THE SALES FORECASTING TECHNIQUES

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ABSTRACT

Many sales managers do not recognize that sales forecasting is their responsibility. In this paper we summarized techniques that manager used into two types: qualitative and quantitative techniques. We also discuss the use of computer software in sales forecasting in Serbia.

KEY WORDS

sales forecasting, quantitative and qualitative techniques

INTRODUCTION

Forecasting activity should help managers to make better decisions in the process of planning the business strategy.

The purpose of planning process is to allocate company resources in a manner to achieve anticipated sales.

A company can forecast sales either by forecasting market sales (called market forecasting) and determining what share of this will accrue to the company or by forecasting the company's sales directly. In this paper we explain techniques for sales forecasting.

There are different periods when we need to predict some results.
1. Short term forecasts – there are usually for periods up to three months ahead and are really of use for tactical matters such as production planning. The general trends of sales is less important here then short term fluctuations
2. Medium term forecasts – these have direct implication for planners. They are of most importance in the area of business budgeting, the starting point for which is sales forecast. Thus if the sales is incorrect then the entire budget is incorrect.
3. Long term forecasts – these are usually for periods of three years and upwards depending upon the type of industry being considered. For computer industry is a long period but for some other industry such as steel manufacture ten years is a typical long term horizon. Such forecasts are needed mainly by finance accountants for long time resource implications and generally the concern of boards of directors.

Other functions in company (production, purchasing, finance, human resource sector) can be directly and indirectly affected in their planning considerations as a result of the sales forecast. [3]

THE FORECASTING PROCESS

The forecasting process refers to a series of procedures used to forecast. It begins when an objective is determined. For example sales objectives can be (estimation of dollar sales, number of sales people to hire, etc.).

Next step is determination of dependent refer to what is being forecasting: sales or the number of sales people to hire next year) and independent variables. After this step we should determine forecast procedure and methods for analyzing data.

Data are then gathered and analyzed often assumptions must be made about the forecast. The forecast is made, finalized, and, estimate passes, evaluated. [2]
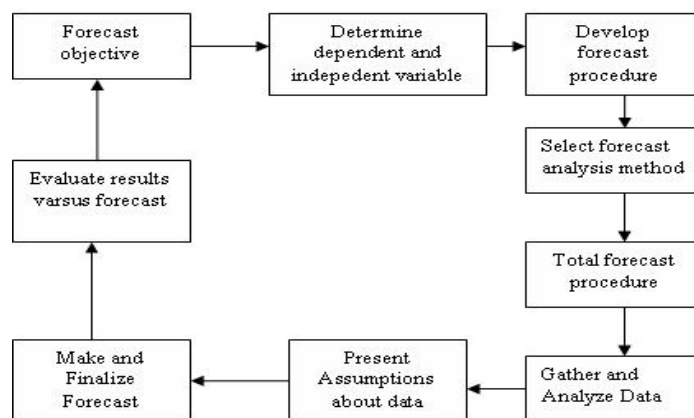

Figure1. The forecasting process

It is important to know when we should use qualitative or quantitative forecasting techniques.

Managers apply quantitative forecasting techniques when environment is predictable and if they have data from past period about sales. These techniques are good when we want to predict existing products and technologies. They often used mathematics' techniques for forecasting.

Qualitative forecasting techniques are used in the not predictable environment and when we don't have enough data. These techniques are usually used when managers forecast launching the new product line or new technologies. [5]
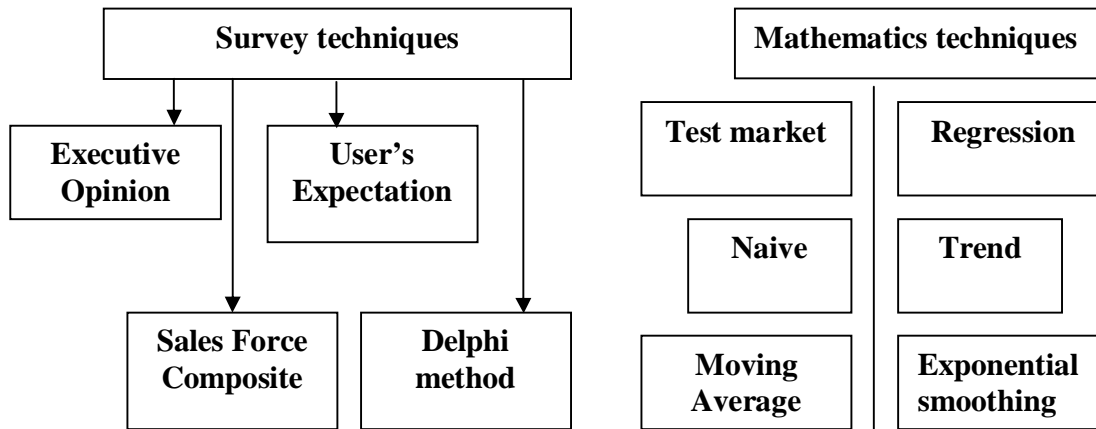
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│      Survey techniques      │          │    Mathematics techniques   │
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┌──────────────┐  ┌──────────────┐   ┌──────────────┐  ┌──────────────┐
│  Executive   │  │   User's     │   │ Test market  │  │  Regression  │
│   Opinion    │  │ Expectation  │   └──────────────┘  └──────────────┘
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┌──────────────┐  ┌──────────────┐   │    Naive     │  │    Trend     │
│ Sales Force  │  │   Delphi     │   └──────────────┘  └──────────────┘
│  Composite   │  │   method     │
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                                     │   Moving     │  │ Exponential  │
                                     │  Average     │  │  smoothing   │
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Figure 2. The more popular of many forecasting techniques[2]

QUALITATIVE FORECASTING TECHNIQUES

Qualitative forecasting techniques are sometimes referred to as judgmental of subjective techniques because they rely more upon opinion and less upon mathematics in their formulations.

