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Factors Affecting Faculty Adoption of Immersive 3D Technologies in Higher Education: A Literature Synthesis

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Abstract

Despite the rapid digital transformation of Higher Education Institutions (HEIs), the organizational dynamics underlying faculty reactions to immersive 3D technologies remain under-researched. While traditional innovation models frequently focus on individual student variables, innovation is a purposeful change process requiring fundamental behavioral shifts among instructors (Kopcha et al., 2016). This literature synthesis examines the resurgence of interest in Immersive Technology (XR) and the "metaverse," identifying a profound empirical imbalance; current research remains disproportionately focused on student-centric outcomes, which are often secondary to successful institutional scaling (De Lima et al., 2022; Scherer &
Teo, 2019). Theoretically grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) and Social Cognitive Theory (SCT), this work identifies that faculty adoption is primarily driven by perceived self-efficacy (PSE) and the mitigation of "second-order" intrinsic barriers, such as pedagogical beliefs and technology anxiety (Bandura, 1997; Ertmer, 1999; Fathema et al., 2015). Furthermore, the transition to actual usage is enabled by facilitating conditions (FC) and design thinking—the ability to align immersive features with specific learning objectives (Venkatesh et al., 2003; Tsai & Chai, 2012). By repositioning faculty as initiative-taking change agents within a trust-based institutional framework, HEIs can foster a sustainable culture of innovation. This synthesis provides a strategic roadmap for administrators to transition from mere technology exposure to standardized, high-value instructional integration.

Keywords: adoption; immersive technology; self-efficacy; technology acceptance; virtual reality