BUSINESS DATA MANAGEMENT CAPSTONE PROJECT

Data-Driven Business Optimization for Neha Prem General Store

Presented by: **Tripti Kumari**
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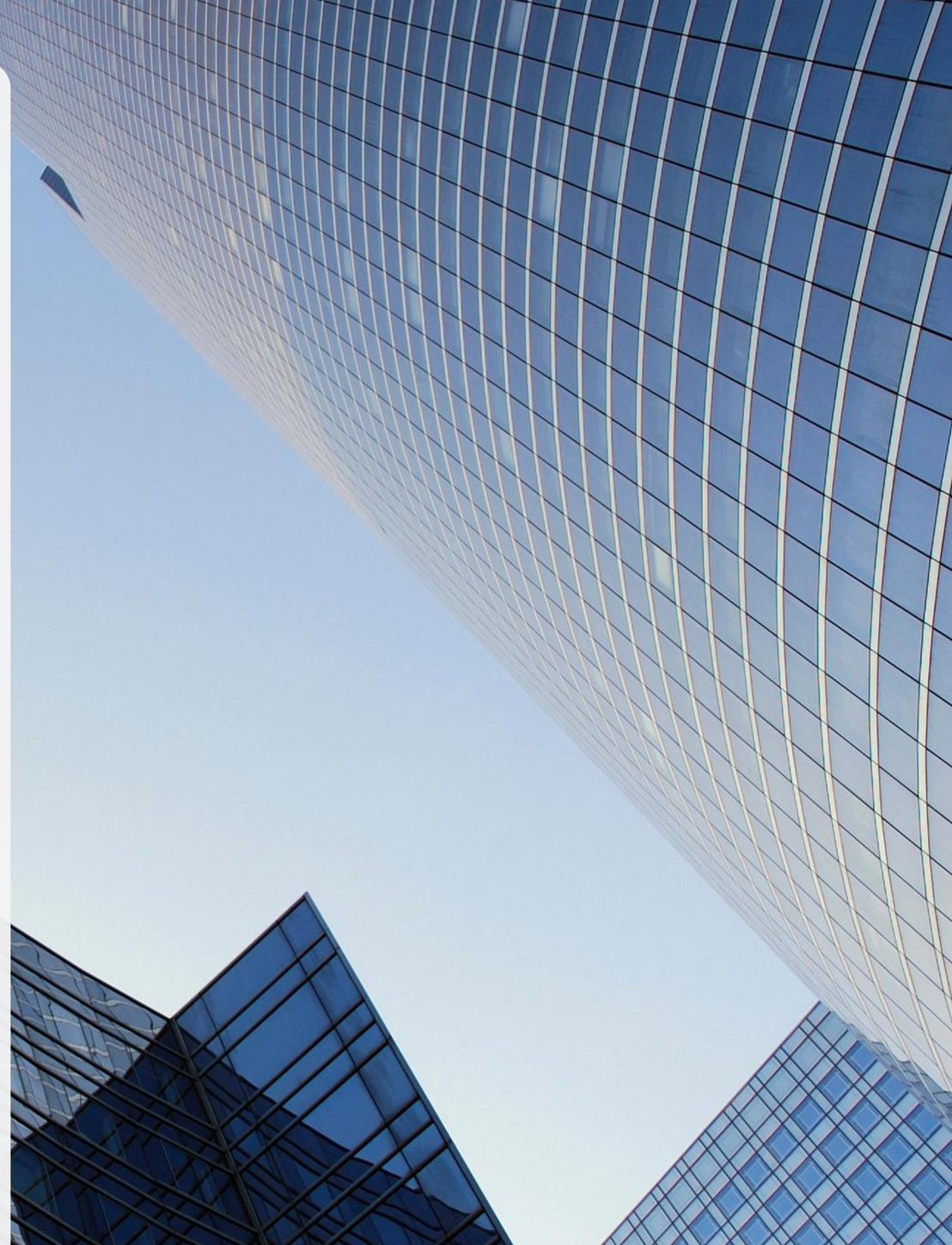

Executive Summary

Neha Prem General Store, owned by Shivam Kumar Jha and located in Andauli, Darbhanga, Bihar (847103), is a local retail shop serving daily household needs. In this project, I analyzed the store's January 2025 sales and stock data to identify patterns, address inventory inefficiencies, and recommend strategies to improve sales, reduce waste, and increase profitability. By applying Business Data Management concepts to a real-world scenario, I aimed to solve the key business challenges faced by the owner.

