Sales Forecast for a Small Engineering Company

In the world of marketing there are many different approaches that can be taken to increase or maintain sales. Every company, whether they provide services or produce products/goods, is able to make sales forecasts, which is often a very important aspect of a company's success (Armstrong at al. , 1987). A sales forecast is the amount of products or services a company expects to sell during a specific period of time at a specified level of marketing activities (Pride & Ferrell, 2012). When making sales forecasts for marketing decisions, there are many factors to consider. Some factors to consider are; what situation exists (for example the state of the economy), what forecast horizon is appropriate (short, medium or long range), the value of the forecast to the company, what data are relevant and available, and what process should be used (such as how the data will be collected and analyzed) (Armstrong et al., 1987). Different companies working in diverse industries and fields, use different forecasting methods. Each company is unique and therefore different forecasting methods will work better for every company (Green, 2001).

The name of the company which will be analyzed in this project is Hanbay Incorporated. Hanbay is a very small company which does not yet have an effective sales forecasting method. They develop electric valve actuators which are then sold to various different industries. Valve actuators are industrial products, meaning they are sold to other businesses for consumption. Thus, sales do not rely on individual consumer behaviour, but rather on the state of the economy and the condition of particular industries. The purpose of a sales forecast for Hanbay is to discover a pattern of sales over time and more importantly to assess which industries are worth additional investment of marketing dollars to increase overall sales. With the data available, an effective sales forecast for Hanbay can be prepared using two different forecasting technique.

The first technique that will be used is 'regression analysis'. In this method, the forecaster searches for a "relationship between past sales and one or more independent variables" which, in this case, will be the industry in which the customer works in (Pride & Ferrell, 2012, p. 139). In order to produce a sales forecast using regression analysis, historical sales data must be available. Sales data of the company from the past 5 years (2010 - 2015) is readily available. This data includes date of invoice, customer name, industry in which the customer works in, invoice amount, and whether the customer is returning or new. Using functions in the Python programming language, this data will be sorted by industry for each year. Data for each industry will be compared over the years to observe whether there is a relationship. If there is a relationship between the two variables, closer analysis will follow and a sales forecast can be made.

A second method that will be applied is 'time series analysis'. This method also uses past sales data in an attempt to discover patterns in the company's sales over time (Pride & Ferrell, 2012). The results of four types of analyses (trend, cycle, seasonal, and random) are combined to develop a sales forecast (Pride & Ferrell, 2012). In other words, past sales data of Hanbay will be used to plot graphs in Python that will be analyzed in an attempt to find annual, seasonal, or random trends. This is an effective forecasting technique for products with reasonably stable demand, which is the case for valve actuators (Pride & Ferrell, 2012).

I predict that customers in industries which have increased in growth and success over the past few years, will show higher sales. On the other hand, customers in industries which have struggled in past years will show a decrease in sales. I believe that time series analysis will show that sales do not demonstrate obvious annual or seasonal trends. However, it will show random trends based on the state of the American economy. These two observations combined, will help the company decide how much money they should spend on marketing in specific industries. It will also help the company make predictions on future sales trends based on how much money and how effectively money is spent on marketing.

References:

Green, Y.N.G (2001). Chapter 2: Literature Review. *An Exploratory Investigation of the Sales Forecasting Process in the Casual Theme* (pp. 9 - 35). VirginiaTech.

Armstrong J.S. , Brodie R.J. , McIntyre S.H. (1987). Forecasting Methods for Marketing: Review of Empirical Research. *International Journal of Forecasting, 3,* 355 - 376.

Pride W., Ferrell O.C. (2012). Part 2: Marketing Research and Target Markets. *Foundations of Marketing* (pp. 87 - 144). Nelson Education.