



Accurate forecasting in Revenue Management

# “How to get forecasts into perspective”

A practitioner's view

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# Why accurate forecasts are good ....

## ■ The typical RM problem

- You have a perishable product/service
- Your marginal cost of carriage/production is low compared to your average price/fare
- You have high cost fixed assets which determine your average utilisation (load factor) and prices (fares) to break even.
- You may have fixed capacity levels.

## ■ You need some forecasts somewhere to enable you to make the yield/volume/capacity trade-offs

- A description of the size and shape of the market
  - How many people will pay how much to “enjoy” your service/product.
    - By time of day, market, etc ,etc.

## ■ The better the forecast, the more money you make.

# But what is essential is ....

- That you understand how accurate your forecasts are (or where they are more accurate and where less accurate).
- They fit into a work method that gives you control of your business.

# Your ability to forecast is a function of your environment, not just your systems

## ■ Some key parameters

- **Size of you business**
- **Complexity of markets/network and your business**
- **Stability/Maturity – of the market, your business and the competition**

## ■ PLUS ... the quality of data you can get.

## ■ There is a time NOT to forecast .....

# How to measure forecast accuracy

- **What I have seen**
  - **Error reports**
  - **Exception reporting**
  - **Intervention reporting**
  - **Quality measures – spill & spoil**
  - **Analyst’s “gut-feel”**
  
- **What I haven’t seen so much of**
  - **Variance reporting**

# How do you maintain forecast accuracy

## ■ Systems

- Hedge your bets with more than one method – Kalman filters
- Seasonality modelling
- Growth & modelling parameters/functions

## ■ Analyst monitoring & intervention

- or no Analyst monitoring and no intervention

## ■ More I haven't thought of .....

## ■ But what about new industry concepts .....

- Price elasticity !!!!!!
  - No idea – especially when it includes competitive effects.
- Choice models !!!!!!!!!!!!!

# Three pitfalls in measuring & maintaining forecasts

## ■ Unconstrained forecasts !!!!!

- How do you measure the immeasurable .....

## ■ Workload – the volume of work and level of detail

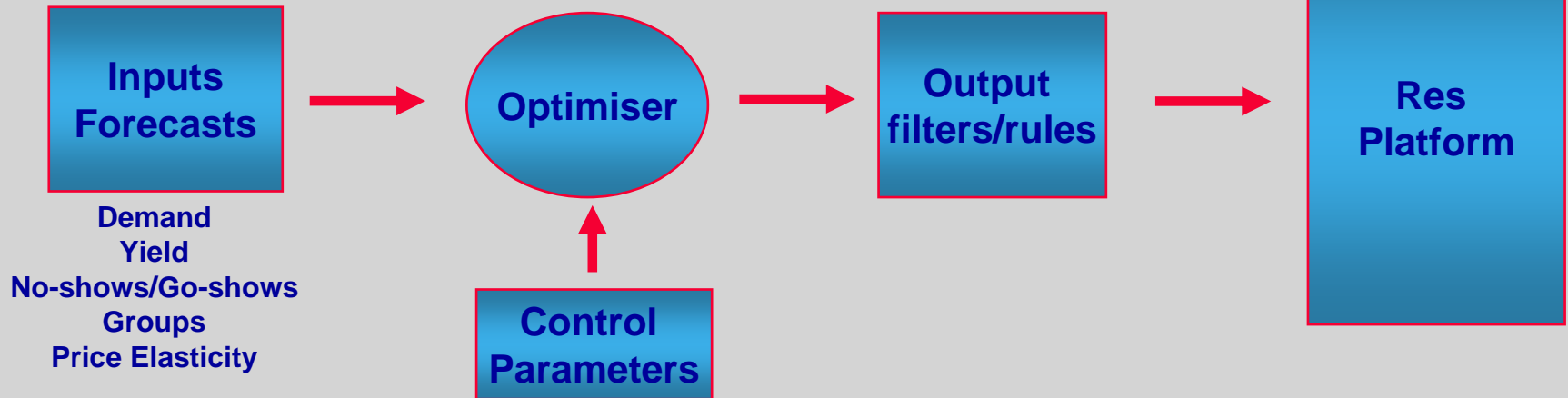
- How to avoid your staff getting swamped

## ■ Understanding

- Even if the analyst does understand it, will the manager?

