



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.

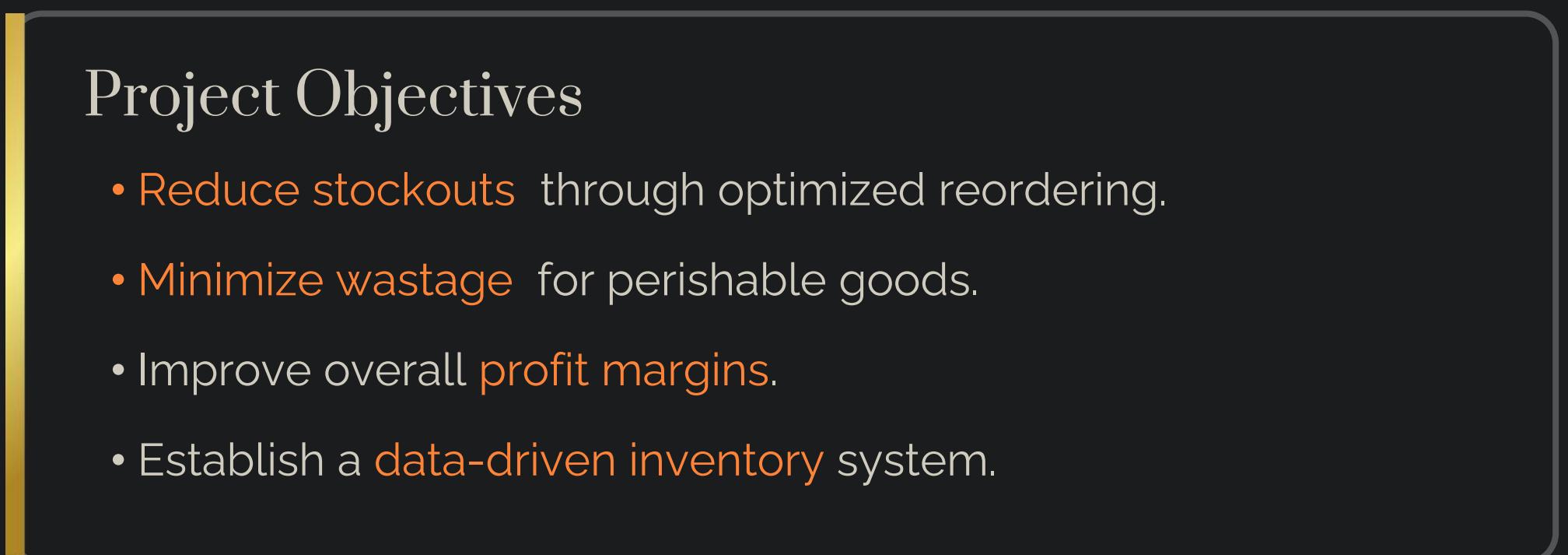


Problem Statement & Project Objectives



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.

