Case Study

Demand Planning & Forecasting – Leading Fashion Retail Firm

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Business Challenge

Client, a fashion retail chain (focus on 14 products categories) selling across India through its 250+ retail stores and e-commerce portals. Client was facing challenges with demand forecast and implement optimum assortment based on each store characteristics and demand peculiarities which in turn minimize the loss sales and inventory costs.

Operational Challenges:

- Huge volumes of sales data, inventory data to analyze, but do not have effective tools/techniques to forecast accurately and generate actionable insights at product attribute or store level
- Data extraction and reporting is manual (using excel), which consumes lot of time
- Every time, new analysis has to be done using excel modelling that leads to repetition of efforts
- No effective real-time & forward-looking analysis for category managers to take decisions

Planning & Forecasting Challenges:

- Large no. of SKUs with different attributes (not interlinked) makes it difficult to make demand assessment at SKU level or store level
- No consistency in ordering cycle
- No clear identification of dormant stock at store level and set process for re-distribution
- Intermittent demand (slow and erratic sales for many items at store level)
- Assortment instability (frequent new-item introductions and seasonal assortment changes)

STATXO Solution

STATXO developed a Cloud Analytics platform for Demand Planning and Inventory Planning & Replenishment that provided forward looking analysis to support the Category Manager/ Product Manager to do following:

- Place a right-size order well before time
- Optimize the stock levels for individual products & sub-products across different cities/stores
- Plan distribution & re-distribution
- Track business KPIs related to product sales performance
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### 4 Phased Approach to Design Effective Demand Planning & Forecasting Solution

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**Phase 1: Project Kick-off**
- STATXO team of experts conducted a 3 day workshop with different stakeholders for better understanding of current processes, scope, forecasting models, data structure, category wise details etc.

**Phase 2: Pilot State (POC)**
- Designed tool with selected focus:
  - Top 3 Categories (in terms of sales)
  - Demand planning & forecasting at SKU, Category, Store (250 stores) and Procurement Hub level

**Phase 3: Scaling State**
- Demand forecasting & Inventory Planning implemented & scaled to all remaining categories/departments across 250 stores
- Testing done in parallel, which helped in tracking accuracy levels and make iterations for improvement

**Phase 4: Steady State**
- Regular tracking of all relevant categories
- Processes are optimized; iterations gets reduced
- Focus on efficiency & process improvement
- Users get regular feeds on the quantity to be ordered well ahead in time

### 6 Different Type of Analysis Conducted

1. **Demand Supply Pattern Analysis**
   - Understand trend & seasonality in product/ category sales
   - Variation in sales lifecycle across product profiles historically
   - Top-Bottom performing products
   - Assess lost sales due to stock-outs

2. **Product Lifecycle Analysis**
   - Understand how sales lifecycle change across product families
   - Understand how stock-outs/inventory levels vary across product families
   - Lead-time assessment of various products

3. **Product Affinity Analysis**
   - Better understand which products are homogenous group with similar attributes
   - Create product families by clustering similar products
   - Create product family profiles along with Category manager

4. **Store Segmentation**
   - Identify various store profiles/ store clusters based on similarity in sales trend, product composition etc.
   - Identify top/ bottom performing products in each category by store clusters

5. **Demand Forecasting**
   - Attribute demand at store level
   - Improve sales through better in-stocks
   - Reduce excess & safety stock inventory
   - Decrease sales planning & operations planning time
   - Improve store and DC replenishment

### Inventory Planning & Optimization

- Improve inventory turns
- Reduce inventory holding costs
- Store & DC replenishment
- Plan distribution & re-distribution based on stock inventory at different stores
- Improve assortment planning to meet demand patterns to each store cluster (performance & non-performance based)
- Identification of base range (most popular products placed in all stores) and custom assortment (products specific to each store cluster)
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Solution Approach – 1/2

Step I

- Classify products in a category into families based on price, life-span, season, style, colour, size. Such as for category – Shirt

Product Affinity

Step II

- Analyse the historical sales pattern of these product families across months at country/ state/ city level and create sales profile for each family

Product Lifecycle

Step III

- Using machine learning algorithms conduct time-series forecast to determine future sales of the category/ product family for next 1 year at country/ state/ city level

Time-Series Forecast
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Solution Approach – 2/2

Work with Category Manager

- STATXO consultants will work with Category Manager to understand following key things:
  - Number of new products need to be ordered for each product family for next season.
  - Expected arrival date of new products.
  - Expected Inventory level of product family at time of arrival of new products.
  - Replenishment strategy for new products

New Product Classification

- Analyse the historical sales pattern of these product families across months at country/ state/ city level and create sales profile for each family

Historical Demand Supply Analysis to Forecast

- Using machine learning algorithms conduct time-series forecast to determine future sales of the category/ product family for next 1 year at country/ state/ city level

New Product Details

- Size
- Color
- Composition
- Sub-composition

Classification Algorithm

- Machine Learning
  - Neural Network
  - Random Forest

Product Profile Assignment

- Product Profile – Average Expected Sales
- 1,100 Units over 8 Months
  - 400 units in City 1
  - 200 “ “City 2
  - …………………………
  - N……………………. where N is City Type
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Output & Benefits Achieved

STATXO’s customized Cloud based platform helped client in following ways:

- Regular tracking of relevant SKUs/ categories and optimized stock levels
- Users get regular feeds on quantity to be ordered well ahead in time
- Provided demand forecasting at multiple levels – SKU, Category, Store and Procurement Hub Level
- ~90% demand forecasting accuracy achieved for targeted categories
- Achieved ~10% reduction in total inventory
- Effective planning of distribution & re-distribution
- Improved processes and reduced iterations

STATXO is a global Market Intelligence and Advanced Analytics company with expertise in transforming data into forward-looking actionable insights and empowering companies to make smarter & proactive decisions.

Our approach, driven by domain expertise + data science + machine learning has successfully enabled various businesses to mitigate challenges, leverage their growth potential, outperform competitors and significantly reduce costs.

We support a range of corporate & professional services companies – from Fortune 500 to high potential start-ups across various industry verticals such as Retail, Automotive, Professional Services, Industrial Goods, Travel, Chemicals, and others.

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