Qualitative Forecasting Approaches

Qualitative forecasting methods are based primarily on human judgement. Quantitative forecasting methods are based primarily on the mathematical modelling of historical data. Here we provide a brief overview of the most important qualitative forecasting approaches. In many environments the time horizon is closely linked to the type of forecasting method used. Longer term and higher level forecasting will often require qualitative forecasting techniques. Such techniques may vary significantly in how they are applied. We begin with methods that rely on quantitative analysis to some degree and proceed to the more judgmental methods.

Economic indicators

The tracking of economic time series originated in the US following the great depression of the 1930's. It was realised that monthly, quarterly and annual series on such things as prices, employment and production were closely related to observed economic activity and business cycles. Today, over 30 such series are tracked in most developed countries. It was soon realised that such series were useful for general forecasting by many organisations. Such series provide the basis for interpretative judgmental forecasting. The term economic indicator is used for an economic series on which a forecast is based. Leading indicators provide advance warning of probable change in future economic activity. Coincident indicators reflect current performance in an economy. Lagging indicators confirm changes previously signalled. The description of a series in these terms depends to some extent on the nature of the forecast, the business sector and type of organisation and geographical region. Composite indicators that aggregate a number of series are also important. The *composite of leading indicators* is an important series for signalling major changes in economic activity.

The impact of any economic indicator on demand for specific products or services is sector dependent and needs to be judged with care. The Office of National Statistics (ONS)[1] in the UK gives guidance on the interpretation of economic data series. The National Bureau for Economic Research (NBER)[2] is a source for information in the US. Other professional, industry and academic bodies publish series related to a range of economic phenomena e.g. business purchasing behaviour, factory gate prices, consumer and business confidence etc. The Confederation of British Industry[3] and the Chartered Institute of Purchasing and Supply (CIPS)[4] report on series related to industrial activity and business confidence. Some of these are regionalised or sector based and may give good indications of changes and trends on a regional, sectoral or industry basis.

Market Research

[1] Office of National Statistics - www.statistics.gov.uk
[2] Nationa Bureau of Economic Research – www.nber.gov.org
[3] Confedration of British Industry - www.cbi.org.uk
[4] Charterd Institute of Purchasing and Supply - www.cips.org

Market research attempts to extract information from a sample of members of a target market in order to make an inference or judgement about the market population. Often the information that is sought relates to product preferences e.g. opinions on existing products, opinions on new products, opinions on competitor products and more general preferences.

Market research may provide sophisticated accurate forecasts on market potential, particularly before product launch and in the early stages of product introduction. However, expertise is needed. Studies need to be carefully designed and executed. Market research data needs to be collected and analysed with care. It requires:

- Decisions on sample size and sample type
- Decisions on the medium and methods to be used for information gathering
- Prior selection of methods for statistical inference and decision making.

There are many sources of expertise and specialist organisations that will assist in market research. Market research may be costly.

Historical analogy

The basic idea is to link a new product with an assumed analogous product in the past. An example might be the generation of a forecast of demand for a new mobile phone model using the known historical pattern on take up of related mobile phone models in the past. Similarly, a forecast for the likely demand for a product in a new market might be made by analogy with the known shape of the demand curve for the same product in a mature market. A product that is rolled out sequentially in different markets over a period of time may generate useful information during early launches on the likely demand in subsequent launches. We can also attempt to forecast demand for a new product by analogy with the known demand for a related product.

This type of approach may provide the basis for forecasting on an ad-hoc basis, particularly in relation to new products and the take up of new technologies for which there may be little or no previous market experience. Clearly, there are many potential dangers in the historical analogy approach. However, it may aid understanding and in particular give valuable qualitative information on the *shape of the demand curve* that could lead to more sophisticated modelling of demand subsequently.

