 90% of peak sales.

5. Google Sheet integration for continuous inventory monitoring

- Implementation:
  - In long term, the plan is to completely digitize data storage, the Google sheet system will include a Daily sales record, Inventory stock input and a static master sheet for all SKUs
  - The Inventory sheet can dynamically VLOOKUP item details from master sheet and automatically calculate current stock.
  - Conditional formatting will be applied to automatically indicate stock status by display of colors- Green (safe stock), Yellow (approaching reorder point) and Red (critically low stock).
- Expected benefits:
  - Accurate and real-time stock levels, minimizing guess work and enabling long-term data analysis.

Analysis Links:

Link1 (Google Colab)

Link 2 (Google Colab)

END OF REPORT