AMOS in 3 minutes!

DATA SCREENING

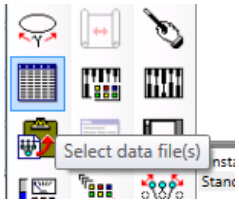
1) Data Screening:
   - Identifying typos and correcting them
   - Removing cases without enough variance
   - Handling missing data (Replacing with mean, median, regression based, etc.)
   - Handling outliers (Univariate outliers: Boxplot, Multivariate outliers: Mahalanobis d-square)

DRAWING THE MODEL

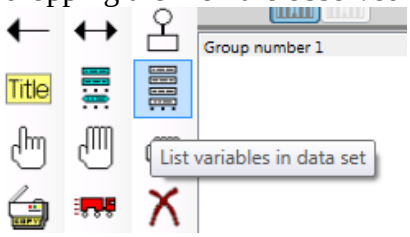
2) Drawing CFA model in AMOS Graphics

3) Identify the model (one path from each latent variable to one of its measured variables must be fixed to 1. Also fix paths leading from disturbance terms to exogenous variables to 1).

4) Load the data file from SPSS to AMOS.



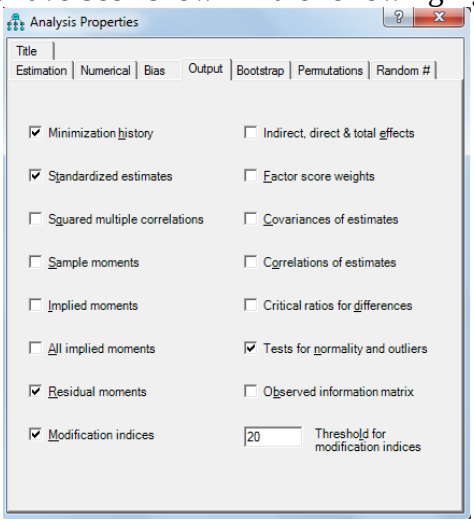
5) Load variables into observed variables in the model by dragging them from the list and dropping them on the observed variables.



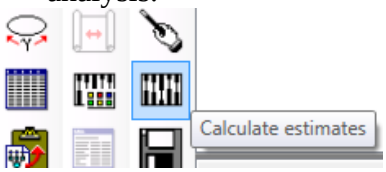
RUNNING CFA

6) Click on *Analysis Properties* in AMOS toolbox

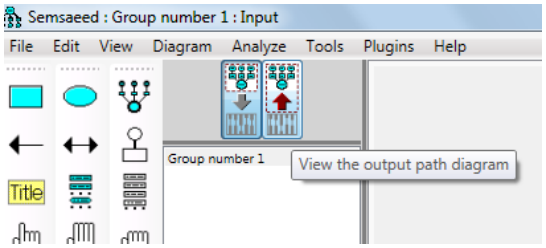
7) In the *Analysis Properties* menu select those that have been shown in the following figure



8) By clicking on *Calculate estimates* run the analysis.



9) If the red arrow on *View the output path diagram* was turn on it means you could run the model successfully.



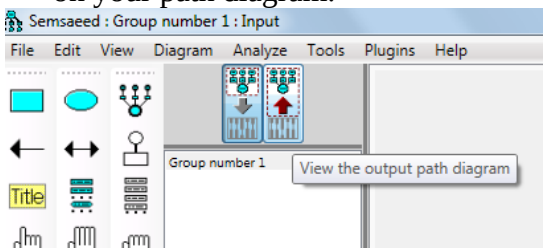
If the model was not run maybe you have made one of these mistakes:

- The model has not been identified (one path from each latent variable to one of its measured variables must be fixed to 1. Also fix paths leading from disturbance terms to exogenous variables to 1).
- You deleted one observed variable and you forgot to delete its error term! Move your model part by part and check whether there is something left under the model or not!
- The name that you choose for your latent variable must be different from all variable

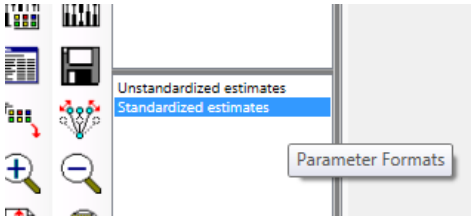
names in your data file.

