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Class: B.A. Economics (Part-3)

Paper: 07

Topic- Linear or Non linear Correlation

Date: 19-02-2024

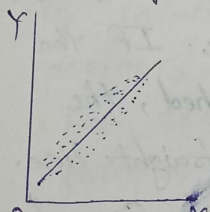
### ③. Linear or Non-linear Correlation

The distinction between linear and non-linear correlation is based upon the consistency of the ratio of change between the variables under study. If the ratio of change between two variables is uniform then there will be linear correlation between them. These relationship is best described by a straight line. An arithmetic progression is observed in the relationship, which may be positive or negative. If the variables under study are graphed, the plotted points will form a straight line. In non-linear relationship, which can also be said curvilinear, the amount of change in one variable does not bear a constant ratio to the amount of change in the other variables. The graph of variable having such a relationship will form a curve.

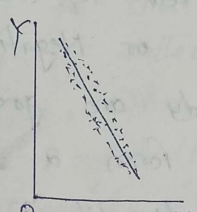
The following data show this Phenomena:

Linear Correlation		Curvilinear Correlation	
X	Y	X	Y
20	50	50	10
40	100	55	12
60	150	60	22
80	200	90	34
100	250	98	45
120	300	120	56

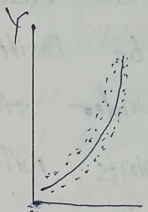
Graph or scatter diagram of Linear and non-Linear Correlation will take the following step.



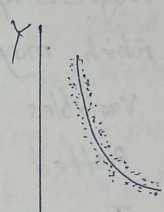
+ve Linear Relationship  
fig(i)



-ve Linear Relationship  
fig(ii)



+ve Curvilinear Relationship  
fig(iii)



-ve Curvilinear Relationship  
fig(iv)

It may be mentioned here that in practice, we find curvilinear relationship in most of the Phenomena. However, since the technique of non-linear correlation analysis being very complicated one, we generally assume that the relationship between the variables under study is linear.