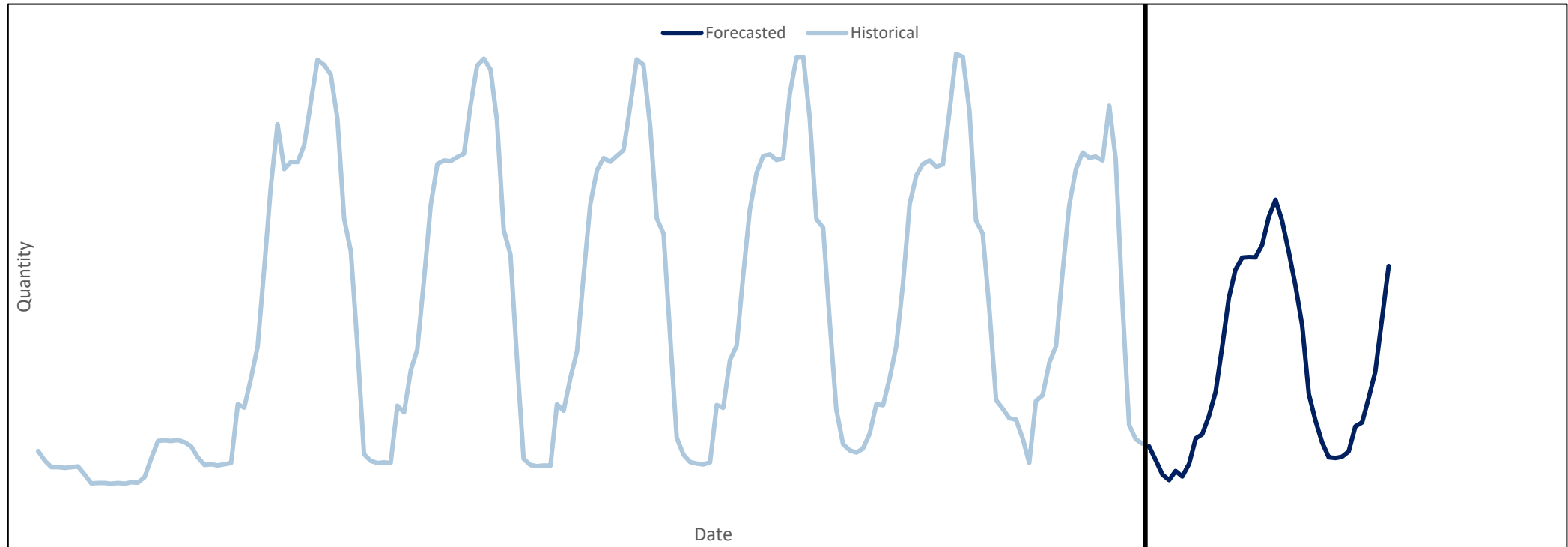# Forecasting with Amazon Forecast

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Forecasting is a Machine learning technique used to predict the future trends

