

# Make forecasts to take decisions

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## EXECUTIVE SUMMARY

In order to take the right decisions it is important to make the right forecasts. Only then may one control and learn. Forecasts vary according to what one wants to plan and they require varying levels of accuracy, depending on what matters one intends to cover. Furthermore, it is advisable for the forecasts to be made by the people most involved in the matter. The forecasting method depends on the life-cycle of each product and type of product. Forecasts are made using quantitative techniques as well as qualitative methods.

## RESUMEN DEL ARTÍCULO

Para tomar decisiones correctas es imprescindible contar con buenas previsiones. Sólo así se podrá controlar y aprender. Las previsiones son distintas en función de qué es lo que se quiere planificar y requieren un grado de precisión diferente, dependiendo de los asuntos que se pretendan abarcar. En segundo lugar, conviene encargar las previsiones a las personas más implicadas en el asunto. El cómo se realicen las previsiones depende del ciclo de vida del producto y del tipo de producto. Las previsiones se hacen utilizando tanto técnicas cuantitativas como cualitativas.



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It is necessary to make forecasts in order to take decisions in the proper way. Only by making the necessary forecasts can we plan, control, correct and learn

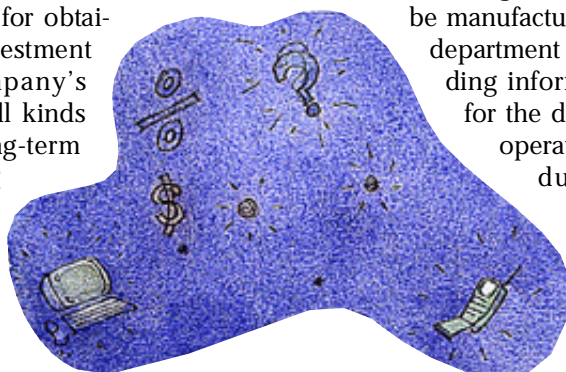
**N**obody takes a decision without having first made a forecast either explicitly or implicitly. Every time we leave home without an umbrella, we are making the automatic and almost unconscious forecast that it is not going to rain. If it is very useful to make forecasts in our daily lives (at least, if we don't want to get wet), in company management it is essential.

Only by making the necessary forecasts can we plan, control, correct and learn. If this were not the case, we would always be taking snap decisions (with a greater or lesser degree of accuracy) without defining those objectives that are under our control, without taking corrective action when objectives are not met, and without learning for the future from the experience acquired.

### Making forecasts in order to plan

It is not, however, a question of making forecasts and nothing else. It is a fact that the duties of management include the planning of future activity; however, each forecast is different, because it depends on what one wishes to plan, and the level of accuracy required depends on what matters one intends to cover. Let us take some examples...

The general management of a company needs to make long and short-term forecasts in order to prepare its strategy and take decisions about investments, entering new markets, etc. These forecasts are necessarily fairly imprecise. For example, in order to decide whether to make a particular investment, or whether to introduce a new line of products, it is not necessary to ascertain the exact level of sales for a particular product for the next four years. It is enough to know that sales will exceed an established threshold, beyond which the investment will be repaid. On the other hand, as the person responsible for obtaining the resources for investment in fixed assets, the company's financial director needs all kinds of short, medium and long-term forecasts when preparing monthly and annual capital budgets, negotiating the necessary credits and assigning cashflow surpluses.



For the Director of Operations, however, his or her department is more concerned with planning production, negotiating contracts with suppliers and establishing supply schedules.

Finally, sales department personnel only require forecasts which help to establish reasonable sales targets and which assist in the planning of marketing campaigns.

