Data analytics for intelligent demand forecasting

Diana PHOLO STONE

Predictive Insights

PREDICTIVE INSIGHTS

Introduction

The importance of data

The importance of data (cont.)

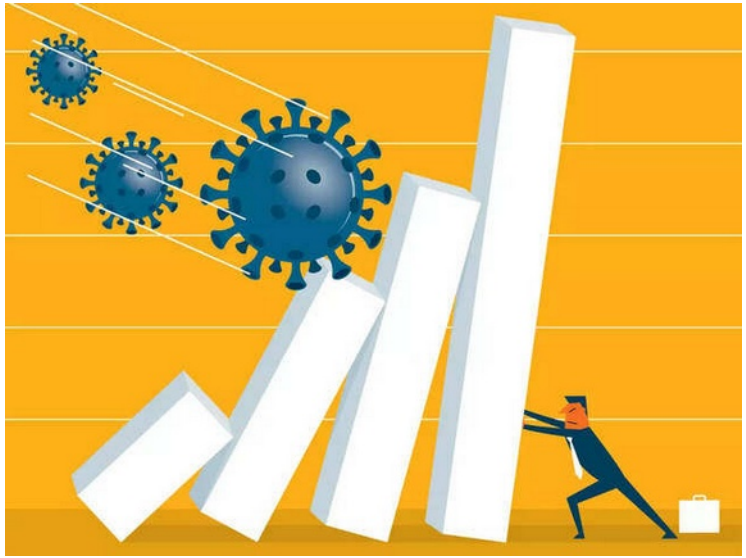
- Data helps business make **decisions**
  - Predicting sales trends
  - Reach new customers
  - Keep existing customers
  - Improve customer service
  - Direct marketing efforts
  - Understand social media impact

AI in the era of COVID-19

- Businesses NEED to forecast and manage systems in way that handles uncertainty
- Tools organisations rely on: analytics, business intelligence, forecasting
- Machine learning (ML) can cut forecast errors by up to half
    - Significantly changes how organisations adapt and pivot

AI in the era of COVID-19 (cont.)

- But AI and ML are not enough
- Pandemic rendered historic data useless
  - → Traditional methods have not been able to change fast enough
- → Need for economics and behavioural insights
- The right data is also necessary!



How can data and AI help my business?

PREDICTIVE INSIGHTS

Intro

Demand Forecasting & Planning

- For products and services
- = Knowing who is going to visit your store, when, and for what.
- Allows for better customer experience + business efficiency

Demand Forecasting & Planning (cont.)

Real-time	Short-term	Medium- to long-term
✔ Forecasts at minute / hour level	✔ Forecasts at day, day part, or hourly level	✔ Forecasts for days, weeks or months
✔ Horizon: next few hours or days	✔ Horizon: next few days or weeks	✔ Made months in advance
✔ Updated in real (or near real) time	✔ Used for planning production, staff scheduling, stock, ordering, etc.	✔ Useful for strategic planning, stock ordering, scheduling promotions or price changes, producing yearly budgets, etc.
✔ Used to identify anomalous behaviour or trigger actions		

Stock optimisation

- Running out of stock can reduce sales
- Too much stock is costly
  - ties up working capital
  - products with a short shelf-life be wasted.
- Sales prediction + info on lead times
  - Preemptive ordering
  - Correct amounts
  - Optimal placement of stock

Sales insight

- Helps identify unusual trends and outliers
  - store, product and individual basis.
- Allows for monitoring of performance
- Can provide warnings for events
  - E.g.: substantially low stores sales levels; staff close to maximum limits of allowed hours
- Can help identify types of customers, target markets or product complements

Success Story: Hungry

PREDICTIVE INSIGHTS

Challenge

- Hungry Lion has 230 stores across South Africa, Angola, Botswana, Lesotho, Namibia, Eswatini and Zambia
- Restaurant managers juggle many responsibilities:
  - determine customer demand, order stock, reduce waste, scheduling staff, etc.
- Scheduling staff = time-consuming task that can affect customer satisfaction
- More challenging during uncertain times

Challenge (cont.)

