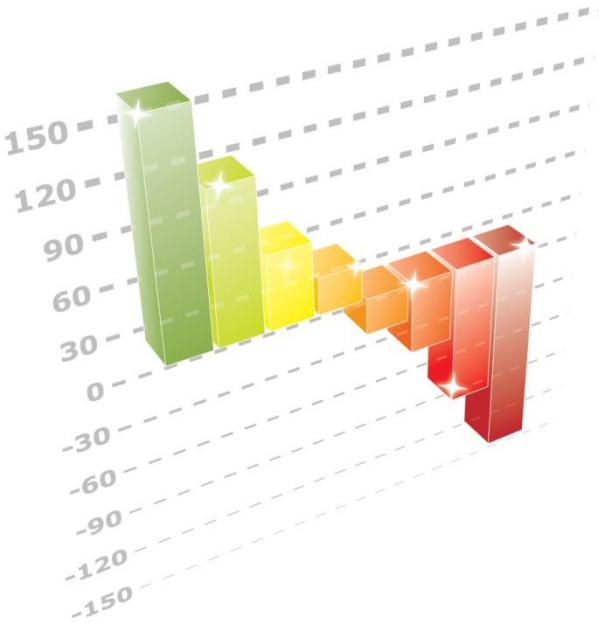




# Forecasting & Scenario Planning

A White Paper by Paul Hague of B2B International



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## INTRODUCTION

The White Paper series from B2B International draws together our thinking on a subject. The White Papers are a vehicle in which we can lay out our thoughts on a subject, hopefully to generate a debate that moves everybody's thinking forward. This paper considers the subject of forecasting, one of the biggest challenges faced by marketers in this fast changing world.

## DIFFERENT TYPES OF FORECASTS

From the marketers' point of view, the term 'forecasts' covers many different types including:

### **Economic Forecasts**

At a high level, economic forecasts paint a broad picture of the environment in which a company operates. These forecasts are likely to include a prediction of changes in the gross domestic product (GDP), inflation, unemployment, balance of payments, and possibly a number of other parameters such as money supply, consumer spending, public sector borrowing and so on. The marketer is interested in economic forecasts as a backdrop to a market sector or a company's position within that sector.

The market researcher is unlikely to become involved in the preparation of economic forecasts as this is the specialized activity of econometricians. In any case, there is little need to do so as the financial press regularly publishes economic forecasts from specialist forecasting organisations (e.g. National Institute of Economic and Social Research), the treasury and the merchant banks.

### **Environmental Forecasts**

A good starting point for forecasting is to examine the environment in which a company sits. This environmental forecast would certainly cover the PESTLE forces which we know as political, economic, social, technological, environmental and legal. These forces vary over time so a key element of this analysis is to consider different scenarios for the present, one year ahead, three years ahead and so on.

### **Market and Product Forecasts**

These are fundamental to the market researcher as they are concerned with specific sectors. The term is generally applied to forecasts of the end-user markets into which products are sold and forecasts for the product itself. The forecast of end-user demand is an important input in the product forecast.

### **Sales Forecasts**

These are a combination of what will happen to a company's sales as a result of the market environment and what will happen if the company introduces a new level of sales and promotional effort. It is, therefore, partly a statement of intent (a target) and partly a true forecast.



## TIME HORIZONS FOR FORECASTS

All forecasts must have a horizon which could be weeks or years. Conventionally, marketers use three important breaks:

- Short-term forecasts concerned with periods up to a year
- Medium-term forecasts which look beyond a year as far as three years
- Long-term forecasts which are predictions beyond three years.

The time periods attributed to short, medium and long-term forecasting are entirely arbitrary and have changed over the last few decades. In the late 1960s and early 1970s economies and markets had greater stability and company forecasts stretched to five years. The shock waves created by the Yom Kippur War of 1973 shortened the medium term to two to three years; longer than this would be beyond the realms of reasonable accuracy. Even these periods are changeable within the specific context of companies and their markets. Today we cannot be certain what is around the corner. When asked once what he feared most, Prime Minister Harold Macmillan famously replied: "Events, dear boy, events." And events tend to be unpredictable such as 9/11 or SARS or Hurricane Katrina or avian flu. In the fast-moving world of electronics, the long-term may be one to two years whereas a manufacturer of chemicals operates in an industry with a longer cycle, so long-term predictions could be pushed out to five years and still maintain acceptable levels of accuracy.

## THE ROLE OF FORECASTS INSIDE A COMPANY

Market and sales forecasting play a role in a number of areas of company planning.

### Corporate Planning

The forecasts of the economic environment and the market enable the corporate planners to steer the future course of the company. They highlight general opportunities and, just as important, pin-point the blind alleys and areas of decline.

