Associations of sweet corn's overall liking and sensory relationships with PLS-PM model

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Abstract

The path-modelling method (*Partial Least Square-Path Model*, *PLS-PM)* of the variance based Structural Equation Modeling (*SEM*) is applied several fields of science. In sensory testing, there are only a few publications utilizes this method, therefore we apply the model, to evaluate the overall liking and sensory parameters (odour, taste and texture) of sweet corn. Furthermore we investigate the relationships and orientations between them using the XL-stat software's PLS-PM module. The inner/structural model of PLS-PM defines the connections of the latent variables, while the outer/measurement model is, an examination of the relationships between the latent and the manifest variables, and summarizing the regression equations. The model shows, that OAL (overall liking) = 0.01153*TextSens+0.07113*OdourSens+0.55215*TasteSens. Impact and contribution of the variables to overall liking is as follows: path coefficient$_{TasteSens}$=0.5522, path coefficient$_{OdourSens}$=0.0711; path coefficient$_{TextSens}$ =-0.0115. The convergence validity of the model is suitable (Cronbach-α=0.72; Dillon-Goldstein-ρ=0.86), the discriminant validity, which measures the independence of the variables (AVE$_{TextSens}$=0.54; AVE$_{OdourSens}$=0.54; AVE$_{TasteSens}$=0.65; AVE$_{OAL}$=0.68) is adequate also. Our work demonstrates that PLS-PM method is an appropriate tool to define the complex sensory relationships and orientations.

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