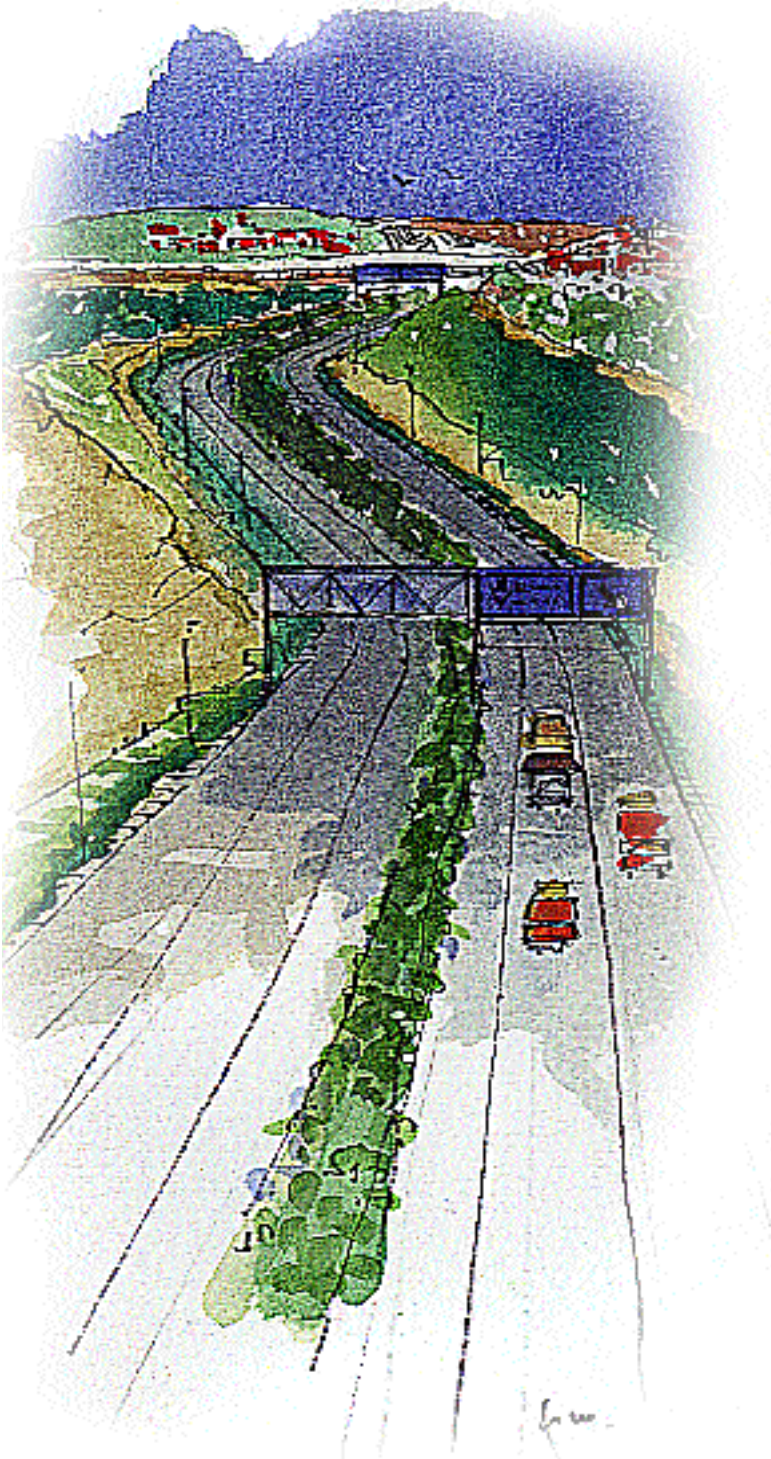
### Who should make these forecasts?

In order to make proper forecasts, one should first decide who is to be entrusted with making them. For example, forecasts relating to the demand for a particular product within a company should, in principle, be made by the department with the most knowledge of the market for this product: the sales department. This will be the first department to know whether a particular product is continuing to register growth levels similar to those recently obtained, whether it is reaching maturity (meaning that sales will soon stagnate) and whether a recently introduced product will have the success expected or turn out to be a failure.

The responsibility for making forecasts does not necessarily include the responsibility to take decisions on the basis of these forecasts. Following on from the previous example, we could say that although it may be a company's sales department that makes the forecasts, this does not mean that the same department will be responsible for taking decisions as regards production.

Nevertheless, quite often it is the sales department that places orders with the operations division, asking for a specific number of units to be manufactured. In my opinion, the sales department should restrict itself to providing information as to future demand for the different products, leaving the operations department to plan production in whatever way is most suitable, as long as it can ensure a high level of service. The production department is aware of warehousing capacities

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and the flexibility of the production lines and it is therefore the one which should take these decisions. However, the need to service clients and the fear of not being able to satisfy demand has meant that in many companies it is the sales department that dictates production requirements.

Changing the method of deciding how much to produce at a given time is often problematic for a company, not only because the sales department becomes concerned about losing sales if it isn't 'calling the shots', but also because it involves dele-

gating the power to decide, a power which many management departments will attempt to retain.