# Stepping Back

## ■ The basic RM model (airline)



## ■ The whole system is a forecast !!!

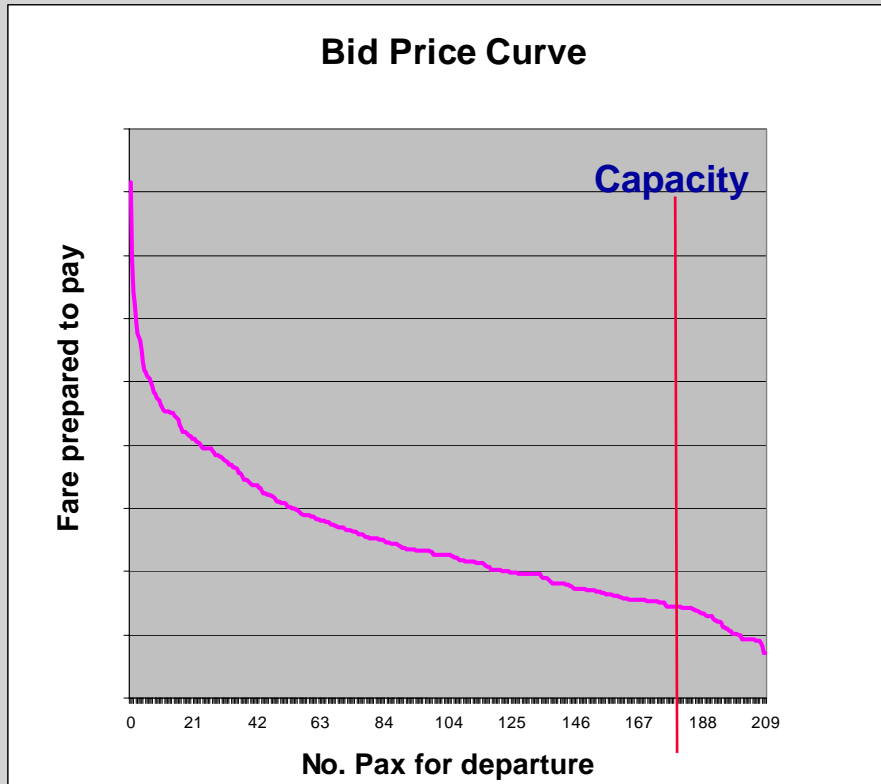
## ■ Where do you put your effort – what is the right balance

## ■ Are you an “inputs” or “outputs” person

- Are you going to die disillusioned, or of a heart attack?

# What we are trying to forecast is:-

- A bid price curve ....



- I've never heard anyone talking about the accuracy of this ....

