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Every competitive business desires to satisfy their customers' needs and wants. This is true whether the business provides a service or product. However, in order for a business to satisfy their customer in a timely and efficient manner, one must anticipate this need or want and take business oriented measures to quantitatively anticipate the demand upon the service or product. This servicing of the anticipated demand upon the product or service is known as forecasting. One widely accepted definition of forecasting is a prediction of future events used for planning purposes (Krajewski and Ritzman, 492).

In forecasting the demand, one may use several techniques and one of them is mathematical models based upon historical, observed, or statistical data. In addition, one may use qualitative methods based upon industry experts or customer feedback, for example, or a combination of the two. When using a mathematical model, one employs a method known as time series data analysis based upon a state space model (Time Series Forecasting 01). Parameters in the model are state variables and are estimated by the maximum likelihood method with numerical optimization. The advantage to this method mainly derives from the practical importance. Improvement of accuracy is gained by aggregating several analogous time series and distributing the forecast at the root level to a leaf level or tier I to tier II. All of this amounts to a tremendous amount of time series data. However, the clustering of the time series itself is a key to effective forecasts. The limitation to this approach is that the state space model is very basic and generalized. To deal with this limitation, one may filter the data through a Kalman filter, Winters, or through a Gaussian family filter model (Time Series Forecasting 01).

One may also utilize qualitative methods for forecasting and may be categorized as casual or judgment. Judgment methods are the opinions of industry experts, managers, customer feedback, and marketing intelligence. Casual methods use a combination of observed data on an independent variable such as economic conditions or the actions of competitors. Since many businesses today are multinational global cooperation's, each should draw upon all of its resources for both judgment and casual forecasts. Moreover, given each employs a large and diverse marketing team, each business unit must advise upper management on such matters as well as other businesses. For example, an entire IBM service group advises other business and is known as IBM Global Services and is sub grouped into Supply Chain Management Services (Supply Chain Management Services 01).

Regardless of the method each uses to forecast the demand, there are two principal factors that affect demand. They are external factors and internal factors. External factors are generally the more difficult for any business to predict and control. These factors include such effects as a booming economy, a sudden recession, or changing government regulation or deregulation. Case in point, IBM forecasted a eighteen percent growth for fiscal year 2000 to 2001 of its LTO Ultrium media drive (What They Are Saying 01). However, fears of a recession have dwindled those expectations and a meager eight percent growth has been so far realized. While Internal factors encompass such items as target market, pricing, advertising, and packaging. Moreover, internal factors are generally more easily controlled by most businesses.

Another important factor in forecasting is the forecast length of time. Most businesses produce short term, medium term, and long-term forecasts. Case in point, IBM uses the term Tactical forecasting for its short term forecasts and uses it to drive the manufacturing and material requirements of its products. Moreover, IBM uses sales and logistical information for its tactical forecasts (Tactical Forecasting 01). IBM's mid terms forecasts are called Operational forecasting and uses marketing and finance data to drive production planning and deployment (Operational Forecasting 01). IBM has no special term for long-term forecasts and uses casual and judgment methods for those.

Each business must certainly desire to refine its forecasting techniques. As such, especially in time series models, much work has been allocated towards developing models for enhanced forecasting. For example, work is being conducted for inclusion of such techniques as Ordinary Least Squares, General Least Squares, and Robust Regression (Forecasting Method 01). However, it should be noted that no single technique has been shown to be superior to any other technique. Thus, all methods almost always contain some errors.

In closing, the ultimate goal is to balance forecast with demand. This is accomplished with careful planning and preparation of operational, strategic, and tactical requirements for all business enterprises. All of these processes must be quantified and based upon the integration of numerous variables such as customer demands and needs, market trends, financial and economic conditions, competitor response, regulatory agencies, and internal strengths and weaknesses.

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