Concept of correlation

Correlation Analysis Correlation analysis is done to measure the strength or magnitude of linear association between two variables. As per definition, a correlation coefficient must lie between -1 and +1. If the correlation between two variables is high, than the model fits the data well depending on whether it is positively or negatively correlated. While, if the correlation is low, than the model is not providing a good fit to the data.

We can explain correlation with the help of graphs

Figure 1: Perfectly Positive Correlation

The graph above shows that the variables are perfectly positively correlated as an increase in the value of independent variable causes the value of dependent variable to increase by the slope of the equation. An example of a perfectly positive correlation can be supply of good with respect to the price of good. As the price increase, the suppliers tend to supply more of the product.

Figure 2: Perfectly Negative Correlation

This graph above shows that the variables are perfectly negatively correlated as an increase in the value of the independent variable causes the value of dependent variable to decrease by the slope of the equation. An example of a perfectly negative correlation can be the demand of good with respect to the price of good. As the price increase, the consumers tend to less of the product.

Figure 3: Minimal Correlation

The third case where the correlation is positive but close to zero since the variables are not closely associated and the data are not scattered around a positive line.

The correlation between two variables is weak if they are close to zero

whether they are negative or positive. GDP and interest rates of the economy are correlated but the magnitude of correlation is very low. On the other side, there might be a strong correlation between smoking and lung cancer.

In the article published by Goolsbee and Guryan (2005) we can infer the correlations among the several variables. The table below illustrates how these variables are related:

Variable A

Variable B

Positive, Negative, Minimal Correlation:

Number of school lunch eligible students in the school

Amount of funding received by the school for federal and state education-related programs

Positive Correlation

Impact of subsidy received

Age of students at school

Minimal Correlation

Number of classrooms connected to the Internet

Student performance, as measured by standardized

test scores

Minimal Correlation

Teachers’ comfort level

with the Internet

Ability of teachers to use

Internet effectively with

their students

Positively Correlated

1) As per the government policy, the federal government subsidizes or gives free school lunches to students whose family income is below a certain level, usually close to the poverty level. So higher the number of eligible students for lunch, higher will be the amount of funding received by the school

2) Age is not correlated with the impact of subsidy received

3) As mentioned in the case study that increase in classroom Internet connections did not prove to have a profound impact on student achievement, as measured by test scores in a variety of subjects.

4) The authors pointed that if teachers are uncomfortable working with the technology they cannot use internet effectively with their students.

WidgeCorp can use this correlation analysis to effectively market its cold drinks in public schools. Since we know that there is a positive correlation between free school lunches and poverty level therefore WidgeCorp can approach the government to offer quality foods at affordable rates. There will be a stiff competition on the basis of price therefore as a case of bulk discounting WidgeCorp should offer quality foods to Government on competitive prices.

References

Goolsbee , A. & Guryan, J. (2005). The Impact of Internet Subsidies in Public School.

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