

Data-Driven Inventory Optimization for MahaLaxmi Kirana and General Store

Reducing Stockouts and Wastage in a Competitive Retail Environment

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Organization Background: MahaLaxmi Kirana and General Store

Business Overview:

- Established in 2024 by Mr. Amit Gupta in Vaishnav Colony, Pali, Rajasthan.
- Traditional single-owner neighborhood grocery shop serving local residents.
- Offers ~1,200 SKUs across 14 categories (dairy, staples, vegetables, snacks, beverages, etc.).
- Operates 7 days a week, managing procurement, sales, customer service, and inventory manually.

Key Challenges:

- High inventory wastage and stockouts, especially in perishables like dairy and vegetables.
- Low customer retention (of walk-ins return as regulars).
- Growing competition from supermarkets and online retail platforms.
- Needs data-driven solutions to optimize stock levels, reduce wastage, and sustain profitability in a fast-changing retail environment.

An illustration on the left side of the slide depicts autumn-themed produce including pumpkins, gourds, and baskets of oranges. Three heavy metal chains are shown in a state of disrepair, with links broken and floating in the air against a vibrant orange background with falling leaves. This visual metaphor likely represents the 'broken links' or 'problems' in the business process mentioned in the text.

Problem Statement & Project Objectives

Business Problems

- Frequent stockouts of high-demand products lead to lost sales and customer dissatisfaction.
- Wastage occurs due to overstocking and expiry of slow-moving/perishable items.
- Difficulty in matching the convenience and pricing of larger competitors.

Project Objectives

- Reduce stockouts through optimized reordering.
- Minimize wastage for perishable goods.
- Improve overall profit margins.
- Establish a data-driven inventory system.

Data Collection and Methodology



Primary Data Collection

Directly collected transactional and inventory data from MahaLaxmi Kirana And General Store via owner's handwritten registers, digitized for analysis (April–June 2025).



Data Types & Volume

4,513 transaction records, daily inventory levels, product categories, customer payment types.

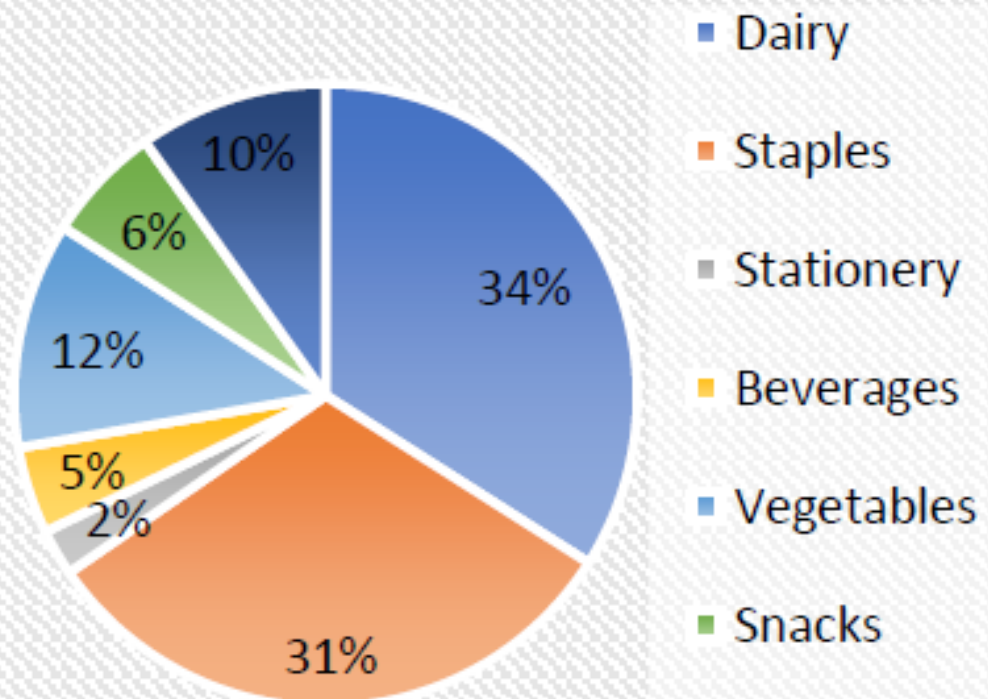


Tools & Analysis

Excel for data cleaning and base analytics; Google Sheets for collaboration; Python (pandas, matplotlib) for deeper analysis/trend graphs; applied ABC classification & time-series methods for insights.

