

In this proposed analysis project, we aim to evaluate the validity of the survey instrument used in the study by Jenatabadi et al. (2017) and propose an alternative model to test its validity using structural equation modeling (SEM) in R.

The research framework used in the original study is based on the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model, which includes eight constructs: performance expectancy, effort expectancy, hedonic motivation, social influence, facilitating conditions, behavioral intention, use behavior, and anxiety. (Jenatabadi et al., 2017) While the UTAUT2 model provides a useful basis for examining students' acceptance and use of e-learning via Facebook, we will explore the possibility of modifying the model or introducing new constructs based on our research objectives and the results of our analyses.

To evaluate the factorial validity of the survey instrument, we will conduct confirmatory factor analysis (CFA) using lavaan in R to test whether the items load on their respective constructs as expected. (Kline, 2016)

We will also calculate reliability indices, such as Cronbach's alpha and composite reliability, to evaluate the internal consistency of the questionnaire items within each construct.

Next, we will propose an alternative model to the UTAUT2 model and test its validity using SEM in R. For instance, we may explore the possibility of adding new constructs, such as motivation or self-efficacy, that might impact students' engagement and learning outcomes. We will compare the fit of the alternative model to the UTAUT2 model using goodness-of-fit indices, such as the chi-square test, the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA).

Overall, this proposed research study will contribute to the existing literature on the effectiveness of Facebook as a platform for e-learning and help identify the factors that impact students' engagement and learning outcomes. By evaluating the factorial validity of the survey instrument and proposing an alternative model, we can ensure that our results are based on valid and reliable measures of the constructs involved. By using SEM in R, we can explore multiple models and test their validity, providing a flexible and robust analysis of the data.

Jenatabadi, H. S., Moghavvemi, S., Radzi, C. W. J. B. W. M., Babashamsi, P., & Arashi, M. (2017).

Testing students' e-learning via Facebook through Bayesian structural equation

modeling. *PLOS ONE*, 12(9), e0182311. <https://doi.org/10.1371/journal.pone.0182311>

Kline, R. B. (2016). *Principles and practice of structural equation modeling*, 4th ed (pp. xvii, 534).

Guilford Press.

