Validation of the Metaverse Participation Scale by Using Structural Equation Modeling

Prof. Dr. Chun-Yen Tsai

National Sun Yat-sen University, Taiwan

Abstract

Based on the works of O'Brien and Toms (2013), Lai and Hwang (2014), Chiu et al. (2013), and the OECD (2010), the revised 20-item Metaverse Participation Scale was translated to assess users' levels of engagement in the metaverse and its influencing factors. A total of 237 valid responses were collected to examine the construct validity and reliability of this scale. Data were analyzed using first-order confirmatory factor analysis within the structural equation modeling (SEM) framework via AMOS version 22. The results of exploratory factor analysis indicated that the four observed variables—metaverse self-concept, online epistemic justification, problem-solving tendency, and metaverse engagement—were effective indicators for measuring metaverse participation and its underlying factors (81.47% of variation). In the results of confirmatory factor analysis by using SEM, the construct validity values were within acceptable ranges (GFI = .90, CFI = .98, SRMR = .036, RMSEA = .033), demonstrating adequate validity. The reliability of each subscale was .96, .92, .95, and .93 respectively. The component reliabilities of the latent variables were .96, .92, .94, and .92, and the average variance extracted from the latent variables were .78, .80, .73, and .70, respectively. Therefore, the Metaverse Participation Scale possesses acceptable construct validity and reliability and is suitable for assessing public engagement in the metaverse.

Keywords: engagement, epistemic justification, metaverse, problem-solving tendency, self-concept