The absence of past sales means that you have to be more creative in coming up with prediction in the future. Sales forecast for new products are often based on executive judgments, sales force projection, surveys and user's expectation.

We summarized qualitative forecasting techniques which include:
Jury of executive opinion consists of combining top executives' views concerning future sales. This type of forecasting technique is term a 'top down' technique whereby a forecast is produced for the industry.
Customer expectations use customer's expectations of their needs and requirements as the basis for the forecast. The data are typically gathered by a survey of customers or by the sales force
Sales force composite combines the individual forecasts of salespeople. This technique involves salesperson making a product-by-product forecast for their particular sales territory. Such a method is a bottom-up approach.
Delphi method is a similar to jury of executive opinion technique. The main difference the members do not meet in committee. A project leader administers a questionnaire to each member of the team which asks questions usually of a behavioural nature. The questioning then proceeds to a more detailed second stage which asks questions about the individual company. The process go on to further stages where appropriate. The ultimate objective is to translate opinion into some form of forecast.
Bayesian decision theory has been placed under techniques although it is really a mixture of subjective and objectives techniques. This technique is similar to critical path analysis in that it uses a network diagram and probability must be estimated for each event over the network.

We already mention that qualitative techniques are often used when managers have little data to incorporate into forecast. New products are a classic example of limited information and qualitative techniques are frequently employed to predict sales revenues for these items.

Qualitative techniques are recommended for those situations where managers or sales force are particularly adept at predicting sales revenues. These techniques are often utilized when markets have been disturbed by strikes, wars, natural disasters, recessions or inflation. Under these conditions historical data are useless and judgmental procedures that account for the factors causing market stocks are usually more accurate. [1]

QUANTITATIVE TECHNIQUES

Quantitative techniques are sometimes termed objective or mathematical techniques as they rely more upon mathematics as less upon judgment in their computation. These techniques are now very popular as a result of sophisticated computer packages.

There are many quantitative techniques:
Regression analysis statistically relates sales to one or more explanatory (independent) variables. Explanatory variables may be marketing decisions (price changes, for instance), competitive information, economic data on any other variable that can be related to sales.
Exponential smoothing makes an exponentially smoothed weighted average of past sales, trend and seasonality to derive the forecast
Moving average takes an average of a specified number of past observations to make a forecast. As new observations become available, they are used in the forecast and the oldest observations are dropped.
Box-Jenkins uses the autocorrelative structure of sales data to develop autoregressive moving average forecast from past sales and forecast errors
Trend line Analysis fits a line to sales data by minimizing the squared error between the line and actual past sales values. The line is that projected into the future as the forecast.
Decomposition breaks the sales data into seasonal, cyclical, trend and noise components and projects each into the forecast
Straight-line projection is a visual extrapolation of the past data which is projected into the future as the forecast
Life cycle analysis bases the forecast upon whether the product is judged to be in the introduction, growth, maturity or decline stage of its life cycle
Simulation uses computer to model the forces which affect sales: customers, marketing plans, competitors, flow-of-goods, etc. The simulation model is mathematical replicaton of the actual corporation.
Experts systems use the knowledge of one or more forecasting experts to develop decision rules to arrive at a forecast
Neutral networks look for patterns in previous history of sales and explanatory data to uncover relationships. These relationships are then used to produce the forecast. [4]

CONCLUSION

One of the keys to success in sales is knowing where are customers are located and being able to predict how much they will buy. Sales forecasting is so important that more then 50% of companies include this topic in their sales manager training programs. Inaccurate demand predictions can have disastrous effects of profitability.

Managers should calculate and record the forecasting errors produced by the qualitative techniques they employ so that will know when these methods are best employed.

Qualitative techniques are often used in conjunction with the quantitative techniques.

Managers identified several sources to learn about sales forecasting techniques. The majority of them identified colleagues as an important source.

Source	Percent
Conferences	59
Books	65
Trade journals	59
Consultants	46
Colleagues	65
College course	45
Publics seminars	35
Company seminars	23

Table1. Where to learn about forecasting [4]

Most initial sales forecast today are prepared with computer program. A recent survey of 207 firms revealed that 76% of the companies allowed managers to make adjustments to computer generated forecast with judgmental procedures.

Quantitative forecasting techniques are best employed when companies have access to historical data. Quantitative techniques have distinct advantages in situations where managers must make frequent forecasts for hundreds or thousands of products.
Because of the large number of calculation required by quantitative forecasting procedures, analysts need access to computers and appropriate forecasting software. The successful use of quantitative technique demands that analysts be well versed in the statistical procedures used by these techniques. [1]

Managers believe that support of computer software should help in reducing forecasting errors. They used CRM solutions that involves of corporate functions (marketing, manufacturing, customer services, field sales and field service) required to contact customers directly or indirectly. Before 1993., CRM included two major markets: (*Sales Force Automation*) and (*Customer Services*). Sales force automation was initially design to support salespersons in managing their activities: contact management, activity management, communication management, **forecasting**, order management, opportunity management, document management, sales analysis, product configuration. [6]
In Serbian market there are many causes of failure computers supports such as: organizational changes, poor planning and forecasting, lack of computer skills, lack of knowledge the language and budget problems.

When companies want to apply computer package for sales forecasting they need to choose a program that works for the time series which managers planed to predict.

Finally, companies in Serbia have to select techniques with adequate computer solving solution that can be sold to management. If managers can't understand how forecasts are prepared, they are likely to reject the techniques in favor of their own judgmental forecasting techniques.

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