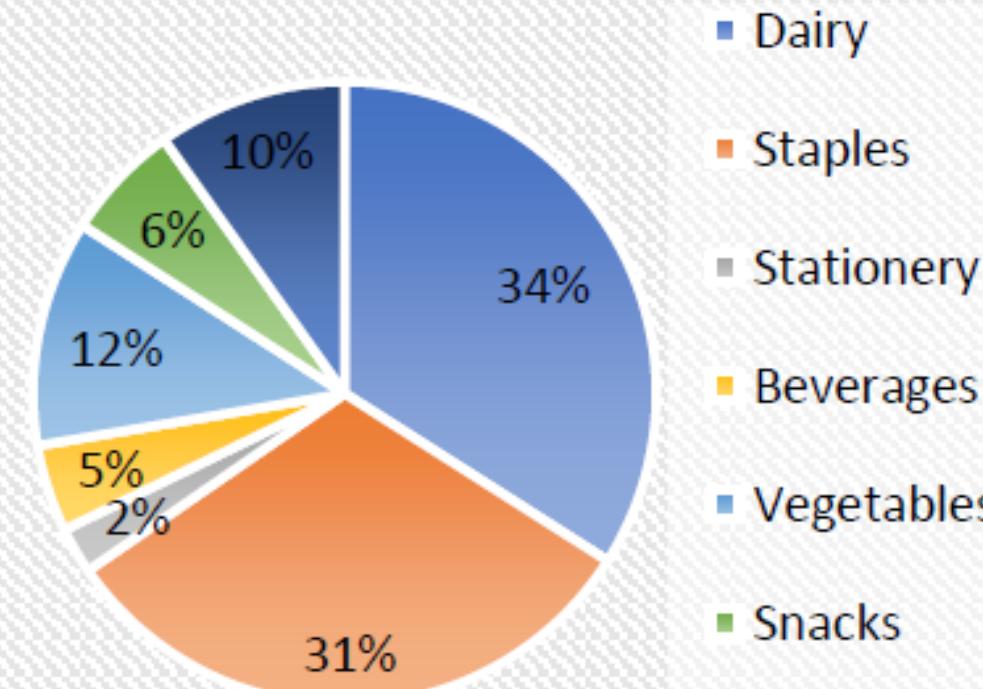


Tools & Analysis

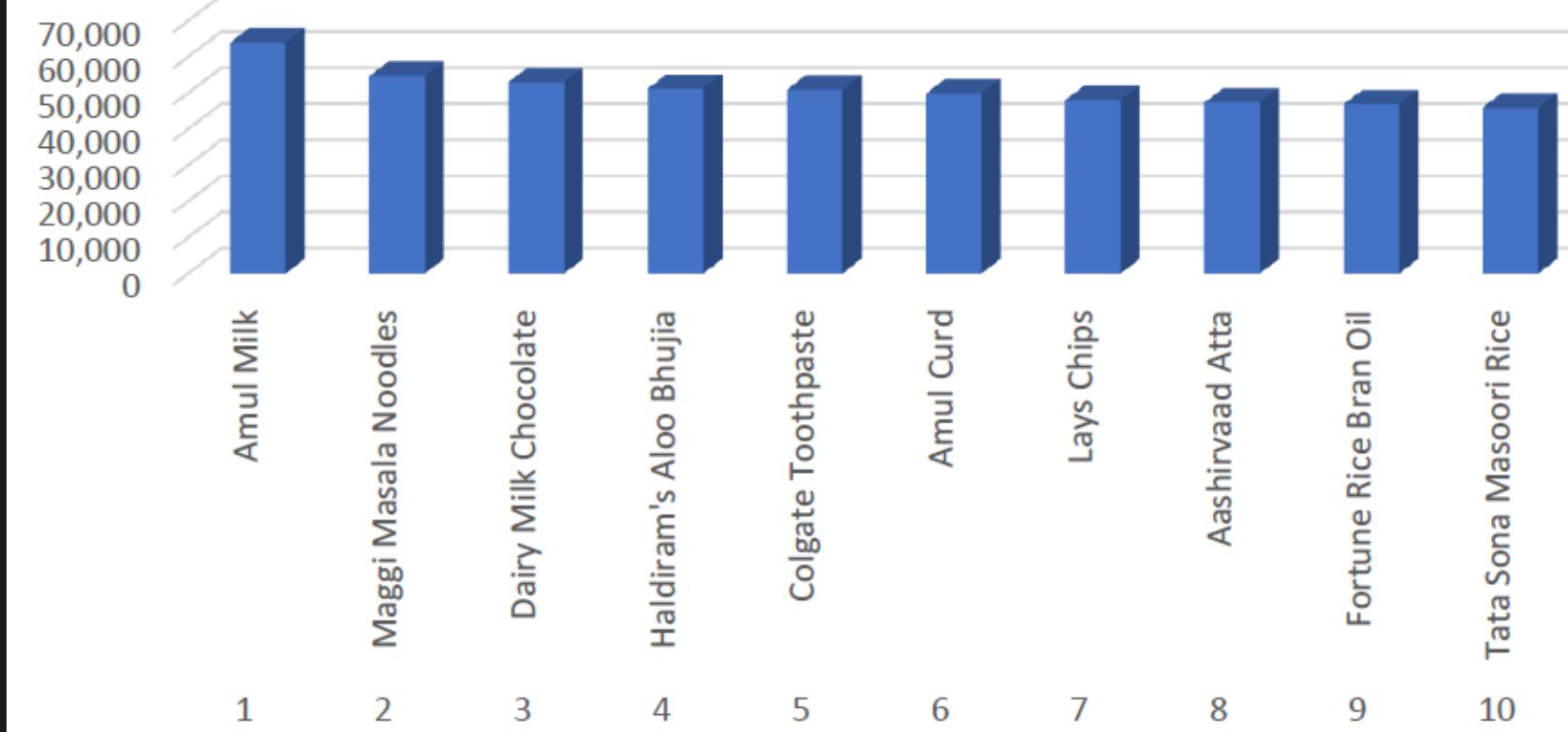
Excel for data cleaning and base analytics; Google Sheets for collaboration; Python (pandas, matplotlib) for deeper analysis/trend graphs; applied ABC classification & time-series methods for insights.

