



Case Study

Sales and demand forecasting for a leading FMCG

Demand sensing for a leading FMCG company at SKU level across sales areas



About Client

Client is one of India's leading consumer goods companies providing consumer products and services with annual turnover of over 1 Bn USD. With its headquarters in Mumbai, Maharashtra, India, it is present in over 25 countries across Asia and Africa. It owns brands in categories of hair care, skin care, edible oils, health foods, male grooming, and fabric care.

Objectives:

Client's internal demand forecasting was at an accuracy of 70% which resulted in –

- ❖ Stock out of some SKUs during high demand months
- ❖ Excess inventory of SKUs having low demand
- Client wanted to build a predictive model to forecast the sales for different SKUs of multiple brands in important ASM areas at retailer level to optimize inventory
- Client shared three choices in terms of brand and ASM areas for Phase 1 of the project
 - ❖ Coconut oil for ASM areas ABC1, ABC2 and XYZ
 - ❖ Amla oil for ASM areas PQR and XYZ
 - ❖ Cooking oil for ASM areas UVW1 and UVW2

Project overview

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List of choices

Brand 1

Brand 2

Brand 3

Collecting enterprise data at SKU level on the brands and ASM choices shared by the client

Descriptive testing



Tests to select brand for POC

- Correlation metrics
- Trend Analysis
- Trade and Consumer offer (TO /CO) impact
- Stability tests

Modelling



Created ~150 secondary variables for each SKU, area and month combination
Implemented various machine learning algorithms on the datasets

Business Impact



The model was performing best with random forest algorithm with 85+% accuracy for the selected brand.
Predicted Aug, Sep and Oct'XX sales using data till their previous month

Data sources and important variables

Demand sensing for a leading FMCG company at SKU level across sales areas



- Exploratory Data Analysis was used to identify variables for each SKU and Area combination separately
- A few important variables used to train the model



*Month is divided into 3 blocks of 10 days each

Approach and Impact

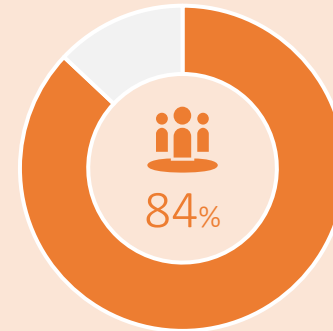
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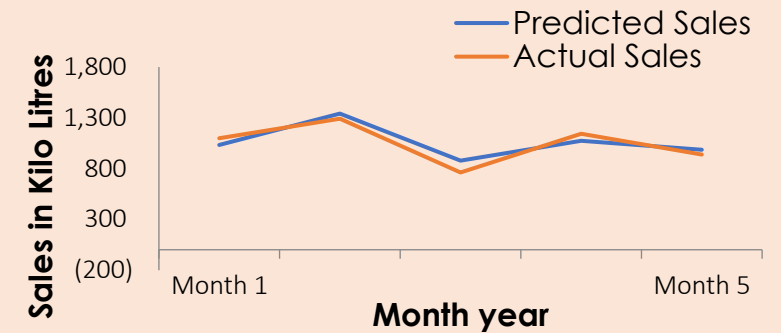
Approach Methodology

- Analyzed 3 years of historical sales data at SKU and area level
- Created ~150 variables such as:
 - ✓ Past 3 months primary sales, secondary sales, block sales, planned sales
 - ✓ Average, ratio and percentage variable for the above variables
 - ✓ Product pricing
 - ✓ Last trade offer and consumer offer was present and past 3 months behavior
 - ✓ Marketing spend at central and area level
 - ✓ Number of event days in that particular month
- Developed multiple predictive models to forecast the demand
- Random forest regression gave the best results

Impact



- The forecasting model built had an accuracy of **84%** for the largest brand.



- Improved and better demand planning to avoid stock out situations.