

**US Certified Management Accountant**

**- Forecasting**

What are the three primary approaches to forecasting?

* Experience: Because sales, expenses, or earnings have grown at a particular rate in the past, we assume they will continue growing at that rate in the future. This leads to trend projections.
* Probability: We assume something will happen in the future because the laws of probability indicate it will. For example, probability is used to forecast the expected value of future cash flows from a proposed capital budgeting project.
* Correlation: Because there has been a high correlation in the past between one factor and another factor, such as increased advertising leading to increased sales, we use what we know about the first factor to forecast the second factor.

What are the two basic forecasting methods?

1. Time series methods, which look only at the historical pattern of one variable and generate a forecast by extrapolating the pattern using one or more of the components (or patterns) of the time series.
2. Causal forecasting methods, which look for a cause-and-effect relationship between the variable we are trying to forecast (the dependent variable) and one or more other variables (the independent variables).

What are trend projection and regression analysis?

A time series that has a long-term upward or downward trend can be forecasted by means of trend projection. A trend projection is done with simple regression analysis, which forecasts values using historical information from all available past observations of the value.

Simple linear regression analysis relies on two assumptions:

* Variations in the dependent variable (i.e., what we are forecasting) are explained by variations in one single independent variable (i.e., the passage of time, if a time series is what we are forecasting).
* The relationship between the independent variable (time or a specific value) and the dependent variable (sales or whatever we are forecasting based on the value of the independent variable) is linear. A linear relationship is one in which the relationship between the independent variable and the dependent variable can be approximated by a straight line on a graph. The regression equation, which approximates the relationship, will graph as a straight line.

What is multiple regression analysis?

Multiple regression analysis is used when more than one independent variable is known to impact a dependent variable to forecast the dependent variable. Multiple regression analysis is another type of causal forecasting.

What two forecasting models use regression analysis?

* Time series analysis
* Causal forecasting

What is time series analysis?

* Time series data reflects historical activity for one variable over a sequence of past time periods. A time series method of forecasting uses only these historical values in an attempt to find a pattern that can be used in forecasting the future. Only one set of historical time series data is used in time series analysis, and this historical data is not compared to any other set of data.
* Time series analysis looks at patterns of the desired variable over time. The most frequent pattern and most amenable to use for forecasting is a trend pattern, in which the historical data exhibits gradual shifting to a higher or lower level.

What are the benefits of regression analysis?

* Regression analysis is a quantitative method, and as such it is objective. A given data set generates specific results. The results can be used to draw conclusions and make forecasts.
* Regression analysis is an important tool for budgeting and cost accounting. In budgeting, it is virtually the only way to compute fixed and variable portions of costs that contain both fixed and variable components (mixed costs).

What are the limitations of regression analysis?

* To use regression analysis, historical data is required for the variable that is being forecasted or for the variables that are causal to this variable. If historical data is not available, regression analysis cannot be used.
* Even when historical data is available, its use is questionable for predicting the future if a significant change has taken place in the conditions surrounding that data.
* In causal forecasting, the usefulness of the data generated by regression analysis depends upon the choice of independent variable(s). If the choice of independent variable(s) is inappropriate, the results can be misleading.
* The statistical relationships that can be developed using regression analysis are valid only for the range of data in the sample.

What is pro-forma financial statement?

Pro forma financial statements are financial statements containing projected amounts that are expected if a particular course of action is followed. Pro forma financial statements are used in order to see what the financial statements of the firm will look like if something that is under consideration or forecasted actually happens. Pro forma financial statements are often used to evaluate the effects on the company’s finances if a particular sales forecast is realized, although they can be used for other “what if” scenarios as well.

How are pro forma financial statements used internally?

* A pro forma financial statement is used to compare the company’s anticipated performance with its target performance and with investor expectations.
* Pro forma statements are used for “what if” analysis in order to forecast the effect of a proposed change.
* They are used to determine in advance what the company’s future financing needs will be.
* Various cash flow projections and sets of pro forma statements may be prepared using different assumptions for different operating plans. They are used to forecast the capital requirements of the plans in order to select the plan that maximizes shareholder value.
* Pro forma financial statements are used to determine whether the company will be able to remain in compliance with the required covenants on its long-term debt.

What is the Forecasted Financial Statement Method of forecasting?

The Forecasted Financial Statement approach to forecasting future financing needs involves preparation of a complete set of pro forma financial statements, including income statement, balance sheet, and statement of cash flows. We begin with a forecast of sales, and we forecast the assets (such as accounts receivable, inventory, and fixed assets) that will be needed to support those sales, the spontaneous liabilities (such as accounts payable and accruals) that will arise, and the increase in retained earnings from profits. All of the sources of financing are forecasted, including existing debt and equity. The forecasted increase in retained earnings is developed from the projected income statement and dividend payments. The difference between total assets and total liabilities plus equity is the “additional funds needed,” which is a “plugged” figure on the balance sheet. The FFS method produces a forecast of the entire balance sheet and income statement. The pro forma balance sheet and income statement can then be used to create the pro forma statement of cash flows.

What are the four steps in forecasting using the Forecasted Financial Statement Method?

* Analyze historical ratios that will be used for the projections.
* Forecast the income statement.
* Forecast the balance sheet.
* Construct a pro forma statement of cash flows.



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