- Latent variable name cannot contain space.
- The data file has not been loaded to the model.

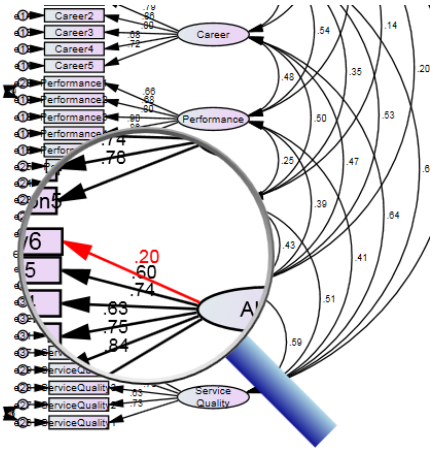
10) Click on the *View the output path diagram* button. Then, you can see all path coefficients on your path diagram.



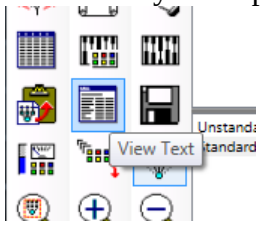
11) Click on *Standardized estimates* to see all path coefficients in the model in standardized form.



12) Check all factor loadings and drop those which are less than 0.5.



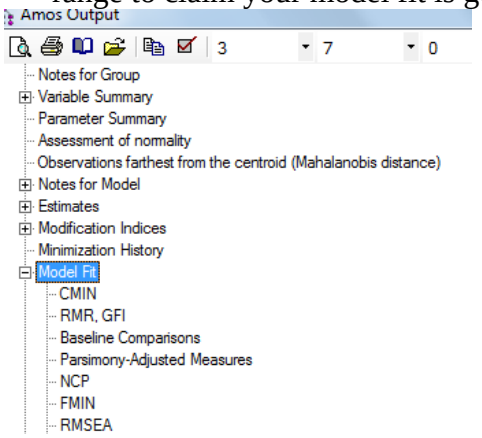
13) After dropping weak factor loading items, rerun the analysis and click on *View Text* to see the analysis output reports.



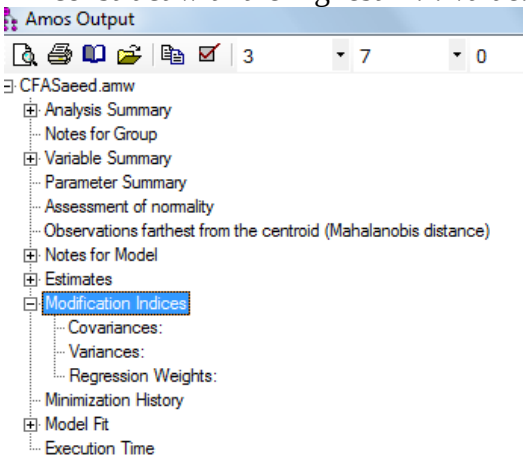
14) Click on *Assessment of normality* and *Mahalanobis distance* to check normality and multivariate outliers (In a normal distribution -3<Skewness<3, -7<Kurtosis<7. Mahalonobis: those with p1<0.05 may be multivariate outliers).

15) You may do this step before checking factor loadings).

16) Click on *Model Fit.* Then, check the model fit by using the decision criteria Table that you have in your PowerPoint slides. You need to have at least three indexes in the acceptable range to claim your model fit is good.

