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PLS: New Directions, New Challenges, and New Understandings

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AMCIS 2012 – Panel Proposal

Title: PLS: New Directions, New Challenges, and New Understandings

Moderator: Fred Davis

Panelists:

- Wynne W. Chin
- Dale Goodhue
- Ron Thompson

Objectives:

The primary objective of this panel is to surface opportunities and address recent concerns about the use of the Partial Least Squares (PLS) statistical analysis technique within the Information Systems (IS) research arena. Since it was first employed in a paper published in a major IS journal (Rivard and Huff, 1988) and compared to regression and LISREL at a major IS conference (Davis, Goodhue and Thompson, 1990), PLS has become one of the more popular statistical techniques for analyzing causal models within the IS research field. This was due mainly to the efforts of Chin's introduction in seminars and the first graphical software PLS-Graph in the late 80s and early 90s (Roldán & Sánchez-Franco, 2012; Chin & Marcolin, 1994). While Chin (1995) suggested comparing PLS to covariance based SEM from the same perspective of principal components analysis to factor analysis, other early proponents for the use of PLS (e.g., Barclay, Higgins and Thompson, 1995) focused on advantages over other techniques such as robustness under conditions of small sample sizes, and the ability to handle non-normal distributions or formative measurement. Many IS researchers who have chosen to use PLS during the intervening years have cited these and other reasons (such as a focus on prediction rather than theory testing) for their choice (Chin, 2010; Ringle et al., 2012; Chin 1998).

Since the 90s, various researchers have tested the use of PLS under a variety of conditions with mixed results. In some instances researchers have concluded that certain advantages hold, and in others questions have been raised about certain advantages. Some argue that while PLS may have limitations under certain conditions, it is still preferable for use in many situations such as structural modeling with the use of secondary data. In summary, it appears the understanding of the IS field with respect to the use of PLS is shifting and in need of better insights. Though this panel will probably not resolve the issue, it is hoped that it will answer some questions and clarify other issues that need more attention.

This panel will provide a forum for discussing these and related issues.

Possible issues for discussion:

1. Sample size
2. Non-normal data distribution
3. Formative measurement
4. Model complexity

5. Measurement error
6. Avoidance of false positives in the presence of correlated constructs
7. Indications of overall model fit, and the detection of model misspecification
8. Construct validity and susceptibility to instrument bias
9. Prediction and exploration versus theory testing
10. Emphasis on variance versus covariance
11. Etc….

Panel Layout:

The moderator will begin the session with a brief opening statement, introducing the panelists and providing an overview of the history and growth of the use of PLS in IS research.

Each panelist will provide a short presentation focusing on a subset of the issues. Ron Thompson will provide a brief overview of conclusions from some studies investigating potential limitations (e.g., potential loss of power under conditions of small sample sizes), taking the position that some recent cautions on the use of PLS are warranted but that PLS remains a valuable research tool. Dale Goodhue will take these concerns further and cover several often cited concepts associated with PLS (consistency at large, exploration and prediction versus explanation and theory testing), and argue that IS researchers should seriously consider using alternative statistical analysis techniques. Wynne Chin will then address these concerns and issues raised in light of recent developments in the field of PLS research and highlight its successful and commonly accepted use in other disciplines such as chemistry and genomic research while contrasting the constraints of the latent variable ontology perspective among IS researchers. Each of the panelists will then have an opportunity to respond to points raised by the other panelists. Thirty minutes will be reserved for a question-and-answer period from the floor.

Moderator

Fred Davis – is Distinguished Professor and David D. Glass Chair in Information Systems in the Walton College of Business at the University of Arkansas (additional details to be added).

Panelists (in alphabetical order):

Wynne Chin – is the WCU Visiting Professor of Service Systems Management and Engineering - Sogang University & C. T. Bauer Professor of Decision Science - University of Houston (additional details to be added).

Dale Goodhue – is C. Herman and Mary Virginia Terry Chair of Business Administration and Head of the Management Information Systems Department at the Terry College of Business at the University of Georgia (additional details to be added).

Ron Thompson – is Professor in the Wake Forest Schools of Business, and Senior Editor of *MIS Quarterly* (additional details to be added).

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