Enhance supply chain efficiency through demand forecasting for NIVEA

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Business Goal

“To optimize the efficiency of downstream supply chain in CBEC Dept. of Nivea TW”
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Client

• Cross Border E-commerce department at NIVEA Taiwan
• Key account manager (Tmall)

Problem

• Long lead time: minimum 6 weeks from distributor to FTZ warehouse
• Product shortages: affect sales performance
• Overcome the consequences of product shortage
  • Enhance product availability
  • Gain loyalty

Benefit

• To plan and get ready in advance to overcome consequences of the shortage
• Extend their market by gaining client's loyalty and trust on the product availability
Forecasting Goal

“To forecast sales quantity of specific hero products to Nivea Tmall flagship store”

Current inventory level

Action:

Order NOW!

Hold until next week...

Sum of 8-week Sales Quantity

Week Number of 2018

Wk43 (22-28 Oct)  Wk44  Wk45  Wk46  Wk47  Wk48  Wk49  Wk50 (10-16 Dec)
Forecasting Goal

“To forecast sales quantity of specific hero products to Nivea Tmall flagship store”

(\(Y_t\)) Forecasts (\(F_{t+k}\)): Weekly forecast of sum of 8-week sales quantity of each product
• Source: NIVEA Tmall flagship store
• Measure: Total sales volume of each SKU (Mon-Sun)
• Time period: weekly data starting from Nov 2017
• Data length: 59 weeks as of 16Nov 2018
• Pre-process: Rearrange data; Create dummy; Replace outliners
Method
- Benchmark: Naive Forecast
- Method: Simple Exponential Smoothing (SES), Linear regression with/without dummy variables, ARIMA
- Performance: 1\textsuperscript{st} Actuals ≤ Forecasts; 2\textsuperscript{nd} RMSE

Under-estimate demand → Product shortage
1. Loss potential revenue
2. FTZ warehouse capacity is not maximize
3. Higher inventory cost in distributor warehouse
Residuals (Actuals – Forecasts)

- Actuals ≤ Forecasts
- Negative residuals
- Over-forecast
- Meet all potential sales
Recommendations

- Keep an eye on the upstream supply chain
- Take domain knowledge & safety inventory level into concern
- Adjust marketing strategies based on supply & demand
- Keep a good data maintenance for further studies
Thank you for joining our presentations!

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Join us for snacks outside…

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