Evaluating a model

Basic Introduction to SEM-in-R

Laura

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Evaluating a model:

- Following, we present how the quality of a structural-equation model should be evaluated.
- There are primary quality or evaluation criteria.
- Further, Systematicall application to PLS path models.

Overview:

- primary quality or evaluation criteria and their systematic application to PLS-path-models
- evaluation of reflective specified measurement models: application of relevant evaluation criteria and their appropriate evaluation

Evaluation - in general:

- In the evaluation of PLS pathway models: Starting point: R2 from the regressions of the individual endogenous latent variables of the structural model.
- interpret as in ordinary regressions
- Path values: can also be considered as coefficients of an ordinary (multiple) regression
- R2 change analysis > whether an independent latent variable exerts a substantial influence on a dependent variable
- Effect size f2: calculated from different R2 when the independent latent variable in question is included in the dependent latent variable (R2 incl) or not (R2 excl):

$$f^2 := \frac{R^2_{incl} - R^2_{excl}}{1 - R^2_{incl}}$$

Values for f 2 of more than 0.02 / 0.15 / 0.35: independent latent variable has small /medium / large influence on dependent latent variable

Evaluation - Validation:

- Validation of determined estimated values: resampling techniques -- allow evaluation of stability of determined model parameters
- From the raw data matrix: n times a number k of observations (with or without regression) are drawn from the raw data matrix. transformed to a modified raw data matrix.

Evaluation of measurement models

- estimation of model > empirical measured variables to assess the relationship between the indicators and constructs (measurement models) and between the different constructs (structural model)