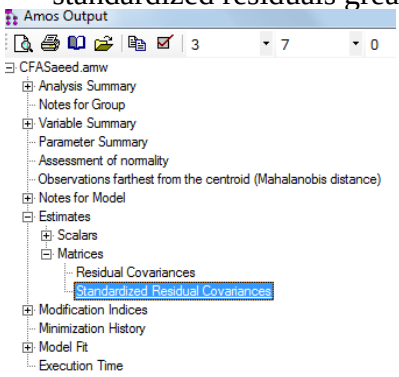


17) If the model fit is not good click on *Modification Indices* to improve the model fit by following the AMOS suggestions. To do so, correlate those error terms under same construct with the highest *M.I.* value.



18) Redo step 12 and 13 until achieving a good model fit.

19) Meanwhile, you can check *standardized residual Covariances* Matrix. To improve your model fit you can drop those items with many standardized residuals greater than 4.

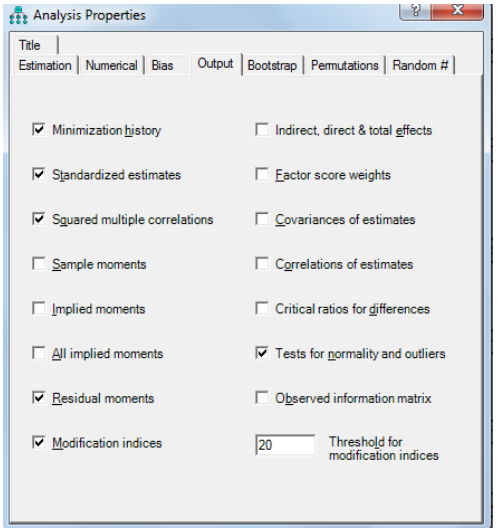


20) Check Reliability and Construct Validity by using *Stats Tools Package* Excel file developed by James Gaskin (You can download it from www.saeedsharif.com)

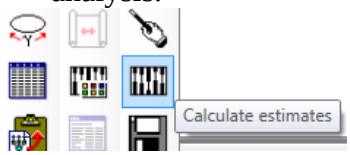
RUNNING SEM

21) After fitting your model, you can draw SEM model from your CFA model. Be sure you have drawn covariance between all exogenous variables. And put disturbance term on all endogenous variables.

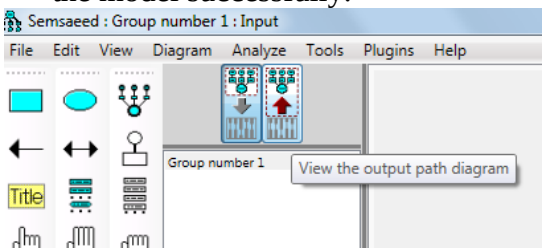
22) In the *Analysis Properties* menu select those that have been shown in the following figure.



23) By clicking on *Calculate estimates* run the analysis.

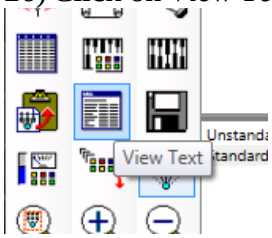


24) If the red arrow on *View the output path diagram* was turn on it means you could run the model successfully.

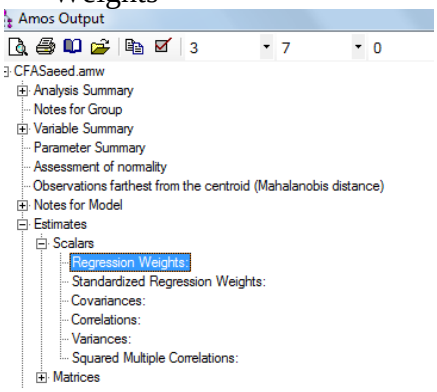


25) Click on the *View the output path diagram* and you can see the path coefficients and Squared multiple correlation (R^2) of endogenous variables on the model.

26) Click on *View Text.*



27) Go to Estimates -> Scalars -> Regression Weights



You can see unstandardized estimate of path coefficients and their *p*-value in the table. Those with p-value < 0.05 are significant.

You also can click on Standardized Regression Weights to see standardized path coefficients.

Finally, Squared Multiple Correlations show R^2 of endogenous variables.