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Statistical Inference with PLSc Using Bootstrap Confidence Intervals

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Abstract

Partial least squares (PLS) is one of the most popular statistical techniques in use in the Information Systems field. When applied to data originating from a common factor model, as is often the case in the discipline, PLS will produce biased estimates. A recent development, consistent PLS (PLSc) has been introduced to correct for this bias. In addition, the common practice in PLS of comparing the ratio of an estimate to its standard error to a *t* distribution for the purposes of statistical inference has also been challenged. We contribute to the practice of research in the IS discipline by providing evidence of the value of employing bootstrap confidence intervals in conjunction with PLSc, which is a more appropriate alternative than PLS for many of the research scenarios that are of interest to the field. Such evidence is direly needed before a complete approach to the estimation of SEM that relies on both PLSc and bootstrap CIs can be widely adopted. We also provide recommendations for researchers on the use of confidence intervals with PLSc.

Keywords: Partial least squares, significance testing, bootstrap, confidence intervals, statistical inference, disattenuation, consistent partial least squares