FINAL REPORT

1. INTRODUCTION

1.1 Project Overview

This project explores how strategic in-store product placements, pricing strategies, promotions, and consumer behaviours impact overall sales. Using data-driven insights, we aim to identify optimal positioning strategies that drive higher sales volume.

1.2 Purpose

To help retailers optimize product positioning and promotional efforts by uncovering patterns in sales data using visualization, analysis, and machine learning.

2. IDEATION PHASE

2.1 Problem Statement

Retailers often lack clarity on how shelf placement and promotional strategies affect sales. This project aims to fill that gap with actionable analytics.

2.2 **Empathy Map Canvas**

https://drive.google.com/file/d/1pd3Zd10_z5QFbLyWoZ7qG5J1SZgxoInf/view

Says	**"We want more sales."**
Thinks	"Are end-caps more profitable?"
Feels	Pressure to optimize floor space
Does	Runs promotions, tests placements

2.3 Brainstorming

Ideas included:

- Analysing foot traffic impact
- Comparing placement types (Aisle vs End-cap)
- Using ML to predict sales

- Visualization dashboards

https://drive.google.com/file/d/1NBVktNPOCPcjOT1CDc_mFcvjZMoJQWlr/view

3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

1. Enters store
2. Navigates to product location
3. Makes purchase based on visibility, promotion, and price

   https://drive.google.com/file/d/16EA7QA0_6xsPYtKxTBoe0CVQKy-gj0x9/view

3.2 Solution Requirements

- Clean dataset
- Identify key impact variables
- Visual & statistical analysis
- Optional ML model

  https://drive.google.com/file/d/1ykNiTnN7N677Mhdq-5warpmjTX9QfkPc/view

3.3 Data Flow Diagram

(We can create one if needed):
Data → Preprocessing → Analysis/Model → Insights → Output/Visualization

https://drive.google.com/file/d/1VGssHtesN8w_P04Dpw47TG39YKBXWGct/view

3.4 Technology Stack

- Python (Pandas, Seaborn, Scikit-learn)
- Jupyter Notebook
- Flask (for optional deployment)
- Word, Excel for reporting

4. PROJECT DESIGN

4.1 Problem-Solution Fit

Retailers need data to inform their positioning. We provide sales impact analysis through data science.

https://drive.google.com/file/d/1CatloUvVQUgWG2E1rgfACnOHHgnUlfB5/view

4.2 Proposed Solution

Analyse a dataset of 1000 product entries with various attributes to determine what drives high sales.

https://drive.google.com/file/d/1erZN9OgkQHbaP0sYqE809XWHj1vWhHy8/view

4.3 Solution Architecture

1. Data Collection
2. Preprocessing
3. EDA & Visualization
4. Model (optional)
5. Report generation or dashboard

   https://drive.google.com/file/d/18qu4h57KUBAvjE6Rpsq23Arjerheh-kW/view

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

- Completed with Agile methodology
- Tasks divided into 3 sprints
- Estimated using story points
  https://drive.google.com/file/d/1212mehGcPkGX3lhNz4nfzSmc-dG61t2Z/view
- **6. FUNCTIONAL AND PERFORMANCE TESTING**
- **6.1 Performance Testing**
- We evaluated model accuracy using R^2 and MSE.
  https://drive.google.com/file/d/1lPb0RzU62e1BPCiR4M1KuQ4frUn9Ctjm/view

7. RESULTS

7.1 Output Screenshots

- Bar charts of sales by Product Position and Promotion

https://drive.google.com/file/d/1q5p5cYjVtl_6d--YI0_Itvfe-RsaxCXh/view

https://drive.google.com/file/d/1WAYtur3mYS1uqt7C1i4FgRAQFk5J_sKl/view

8. ADVANTAGES & DISADVANTAGES

Advantages:

- Data-driven decisions
- Easy-to-understand visuals
- Actionable insights

Disadvantages:

- Limited dataset (only 1000 entries)
- Seasonal trends might vary across regions

9. CONCLUSION

Product positioning and promotions strongly influence sales. End-caps and promotions drive significantly higher volumes. This data can guide retail strategy.

10. FUTURE SCOPE

- Use larger, real-time datasets
- Integrate customer feedback
- Predict optimal price for maximum sales
- Real-time dashboard for dynamic positioning

11. APPENDIX

- Source Code: (if applicable)
- Dataset Link: *https://docs.google.com/spreadsheets/d/1qZ2oJ-9bP0qwsG5Z4Dw2NNF05AzAUY5XB-eZaVAeq6g/edit?gid=372446189#gid=372446189*
- Project Demo: *https://drive.google.com/file/d/17v8CrF7y0Gbt_K9I_N1J94MHxwS83bmP/view?t=1*
- *GitHub link:*

https://github.com/Chetan2467/Product-analysis/tree/main