Automatically understands historical data and patterns

Time Series Forecasting is used frequently in many industries

Demand forecasting for retail stores
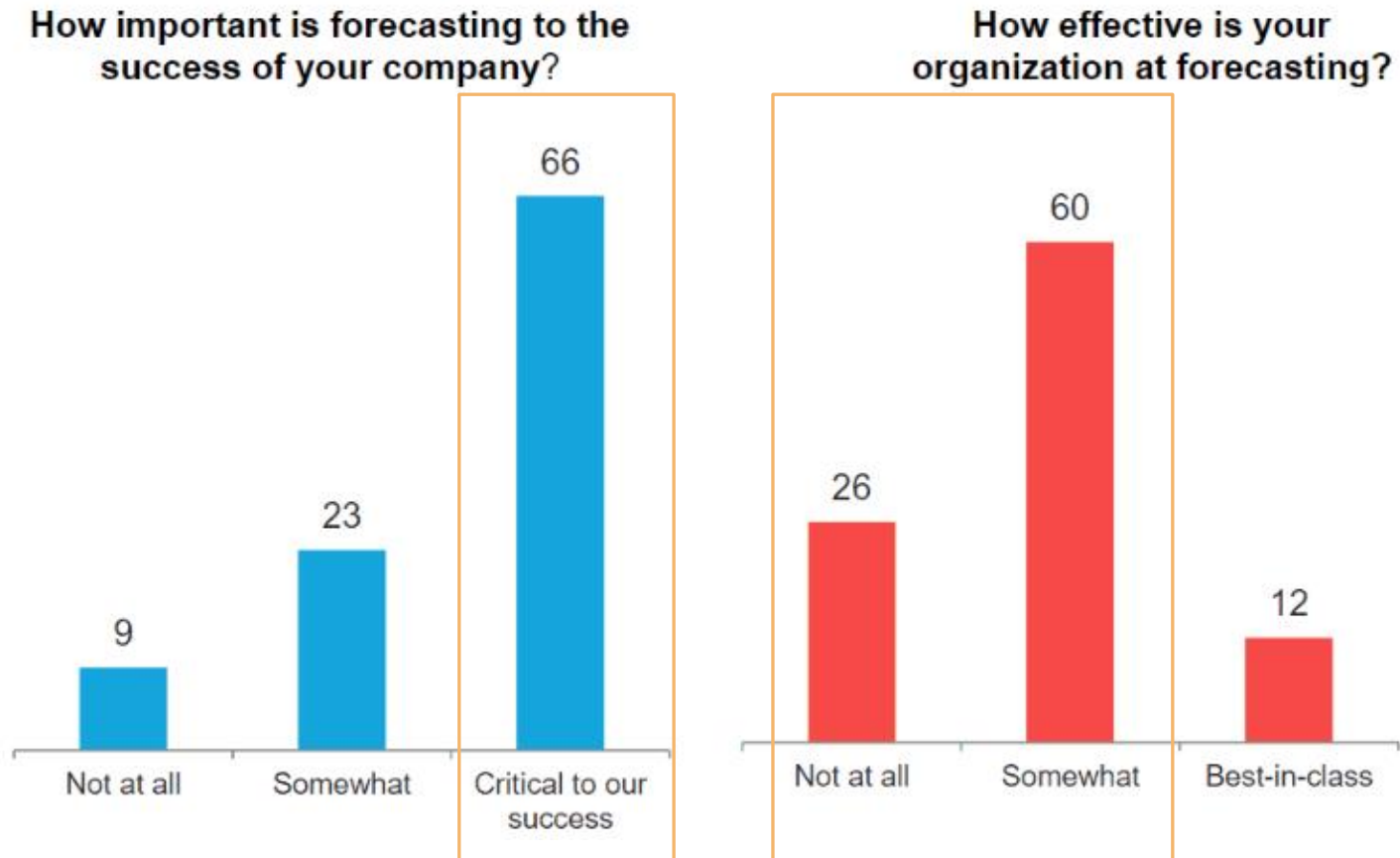
Supply chain and Inventory Management

Stock market analysis

Weather forecasting

Forecasting is critical to a company's success

How important is forecasting to the success of your company?

- Not at all: 9
- Somewhat: 23
- Critical to our success: 66

How effective is your organization at forecasting?

- Not at all: 26
- Somewhat: 60
- Best-in-class: 12

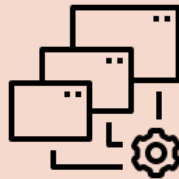# Building accurate forecasts is the core of many industries today

➢In retail, poor sales forecasts result in -
➢Lost Sales
➢Increasing inventory costs

➢Companies today require automation of forecasts
➢Manual work – inefficiency
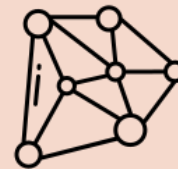➢Difficult to implement at Scale

What is Amazon Forecast?