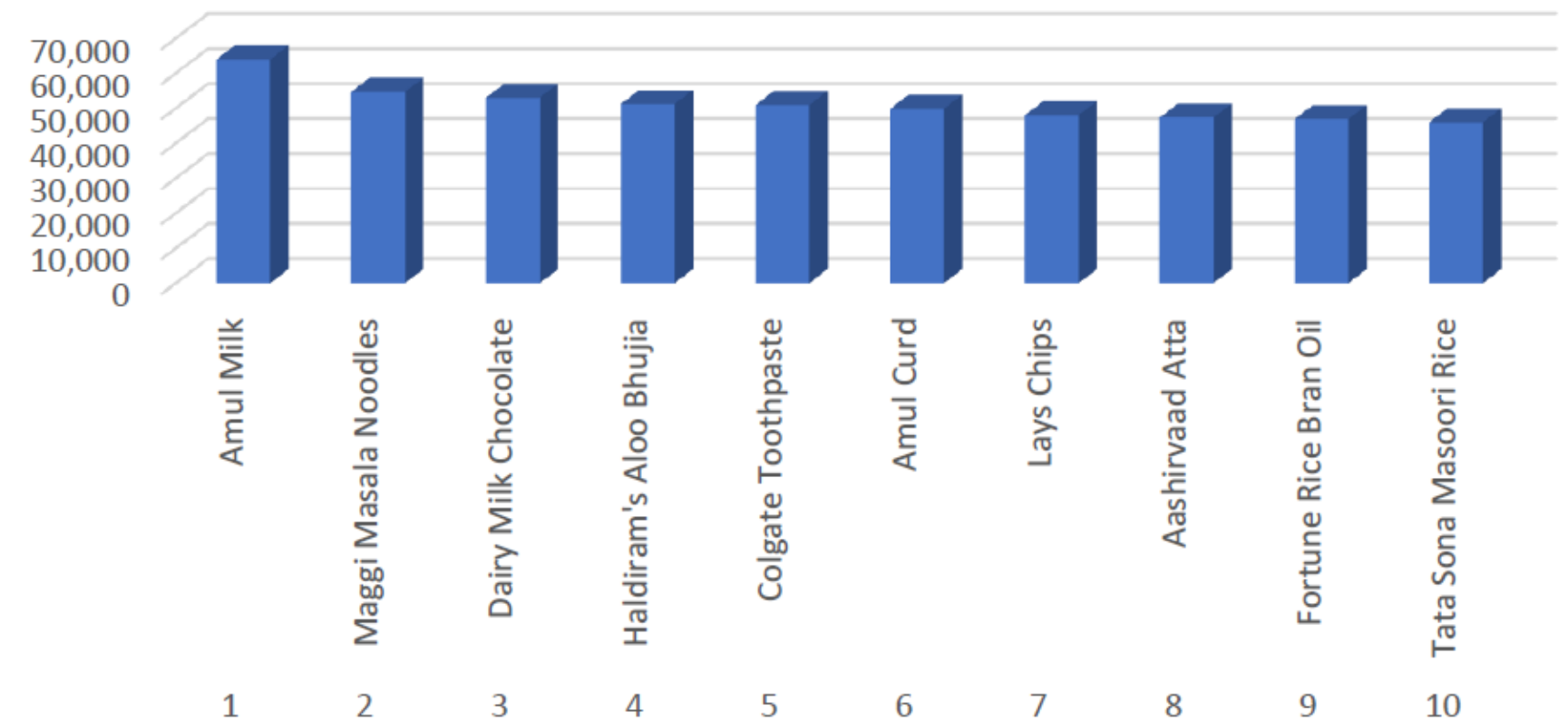
Results and Findings: Revenue by Category & Top Products

Revenue Share by Product Category (Apr–Jun 2025)