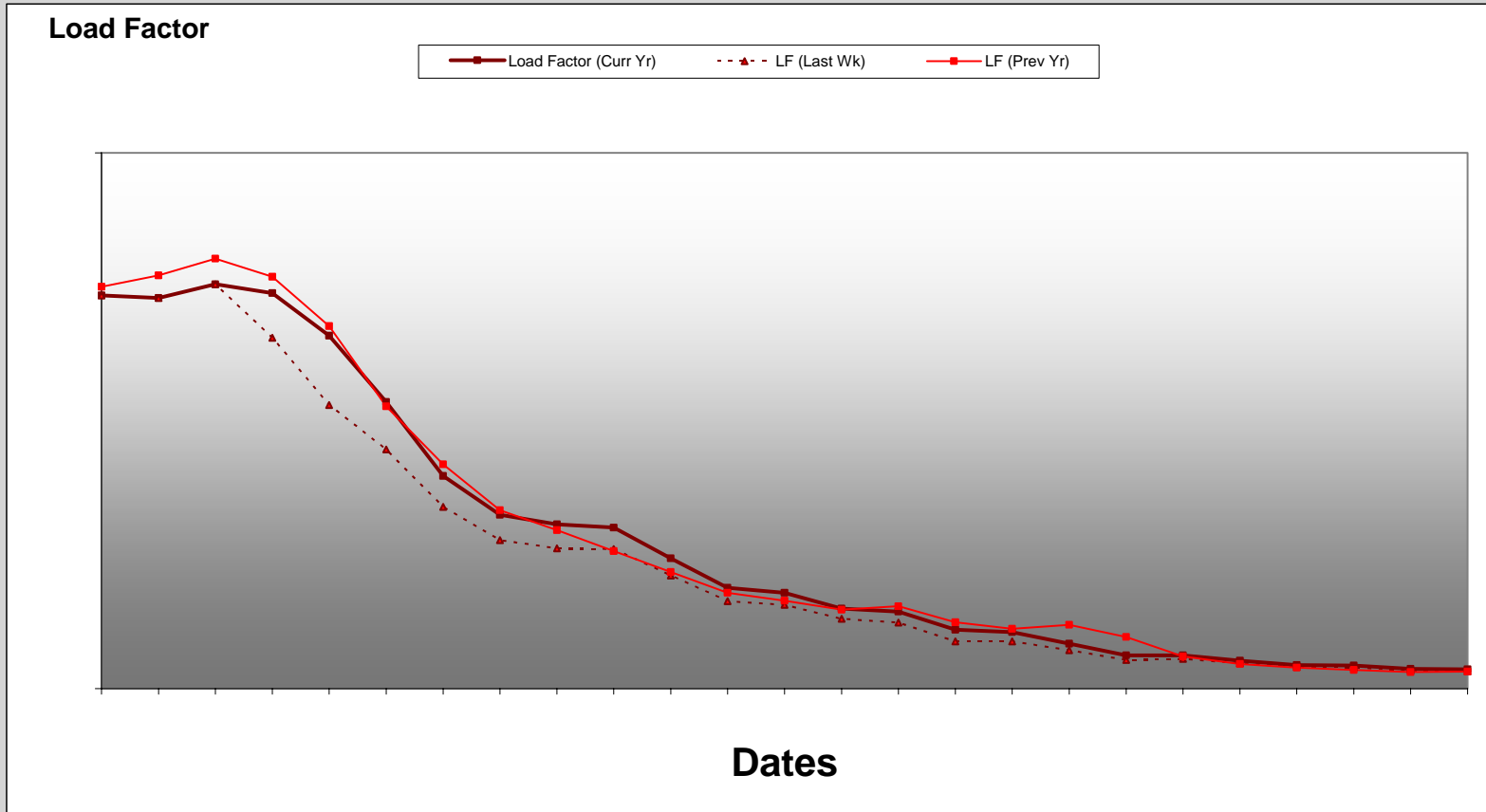
# Three steps to ensuring you have “good enough” forecasts that add value .....

- 1. Build good monitors of your business. Build learning or feedback loops.**
- 2. Work on “Best practice” – work methods that give you control on your business**
- 3. Work on forecast accuracy**

# 1. Build good monitors

## Weekly Forward Bookings and Revenue Report

Market: (All) Analyst: (All) Operations: DOM Region: (All) Direction: (All)  
Super-Market: (All) Team: JAY Airline: DJ&PB Catchment: (All)



- Integrate monitoring/reporting up and down the organisation and across critical dimensions of your business.
- Build performance management systems – learning & feedback loops



## 2. Best Practice

- A combination of
  - Data, Systems, tools
  - Processes
  - Analysts and their skills
- Some of the key dimensions
  - Productivity
  - Speed to market
  - Accuracy/Quality
  - Control/Consistency
  - Simplicity / comprehension
  - Learning
- Find how best to deploy your forecasting capability
  - ... and how to measure and maintain/improve forecast accuracy

# 3. Work on forecast accuracy

## ■ Example: Virgin Blue – Airmax implementation

### ■ Starting position

- Use Real Prices – no yield forecasts
- Current over booking levels
- Experiment with price sensitive demand forecasts & Optimisation control parameters.

### ■ Key measure

- Amount of analyst “output overrides”

### ■ Later on down the track

- Explore model adaptations/enhancements with sabre
- Analyse forecast performance

## ■ Our monitors & best practice provide the test bed to explore forecast accuracy – whilst ensuring the business is not put at risk.

# Summary

- RM “forecasts” have to be put in the context of the total system
- Knowing how accurate they are (and where they are accurate) and how to manage them to keep control of your business is key.
- Once you have control and the ability to measure outputs, you can work on improving forecasts.