
Data Analysis Workshop

Partial Least Squares Structural Equations Modeling (PLS-SEM) Using SmartPLS (Online)

27/11/2021 to 28/11/2021

Date: 27 November 2021 (Saturday) and 28 November 2021 (Sunday)
Time: 10:00 A.M – 5:00 P.M
Facilitator: Dr. Shaian Kiumarsi
Venue: Modaber Management Research Institute, No. 2, 3rd Floor, Danesh Tower, Falah St., Ashrafi Esfahani Highway, Tehran, Iran

Description of Workshop Activities

Participants will be encouraged to bring laptops and to download and install the (currently free) SmartPLS 3.3.3 software by referring to the download instruction "How to Install Smart PLS 3.3.3" in the attached file and sample data sets, prior to the workshop. Then, in the workshop, participants will be instructed on how to use SmartPLS in SEM modeling exercises.

Using SmartPLS for Statistical Research Analysis

SmartPLS is a software with graphical user interface for solving variance-based structural equation modeling (SEM) using the partial least squares (PLS) method. The software can be used in empirical research to analyse collected data from primary surveys and to test the hypothesized relationships.
SmartPLS is a very popular PLS path modeling tool. SmartPLS determines relationships between independent and dependent latent variables as linear composites, much like multiple regression multivariate techniques. Interestingly, this SEM tool is capable of simultaneously determining both the indirect as well as the direct path influences among all of the latent variables. PLS path modeling can incorporate both reflective (effect) and formative (cause) measurements models of latent variables. In essence, PLS path modeling is a robust SEM technique which is flexible in handling, a very user-friendly path modeling tool, with an intuitive visual interface.

Course Outline

The objectives of this course are to provide an in-depth methodological introduction into the PLS-SEM approach, the evaluation of measurement results, and complementary analytical techniques. Participants learn basic and intermediate techniques for conducting PLS path modeling using linear (SmartPLS).

Participants will receive: (1) 'hands on' exercises and data sets; (2) Slides and materials (during workshop); (3) relevant full-copy SEM research articles.

Participants will understand the following topics:

1. Pilot Study
2. Target Population and Sample Size Determination (G*Power)
3. Missing Values
4. Response Rate
5. Respondents Profile
6. Descriptive Statistics of Individual Question Items and Latent Constructs
7. Common Method Bias
8. Data Analysis
9. Basics of SEM
10. Model development and fundamentals of PLS-SEM
11. Measurement Model of PLS
12. Discriminant Validity-Fornell and Larcker Criterion
13. Discriminant Validity-Heterotrait-Monotrait Ratio (HTMT)
14. Assessment of Structural Model
15. Multicollinearity
16. Assessment of R-Square Value (R^2) or Coefficient of Determination
17. Blindfolding and Predictive Relevance (Q^2)
18. Assessing Effect Size (f^2)
19. Assessment of Goodness of Fit
20. Significance of Direct Effects-Path Coefficients
21. Mediating Effect
22. Mediating Effect of Serial Mediation Role
23. Testing the Effects of Moderating Effect of Moderating Variable (interaction effects)
24. Testing Moderating Effect in PLS-Multi-Group Analysis (MGA)
25. Importance-Performance Matrix Analysis

More specifically:

1) Introduction to SmartPLS, Latent variables, and SEM
    A. Why Use PLS Path Modeling?
    B. PLS vs. Covariance-Based SEM (CBSEM)
    C. Specifying PLS Path Models
    D. Formative vs. reflective measurement
    E. How to Get Started with SmartPLS
2) Reliability and Validity
    A. 'Hands-on' Reliability and Validity Exercises
    B. Internal Consistency Reliability
    C. Indicator Reliability
    D. Convergent Validity
    E. Discriminant Validity
3) Mediating and Moderating Effects
    A. What is Mediation?
    B. What is Moderation?
    C. Why Care about Mediating and Moderating Effects?
    D. 'Hands-on' Mediating and Moderating Exercises

Who Will Benefit?

This course has been designed for Master, Ph.D students and Lecturer who are engaged in, or interested in, current techniques perform SEM using the SMART-PLS path modeling approach in their own research applications. A basic knowledge of multivariate statistics and SEM techniques is helpful.

Equipment

All participants must bring a laptop to enable hands-on training using the SmartPLS program. Participants should arrive with SmartPLS software and SPSS already installed and activated.

Yours Sincerely,