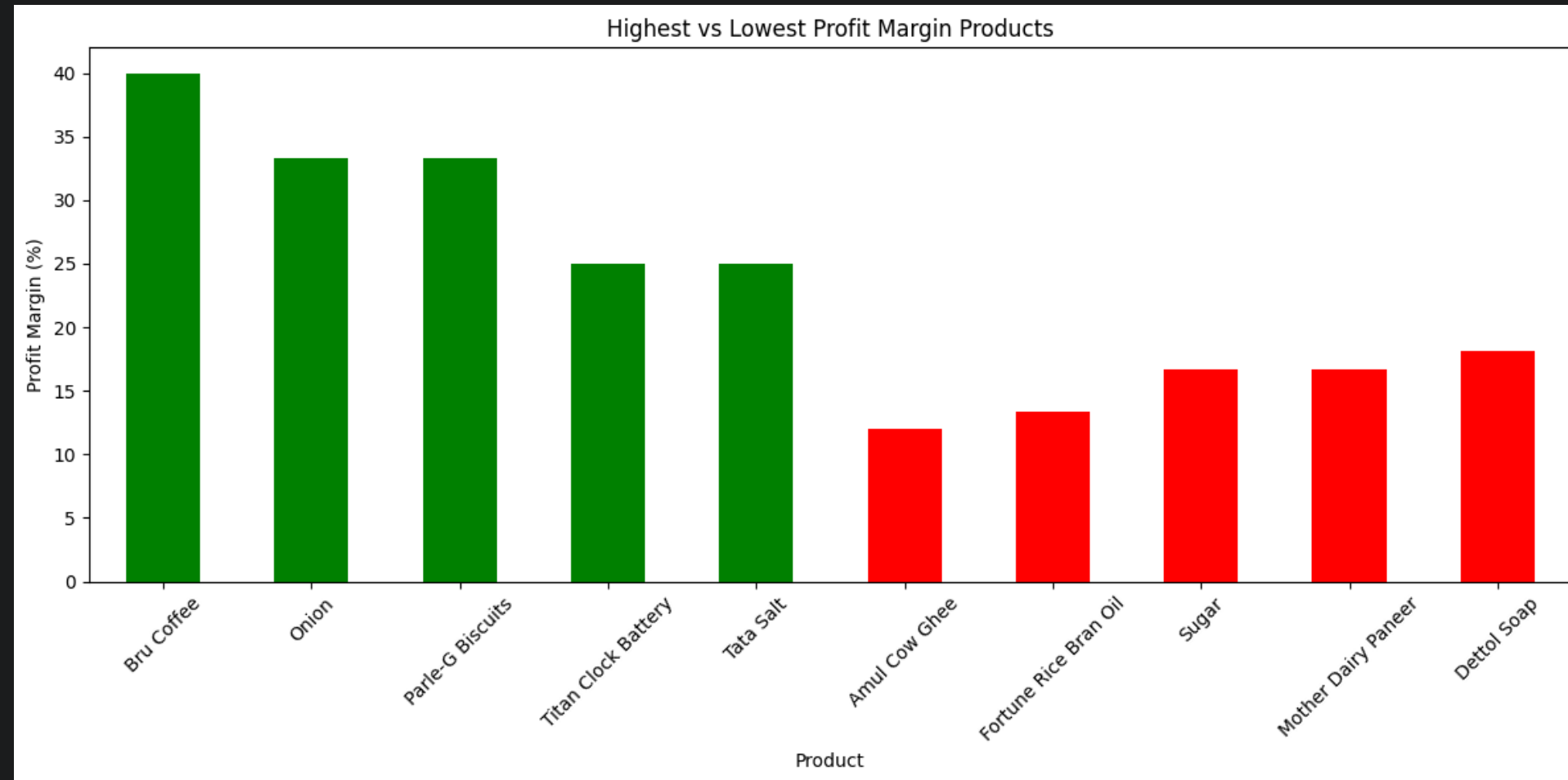
- Dairy and Staples together ≈ 65–70% of revenue.
- Personal care, beverages, stationery are much smaller contributors but add variety.

