

INTRODUCTION TO STRUCTURAL EQUATION MODELING WITH LISREL

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Seminar 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 emphasis is on understanding and applying SEM as a tool in substantive research and its target audience includes doctoral students and academic researchers involved in quantitative modeling and data analysis. ***Important:** The course assumes prior knowledge of data analysis and multivariate statistics (including factor analysis and regression).*

Scope & Approach

The course seeks to familiarize participants with the various stages associated with conceptualizing, identifying, estimating, and evaluating structural equation models, highlighting key decisions and potential problems at each stage. Following an introduction of SEM as an analytical approach, 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 course 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, and measurement models. In addition, various LISREL programming issues (e.g., fixing specific parameters, incorporating equality constraints, undertaking an effect decomposition) will be discussed as will problems that might be encountered along the way.

The course will take the form of interactive workshop sessions, placing particular emphasis on student participation.

Participants are expected to download the latest version of the LISREL software program from www.ssicentral.com (they will be provided with a free student license) and also read widely on the subject (see Readings below).

Assessment

Assessment will take the form of a group project (2-3 students) involving the estimation and interpretation of different kinds of models using the LISREL program.

Topics

- Nature of SEM
- Benefits of SEM
- Model Conceptualization I: Structure
- Model Conceptualization II: Measurement
- Path Diagram Construction
- Model Identification
- Introduction to the LISREL Program
- Parameter Estimation
- Model Fit Evaluation
- Model Modification
- Model Cross-Validation
- Examples of Different Kinds of Models

Readings

The main textbook used in the course is:

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

Other introductory 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.
- Hair, J. F., Babin, B. J., Anderson, R. E., & Black, W. C. (2018): *Multivariate Data Analysis*, 8th ed., Pearson.

Note: A comprehensive list of articles on SEM will be provided to participants at the end of the course.

Instructor



Adamantios Diamantopoulos Ph.D., D.Litt. is Professorial Research Fellow at the Department of Marketing and International Business, 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, Nuremberg, Germany. During 2004-2023 he was Chaired Professor of International Marketing at the University of Vienna. Previous academic appointments include full-time professorships at the University of Wales and Loughborough University in the UK, as well as visiting professorships in France, Germany, Greece, Sweden, Spain, UK, and USA. 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 54,000 citations (h-index: 93; *Google Scholar*, November 2023). His work has appeared, among others, in the *Journal of Marketing Research*, *Journal of International Business Studies*, *Journal of the Academy of Marketing Science*, *International Journal of Research in Marketing*, *Journal of Service Research*, *Journal of International Marketing*, *Journal of Retailing*, *MIS Quarterly*, *Organizational Research Methods*, *Psychological Methods*, *Information Systems Research*, *British Journal of Management*, and *Journal of Business Research*.

In addition to his work in international marketing, he is an acknowledged expert in structural equation modeling (SEM) and measurement theory/scale development. His SEM textbook *Introducing LISREL: A Guide for the Uninitiated* (with J. A. Sigauw) has been cited more than 3,900 times. He has taught introductory and advanced SEM courses at 20+ university institutions in 16 countries.

He is currently ranked #8 worldwide in terms of citations among a total of 13,180 scholars in the Marketing discipline (*Elsevier BV - Stanford University* study; Ioannidis, 2023). 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 several Best Paper Awards, including four *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 is an elected Fellow of the *British Academy of Management*, the *European Marketing Academy* and the *Academy of International Business*. In 2019 he was awarded the *JIBS Silver Medal* and in 2021 he received the *Significant Contributions to Global Marketing Award* by the *American Marketing Association*.