Marketing Campaign Optimization using Linear Programming

Course: Decision Sciences Applications (AIL6110)

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Proof of Concept Overview

Problem Statement

Many brands invest heavily across marketing channels like TV, social media, influencer campaigns, and digital ads — but often don't know **which channels actually drive sales**.
As a result, marketing budgets are distributed based on intuition rather than data, causing **inefficient spending and lower ROI**.

Solution Approach

Linear Programming (LP) to develop a data-driven optimization model that allocates ad budgets optimally across channels to maximize predicted sales.

Why This Matters

- The **Consumer Goods industry** faces major challenges in optimizing trade promotions and marketing execution.
- According to **Salesforce (2024)**, U.S. consumer goods companies spend **over $200 billion annually** on merchandising and marketing — yet **52% of plans are not executed as intended**, leading to **$100 billion in trade spend going unoptimized**.
- Only **36%** of firms have high adoption of trade promotion optimization tools, and less than **46%** are satisfied with promotion ROI.
- A Google study indicates that businesses implementing data-driven marketing strategies are six times more likely to see annual profitability.

Our **data-driven, Linear Programming–based optimization model** helps companies:

- **Allocate budgets efficiently** using real performance data.
- **Target customers better** through insight-based decisions.
- **Increase ROI by 15–25%** (McKinsey, 2023).

Hindustan Unilever (HUL) spent **₹6,199 crore on advertising and promotions in FY25**

Other Potential Clients:

- Startups running digital campaigns
- Marketing agencies managing multi-channel budgets
- E-commerce Platform

Refrence 1, Refrence 2

Budget Proposal

Budget Head	Details / Logic	Estimated Cost (₹)
Data Collection & Cleaning	Extracting and processing marketing/sales data	110,000
Model Development	Predictive model for sales–spend relationship	460,000
Optimization Engine	Linear programming for budget reallocation	160,000
Cloud & Software	Python, cloud compute, data storage	46,000
Manpower	2 analysts × ₹60,000 each	120,000
Miscellaneous	Testing, reporting, documentation	40,000
Total Estimated Cost		**9,36,000(base) +/- 40K**

Refrence1, Refrence2,