



WORKSHOP ON ADVANCED PLS-SEM TOPICS

**European Marketing Academy (EMAC) 2019 Conference
Hamburg, Germany**



Treating Observed and Unobserved Heterogeneity and Prediction-oriented Assessment of Results in PLS-SEM

Thursday, May 30, 2019 – 9 a.m. to 5 p.m.

Jan-Michael Becker and Christian M. Ringle

Partial Least squares is a family of regression-based methods developed in the 1970s and 1980s by the Swedish econometrician Herman O. A. Wold, who vigorously pursued the development of methods for the social sciences where “soft models and soft data” were the rule rather than the exception, and where approaches focusing on prediction would be of great value. One procedure that emerged from Wold’s efforts is partial least squares structural equation modeling (PLS-SEM), which has gained widespread popularity in a variety of disciplines such as marketing, strategic management, management information systems, and accounting.

Along with the increasing prominence of the PLS-SEM technique, researchers have started developing more **advanced modeling techniques** that enable them to more fully explore the roles of intervening and contingent variables and to control for data structures that pose a threat to the validity of results. The benefits of having such advanced PLS-SEM approaches readily available are tremendous. These types of analyses assist in a more thorough evaluation of PLS-SEM estimations and are increasingly being requested by editors and reviewers. At the same time, however, applying these and other advanced PLS-SEM approaches requires understanding their intricacies and knowing when they can assist in analyzing data in a meaningful way such that the applications fit the research context.

In light of these developments, this post-conference workshop provides an introduction to **advanced issues** in PLS-SEM, focusing on the issues of **observed** and **unobserved heterogeneity** as well as other relevant analyses. Specifically, the workshop will cover the following topics:

- Prediction-oriented assessment of PLS-SEM results (PLSpredict & Blindfolding)
- Multigroup analysis and measurement invariance in PLS-SEM
- Identifying and treating unobserved heterogeneity (FIMIX-PLS and PLS-POS)

The course is based on their new PLS-SEM textbook, a signed copy of which will be given to workshop participants:

Hair, Joe F.; Marko Sarstedt; Christian M. Ringle and Siggi P. Gudergan (2018). *Advanced Issues in Partial Least Squares Structural Equation Modeling (PLS-SEM)*, Thousand Oaks: Sage.

Practical applications and the use of the software SmartPLS 3 are an integral part of the workshop. Each course participant will get a *free* two-month professional license for the SmartPLS 3 software.

Date and time: Thursday, May 30, 2019 – 9 a.m. to 5 p.m.

Place: EMAC Conference

Registration: **Via EMAC Registration (you need to register for EMAC)**

Cost: **50 EUR**

Preliminary Schedule:

Date	Time	Content
Thursday May 30, 2019	09:00 - 10:30	RECAP: Foundations of partial least squares structural equation modeling (PLS-SEM) & introduction to the SmartPLS software
	11:00 - 12:30	Advanced model evaluation: Prediction-oriented assessment of PLS-SEM results (PLSpredict & Blindfolding) & SmartPLS exercises
	13:30 - 15:00	Observed heterogeneity: Moderation, measurement invariance, and multigroup analysis & SmartPLS exercises
	15:00 - 17:00	Unobserved heterogeneity: Finite mixture partial least squares (FIMIX-PLS), and prediction-oriented segmentation & SmartPLS exercises

Course set-up:

- The workshop builds on the contents and the data from the newly published book *Advanced Issues in Partial Least Squares Structural Equation Modeling (PLS-SEM)* (Sage, 2017). Handouts with major concepts will be provided.
- Most of the workshop will involve “hands-on” analysis of real-world datasets using the SmartPLS 3 software. The SmartPLS 3 software output diagnostics and interpretation of the results will be covered.
- Potential obstacles and “rules-of-thumb” to ensure appropriate application of the techniques will be addressed.

Requirements:

- Participants should have knowledge of the fundamentals of PLS-SEM and be familiar with the basics of model development and evaluation.
- Participants must bring a laptop with the SmartPLS 3 software readily installed. The software is available from <http://www.smartpls.com>. If you encounter any software related problems, please create a support ticket here: <http://support.smartpls.com/>.
- Course participants will obtain a free two-month license for SmartPLS 3 Professional.

Who should attend? Individuals wanting to learn more advanced PLS-SEM topics and the SmartPLS software for their PhD research and/or top-tier journal publications.

Instructors:

- *Jan-Michael Becker* is a postdoctoral researcher and lecturer in Marketing at the University of Cologne in Germany. He has been a visiting scholar at leading international business schools like Georgia State University, Atlanta, USA and University of Waikato, Hamilton, New Zealand. His research interests focus on data science and marketing analytics with special focus on structural equation modeling (SEM) and measurement theory, as well as bridging substantive marketing and IS problems. His research has been published in several premier academic journals, including *Information Systems Research*, *MIS Quarterly*, *Long Range Planning*, *Multivariate Behavioral Research*, and *European Management Journal*. He is a co-founder of the SmartPLS software application. <https://www.marketing.uni-koeln.de/de/team/jan-michael-becker/>
- *Christian M. Ringle* is a Professor of Management and the Director of the Institute for Human Resource Management and Organizations at the Hamburg University of Technology (TUHH) and a Conjoint Professor at the Waikato Management School, New Zealand. He holds a PhD from the University of Hamburg, Faculty of Business and Economics. His research has been published in well-known journals such as *Information Systems Research (ISR)*, *International Journal of Research in Marketing (IJRM)*, *Journal of Business Research (JBR)*, *Journal of Service Research (JSR)*, *Journal of the Academy of Marketing Science (JAMS)*, *Long Range Planning (LRP)*, *MIS Quarterly (MISQ)*, and *Organizational Research Methods (ORM)*. Dr. Ringle co-authored the textbook on PLS-SEM and is co-founder of SmartPLS, a software tool with a graphical user interface for the application of the PLS-SEM method. <https://www.tuhh.de/hrmo/team/prof-dr-c-m-ringle.html>

Additional references and suggested readings:

- Becker, J.-M., Rai, A., Ringle, C. M., & Völckner, F. Discovering Unobserved Heterogeneity in Structural Equation Models to Avert Validity Threats. *MIS Quarterly* 2013; 37 (3): 665-694.
- Hair, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. *Advanced Issues in Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks, CA: Sage, 2018.
- Henseler, J., Ringle, C. M., & Sarstedt, M. Testing Measurement Invariance of Composites Using Partial Least Squares. *International Marketing Review* 2016; 33 (3): 405-431.
- Sarstedt, M., Ringle, C. M., & Hair, J. F. *Partial Least Squares Structural Equation Modeling*. In: Christian Homburg, Martin Klarmann, Arndt Vomberg editors. *Handbook of Market Research*. Heidelberg: Springer, 2017.
- Sarstedt, M., Ringle, C. M., & Hair, J. F. Treating Unobserved Heterogeneity in PLS-SEM: A Multi-Method Approach. In: Richard Noonan, Hengky Latan editors. *Partial Least Squares Structural Equation Modeling: Basic Concepts, Methodological Issues and Applications*. Heidelberg: Springer, 2017. pp. 197-217.
- Sharma, P. N., Shmueli, G., Sarstedt, M., Danks, N., & Ray, S. Prediction-oriented Model Selection in Partial Least Squares Path Modeling. *Decision Sciences* 2019; in press.
- Shmueli, G., Ray, S., Velasquez Estrada, J. M., & Chatla, S. B. The Elephant in the Room: Evaluating the Predictive Performance of PLS Models. *Journal of Business Research* 2016; 69 (10): 4552-4564.

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