Pitfalls Associated With Regression and Correlation Analysis

The regression analysis as a statistical tool has a number of uses, or utilities for which it is widely used in various fields relating to almost all the natural, physical and social sciences. The specific uses or utilities of such a technique may be outlined as under:

- It provides a functional relationship between two or more related variables with the help of which we can easily estimate or predict the unknown values of one variable from the known values of another variable.
- It provides a measure of errors of estimates made through the regression line. A little scatter of the observed (actual) values around the relevant regression line indicates good estimates of the values of a variable, and less degree of errors involved therein. On the other hand, a great deal of scatter of the observed values around the relevant regression line indicates inaccurate estimates of the values of a variable and high degree of errors involved therein.
- It provides a measure of coefficient of correlation between the two variables which can be calculated by taking the square root of the product of the two regression coefficients e. r = √(b×y. byx)
- It provides a measure of coefficient of the determination which speaks of the effect of the independent variable (explanatory, or regressing variable) on the dependent variable (explained or regressed variable) which in its turn give us an idea about the predictive values of the regression analysis. This coefficient of determination is computed by taking the product of the two regression coefficients e. r2 = bxy. Byx The greater the value of the Coefficient of Determination (r2), the better is the fit, and more useful is the regression equations as the estimating devices.
- It provides a formidable tool of statistical analysis in the field of business and commerce where people are interested in predicting the future events viz.: consumption, production, investment, prices, sales, profits, etc. and success of businessmen depends very much on the degree of accuracy in their various estimates.
- It provides a valuable tool for measuring and estimating the cause and effect relationship among the economic variables that constitute the essence of economic theory and economic life. It is highly used in the estimation of Demand curves, Supply curves, and Production functions; Cost functions, Consumption functions etc. In fact, economists have propounded many types of production function by fitting regression lines to the input and output data.
- This technique is highly used in our day-to-day life and sociological studies as well to estimate the various factors viz. birth rate, death rate, tax rate, yield rate, etc.
- Last but not the least; the regression analysis technique gives us an idea about the relative variation of a series.