Top 10 Selling Items by Revenue

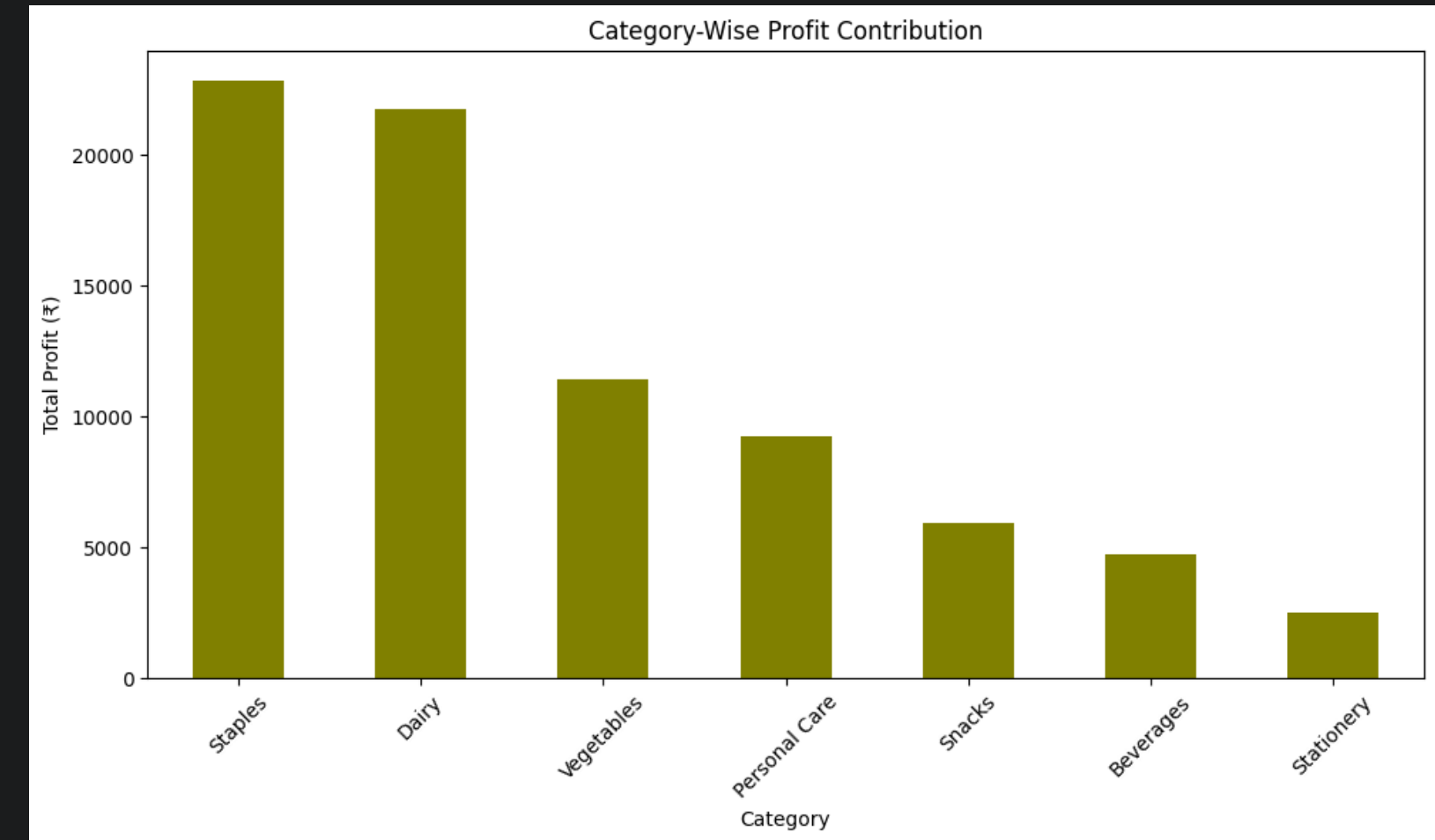


- Amul Milk, Maggi, Dairy Milk are daily essentials, must be stocked always.
- Snacks and branded items boost sales and cross-category appeal.