### Forecasting methods

The framework within which forecasts are made depends on many factors, but certain general criteria can be established:

#### 1. The first factor to consider is the current phase of the product's life-cycle

If the product is still at the growth stage, one needs to take account of the rate at which demand is growing. At this stage, competition tends to be less fierce than for products which have reached maturity, because while demand is growing, every company is able to increase its sales. Forecasts in these cases often depend upon how the company wishes to position itself, what it wants to do and what the options are for satisfying growing demand. In order to make effective forecasts, the company must look inwards.

For products that are entering maturity, demand depends less on the company's own decisions and more on market conditions, both in terms of the competitive environment within the sector (the company's competitive position within its sector) and as regards the general macro-economic environment (which affects all companies in one sector equally, though some are better prepared than others to face up to the vagaries of the economic cycle).

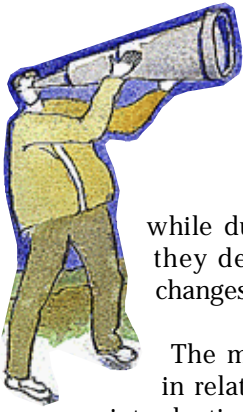
Much has been said over recent decades about the manner in which a particular company may compete within its sector, but business academics have restricted themselves to recognizing the influence of the economic environment on different sectors and the companies operating within them.

At IESE we are currently carrying out research on the impact of the economic environment on company activities and the intensity of this impact. We will report on this research project in a future article in this magazine.

In order to make forecasts relating to the demand for products which have already reached the maturity stage, use is generally made of certain variables from the economic environment, such as growth in GDP, interest rates, etc.

It is well known, for example, that car sales (an already mature sector?) depend on these two variables, among others. When the economic cycle is going through a period of growth, car sales soar,

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while during periods of economic slowdown they decline. Car sales are also sensitive to changes in interest rates.

The most difficult forecasts are those made in relation to products at the conception and introduction stage. Firstly, one has no experience, and secondly, one lacks sales data to support one's forecasts. It is therefore no accident that a significant number of products fail to open a window in the market and are finally withdrawn before they cause even greater losses. These are the risks entailed in business. Nevertheless, one can always establish something of the future behavior of new products by comparing them with similar products already available, or by using information—where it is available—about the sales profile of this product in other countries where it has been introduced. Market research is an essential tool prior to introducing a product.

## 2. Second factor: Type of product

Specialized products, such as heavy machinery or equipment required only by hospitals with 500 or more beds, are not the same as high-volume consumer products. In the case of the former, one can make forecasts by contacting potential clients directly. In the latter case, statistical techniques will be needed.

### Forecasting techniques

There are many techniques available for forecasting, but for the sake of simplicity one can divide them into two groups: qualitative techniques and quantitative techniques.

Qualitative techniques include the Delphi method; consensus obtained from the views of a group of experts; surveys of opinion, etc. These techniques seek to find a consensus among the opinions expressed by the various people who have something to say in respect of the forecast.

While qualitative methods are used for long-term forecasts, in which one cannot expect a high level of accuracy and in which the views of management play a more important role, quantitative techniques are more useful for short and medium-term decisions.

Quantitative techniques are many and varied. The general rule is this: the simpler the model, the better its predictive behavior is likely to be. A model which attempts to combine too many of the variables on which the future may depend is prone to errors in assessing the impact of some of these variables on future demand. This is why the most widely used quantitative methods in demand forecasting are curve adjustment and regression models.

Curve adjustment involves drawing the smoothest curve possible through a graph of past sales, and planning future demand in accordance with the trajectory of this curve. These are called demand trend curves. The most widely used trend curves are straight lines representing a period of growth and parabolic and exponential curves, used when demand is entering maturity.

Regression models are mostly used to make demand forecasts for mature products. They involve making the variable to be forecast dependent upon other variables which may come from either inside or outside the company. For example, a network of automatic cash machines must forecast how much money is to be available at each machine every day. The forecast in this case uses data such as the day of the week in question, the season of the year, the demand at this machine on the same day of the previous week and, perhaps, the average daily demand for money at this machine. Taking all these variables into consideration, one can arrive at a specific forecast and forecast period. For example, it may be possible to that for a particular machine, demand on a Tuesday in the month of February is 800,000 ptas, and that there is a 90% probability that demand will be between 700,000 and 900,000, or that there is a 95% probability that demand will be between 600,000 and 1,000,000.

To sum up, forecasts are necessary if companies want to take the right decisions. The level of accuracy necessary for a particular forecast depends on what sort of decision it is going to be used for. High accuracy is not usually necessary; sufficient accuracy for taking the particular decision is what is wanted, and there is usually no need to spend large sums of money on gathering additional information to increase accuracy beyond this level.



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