AI Adoption Determinants in Infertility Treatment Services Based on the UTAUT2 Framework

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Abstract

Artificial Intelligence (AI) holds significant promise in enhancing clinical decision-making, improving service efficiency, and personalizing patient care in infertility treatment services. This study aims to identify the key factors influencing behavioral intention to adopt AI within this specialized healthcare domain by applying the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) framework. Unlike previous research that primarily focused on general clinical settings, this work explores AI adoption from the perspectives of multiple stakeholder groups healthcare professionals, patients, and administrative staff in infertility clinics. A structured survey was distributed across these groups, and the data were analyzed using Partial Least Squares Structural

Equation Modeling (PLS-SEM) to assess the impact of UTAUT2 constructs. The analysis revealed that performance expectancy and facilitating conditions significantly influence the intention to adopt AI systems. These results suggest that perceived performance improvements and the presence of reliable technological and organizational infrastructure play a critical role in determining stakeholders' willingness to adopt AI in infertility treatment. The study provides empirical support for the tailored application of UTAUT2 in a highly sensitive medical context and highlights the importance of supportive conditions for technology acceptance. Future research should explore longitudinal validation, the transition from intention to actual system use, and broader application in other areas of personalized healthcare. © 2025 IEEE.

Author keywords

Artificial Intelligence; Healthcare; Infertility; Reproductive; UTAUT2

Indexed keywords

Engineering controlled terms

Clinical research; Computation theory; Decision making; Engineering research; Patient treatment

Engineering uncontrolled terms

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Engineering main heading

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