### Product and Market Planning

The product and market plans are used to set company objectives and establish budgets for promotion and selling which are needed to achieve goals. Product and market forecasts are action orientated. It is from these that companies plan their entry into new markets, or their withdrawal from those offering limited opportunities. The more detailed the forecast, the more precise the action can be. A forecast of regional growth prospects allows a company to concentrate its efforts where they will pay greatest dividends. Forecasts for sub-groups of products similarly allow detailed planning for each sector.

### Sales Planning

The sales plan is based on the forecast of sales which the company believes it can achieve. The sales forecast cannot be viewed in isolation; it represents a share of the total market which can realistically be attained and this, in turn, depends on the strengths and weaknesses of every competing supplier and the level of resources each commits in support of its own sales.



### **Production Planning**

Once agreed and accepted the sales plan becomes the master document on which all other internal company plans depend. The first of these is the production plan which is designed to ensure that productive resources are available to manufacture the product mix. Careful production planning is necessary to ensure good deliveries and productive efficiencies. The production manager may face the difficult choice of whether to produce large quantities in bulk, store them and live with expensive financing and warehousing costs, or to remain flexible, manufacturing to meet orders but paying the penalty of lost economies of scale.

### **Financial Planning**

The production schedule will incur costs, the most important of which are stocks, tooling, machinery and plant. The sales and marketing plan will require money to be spent on promotion, selling, delivery and the clerical processing of orders. The sales forecast affects the flow of cash into the company and if the predicted cash flow cannot be reconciled with predicted costs in the months ahead, loan options must be agreed with banks well in advance to ensure the lowest possible interest charges. Thus the financial plan is drawn up using the sales and production budgets and adding to them the overhead burden necessary to run the business.

## **SELECTING THE FORECASTING METHOD**

Forecasts attempt to predict the future; therefore it is necessary that the forecast is expressed in appropriate values and in time periods which are appropriate to the exercise. Values should ideally be inflation free, such as numbers of products, tonnes or gallons. Monetary values can be used but they should be expressed at current prices. Alternatively, the figures could be converted to an index. The steps of time over which the forecast is made can be as short as days, weeks or months (as in a sales plan) but more often they are in quarters or years.

A forecast can never be absolutely correct except by coincidence given that the future is always uncertain. It is usual, therefore, to qualify a forecast. Different predictions could be given, based on different assumptions or there could simply be an upper and lower limit either side of the best estimate. The finished forecast should be supported by a description of the underpinning assumptions and their effect. The method of preparing the forecast should also be described. In general, a simple approach is better than a sophisticated but complex method where the user needs to wrestle with the concepts.

Forecasting methods can be divided into two major types: objective methods comprising various statistical approaches and subjective methods based on surveys of opinion. The table below shows the most commonly used forecasting methods and how they are suited to different forecasting periods and applications.

Classification of forecasting method	Period	Application
<b>Objective methods</b>		
<b>Historical analogy</b>	Medium- to long-term	New products'. Products susceptible to change.
<b>Moving Averages</b>	Short- to medium-term	Established products with a recognizable cycle.
<b>Exponential smoothing</b>	Short-term	Products which are changing and entering uncharted areas.
<b>Correlation and regression</b>	Short- to medium-term	Where products are influenced by factors on which data is available historically and for the forecast period.
<b>Subjective methods</b>		
<b>User opinion</b>	Short- to medium-term	Sales forecasts; new products.
<b>Expert opinion</b>	Medium- to long-term	Market and industry forecasts.

## HISTORICAL ANALOGY

History often repeats itself. If the researcher believes that a product will follow a similar pattern to one which is already established and well-documented, the earlier analogous trend becomes a base for predicting the future.

This philosophy lies behind the 'product life cycle' which argues that most products face recognisable stages of youth, maturity and decline. Identifying the position of a product at any one point in time in its life is critical, as it enables the researcher to predict future sales and, if necessary, rejuvenate or replace the product. The time span from youth to old age could cover 20 or more years and within that period, product modifications distort the smooth lines of the time curve. Interference with the curve is created by economical cycles, legislation and social changes so that it is sometimes difficult to make practical use of the product cycle, even though theoretically it is a useful concept.

Nevertheless, while it may be difficult to plot an entire life cycle for a product, it may be possible to recognise short sections of it. Only a few years ago, a product launched in America would set a trend which could manifest in the UK a short while later. Today, product launches tend to be global such that the iPod and the latest chip are available to everyone almost everywhere at the same time. Of course, allowance must be made for cultural and economic differences. Product launches which have proved successful in Europe cannot necessarily be expected to be repeated in developing nations.



