Coefficient of Determination

Psychometrics Knowledge · https://psyasia.com/kb/coefficient-of-determination/

This statistic is useful when we are trying to assess the amount of coverage (prediction) of job performance that is afforded by a test score or composite of scores. Most trained users of psychometric assessments will be familiar with the correlation coefficient. This is simply the strength of relationship between two variables. For example, test score and performance rating. The coefficient of determination is calculated by squaring the correlation coefficient.

Let's say that a candidate's score on the Numerical Reasoning Test is related to their performance as an accountant. We find there is a strong relationship or correlation. We'll make it r = .6. Now just square this: r-squared = .6 x .6 = .36. This suggests that the test score accounts for 36% of the variance in performance. However, because correlation does not infer causation, we must also accept the inverse. Performance accounts for 36% of the variance in test scores!

The calculation is similar although more complicated within regression models. Here, the theoretical rationale will drive the direction of the hypothesis and a resultant r-squared is produced which tells us the amount of variance in performance that is accounted for by the test scores when their respective beta weights are applied.

In essence, the coefficient of determination is a measure of how well the regression line represents the data. If the regression line passes exactly through every point on the scatter plot, it would be able to explain all of the variation. The further the line is away from the points, the less it is able to explain.