Based on machine learning

Automated

Multiple Data Sources

Accurate Forecasts (50% greater than only time series)

Amazon forecast provides accurate results with ease

➢ No Prior ML Experience required

➢ Uses state of the art algorithms based on over 20 years of forecasting experience

   ➢ **Forecast Explainability** – AF tells you what factors are driving your forecasts

   ➢ **Include local weather information** – Increase accuracy using local weather information

   ➢ Works with any **historical time series** data

➢ Fully managed service, no need to build your own models

It can handle large volumes of data

OVER 50M FORECAST DATA POINTS

FAST RESULTS

CAN COMBINE MULTIPLE DATASETS

It uses state of the art algorithms

CNN-QR

- Convolutional Neural Network - Quantile Regression, is a proprietary machine learning algorithm for forecasting time series using causal convolutional neural networks
- Works best with large datasets containing hundreds of time series

ARIMA and ETS

- Commonly used algorithms for time series
- Useful for simple datasets with under 100 time series

Prophet

- Based on an additive model where non-linear trends are fit
- Best with time series with strong seasonal effects and several seasons of historical data

Pay for only what you use – Dynamic Pricing Options

Generated forecast data points per month	Price per 1000 forecast data points
First 100K forecast data points	$2.00
Next 900K forecast data points	$0.80
Next 49M forecast data points	$0.20
Over 50M forecast data points	$0.02

Easy to integrate with your existing tools

✓ Compatible with SAP and Oracle Supply Chain

✓ Easy API Configuration to Query AWS Forecast Results

✓ Secured by credential stored in AWS Secrets Manager

Access your data in many ways

Export as .csv

Retrieve through private API

Access your data from S3

We used the electric power consumption data to showcase the capability of Amazon forecast

Time (hour)	Usage (kWH)	Client (household)
1/1/2014 1:00	32.78	client_339
1/1/2014 2:00	31.50	client_339
1/1/2014 3:00	34.80	client_339
1/1/2014 4:00	28.57	client_339
1/1/2014 5:00	28.57	client_339
1/1/2014 6:00	28.57	client_339
1/1/2014 7:00	28.39	client_339
1/1/2014 8:00	26.01	client_339
1/1/2014 9:00	20.33	client_339
1/1/2014 10:00	17.58	client_339

How do we use it?

