The Forecast Process

Guiding principles
Dr Steve Morlidge

- **Operational Roles 1978 – 2002 including**
  - Controller Unilever Foods UK ($1 billion turnover)
- **Performance Management Leadership**
  - 2002 – 2006 Leader Global Performance Management Change Project
  - 2001 -2006 Chairman of Beyond Budgeting Round Table
  - 2007 - BBRT Associate
  - 2006 - Founder Director Satori Partners Ltd
  - 2007 - Visiting Fellow Cranfield University
  - 2010 Published book ‘Future Ready: How to Master Business Forecasting’
  - 2011 Editorial Board of Foresight Magazine
  - 2011 PhD Hull Business School (Management Cybernetics)
  - 2011 Founding Director CatchBull Ltd
Guiding Principles

1. Foundation Principles
2. Design Principles
3. Process Principles
4. Behavioural Principles
5. Maintenance and Improvement
How to we build knowledge?

• Remit of Foresight
  • Understanding of how best to apply forecasting techniques to organisational reality

• Ontology
  • The set of assumptions we hold about the world

• Epistemology
  • How we know what we know
Ontology

1. The world exists
2. It exhibits patterns of behaviour
3. The patterns of behaviour are subject to perturbation and change only some of which are/can be known
4. Organisations are purposeful, complex social systems which exhibit
   • High levels of interdependency
   • A tendency to process entropy
   • A mix of rational and emotional reasoning
5. They use forecasts because they cannot react quickly enough to changes in the world
Epistemology

1. Hard science
   - Deductive derivation of scientific laws
   - Verified by experiment
     - Can’t hold contextual variables constant

2. ‘Common sense’ empiricism
   - Inductive/Anecdotal
     - Choice of principles?
     - Applicability in other contexts?
     - Testing and accumulation of knowledge?

3. Constructivism
   - Build models deductively
   - Criteria: accurate/internally consistent/broad scope/simple/useful
Foundation Principles

1. Shared grasp of nature and role of forecasting
2. Agreement about how forecasts will be used*
3. Define criteria for judging forecast performance*
Increasingly unpredictable
increasing choice

Strategic Planning

ADAPTATION
How do we structure the business to compete most effectively?

Freedom of action
Alternative scenarios of the future environment
Broad brush estimates

NAVIGATION
How do we deploy our resources to best effect?

Creating Options

Decision Making

Operational Forecasting

RESPONSE
How do we service demand efficiently?

Execution

PURPOSE
CREATE THE FUTURE

ADAPTATION
How can we remain long-term scalable in the future environment
Broad brush estimates

NAVIGATION
How can we plan our resources to best effect?

Decision Making

ADAPTATION

NAVIGATION
Some choice available
Multiple variables
Best estimate
Acceptable variation (with ranges)

RESPONSE
Highly constrained
Highly detail-focused
Detailed forecasts
Safety stock

PREDICT THE FUTURE

SHAPE THE FUTURE

stratifedsatapi
Increasingly unpredictable increasing choice

Strategic Planning

Business Forecasting

Operational Forecasting

Increasingly unpredictable increasing choice

FUTURE

NOW

PURPOSE

ADAPTATION
How do we structure the business to compete most effectively?
Creating Options

ADAPTATION
Freedom of action
Alternative scenarios of the future environment
Broad brush estimates

NAVIGATION
How do we deploy our resources to best effect?

NAVIGATION
Some choice available
Multiple variables
Best estimate
Acceptable variation (with ranges)

RESPONSE
How do we service demand efficiently?

RESPONSE
Highly constrained
Single variable
Precise prediction
Detailed forecasts
Safety stock
Two kinds of forecast error

- **Bias (slice):** Leads to:
  - Tampering with forecasts and...
  - Performance shocks and...
  - Too much stock (and obsolescence) or...
  - Too little stock (and lost sales). *Bias is avoidable*

- **Variation:**
  - We can cover variation (some of which is unavoidable) with stock or contingency plans.

---

**Criteria:**
- No bias
- Acceptable levels of variation
Design Principles

1. Design in interdependencies*
2. Balance alignment and flexibility
3. Organise process elements logically
4. Standardise process*
5. Identify and eliminate sources of bias*
6. Match roles to skills and competencies*
7. Build in checks and balances
Typical points of failure

- Disconnects
  - Ops planning
  - Suppliers
  - Variability of supply (long lead times)

- Activity bias
  - High volume
  - Noisy demand patterns
  - Complex process
  - Measurement difficult

- Infrequent, inconsistent, process
  - Managing expectations
  - Multiple adjustments
  - Disconnected
    - Activity planning
    - No measurement

- ‘Gap’ driven bias
  - Disconnected
  - Ops planning
  - Activity planning
  - Little measurement

- Lack of trust in the process

100% judgement
- Natural optimism
  - Motivational tool
  - Budget protection
  - Used for target setting

Market

Historic Demand

Suppliers

Requirements

Future Demand

Operations Planning

Financial Planning

Future Results

Stakeholders

Resource Allocation

Activity Planning

Forecast Uplift
Sources of bias

Cognitive
- Ease of recall
- Anchoring
- Overconfidence bias
- Confirmation bias
- Overconfidence bias
- etc...

Social
Another source of bias:

Motivational bias: a rational response to organisational incentives or threats
Skills and competencies

1. Technical competence
   • Statistically knowledgeable
   • Process minded

2. Domain knowledge
   • Externally focussed

3. Unbiased
   • Aware of sources of bias
   • No psychological or tangible stake in the outcome
Process principles

1. Run in a disciplined way*
2. Document assumptions*
3. Document and analyse reasons for adjustments
4. Provide feedback on forecast error*
Is it safe to cross the road?

FACTS
- Speed of cars
- Change in speed

PLUS ASSUMPTIONS:
- Stopping distances
- Intentions of driver
- Eyesight of driver
- The margin of error
- All continuously validated

INFORM DECISIONS
- To cross/speed up/slow down
Forecasts should be unbiased and have an acceptable level of variation

<table>
<thead>
<tr>
<th>KPI’s</th>
<th>TARGET</th>
<th>ACTUAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPE (Bias)</td>
<td>&lt;1%</td>
<td>0.8%</td>
</tr>
<tr>
<td>MAPE (Variation)</td>
<td>+/- 5%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Is this forecast biased?

Is there too much variation?
1. Do things in the right order and at the right speed.
2. Do it often and in the same way.
3. Observe the results, separating bias (hook or slice) from variation.
4. Make adjustments, improve the process.
Behavioural Principles*

1. Cultivate openness and trust
2. Accept variation, uncertainty and change
3. Model good behaviour
Some sources of the bias disease or ‘how we reward lying’

‘My boss wants to see the forecast coming back to target’
‘If I don’t show 4 per cent growth in sales I will be crucified’
‘If I tell the truth about the sales shortfall my marketing budget will be cut’
‘If I let them know that I am going to beat my target it will be increased’
‘This forecast is unacceptable’
‘I only want nice surprises’
‘I don’t want to signal that yet’
‘You are not in control - your numbers keep changing’
‘He always sandbags his numbers - increase them by 5%’
‘If I declare savings my budget will be cut next year’
‘Don’t tell them yet. Why get beaten up more than once?’
Maintenance and Improvement Principles

1. Regularly audit
2. Make changes in formal and controlled fashion
3. Balance sophistication and pragmatism*
“Le mieux est l'ennemi du bien”

Francoise-Marie Arouet " La Begueut" (Contes, 1772)
Thank you