INTRODUCTION TO STRUCTURAL EQUATION MODELING: PRINCIPLES AND APPLICATIONS
June 8-10, 2023

Course Objectives

The purpose of this intensive course is to provide a user-friendly introduction to (covariance-based) structural equation modeling (SEM) using the LISREL program and the SIMPLIS command language. The workshop's emphasis is on understanding and correctly applying SEM as a tool in substantive research. Its target audience includes doctoral students and academic researchers involved in quantitative modeling and data analysis. The workshop assumes prior basic knowledge of data analysis and multivariate statistics (including factor analysis and regression).

Scope & Approach

The workshop seeks to familiarize participants with the various stages associated with conceptualizing, estimating, and evaluating structural equation models, highlighting key decisions and potential problems at each stage. Following an introduction of SEM as an analytical approach, critical issues associated with the theoretical specification and graphical representation of a full latent variable model are discussed. These set the background for applying the LISREL program to estimate the model and assess its fit along different criteria. Strategies for model modification and cross-validation are also outlined.

To enable participants experience SEM "in action", the above issues are illustrated with a concrete example of a comprehensive model estimated by the LISREL program. Detailed guidance for setting up and interpreting the relevant LISREL input/output files is also provided.

Once participants have become familiar with the basic principles of SEM and the use of the LISREL program, several different types of models will be illustrated, such as regression-type models, path analysis models, different kinds of measurement models, and MIMIC models. In addition, various programming issues (e.g., fixing specific parameters, incorporating equality constraints, undertaking an effect decomposition) will be discussed as will problems that might be encountered. Workshop participants will be provided by free LISREL licenses so that they get "hands on" experience on specifying, estimating, and interpreting different types of models.

Instructor

Adamantios Diamantopoulos Ph.D., D.Litt., is Chaired Professor of International Marketing at the University of Vienna, Austria. He is also Visiting Professor at the University of Ljubljana, Slovenia and Senior Fellow at the Dr. Theo and Friedl Schoeller Research Center for Business & Society, Nuremburg, Germany. During the academic year 2012/13, he was the *"Joseph A. Schumpeter Fellow"* at Harvard University, USA.
His main research interests are in international marketing and research methodology, and he is the author of over 200 publications in these areas with over 48,000 citations (h-index: 88; *Google Scholar*, September 2022). In addition to his work in international marketing, he is an acknowledged expert in structural equation modeling (SEM) and measurement theory/scale development. His *Journal of Marketing Research* (JMR) article "Index Construction with Formative Indicators: An Alternative to Scale Development" (with H. Winklhofer) has received 6,000+

citations and is the most widely cited JMR article during the ten-year period 2000-2009. His introductory SEM textbook *Introducing LISREL: A Guide for the Uninitiated* (with J. A. Siguaw) has been cited more than 3500 times. He has taught SEM courses at 20+ university institutions in the UK, France, Belgium, Germany, Austria, Spain, Sweden, Switzerland, Slovenia, Greece, Bosnia & Herzegovina, Lithuania, Poland, Thailand, Canada, and the USA.
He is ranked #8 worldwide in terms of overall citations among a total of 11,636 scholars in the marketing discipline (*Elsevier BV - Stanford University* study, October 2021). He is also ranked #1 in Austria and #94 worldwide in the 2022 *Ranking of Top 1000 Scientists* in the field of Business and Management *(Research.com*, 2022). Furthermore, he ranks #4 worldwide based on publications in the top six international business journals during 1995-2015 (Leonidou et al., 2018) and is the most prolific contributor to *Journal of International Marketing* both in terms of published articles and in terms of citations (Donthu et al., 2021).
He has been the recipient of more than twenty Best Paper Awards, including three *Hans B. Thorelli Award* for articles published in *Journal of International Marketing* that have made the most significant and long-term contribution to international marketing theory or practice. He sits on the Editorial Review Boards of several academic journals and acts as a referee for various professional associations and funding bodies.