Insert Demo here

AF can be used in many industries
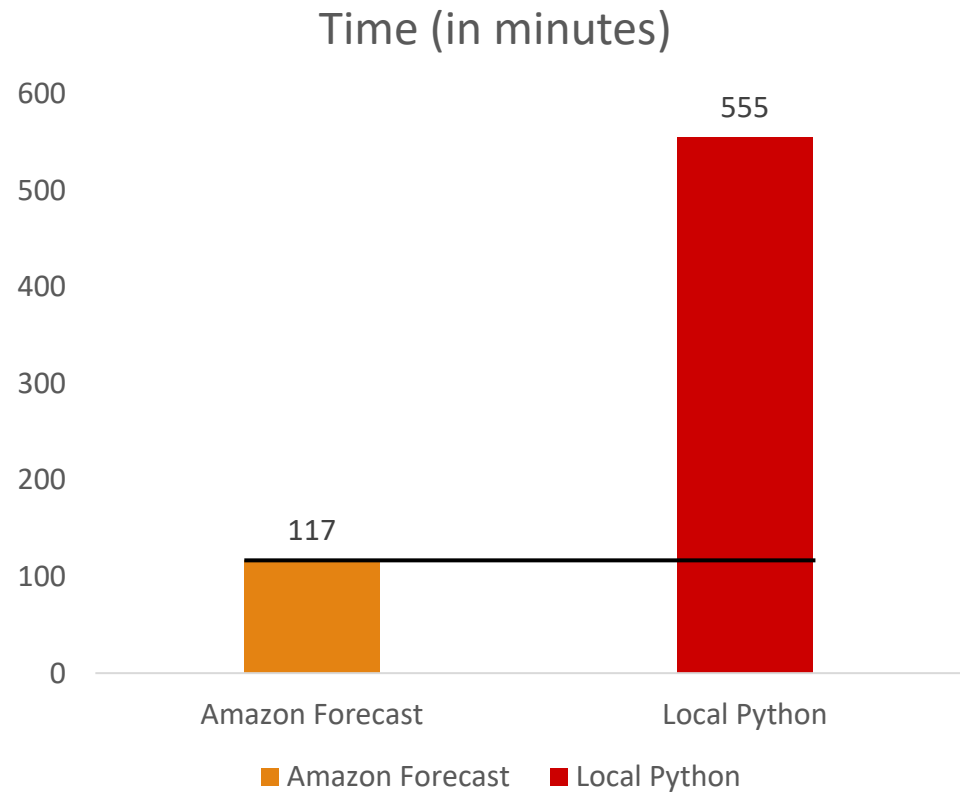
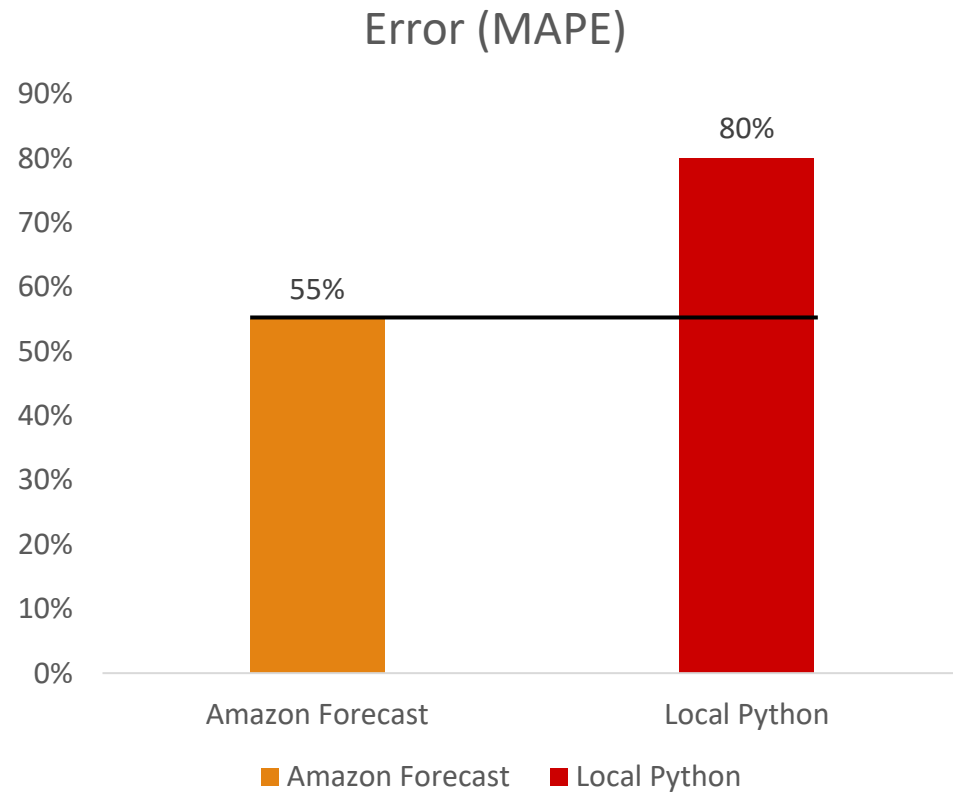**Retail demand planning**

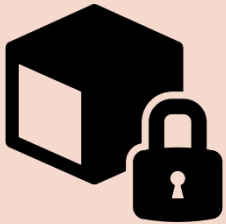**Supply chain planning**

Resource planning

Operational planning

Approximately 5 times faster than local python

Some Limitations of Amazon Forecast

Amazon Forecast is a great tool for managing your statistical forecasting needs, however there are some limitations to using the service by itself -

"Black Box" modeling

Limited options for feature engineering

Results should be used in conjunction with existing forecasting intuition

It has been proven to create value in many industries

meesho

Online shopping for fashion

Increased forecasting accuracy by 20%

clearly

Online retailer of contact lenses

97% accuracy, and over 90% accuracy when predicting sales for the following month

more QUALITY 1st

Omni channel grocery brand

Increase forecasting accuracy from 27% to 76% and reducing wastage by 20%