ABSTRACT

The adoption of Internet of Things (IoT) technologies has made notable strides within Indonesia's construction industry, as professionals increasingly integrate connected systems into field operations. This transition reflects a critical phase in the sector's broader digital transformation, aimed at enhancing real-time monitoring, operational efficiency, safety compliance, and project productivity. Nevertheless, the path to widespread IoT adoption is marked by technical, organizational, and behavioral challenges, requiring a deeper understanding of the factors that influence technology acceptance in construction environments.

This study investigates the extent to which four key constructs—Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions—affect the Behavioral Intention (BI) of construction professionals to adopt IoT tools, as conceptualized in the Unified Theory of Acceptance and Use of Technology (UTAUT) framework. It further explores whether Behavioral Intention significantly contributes to actual Use Behavior (UB) and whether demographic characteristics such as gender, age, and job functional level moderate these relationships.

Using a quantitative approach, data were collected from 402 respondents across various regions in Indonesia. Analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results reveal that Performance Expectancy, Social Influence, and Facilitating Conditions exert significant direct effects on Behavioral Intention, which in turn positively influences Use Behavio. While Effort Expectancy does not show a significant direct effect on intention, its influence is partially channeled through mediating paths. Additionally, Multi-Group Analysis (MGA) highlights observable yet statistically non-significant variations based on gender, age, and functional level, suggesting nuanced differences in adoption patterns among subgroups.

These findings offer valuable implications for industry stakeholders, digital strategists, and policy-makers seeking to promote effective IoT implementation in

construction. Understanding both the direct and indirect pathways, as well as demographic nuances, is essential in tailoring adoption strategies that align with the sector's evolving digital readiness.

***Keywords**: Internet of Things, Digital Transformation, Technology Adoption, UTAUT, PLS-SEM, Indonesia, Construction Industry*