Business Problems

1. Customer Attraction: Sales fluctuate; weekend peaks not fully utilized.
2. Inventory Inefficiency: Overstocking slow movers leads to capital lock & wastage.
3. Profitability Gaps: Reliance on a few products for profit.

Data Collection & Preprocessing

Datasets Used:
-grocery Data

Source of Data:

Sales Data: Daily Sales.csv (Jan 1 – Jan 31, 2025)
Stock Data: Monthly Stock.csv (January 2025)
Data originally recorded manually via **handwritten lists, WhatsApp messages, and notepad entries**, then digitized into Excel.

Descriptive Statistics:

Total Transactions: 930
Products Analyzed: 10 unique items across 4 categories
Total Units Sold: 7,850
Total Units Purchased: 8,420
Revenue in January: ₹1,72,300
Average Daily Sales Value: ₹5,558
Preprocessing Steps:
Removed duplicates and filled missing values.
Converted dates to standard datetime format.
Standardized units for weight-based items (e.g., kg for grains).
Added calculated fields:

Profit = (Selling Price × Units Sold) − (Purchase Price × Units Purchased) − Fixed Costs − Variable Costs
Inventory Turnover = Units Sold ÷ Units Purchased

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	A	B	C	D	E	F
1	Date	Item	Category	Quantity Sold	Price Per Unit	Total Sales
2	01-01-2025	Rice	Grains & Pulses (in kg)	7	₹ 70.00	₹ 490.00
3		Wheat Flour	Grains & Pulses (in kg)	4	₹ 40.00	₹ 160.00
4		Pulses	Grains & Pulses (in kg)	6	₹ 50.00	₹ 300.00
5		Chickpeas	Grains & Pulses (in kg)	2	₹ 64.00	₹ 128.00
6		Potato Chips	Snacks	10	₹ 10.00	₹ 100.00
7		Cookies	Snacks	17	₹ 20.00	₹ 340.00
8		Tea	Beverages	13	₹ 20.00	₹ 260.00
9		Coffee	Beverages	8	₹ 78.00	₹ 624.00
10		Dish Soap	Cleaning	10	₹ 45.00	₹ 450.00
11		Laundry Detergent	Cleaning	7	₹ 40.00	₹ 280.00
12		Body soap	Cleaning	12	₹ 20.00	₹ 240.00
13	02-01-2025	Rice	Grains & Pulses (in kg)	7	₹ 70.00	₹ 490.00
14		Wheat Flour	Grains & Pulses (in kg)	4	₹ 40.00	₹ 160.00
15		Pulses	Grains & Pulses (in kg)	5	₹ 50.00	₹ 250.00
16		Chickpeas	Grains & Pulses (in kg)	1	₹ 64.00	₹ 64.00
17		Potato Chips	Snacks	14	₹ 10.00	₹ 140.00
18		Cookies	Snacks	13	₹ 20.00	₹ 260.00
19		Tea	Beverages	12	₹ 20.00	₹ 240.00
20		Coffee	Beverages	9	₹ 78.00	₹ 702.00
21		Dish Soap	Cleaning	11	₹ 45.00	₹ 495.00
22		Laundry Detergent	Cleaning	9	₹ 40.00	₹ 360.00
23		Body soap	Cleaning	10	₹ 20.00	₹ 200.00
24	03-01-2025	Rice	Grains & Pulses (in kg)	7	₹ 70.00	₹ 490.00
25		Wheat Flour	Grains & Pulses (in kg)	2	₹ 40.00	₹ 80.00
26		Pulses	Grains & Pulses (in kg)	4	₹ 50.00	₹ 200.00
27		Chickpeas	Grains & Pulses (in kg)	3	₹ 64.00	₹ 192.00
28		Potato Chips	Snacks	13	₹ 10.00	₹ 130.00
29		Cookies	Snacks	11	₹ 20.00	₹ 220.00
30		Tea	Snacks	11	₹ 20.00	₹ 120.00

Sheet4 | Table1 | Daily Sales | Sheet1 | Monthly Stock | Sheet7 | Sheet8

Data & Methodology

Analytical Approach

• Data Preparation: January 2025 sales and stock datasets were cleaned, standardized, and formatted for accurate computation. Missing values were handled, and product names were normalized for consistency.

