ABSTRACT

Employee attendance systems play a crucial role in supporting operational efficiency and security within organizations. However, the fingerprint-based system previously used at JTV Office Surabaya often encountered issues such as long queues and identification errors. This research aims to design and implement an attendance system based on QR Code technology integrated with the JTV Plus+ application and Internet of Things (IoT) devices, using a Hash-based Message Authentication Code (HMAC) with the SHA-256 algorithm to ensure the integrity and authenticity of attendance data. The system was developed using ESP8266, a QR scanner, and a magnetic door lock (emlock) for automated access control. The system was tested through black-box testing, hardware functionality testing, response time measurement, and user satisfaction evaluation via questionnaires. The results show that the system achieved 100% accuracy and sensitivity, a response speed of 374–532 milliseconds—significantly faster than the fingerprint system—and an average user satisfaction score of 4.3 out of 5. Thus, the QR Code-based attendance system is considered more efficient, secure, and suitable as a modern solution to replace conventional fingerprint systems in professional work environments.

Keywords: *Employee Attendance, QR code, Internet of Things, HMAC-SHA256, Data Security*