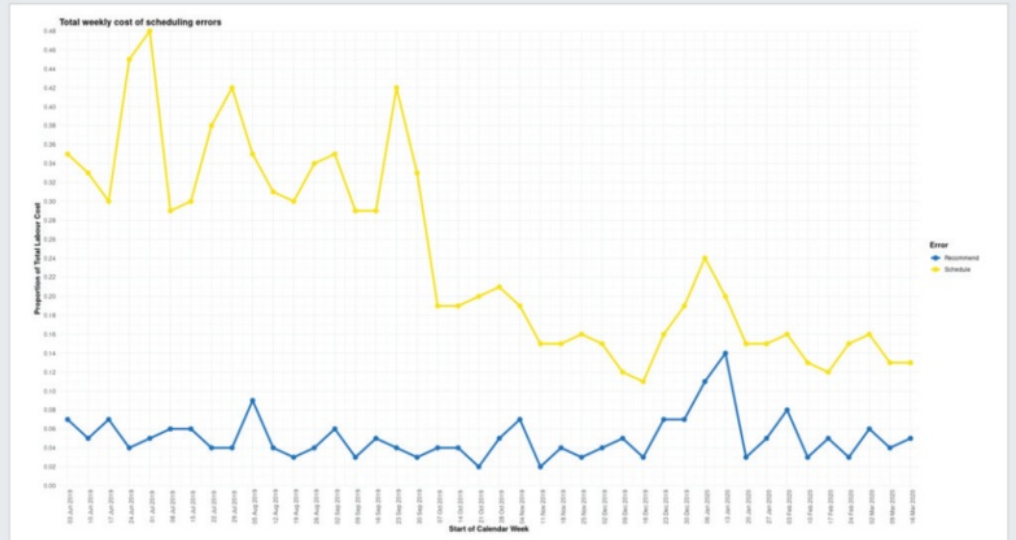
- Managers project sales and schedule staff using instinct, experience and guesswork
- Not based on solid data
- Result: Branch managers were off by more than **40 percent** in their predictions

Solution: Combining human and machine intelligence to improve accuracy

- Hungry Lion brought Predictive Insights in
  - complement human element with ML algorithms
- Predictive Insights extracts point of sales data, staff scheduling data and clock-in data from each branch daily.
- Data is combined with historical data and curated dataset
  - Contains SASSA, loadshedding and weather data, etc.
- Algorithms combine ML methods and economic models of consumer behaviour

Results

- Cost of scheduling errors reduced from 34 to 20 percent



Benefits

- Hungry Lion reports definite decrease in periods of being either under- or overstaffed,
- → Wage bill is more aligned to demand.
- → Benefits to bottom line, staff, managers and customers

Overall benefits of accurate demand forecasting

- Better supply chain management
- Better budget preparation
- Improved staff management
- Potential improvement of pricing strategy
- Satisfied customers

Is this for me?

Who can use demand forecasting

Variable Demand

Cost to forecasting wrong

Openness to integration

How do I get started?

PREDICTIVE INSIGHTS

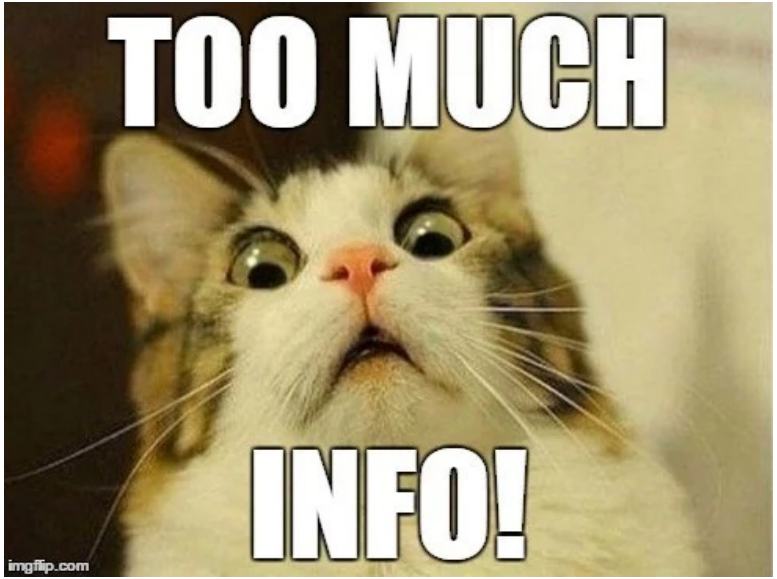
Getting started: Identify the problem

Getting started: Collecting Data

Getting started: Preparing Data

Which data to focus on? Data which are:

- relevant to your question
- accurate
- connected to the bigger picture
- hopefully big



Getting started: Preparing Data (Cont.)

Getting started: Building the right team

Or...

Getting started: Building a data-driven culture

- Step 1: Have your data “analysis-ready”
  - requires a level of “data transparency”
- Step 2: Link your data to business value
  - list business problems + key questions to be answered using data
- Step 3: Invest into training
  - basic analytics + tool usage

Questions?

E-mail: hello@predictiveinsights.net

PREDICTIVE INSIGHTS