• Profit Calculation: Profitability was determined using the detailed cost formula:
Profit = (Selling Price × Units Sold) – (Purchase Price × Units Purchased) – Fixed Costs – Variable Costs

• Demand Forecasting: Seasonal Moving Average Model was applied to detect demand peaks (weekends and month-end) and project future sales trends.

• Inventory Classification: Products were categorized using the Inventory Turnover Ratio:
- **Fast Movers: Ratio > 2.5 (e.g., Coffee, Cookies)**
- **Moderate Movers: Ratio 1.0 – 2.5 (e.g., Potato Chips)**
- **Slow Movers: Ratio < 1.0 (e.g., Wheat Flour, Chickpeas)**

• Optimization Insight: These classifications guided stock-level decisions to avoid over-purchasing slow movers and ensure high-demand items remain available.

Demand Forecasting Findings

Daily Sales Volume by Date – January 2025

This line chart shows daily sales quantities for January 2025. Noticeable peaks occur on weekends (e.g., 5th, 12th, 19th, 26th) and at month-end, with sales reaching around 150 units. Weekday sales remain steady between 90–120 units. This confirms predictable high-demand periods for better staffing and stock planning.

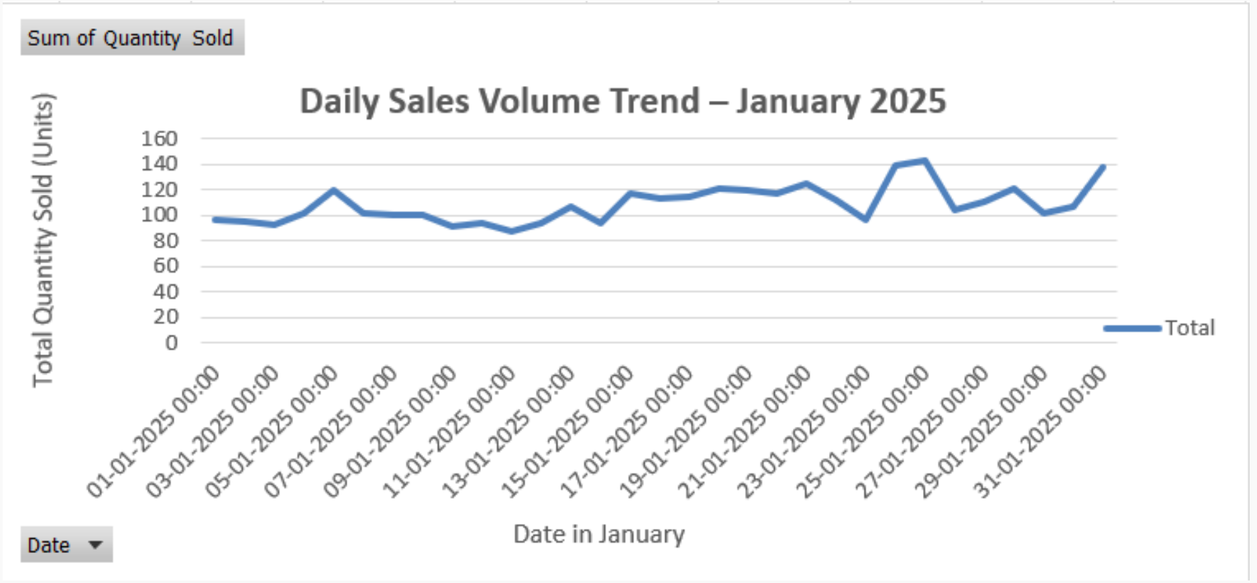
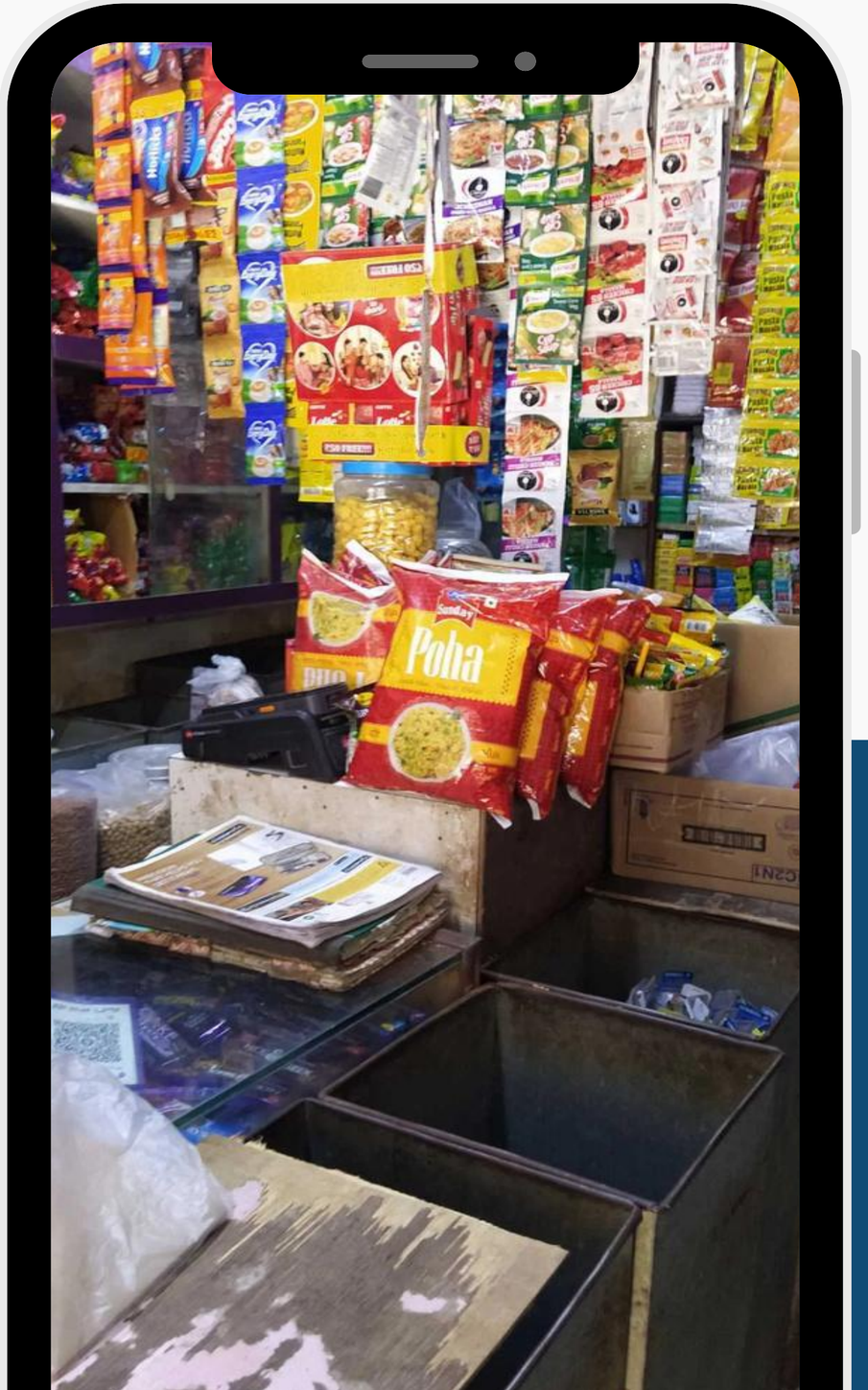
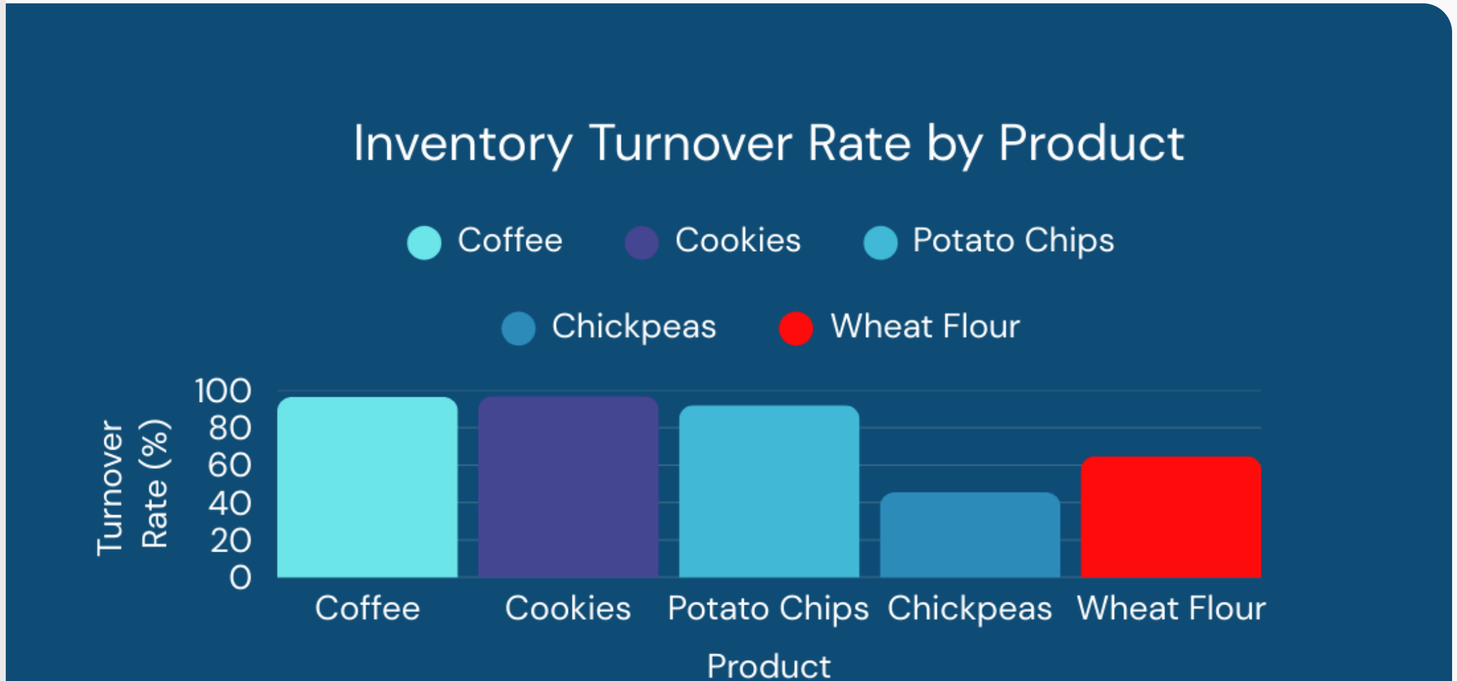