## MOVING AVERAGES

Moving averages smooth the peaks and troughs in data, creating a trend line which cuts the centre of the figures. They are a suitable method for predicting from a series of data which has shown regular historical patterns and where there is a long series. Thus they are a suitable means of predicting seasonal sales and those with an evident cycle. They are not suitable for predicting events in rapidly changing markets, where there is a short time series of data or where account has to be taken of a recent major event (such as the imposition of a new tax or law which affects a market).

## EXPONENTIAL SMOOTHING

Predictions using moving averages assume that history, no matter how distant, has an effect on the future equal to that of the most recent past. Often, however, it is recent events which provide the greatest clue to future activity. Exponential smoothing is a mathematical approach which applies such weights. Like all methods of trend projection, it relies on a long series of data, but here five years is probably sufficient, compared with the ten or more years necessary in moving averages. Where such lengthy historical series are not available, the forecast may have to be calculated on quarterly figures, accepting the fact that the forecasting horizon will be that much shorter.

Exponential smoothing is most suited to a series of data where there have been no wild fluctuations but a steady growth or decline which is accelerating or decelerating.

## CORRELATION

Correlation is a statistical technique for demonstrating the relationship between two series of data. One set of data is known as the *dependent variable* and is the item to be forecast; the other is known as the *independent variable* and is the factor which explains the movement in the dependant variable. The influence of one factor on another is very often obvious:

- sales of fuel and miles driven
- steel consumption and car production
- welding rods and CO<sub>2</sub>

That they may prove to be so is not, of course, proof of a direct causal relationship. Steel consumption and car production may rise and fall in sympathy – not because cars are the major outlet for steel but because car production is a fair barometer of the country's economic prosperity and it is in this connection that a relationship is apparent. Similarly, historical relationships can change. Cars have become increasingly reliable in recent years and this has resulted in some changes to the relationship between car servicing expenditure and miles driven.



Establishing a strong relationship between two sets of data is the first step in using correlation to arrive at a forecast. To make use of that relationship and predict the future depends upon the availability of a forecast for the independent variable. The accuracy of the forecast of the dependent variable is not only affected by the level of correlation but also by the accuracy of the forecast of the independent variable. Thus there is no point demonstrating a relationship between welding rod sales and CO2 consumption unless an apparently reliable forecast of CO2 consumption is readily available over the period of the forecast.

Sometimes an independent variable can be identified which leads the dependent variable. Flat roofs being constructed today can be used to predict sales of the replacement roofing felts market in ten years' time – the life of the original felt. Bad winters influence the sale of road-making machinery six months later when it is needed to repair the ravages of the weather.

For many products, no single independent variable explains the relationship. Fork lift truck demand is not only influenced by GDP, but also by interest rates (which affect the propensity to buy equipment). When more than one independent variable is built into a formula to establish the coefficient of the correlation, the statistical technique is known as *multiple regression*.

The validity of a forecast based on correlation depends on the accuracy of the forecast of the independent variable and the maintenance of the proven relationship into the future. A relationship which has held good for the past ten years may well change over the next five. This means that regression forecasting is best restricted to short- to medium-term horizons.

## SURVEYS OF USER OPINIONS

A traditional approach used by market researchers to determine future trends is to ask users how they foresee their consumption of a product or service changing. The 'man in the street' is likely to have more difficulty seeing far into the future than buyers in industry because as high street consumers we tend to react spontaneously to the products we are presented with and do not dwell on what we will be buying or using in years to come. Even the professional buyer in industry struggles nowadays to see more than a few months into the future, such are the uncertainties of the economy.

Producing *market forecasts* from buyers' claimed intentions is notoriously unreliable for two important reasons. First, buyers are not necessarily the best people to predict the future prospects for a product. They react to demands from production departments who in turn respond to orders generated by sales. It is likely that the sales and marketing departments have a better feel for the future though they, too, are not without a bias and often are unduly optimistic. Indeed any survey of the opinion of companies purchasing products (whether respondents are buyers, production or sales people) are likely to receive a biased view of the future that is heavily influenced by the trend of the moment. During a recession most people think it will never end and during a time of booming trade, people see the good times going on for ever.



Despite these caveats, we need to take account of user opinion. Obtaining a prediction of likely purchases from a buyer at a company provides at least one important input for the market forecast.

In order to obtain the most balanced view possible from respondents, the questions may build in the interview. For example, instead of cutting to the chase with the question “what does the future look like?”, the researcher may build in questions that creep up on the subject. For example before asking about future purchases, it would make sense to explore past trends and the factors that have affected them.

