

Abstract

Indoor air pollution in developing megacities like Jakarta presents a significant public health challenge where conventional solutions are often inadequate. This study addresses this gap by proposing a novel, bio-integrated product combining an algae-based air purifier with a smart speaker. The objective was to identify the key factors influencing consumer acceptance of this sustainable hybrid technology in the Jakarta market, utilizing an integrated framework of the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB). A quantitative approach was employed, collecting survey data from 158 target consumers in Jakarta. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the hypothesized relationships. The findings revealed that Perceived Usefulness, Perceived Ease of Use, and a positive Attitude were significant predictors of Adoption Intention. Notably, Price Sensitivity also had a significant positive influence, suggesting the product appeals to value-conscious consumers willing to pay a premium for its unique health benefits. Environmental and Health Concern did not have a direct effect, implying its influence is mediated. The study concludes that consumer acceptance of novel sustainable technologies in this market is driven by a strong value proposition, tangible benefits, and user-friendliness, rather than general environmental concern alone.

Keywords: Consumer Acceptance, Sustainable Technology, Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), Air Purifier