

LECTURE 5.2

STRUCTURAL EQUATION MODEL

STRUCTURAL EQUATION MODELLING (SEM)

- SEMs consist of series of multiple regression equations where equations are fitted simultaneously.
- Aims to explain rather than to predict the relationship
- Models should always be based on theory, knowledge.
- It also known as analysis of covariance structure or causal model or analysis of moment structure.

- Uses path diagrams to visualize what is going on
 - Relating exogenous, intermediary and endogenous variables
- **Exogenous variables**
 - an exogenous variable has paths coming from it and none leading to it (not counting the curved arrows because they're simply describing correlations among the variables and aren't considered to be paths).

- **Endogenous variables**
 - **Dependent variable**
 - Have only incoming arrows
 - **Mediating variables.**
 - have both incoming and outgoing arrows in the path diagram

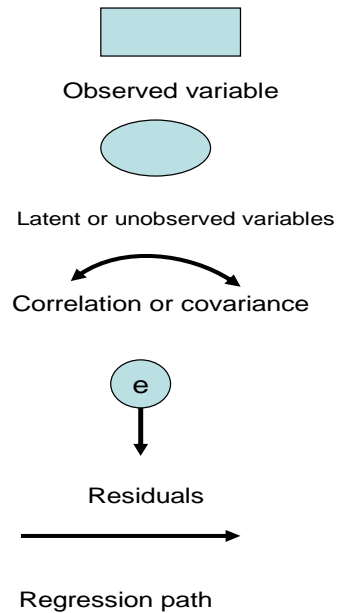
- Variables are represented by rectangles are observable variable
- Path is represented by a straight line with an arrow head at one end.
 - The straight arrows are the **paths**
- The curved ones represent the **correlations or covariances** among the variables.
- The circle with an arrow pointing to the dependent variable is the error term.

UN-STANDARDIZED ESTIMATION

Un-standardized estimation gives the variance of a variable and the covariance among variables and also regression weight

STANDARDIZED ESTIMATES

Standardized estimation estimates correlation among variables, the square multiple correlation and also regression weight.



BEST MODEL CRITERIA

- Chi-square and corresponding p value $\Rightarrow > 0.05$
- $\text{Chi-square}/df < 3$
- $\text{AGFI} > 0.9$
- $\text{RMSEA} < 0.08$
- GFI varies from 0 to 1. Values close to 1 indicates better fit.
- AIC close to zero reflects good fit. Between two model, lower AIC reflects as better model.

END OF LECTURE