CASE STUDY

ALGONOMY

A leading chain of grocery stores based out of the Middle East

SEGMENT | Grocery

PRODUCT | Merchandise Analytics - Forecasting and Replenishment Planning

OBJECTIVE | Enhance forecasting process to reduce wastage and out-of-stock instances for perishables

RESULTS

- The **improvement on the bottomline** was $369 per week per store per SKU
- The **projected annual impact** on the bottom line for just one critical item **was $1,000,000+**

The client is a Saudi Arabia based company. They are the pioneers in food wholesaling, grocery stores, and malls. The company operates with 180+ stores spread across supermarkets and hypermarkets, convenience stores, and wholesale outlets in Saudi Arabia and Egypt.

The client was looking to improve its demand forecasting to align the supply chain of daily perishable goods and faced the following challenges:

- Excessive wastage leading to category margin erosion
- Inadequate stock leading to loss of sales

Since wastage and loss of revenue due to out of stock are two competing business KPIs, any effort to reduce one was nullifying any gains made on the other. The client was therefore looking for a solution to deal with the two aspects holistically and optimize its perishable goods supply chain, especially with respect to replenishment planning.

Beyond accuracy

Forecasting that drives business impact

Forecasting is typically evaluated with respect to accuracy numbers, in which 100% means a perfect fit. However, the client understood that the main drawback of this evaluation method is the absence of any business KPIs. The client was therefore looking for a forecasting solution that is linked with reducing wastage and decreasing out-of-stock instances. Algonomy's demand planning and forecasting solution, part of its larger merchandise analytics suite of solutions, was the perfect match to the client's requirements.

Forecasting framework tailored for the category-outlet combination

Predictors considered

- Retail price
- Presence of outlet promotion
- Local festivals
- Events

The customer wanted to start the engagement with Fresh Broiler Chicken, an item which they had historically struggled to replenish efficiently. To start things off, daily forecasts were generated for Broiler chicken at the outlet level using a multivariate forecasting framework.

For training the models and data, 2 years prior to 2021 were used. Apart from daily sales at outlet level, some predictor variables in the model which can potentially impact demand were also included. However, only price and outlet level promotions improved modeling accuracy significantly.

Notwithstanding the average forecasting accuracy of 75.8%, the replenishment planning module was used to determine the daily replenishment quantities. During the first week of parallel run, in which the customer used the same replenishment criteria, it was possible to establish the impact of the solution in relation to the current practice.

Potential profit gain, where profit gain was defined as the sum of reduction of wastage (due to excess stock) and reduction of loss of sales (due to out-of-stock instances), was used as the main business KPI to evaluate the impact of the solution.

The customer was able to establish a potential profit gain of $369 per week per store for this particular item. The projected impact on the bottom line from this one critical item was in the excess of $1,000,000+.

Combined monetary impact as the evaluation metric for the forecasting model

OUTLET: B001	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Opening Stock*	0.0	5.0	5.0	0.0	5.0	5.0	5.0
Forecasted Demand	40.0	45.0	51.0	42.0	45.0	27.0	30.0
Actual Order Quantity	60.0	33.0	57.0	50.0	53.0	76.0	42.0
Forecast based Order Quantity	40.0	40.0	46.0	42.0	40.0	22.0	25.0
Sales	24.5	31.3	62.0	40.0	33.0	16.0	33.0
Actual Demand	24.5	31.3	74.0	40.0	33.0	16.0	33.0
Actual Wastage	30.5	1.7	0.0	5.0	20.0	60.0	9.0
Forecast Based Wastage	10.5	8.7	0.0	0.0	7.0	6.0	0.0
Actual Loss of Sales	0.0	0.0	12.0	0.0	0.0	0.0	0.0
Forecast Based Loss of Sales	0.0	0.0	23.0	0.0	0.0	0.0	3.0
Combined Monetary Impact Actual**	122	6.8	6	20	80	240	36
Combined Monetary Impact Forecasted**	42	34.8	11.5	0	28	24	1.5
Combined Monetary Gain	**$369.00**						

*Maximum overnight storage: 5kg

**Buying price $4.0, retail Price $4.50

ALGONOMY

Algonomy (previously Manthan-RichRelevance) empowers leading brands to become digital-first with the industry's only real-time Algorithmic Decisioning Platform that unifies data, decisioning, and orchestration across marketing, digital commerce, and merchandising for the retail industry. With industry-leading retail AI connecting demand to supply with a real-time customer data platform as the foundation, Algonomy enables 1:1 omnichannel personalization, customer journey orchestration, merchandise analytics, and supplier collaboration. Algonomy is a trusted partner to more than 400 leading retailers and brands, QSRs, convenience stores, and more; with a global presence spanning over 20 countries. More at algonomy.com.