

## ABSTRACT

Village Information Systems (SID) manage sensitive population data including demographics, personal identities, and residential records, alongside financial and administrative information, which are vulnerable to unauthorized access, theft, and misuse in the digital age. To address these security challenges, the implementation of AES-256 encryption at Wareng Village, Indonesia, serves as a pilot project for enhanced data protection. Performance testing demonstrates efficient system operation without high throughput requirements, while brute force simulations confirm that encrypted data remains secure without the correct decryption key. The successful implementation provides a scalable model for securing village-level digital systems across rural Indonesia, ensuring compliance with national privacy regulations and building user trust through reliable data protection.

*Keywords— Data security, Population data security, AES-256 encryption, Village Information System (SID).*