Results and Findings: Revenue by Category & Top Products

Revenue Share by Product Category (Apr–Jun 2025)

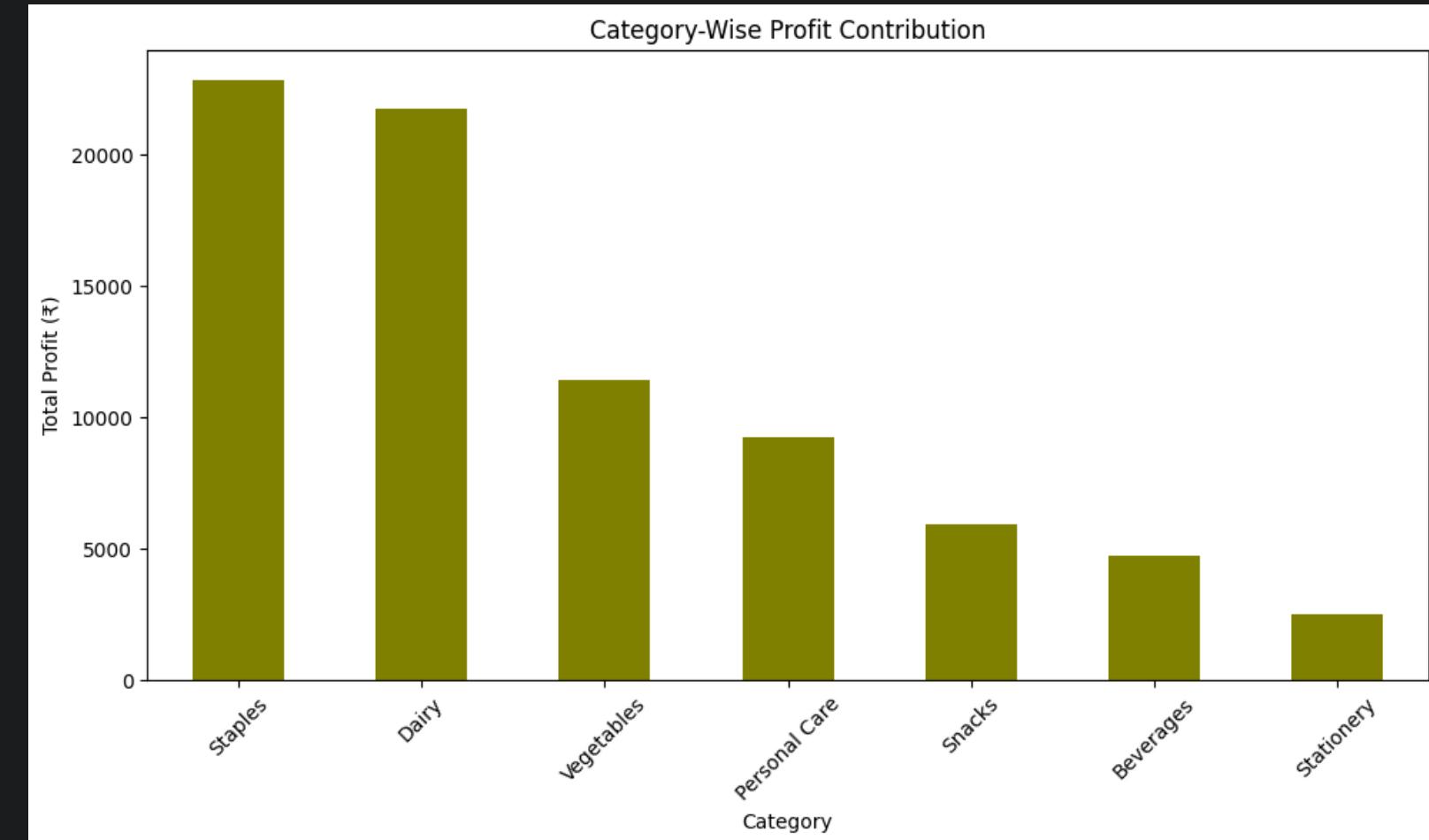
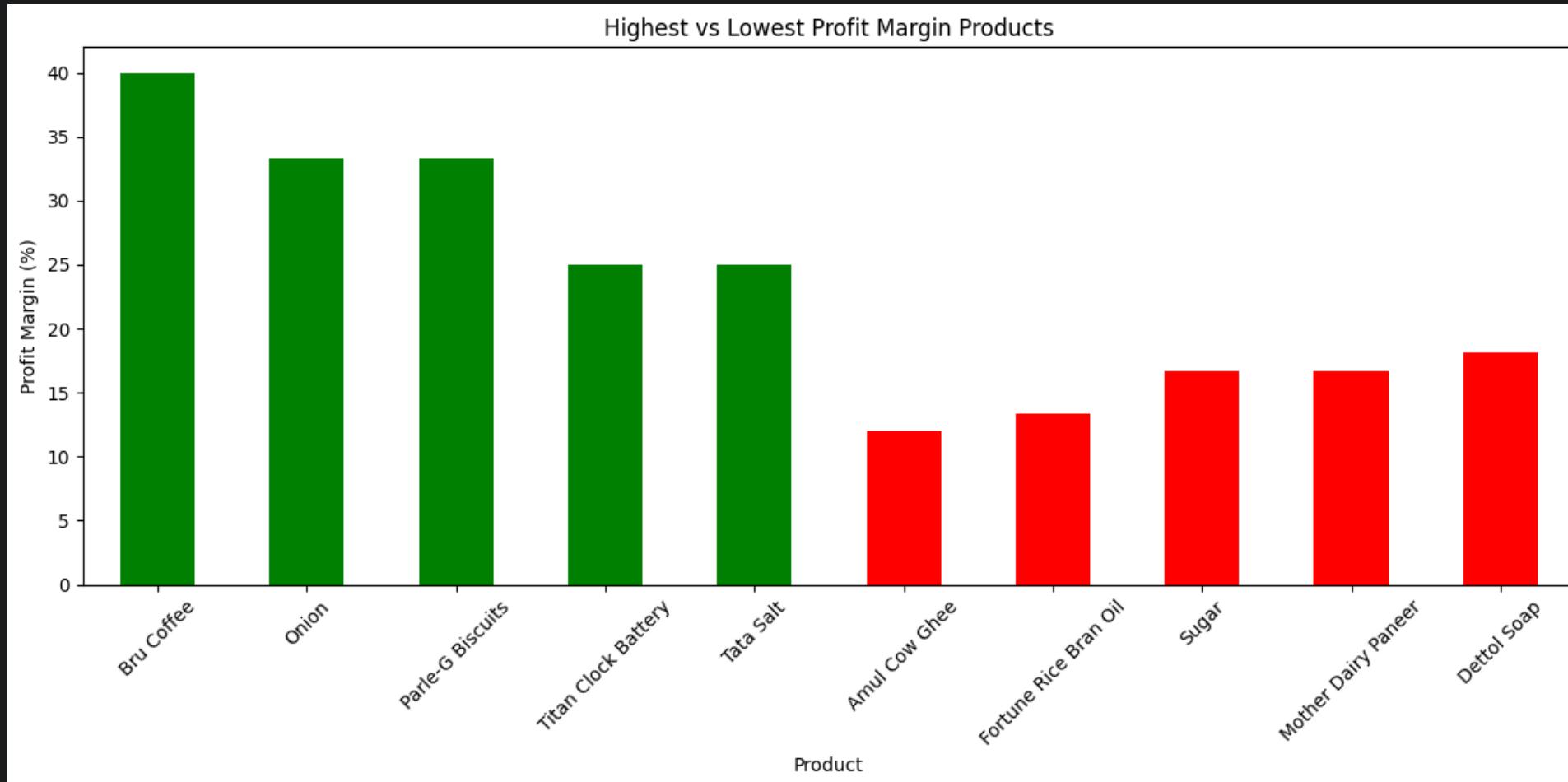


Top 10 Selling Items by Revenue



- Dairy and Staples together ≈ 65–70% of revenue.
- Personal care, beverages, stationery are much smaller contributors but add variety.
- Amul Milk, Maggi, Dairy Milk are daily essentials, must be stocked always.
- Snacks and branded items boost sales and cross-category appeal.

