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By Stefanie Brix



Supply and demand forecasting: more than just a numbers game

By *Stefanie Brix*

Long gone are the days when firms produced demand forecasts based purely upon mathematical calculations. The modern reality is one of negotiation-based push and pull between the various departments contributing to the process, all of whom have their own functional targets to meet and personal incentives that they wish to obtain. Conflicting agendas and how to overcome them is key to accurate forecasting.

Having the necessary internal supply to meet external demand is one of the core activities of any firm. The dynamic between doing good business in-house in order to be able to deliver the necessary product or service onto the market in the right quantity, at the right price, at the right time, at the lowest logistical cost and to the benefit of the firm's brand image is a complex one.

For starters, demand can be influenced by a whole series of outside factors, including global competition, changing consumer preferences, and even seasonal disruptions such as weather conditions or holiday periods. This doesn't make the job of making an accurate forecast any easier. However, when the various departments contributing to the preparation of a final forecast proposal for board approval are not even pulling in the same direction, the task becomes a potentially Herculean one.

Questions of motivation

The irony of the numbers game involved in producing a demand forecast is that it is becoming less and less stats-based as the years go by. Over the past decade, it has been estimated that only 25 per cent of firms produce purely mathematically generated forecasts. The majority of proposals are now accompanied by a whole series of assumptions, explanations and justifications from the various departments involved in the process, which are then argued and debated and, in the event of a consensus being reached, then condensed into an overall argumentation for the final OK



from the people at the top. The process is therefore a very human one, with a particular emphasis on the sometimes conflicting motivations of each interested party. The challenge is to turn opaque, subjective assumptions into healthily-debated conclusions.

The departments involved in such a process differ from one firm to another, but to illustrate the impact that differing agendas can have, a scenario where Sales, Marketing and Operations have to work together provides a good case in point. Typically, the Sales department's key goal is to ensure that enough stock is in place to meet all purchase requests as the last situation they would want to avoid is to miss out on sales due to a lack of available supply. Their forecast input would most probably blend judgement calls with statistical sales targets to back up their opinion.

Marketing's preoccupation would most likely be with brand reputation and incentivising consumers, an art that is altogether more subjective and would err more towards an instinctive but justified feel for the nature of the consumer market than mere figures. The Operations team, on the other hand, would go very much in the opposite direction, looking to justify mathematically a more downward forecast in order to avoid the costly business of handling surplus stock. The challenges only just begin here...

Owning the process

Given that each department puts markedly different cards on the table in terms of stats and arguments, the

thorny issue of attributing ownership of the forecast process also has to be addressed. Some noses will inevitably be put out of joint but in any given firm one department has to take responsibility for synthesising the various recommendations and being responsible and accountable for the final submitted proposal.

Ultimately, forecast accuracy has to carry higher priority than inter-departmental relations. However, a recent case study of a global beverage firm

Under the microscope was its Latin American country business unit, where forecast ownership changed from Marketing to the Supply Chain Department and where a new forecast methodology was introduced in order to reduce tension, improve accuracy, increase transparency and generalise a feeling of ownership of the process and its results.

All of this was achieved via a simple spreadsheet set-up comprising a weighting scheme that brought the

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shows how the former does not necessarily have to come at the expense of the latter. Via a simple, low-cost internal exercise, an improved result was produced both in terms of diplomatic relations between departments and the actual forecast itself.

The firm in question boasted €2.6 billion in sales and an operating income of €324 million in 2009. More significantly, it operates out of 84 plants worldwide within an FMCG market characterised by high seasonality and volatility, doubling the pressure to produce as accurate a demand forecast as possible.

explanations of each department out into the open and onto the negotiating table, combining them with statistical forecasts based on past performance as well as present and future concerns.

Whilst the Supply Chain Department was clearly identified as being in charge, no longer were the motivations and vested interests of each participant in the process cloaked behind the figures presented. Discussion was healthier through improved transparency and the final proposal much closer to a general consensus than in previous years. ▶

Supply and demand forecasting: more than just a numbers game

By **Stefanie Brix**

A behavioural dilemma

Delving deeper into the demand forecast dilemma reveals that the phenomenon is not only an organisational and departmental one but also a functional and human one. Workers belonging to a particular department within a firm have to ask themselves where their priorities lie beyond the correct execution of their own job – the benefit that their demand forecast does to their department or to the firm as a whole.

In a great many organisations, performance-related incentives (pecuniary or otherwise) will be related to the individual department, so it is only human nature that those contributing to the forecast process will seek to deliver a result that will be viewed positively

within their department first and foremost. The danger for the firm is that the final forecast will suffer in terms of accuracy as an individual contribution to the forecast may be inflated or deflated in order to serve primarily departmental interests.

Coupled with the notion of departmental affiliation is also the natural inclination of forecasters to be either conflictual or consensual. As seen before, it is probable that the likes of Marketing, Sales and Operations will not see eye-to-eye. If, at the negotiation stage, some of those involved are also of a naturally conflictual nature, reaching a final agreement will prove tougher still as one department will inflate its predictions in anticipation

from the same hymn sheet represents a long haul for senior management. The challenge for the powers that be is to grasp not only inter-departmental dynamics and incentive structures but also the individual motivations of each team, their behaviour patterns and potentially compose teams of certain personality types in order to keep conflict down to a minimum. In short, when managers are setting up a demand forecasting process, they should try to keep a forecast de-biasing strategy firmly in mind.

Such a strategy could be supported by introducing more collective incentive schemes, which could help strip away some of the inter-departmental dogfighting and encourage workers to see the bigger picture. Helping people understand the potentially negative repercussions of their own forecast proposal on their counterparts in another department could be one way of achieving this. Above all, the message is to get everyone pulling in the same direction by dangling a carrot that serves the firm, and not just the individuals and the department to which they feel most loyal. ■

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of the fact that another will be overly conservative. This battle of wills is a game of give and take but encouraging people's desire to cooperate (known in research circles as Social Value Orientation) can be achieved, in theory.

Dangling collective carrots

In practice, getting the departments involved in demand forecasting to sing

This article draws its inspiration from Stefanie Brix's PhD thesis *Mind the Gap between Supply and Demand – A behavioural perspective on demand forecasting*. It can be freely downloaded at <http://repub.eur.nl/pub/79355>

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