Results and Findings: Profit Analysis

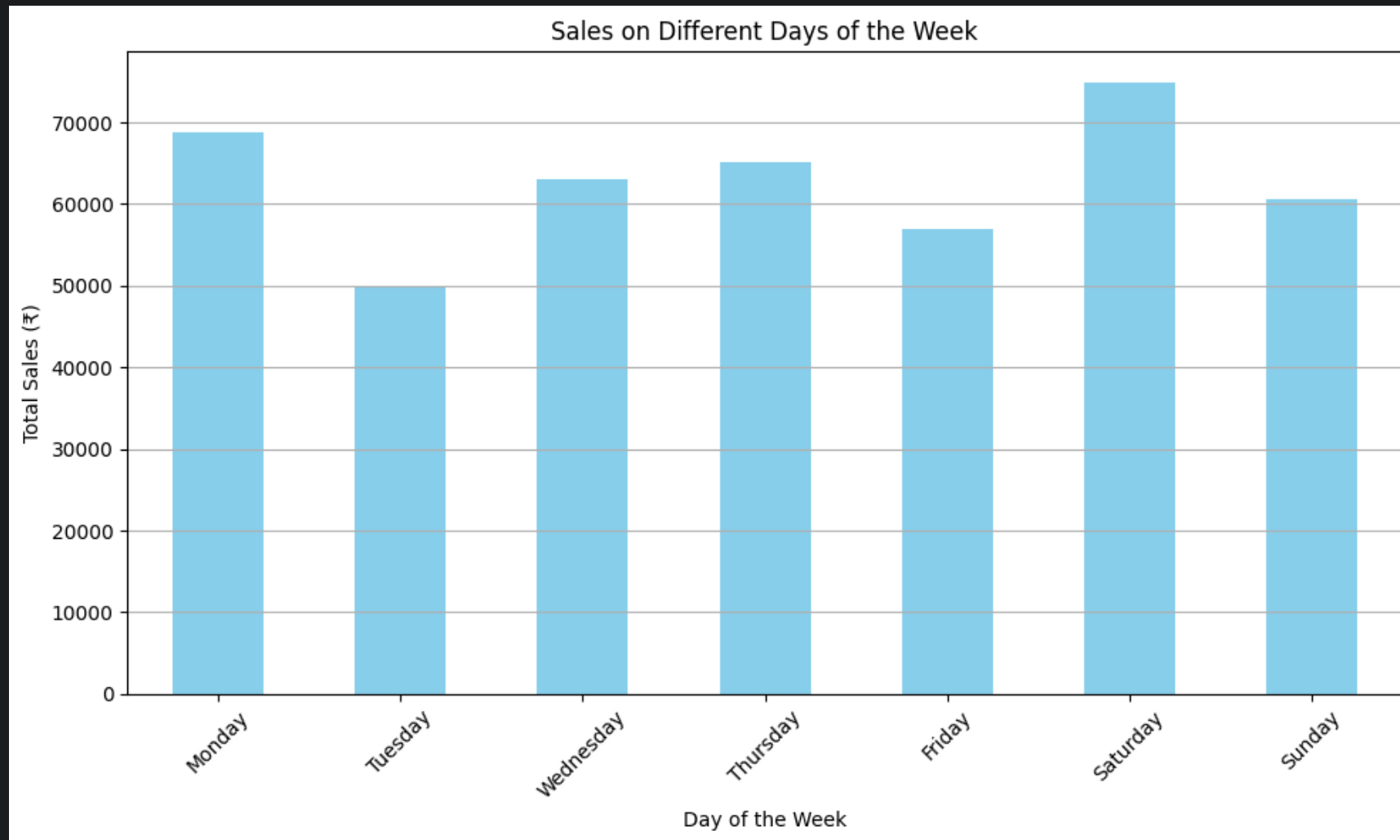


- Highest-margin products (e.g., Bru Coffee, Onion) are niche and have low sales volume but contribute more profit per unit.
- Core staples like Amul Cow Ghee have lower profit margins (<10%) despite being high in sales.
- Focus on promoting high-margin items can improve overall shop profitability.



- Staples and dairy categories contribute the bulk of overall profit, driven by high volume, not necessarily high margins.
- Beverage and snack categories, while smaller in sales, show higher margins but yield lower total profit due to limited volume.
- Diversifying stock with high-margin categories can supplement profit from staple goods

Results and Findings: Sale Trends & Competitor Analysis



- Sale peaks during weekends(Saturday)/festivals.
- Tuesday is consistently the lowest sales day. Store could run special Tuesday offers or events to stimulate mid-week traffic.



- Competitive pricing confirmed: MahaLaxmi Kirana offers milk at ₹35/L vs. competitor's ₹37/L; rice at ₹110/kg vs. competitor's ₹113/kg.
- Fresh product opportunity: One local competitor differentiates with chicken/eggs—potential expansion area.
- Inventory advantage: Most competitors lack structured stock management, giving systematic edge.



Interpretation & Recommendations

Dynamic Inventory Management

Digitize inventory management with basic Excel/Google Sheets or low-cost apps for real-time control.

Customer Engagement

Launch WhatsApp/festival offers for repeat buyers; run "slow day" deals to boost weekdays.

Product & Operational Improvements

Experiment with new local favorites (juices, eggs/chicken) and bundle high-margin drinks/snacks with bestsellers.

Conclusion & Next Steps

- This project proved that data-driven inventory management can meaningfully improve operations for small kirana shops like MahaLaxmi Kirana And General Store.
- By analyzing category-wise sales, payment trends, and wastage drivers, actionable recommendations were developed to tackle stockouts, wastage, and cash flow risk.
- Benchmarking revealed opportunities for fresh products and competitive pricing.



Implement Inventory System

Integrate a simple digital inventory management system.



Monitor KPIs

Continuously track wastage, stockouts, and sales trends.



Explore Automation

Consider automated reordering for fast-moving goods.



Thank You!

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