

## Copula-Based Estimation of Direct and Indirect Effects in Path Analysis Model

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**Abstract :** Path analysis is a statistical technique used to evaluate the strength of the direct and indirect effects of variables. One or more structural regression equations are used to estimate a series of parameters in order to find the better fit of data. Sometimes, exogenous variables do not show a significant strength of their direct and indirect effect when the assumption of classical regression (ordinary least squares (OLS)) are violated by the nature of the data. The main motive of this article is to investigate the efficacy of the copula-based regression approach over the classical regression approach and calculate the direct and indirect effects of variables when data violates the OLS assumption and variables are linked through an elliptical copula. We perform this study using a well-organized numerical scheme. Finally, a real data application is also presented to demonstrate the performance of the superiority of the copula approach.

**Keywords :** path analysis, copula-based regression models, direct and indirect effects, k-fold cross validation technique

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