RESEARCH ON THE EFFECTIVE APPLICATION OF INTERNET OF THINGS IN THE NEW PARADIGM OF UNIVERSITY EDUCATION MANAGEMENT

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Abstract - This research investigates the strategic implementation of Internet of Things (IoT) technologies in university education management through a comprehensive mixed-methods study involving 487 participants across 12 institutions. The quantitative analysis reveals strong positive relationships between IoT adoption and operational efficiency ($\beta = 0.53$, $p < 0.01$) and educational outcomes ($\beta = 0.42$, $p < 0.05$), with excellent model fit (CFI = 0.946, RMSEA = 0.058). However, significant data governance gaps emerge, with 72% of administrators lacking comprehensive policies and students expressing privacy concerns regarding data transparency (67%), consent mechanisms (72%), and third-party sharing (43%). Cross-case analysis demonstrates varying implementation success rates across institutional types: private colleges (95%), technical institutes (88%), and public universities (80%), reflecting differences in decision-making agility. Based on integrated findings, this study proposes a comprehensive IoT application model featuring a four-layer architecture, 24-month phased implementation timeline, and institution-specific frameworks achieving 15-35% ROI by Year 4-5. Key contributions include empirical validation of IoT's transformative impact on university management, identification of critical privacy governance requirements, and development of context-sensitive implementation strategies. The research emphasizes that successful IoT adoption requires robust infrastructure, institutional leadership, stakeholder engagement, and ethical data governance frameworks to balance operational benefits with privacy protection in higher education contexts.