Course structure

The course comprises 18 hours of face-to-face teaching delivered in English (three days each lasting 6 hours) and 57 hours of self-managed independent study for a total of 75 hours equal to 3 CFUs (ECTS university credits).

Period & Venue

8-10 June 2023
Università degli Studi Internazionali di Roma (UNINT)
Via Cristoforo Colombo, 200 00147 Roma

Course agenda

Day 1: Thursday June 8, 2023 – UNINT University

09:30-11.00: An informal welcome and networking reception for course participants.

11:00-13:00: Introduction to and Benefits of SEM

Key concepts and the fundamental logic underlying SEM are introduced, and the benefits offered by SEM vis-à-vis conventional analytical methods considered.

13:00-14:00: *Lunch*

14:00-15:30: Model Conceptualization I: Structure

Issues relating to the specification of one's theoretical model are discussed and implications for subsequent model estimation and testing highlighted.

15:30-15:45: *Coffee Break*

15:45-17:30: Model Conceptualization II: Measurement

Issues relating to the operationalization of the constructs comprising one's theoretical model are examined and reflective vs. formative measurement perspectives contrasted.

Day 2: Friday June 9, 2023 – UNINT University

10:00-11:30: Model Identification

The question of whether there is sufficient information in one's data to estimate the parameters in one's model is addressed and strategies for overcoming under-identification problems outlined.

11:30-11:45: *Coffee Break*

11:45-13:00: Introduction to the LISREL Program

Guidance on how to specify one's model in the SIMPLIS command language is provided and various features of LISREL software highlighted.
13:00-14:00: *Lunch*

14:00-15:30: Parameter Estimation

Alternative estimation options are considered and the results of the estimation process for one's model (parameter estimates, standard errors, t-values, p-values, etc.) discussed.

15:30-15:45: *Coffee Break*

15:45-17:30: Model Fit Evaluation

The notion of model fit is explained and several (complementary) criteria for evaluating the overall fit of one's model to a set of data considered.

Day 3: Saturday June 10, 2023 – UNINT University

10:00-11:30: Model Modification

The issue of adding and/or removing parameters following initial estimation of one's model is discussed, and the dangers of data-driven model adjustments highlighted.

11:30-11:45: *Coffee Break*

11:45-13:00: Model Cross-Validation

Different approaches to cross-validating one's model are presented and issues relating to a model's replicability, robustness and generalizability examined.

13:00-14:00: *Lunch*

14:00-15:30: Examples of different kinds of models I

15:30-15:45: *Coffee Break*

15:45-17:30: Examples of different kinds of models II

Readings

A comprehensive list of articles on SEM will be provided to workshop participants at the end of the seminar. The recommended textbook for the workshop is:

Diamantopoulos, A. & Siguaw, J. A. (2000): *Introducing LISREL: A Guide for the Uninitiated,* Sage Publications.

Other relevant texts that participants may wish to consult include:

Byrne, B. M. (1998): *Structural Equation Modeling with LISREL, PRELIS, and SIMPLIS: Basic Concepts, Applications, and Programming*, Lawrence Erlbaum.

Kline, R. B. (2014): *Principles and Practice of Structural Equation Modeling*, 4th ed. Guilford Press.

Raykov, T. & Marcoulides, G. A. (2006): *A First Course in Structural Equation Modeling*, 2nd ed. Taylor & Francis.

Schumacker, R. & Lomax, R. G. (2015): *A Beginner's Guide to Structural Equation Modeling*, 4th ed. Routledge.

Participation fee

The participation fee is € 366.00. For PhD students, researchers and UNINT teaching staff there is a subsidised participation fee of € 266.00.

Deadline for registrations

No later than 20 May 2023.

To consult the call

www.unint.eu/files/2023/AF/Bando_corso_formazione_introduzione_equazione.pdf

Contacts

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