ABSTRAK

MUHAMMAD IKHSAN NUR, "Implementasi Tanda Tangan Digital Pada Pembuatan Surat Permohonan KKP Dengan Metode AES Dan Deflate (Studi Kasus: Fakultas Teknik, UNISMUH Makassar)" (dibimbing oleh Lukman, S.Kom, M.T dan Muhyiddin A.M. Hayat, S.Kom., M.T).

Perkembangan transformasi digital di lingkungan akademik menuntut adanya sistem verifikasi dokumen yang andal dan aman. Penelitian ini mengimplementasikan sistem tanda tangan digital pada proses verifikasi Surat Permohonan Kuliah Kerja Profesi (KKP) di Fakultas Teknik, Universitas Muhammadiyah Makassar. Sistem dirancang menggunakan algotirma *Advanced Encryption Standard (AES)* dengan mode *Cipher Block Chaining (CBC)* 128-bit untuk proses enkripsi serta algoritma Deflate untuk kompresi data. Integrasi AES dan Deflate mampu menjaga kerahasiaan, integritas, dan keaslian dokumen, sekaligus mengoptimalkan efisiensi penyimpanan dan pengiriman. Data yang telah dienkripsi kemudian dikonversi menjadi *QR Code*, sehingga dapat dipindai dan didekripsi melalui aplikasi *mobile* secara *offline*. Pengujian sistem menggunakan metode *black-box* menunjukkan bahwa tanda tangan digital berhasil mempercepat proses verifikasi administrasi, mengurangi potensi kesalahan manusia, serta memastikan keaslian dokumen akademik. Penelitian ini membuktikan bahwa tanda tangan digital berbasis AES dan Deflate dapat meningkatkan efisiensi, keandalan, dan keamanan verifikasi dokumen di institusi akademik.

Kata kunci: Tanda Tangan Digital, AES, Deflate, Enkripsi, Dokumen Akademik.

ABSTRACT

MUHAMMAD IKHSAN NUR, "*Implementation of Digital Signature in the Creation of Internship Request Letters Using AES and* Deflate *Methods (Case Study: Faculty of Engineering, UNISMUH Makassar)*" (*supervised* by Lukman, S.Kom, M.T and Muhyiddin A.M. Hayat, S.Kom., M.T).

The rapid development of digital transformation in academic environments requires a reliable and secure system for document verification. This research implements a digital signature system for the verification of Surat Permohonan Kuliah Kerja Profesi (KKP) at the Faculty of Engineering, Universitas Muhammadiyah Makassar. The system applies the Advanced Encryption Standard (AES) algorithm with 128-bit Cipher Block Chaining (CBC) mode for encryption and the Deflate *algorithm for data compression. The integration of AES and* Deflate *ensures document confidentiality, integrity, and authenticity, while also optimizing storage and transmission efficiency. Data is encrypted and converted into a QR Code, which can be scanned and decrypted on mobile applications, enabling offline verification. System testing using black-box methods demonstrated that the digital signature system successfully accelerated administrative verification, reduced human error, and maintained the authenticity of academic documents. This research confirms that digital signatures with AES and* Deflate *can significantly improve the efficiency, reliability, and security of document verification processes in academic institutions.*

Keywords: *Digital Signature, AES,* Deflate*, Encryption, Academic Documents.*