

Research on digital document authentication solutions applied at the Department of Education and Training of Thai Nguyen province

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Abstract: This study investigates digital document authentication solutions for application within the Department of Education and Training of Thai Nguyen Province. As administrative processes increasingly transition to digital platforms, ensuring the integrity and origin of electronic documents is critical for preventing forgery and maintaining trust. The research analyzes current authentication challenges faced by the provincial education department, including vulnerabilities in document handling and verification workflows. A comprehensive solution framework is proposed, integrating cryptographic techniques such as digital signatures and hash functions with a centralized verification system tailored to the department's operational context. The methodology includes a needs assessment, system design, prototype development, and performance evaluation based on security, usability, and scalability criteria. Findings demonstrate that the proposed solution significantly enhances document integrity, reduces verification time, and aligns with national digital transformation policies. This study contributes a practical, context-specific authentication model that can be adapted by other provincial education departments, supporting the secure and efficient management of digital records in the public sector.

Keywords: Digital document authentication, authentication solution, Department of Education and Training, Thai Nguyen province