This data backed up by the researcher's knowledge of trends in the end-user markets and changing competition, could enable an informed prediction. Though this forecast may appear to lack sophistication and objectivity, it may provide the more accurate prediction of the future.

## SURVEYS OF EXPERT OPINION


In the same vein, forecasts in business-to-business markets often rely on gurus or expert opinion. Expert opinion can be obtained from a variety of sources. People who have experience of a market over many years develop an intuition for the way it is changing. Journalists, university researchers, government officials, suppliers, large suppliers and big customers may all have a bird's eye view that is worth canvassing.

Depth interviewing is the usual approach for collecting such views. Sometimes *Delphi interviewing* is used whereby individuals' views are collected separately, analysed and shared so that a respondent can review his or her earlier response in the light of the “group think”. There has been considerable success in this method of forecasting in Japan, possibly because collective decision making has a long tradition in that country.

## COMPOSITE FORECASTS

A forecast should not necessarily be derived from a single approach. It can be enlightening to compare forecasts arrived at by different techniques. Forecasts should be justifiable and so, where they do not agree, the rationalisation process may uncover flaws which help towards a deeper understanding of market trends.

Long-term forecasting is more difficult now than it has ever been. Uncertainty surrounds the supply of oil and many other raw materials and, for the first time, a practical awareness is growing of the problems of robbing the world of irreplaceable resources. Secondly, nations are faced with economic pressures which they do not know how to control. Inflation, recession, interest rates and unemployment affect every supplier of industrial goods and, because their interaction is not fully understood, it is not possible to know how deeply recessions will bite or how long they will last. Thirdly, the world is in a state of fragile political tension in which there is always a possibility of localised wars flaring up to become international incidents. If such events are possible or even likely, should they be built into a forecast and, realistically, how could this be done?



The difficulties which beset long-term forecasting pose an important problem to marketers and were one of the reasons for industry embracing scenario planning.

## SCENARIO PLANNING

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Scenario planning is a tool originally used by the military. A group of analysts generate different scenarios (often in the form of games) which combine known facts about the future (such as demographics, geography, military, political and industrial information, and mineral reserves), with possible social, technical and political trends.

In the 1970s, many energy companies were surprised by the shock caused by the Middle East wars and changes within OPEC and lost billions of dollars as a result. The dramatic financial effects of these changes led at least one organization, Royal Dutch Shell, implementing scenario planning. In retrospect, it is not clear that Shell's use of scenario planning gave the company any significant long term business advantages but this could be because too much dependence was given to this management tool alone. Scenario planning is still worth considering as one of the options for predicting the future.

The scenarios in the plan should include all known facts and anticipated social changes that include plausible but unexpectedly important situations. If the scenario throws up the possibility of a major problem, action could be taken way in advance to head it off. For example, in the anticipation of avian flu, a company may decide to split key members of its workforce across different sites, even different countries, to obviate taking a huge hit at one time in one place.

Scenarios should be designed so that they can be readily adapted to changed circumstances. These simulations are then "stressed" as the games play out. Usually, particular groups of facts become more clearly important, so that the intelligence organisation can refine and repackage real information more precisely to better-serve the policy-makers' needs. Usually the games' simulated time runs hundreds of times faster than real life, so that policy-makers can experience several years of policy decisions, and their effects, in less than a day.

The obvious value of scenario planning is that it allows policy-makers to make and learn from mistakes without risking important failures in real life.

## STEPS IN SCENARIO PLANNING

The starting point for scenario planning is to decide on the key question to be answered by the analysis. This may well determine if scenario planning is the preferred tool over the other forecasting methods. If the question is based on small changes or a very few number of elements, other more formalized methods may be more useful.

This is followed by setting the time and scope of the analysis during which consideration would be given to how quickly changes have happened in the past, and an assessment made of the degree to which it is possible to predict common trends in demographics, product life cycles etc. A usual timeframe can be 5 to 10 years.



The various stakeholders in the scenario will be identified including their interests and whether these have changed over time. This permits the mapping of the trends and driving forces, including the PESTLE factors mentioned earlier (political, economic, social, technical, legislative and environmental). It can be useful here to map the driving forces on two axes, assessing each force on an uncertain/(relatively) predictable and important/unimportant scale. All driving forces that are considered unimportant are discarded while the important and relatively predictable forces can be included in the scenario.

It is usual to limit the number of possible scenarios to between two and four and each is given a descriptive name and a written narrative, indicating key events and probabilities.

The final step is to assess the scenarios. Are they relevant for the goal? Are they internally consistent? Are they archetypal? Do they represent relatively stable outcome situations?



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