PREDICTION FOR AHEAD OF TIME DELIVERY

Improving inventory management and transport efficiency by innovative market demand prediction

CHALLENGES: Smart, green and integrated transport

PRODUCTIVE SECTOR: Transportation, automotive

PROBLEM DESCRIPTION

Both IMPAR Ltd. and Melinda Instal Ltd. are retail companies having to cope with long lead times for product delivrey, while also aiming to satisfy user demand. In order to do this, they need accurate long term predictions on the demand for their products.

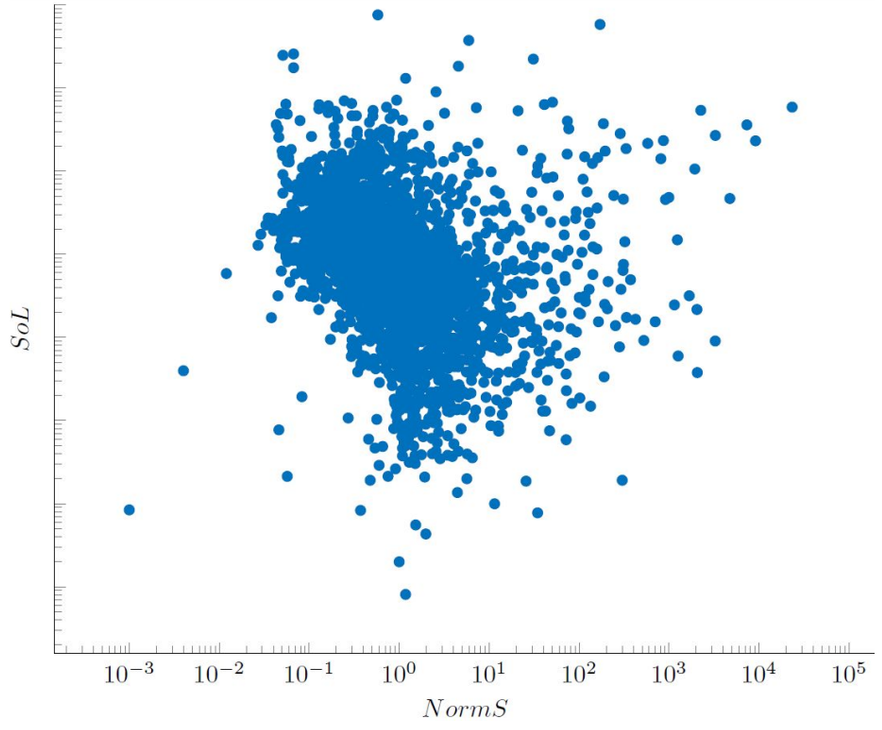
CHALLENGES AND GOALS

The main challenges were that both companies have a highly seasonal trading pattern and products requiring mroe precise predictions were the ones that sold sporadicly.

Our goal was to define a suitable prediction pipeline based on existing methods that can produce better or similar predictions then the in-house experts.

MATHEMATICAL AND COMPUTATIONAL METHODS

We tested a large set of time series prediction methods available in modern AI platforms (i.e. PyThorch, TensorFlow, Prophet and others) and evaluated their suitability for the provided data.



Difference of predicted revenue and actual monthly revenue against difference in sales

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Results and Benefits

We analyzed the sales data provided by companies and evaluated different prediction approaches to see which fits with the characteristics of the data.

The performance of the existing workflows was evaluated and we identified product categories for which a clear benefit was visible for a modified prediction pipeline.

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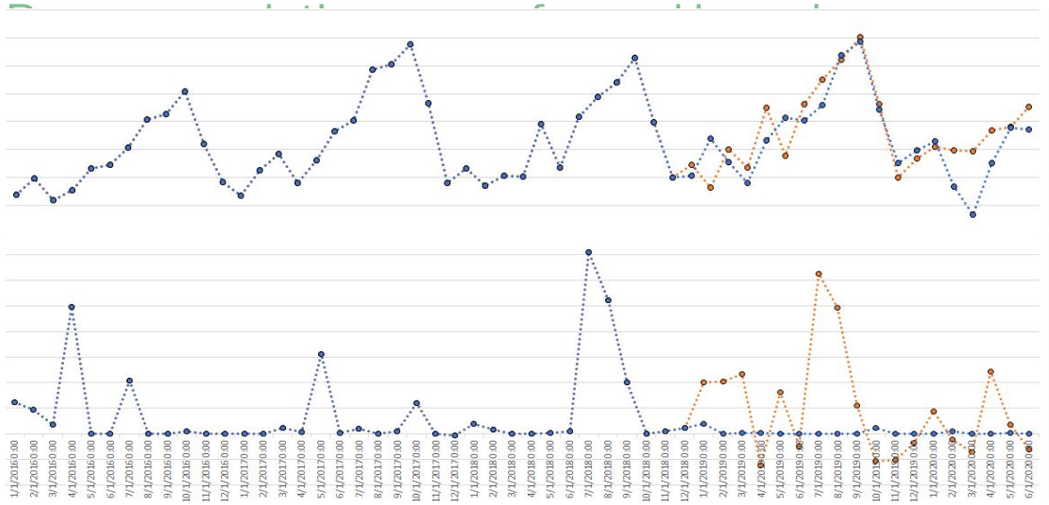

Product with high predictability

Product with low predictability

We provided a fresh perspective on **demand prediction** using modern **machine learning** techniques and an external viewpoint. The **proposed modifications** to existing prediction workflows were welcome.

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