Fig. : Daily Sales Volume – January 2025



Inventory Turnover Rate By Product

This bar chart compares turnover rates for each product. Coffee (96.4%), Cookies (96.9%), and Potato Chips (92%) are fast-moving, while Chickpeas (45.5%) and Wheat Flour (64.7%) are slower. This helps identify overstocked products and prioritize re-ordering for fast movers.

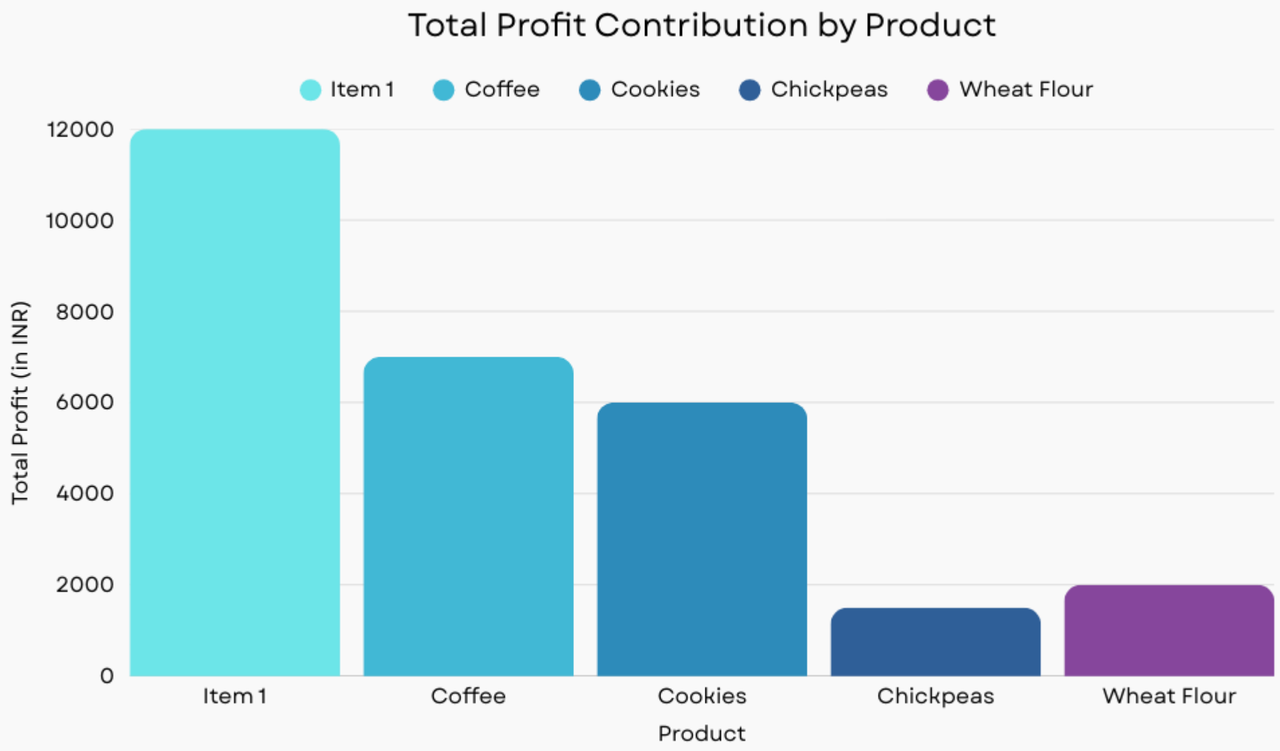


Identifying Key Profit Drivers 💰

A focused analysis of product profitability shows that a few key items drive the majority of profits.

- High-Profit Items:
  - Coffee: ₹8,250
  - Cookies: ₹6,400
- Low-Profit, Slow-Moving Items:
  - Wheat Flour: ₹1,200
  - Chickpeas: ₹1,050

Profitability Analysis Findings



Strategic Actions for Growth 🎯

For Missed Demand: Align staffing and promotions with identified demand peaks (weekends, month-end) to capitalize on high traffic, supported by Seasonal Moving Average forecasts.

For Inventory Imbalance: Reduce procurement of slow-movers (Wheat Flour, Chickpeas) by 50% to free up capital and space, while maintaining 1.5× weekly demand stock for fast-movers like Coffee and Cookies.

For Low Profitability: Launch "profit-booster" bundles, such as a Coffee + Cookies combo, to increase sales of high-margin products and improve average transaction value.

For Long-Term Growth: Gradually diversify product offerings and explore wholesale opportunities to reduce over-dependence on a few products and strengthen market position.

Conclusion

Path Forward to Optimization

By implementing these data-driven recommendations,
Neha Prem General Store can:

Reduce Waste

Avoid losses by cutting excess purchases of slow-moving items and preventing stock expiry.

Optimize Stock

Maintain sufficient stock for high-demand products during peak periods to meet customer needs without overstocking.

Improve Profits

Boost revenue by promoting high-margin products and implementing bundle offers to increase average sales per customer.

Thank You