

Implementation of the Agile Method in Developing a Dynamic QR Code-Based Attendance Website for Improving Attendance Efficiency at Pelem Village Office

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ABSTRACT

This research was conducted because the manual attendance system at the Pelem Village Office still causes several problems, such as attendance data manipulation, proxy attendance, lost archives, and lengthy employee attendance recapitulation processes. In addition, previous studies on QR code-based attendance systems generally still used static QR codes, which are vulnerable to misuse because the same code can be used repeatedly or shared with other parties. This research produced a web-based attendance system using a dynamic QR code developed with the Agile method. The dynamic QR code is updated periodically and equipped with location validation, thereby minimizing fraudulent practices such as proxy attendance. This mechanism also helps address potential replay attacks, prevent concurrency issues when many employees record attendance simultaneously, and avoid duplicate scans or repeated scans by the same user. The testing results showed that all system features functioned properly based on black-box testing. Usability testing showed a task success rate of 100%, an average completion time of 90.5 seconds, and a low error rate of 0.25 errors per task. The System Usability Scale (SUS) test obtained a score of 87.5, which falls into the Acceptable category, receives a Grade Scale of A, and is classified as Excellent. Therefore, the system is considered easy to use, secure, and efficient, while also improving the accuracy of attendance recording, data management, and real-time attendance monitoring at the Pelem Village Office.

Keywords: Attendance System, Dynamic QR Code, Agile Method, Efficiency, Usability, Employee Discipline