Group forecasting methods

Attempting to tap the knowledge, expertise and experience of a group of individuals rather than relying on a single individual (or output from a computer) is perhaps the most common and intuitive approach to business forecasting. However, there are problems and pitfalls with group based forecasting. 'Group dynamics' may affect the accuracy of a forecast generated in this way. Undue weight may be given to the views of dominant individuals. Consensus approaches may be comforting but may be of course be wrong. Group-based forecasting and planning require clarity and transparency in approach and may require facilitation to ensure that relevant views and differences in opinion are addressed and given due weight.

Delphi methods

Techniques exist to survey a group or panel without group interaction. The simplest approach is a survey, which obtains a numerical forecast and summarises both average and spread. A much more sophisticated approach is the DELPHI method**.** In addition to isolating group or panel members, the forecaster is also remote from the group. Delphi attempts to systematically evaluate expert judgement on the likelihood of future events. Six steps may be identified:

(1) Establish a panel of experts
(2) Devise a questionnaire to direct experts to the forecasting problem and to elicit their considered judgement, usually in a quantitative manner.
(3) Evaluate responses by producing a numerical summary. Modal values and extreme values are highlighted.
(4) Controlled feedback: Make the extremists justify their forecasts and decide whether to include or exclude extreme values.
(5) Repeat (3) and (4) until a clear, not necessarily unanimous, forecast emerges. Extremes may persist.
(6) Summarize the results.

There are problems in deciding how many experts to use, how many rounds are appropriate and when to eliminate extremes. Hence, the technique may be difficult, time consuming and may be costly. The approach has been shown to be successful in studies of issues that may affect demand for product and services in the longer term.

Sales force composite forecasts

In many situations, it makes sense to utilise the knowledge and experience of the sales-force to produce a sales forecast. This is limited for long term forecasting but may be essential for the short and medium term in many industries. It is popular where there is a complex product mix, few customers and close contact with customers. It is also important where the sales force has technical expertise i.e. where they are closely involved in negotiation, quotation, pricing and specification of products and services.

Clearly, in some situations sales force knowledge is indispensable. However, there are problems with the approach and many potential sources of errors. There may be a loss of non-aggregate data, particularly risk information. Bias and inaccuracy may be introduced because of the links between forecasts, sales objectives and sales targets that may be set based on the forecast.

Scenario analysis

Scenario analysis techniques attempt to understand and plan for the future rather than producing 'blind' forecasts. They consider not only what may occur in the future but also how different 'players' in a market may respond to future scenarios. The approach has its origin in military strategy planning developed in the 1950's. In this context a scenario is a narrative description of future conditions and how a business and perhaps its competitors may react to those conditions. The approach identifies the principal factors that affect the future and, importantly, explores *a number of different future scenarios* with some indication of the likelihood of each scenario occurring. The whole area is closely linked with corporate strategy and planning. The main benefit of this type of approach is that it acknowledges that different scenarios may be plausible from a given starting point and starts to consider how an organisation, its suppliers, customers and competitors may respond in the future.

There is no generally accepted way of constructing scenarios. The Shell Company are well known[5] for developing and using scenario techniques for corporate forecasting and planning. Simulation approaches may also provide a useful aid to scenario planning. A simulation technique known as Systems Dynamics has been used to assist scenario analysis in some businesses. Agent-based simulation methods are also showing promise in scenario development and evaluation.

Quantitative versus Qualitative forecasting – a word of caution

The distinction between qualitative and quantitative is not always clear cut. The assessment of data will often play a part in qualitative forecasting, for example in examining and trying to predict the growth of a new market. Market research has been classified here as a qualitative approach but it often utilises sophisticated statistical sampling and analysis methods and may generate lots of data. However, the interpretation of a market research study for forecasting and planning will be based on human judgement in most cases. Human judgement will usually play some part in quantitative forecasting e.g. in identifying turning points in a time series. Irrespective of the type of method used, monitoring and tracking of a business forecasting process that generates forecasts on a regular basis should be based on quantitative analysis.

[5] Bradfield et al. (2005), The origins and evolution of scenario techniques in long range business planning, *Futures*, Vol.3 (8),pp 795-812