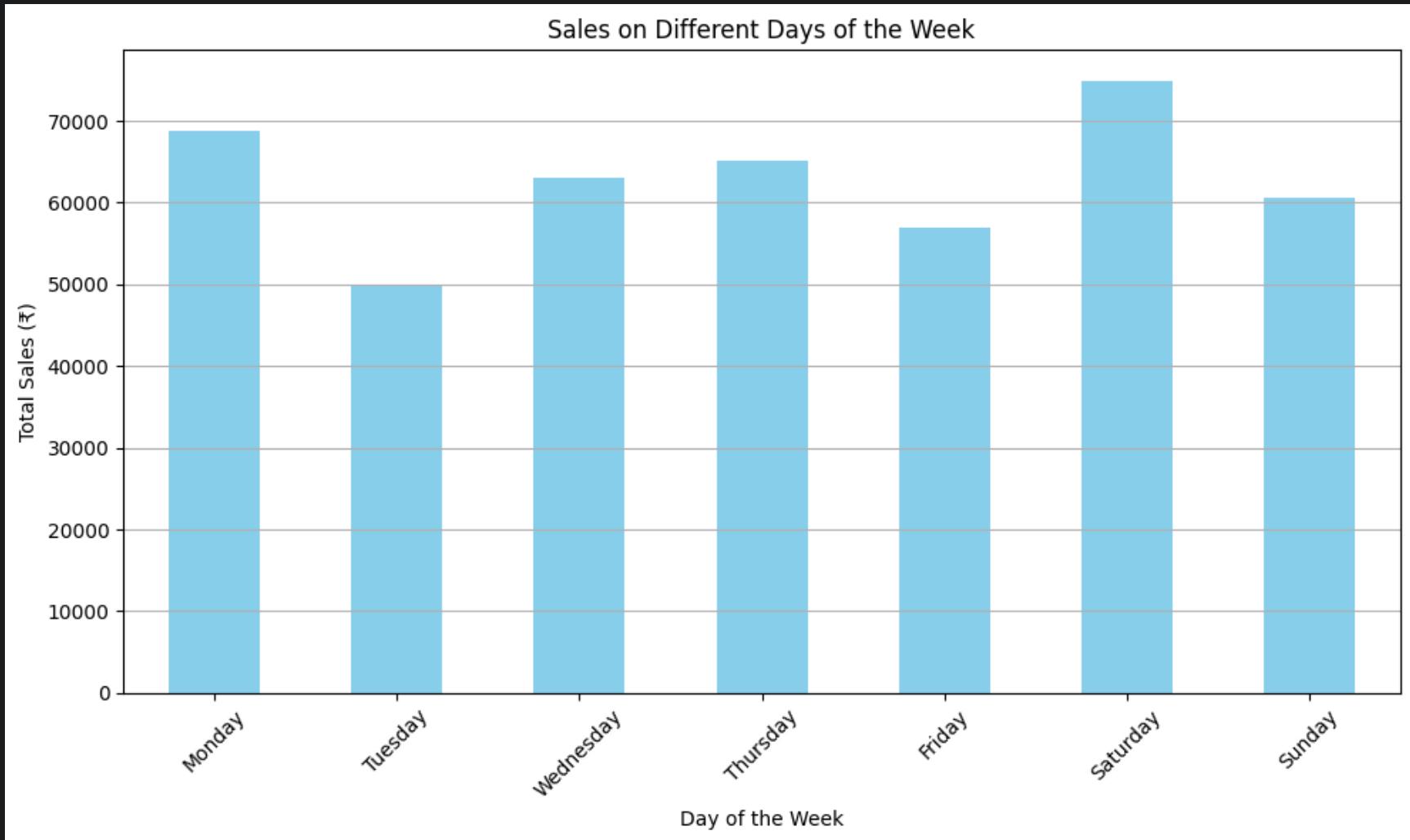
Results and Findings: Profit Analysis



- 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

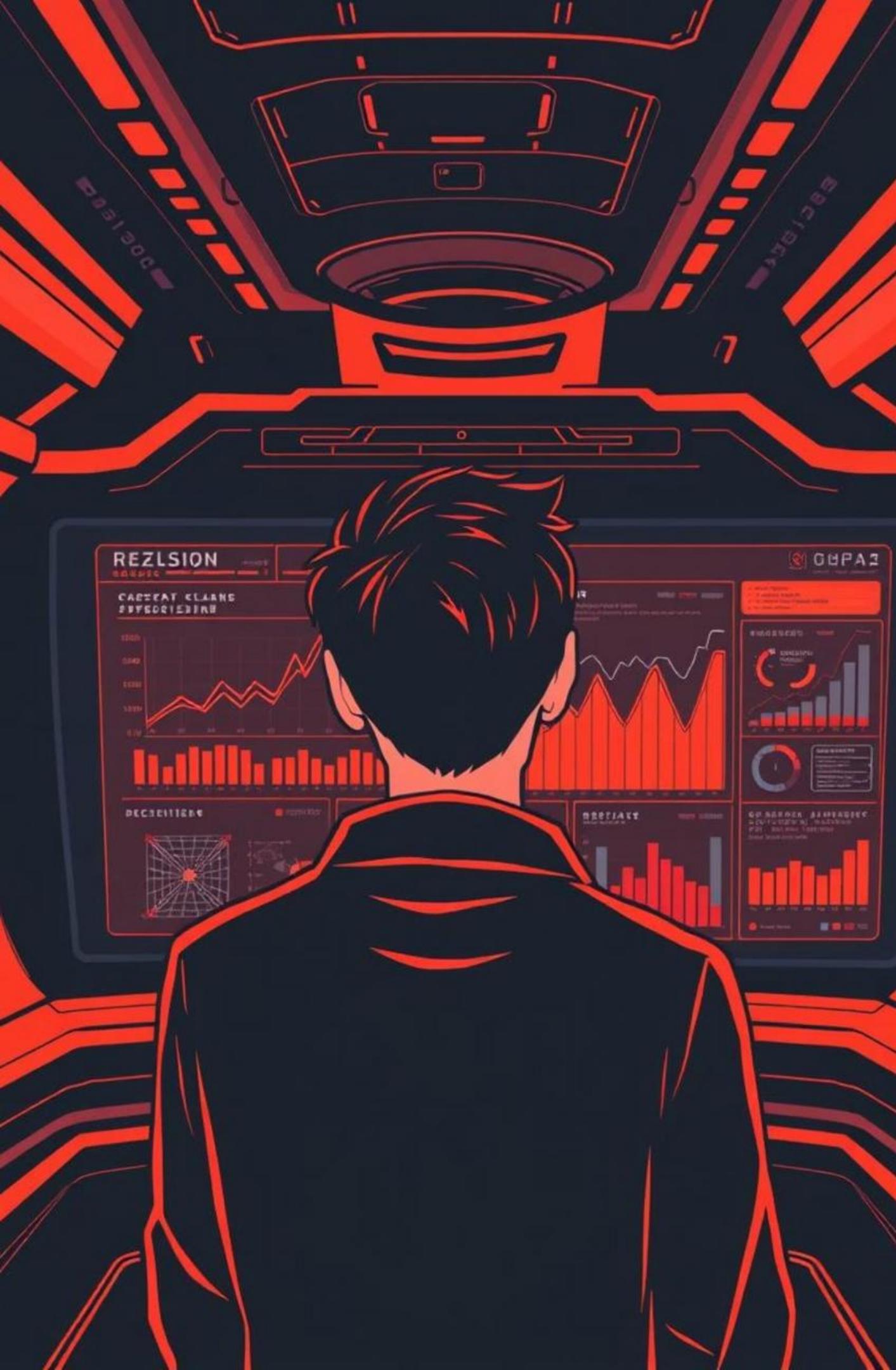
Results and Findings: Sale Trends & Competitor Analysis



- 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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