

**PENERAPAN *FIREBASE AUTHENTICATION* UNTUK PENGUATAN
AUTENTIKASI PADA APLIKASI *MOBILE* SISTEM INFORMASI
PANEN SAWIT**

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ABSTRACT

Authentication security is a critical aspect in mobile application development, particularly in information systems that manage user data and transactions. In palm oil harvest recording systems, authentication mechanisms are often not integrated with role-based access restrictions, potentially leading to unauthorized access risks. This study aims to implement Firebase Authentication integrated with Role-Based Access Control (RBAC) to strengthen the authentication mechanism in a Flutter-based mobile application. The research methodology includes system design, integration of Firebase Authentication into the application, and testing using Black Box Testing and User Acceptance Testing (UAT) with the System Usability Scale (SUS) approach. The testing process covered Email & Password login, Google Sign-In, role-based access management, authentication response time measurement, and repeated login testing to evaluate system stability. The results indicate that all authentication features functioned according to the defined testing scenarios and successfully restricted access based on user roles. The average response time for Email & Password login was approximately 2.9 seconds, while Google Sign-In averaged 2.2 seconds. Usability testing produced an average SUS score of 78.25, categorized as Good. Therefore, the integration of Firebase Authentication with RBAC effectively enhances authentication security without compromising system performance and usability.

Keywords: *Firebase Authentication, Authentication, Mobile Application, Role-Based Access Control, Palm Oil Harvest Information System*