# Concept of Correlation and its applicability in geographical studies

The relationship and association between two variables either independent with dependent is known as Correlation. In other words, there is a causal and logical relationship between two or more variables is known as correlation. According to Kole and King, 'Correlation method provides measures whereby the relationship between two or more variables can be calculated.' In the words of Best 'Correlation is the relationship between two or more paired variable can be calculated.'

The degree of relationship has been measured with the help of quantitative data as well as with the graphic representation. For the purpose of quantitative measurement various techniques have been evolved. The identification of the causal relationship among the different characteristics of any study is an essential concern of a scientific investigation. A causal relationship between the two characteristics exists only when one of them may logically be considered as the cause of the other. The factor which is supposed to be cause is known as the independent variable and the one which is supposed to be the effect is known as the dependent variable.

If an increase in the independent variable also tends to cause an increase in the dependent variables, the correlation is said to be positive. For instance, in a water scarcity area such as Rajasthan, a higher amount of rainfall may tend to cause a higher amount of crop production also, or better facilities of irrigation may lead to higher consumption of fertilizers. On the other hand, if an increase in the independent variable tends to cause a decrease in the values of the dependent variable, the correlation is said to be negative. Another example of negative correlation is increasing distance from the city centre and decreasing the density of population. When there is no apparent relationship between the two variables, then this is called no relation. For example, there is no correlation between shoe size and salary.

Positive Correlation   Negative Correlation   No Correlation
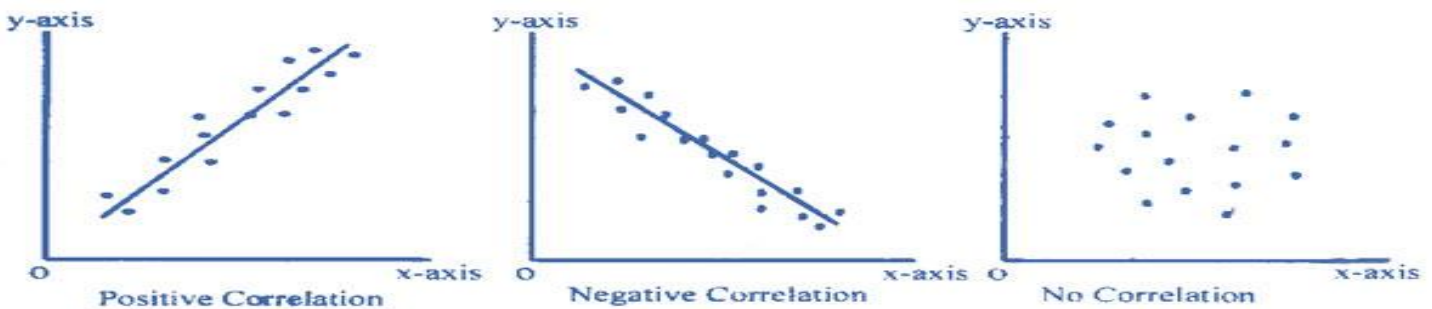
The measurement of the degree and direction of correlation helps particularly the geographers in explaining the variations in various spatial phenomena. To represent the correlation between two variables visually, we consider the values of the independent and dependent variable x and y coordinates of a two dimensional space.

If the sign 'r' is positive the variables x and y are positively related and if the sign is negative, they are negatively correlated. The value of 'r' varies between -1 and +1. The -1 and +1 indicates a perfect positive and negative correlation.

Applicability of correlation in Geographical Studies

Correlation is the most appropriate of all statistical tools used for geographical studies. The subject matter of geography is a region of diversities and regional analysis is considered to be the best method of studying it. But it is the study of the diversities found in only one micro-region or of one diversity between two or more than two micro-regions or a comparative study of several diversities, the basis of correlation is a must. This correlation may be bye the graphic method by comparing maps or by calculating the coefficient correlation. L.J.King in his publication, 'Statistical Analysis in Geography'(1969) has described the importance of correlation in geographical studies in these words: 'A continuous theme in geographic research is that of analyzing the degree and direction of correspondence among two or more spatial pattern or locational arrangement.'

Nearly all geographical facts are connected by the relationship of cause and effect and this relationship is not between two facts only but also between several causes responsible for one effect. The method of correlation is used not only for the analysis of social and economic facts, but also for the analysis of natural facts. For example, the geological structure of a region and its drainage pattern or soil erosion, amount of rainfall and the types of vegetation etc. are also correlated to each other.

Conclusions of several geographical studies have been obtained through correlation. P.S. Florance used this technique in industrial geography by calculating coefficient of localization and coefficient of association. A.H.Robinson (1956) who used this correlation analysis in adjustment of the size of the geographical regions i.e. areal data. H.H. Mc Carty also used in industrial geography. J.B. Lindberg and L.W. Brinkman both used this technique in population geography also. S.C. Thompson used in Economic Geography. On the other hand, this technique used in urban geography & settlement geography by King in 1961.

In fluvial geomorphology, geomorphologist used correlation technique in various geomorphological analysis.