

ABSTRAK

RANCANG BANGUN SISTEM KEAMANAN BERBASIS AUTENTIKASI BIOMETRIK DAN MONITORING LACI KASIR DENGAN INTERNET OF THINGS (STUDI KASUS: COUNTER PROMO PALEMBANG CELL)

(Zahra Zethiera 2026 : 72 Halaman)

Sistem keamanan laci kasir di *Counter* Promo Palembang Cell yang masih menggunakan kunci mekanis memiliki risiko duplikasi, kehilangan kunci, serta tidak adanya riwayat akses, sehingga menyulitkan pengawasan pada sistem dua *shift* kerja. Penelitian ini bertujuan merancang sistem *smart lock* laci kasir berbasis biometrik sidik jari dan *Internet of Things* (IoT). Perangkat keras sistem ini menggunakan mikrokontroler ESP32 sebagai pusat kendali, sensor *fingerprint* AS608 sebagai autentikasi utama, motor servo sebagai penggerak pengunci, serta sensor *infrared* FC-51 untuk mendeteksi posisi laci. Data riwayat akses berupa ID kasir, waktu, dan status autentikasi dikirim secara nirkabel melalui WiFi untuk disimpan pada *database* Supabase dan ditampilkan pada *dashboard website* monitoring secara *real-time*. Hasil pengujian fungsional dengan metode *Black Box Testing* menunjukkan tingkat keberhasilan 100%. Sensor *fingerprint* mampu mengenali hak akses pengguna secara akurat, laci dapat mengunci kembali secara otomatis saat ditutup, dan seluruh log aktivitas berhasil tersinkronisasi ke *website* monitoring tanpa mengalami kehilangan data (*data loss*).

Kata kunci : Laci Kasir, Biometrik, *Fingerprint* AS608, *Internet Of Things*

ABSTRACT
**DESIGN AND DEVELOPMENT OF A SECURITY SYSTEM BASED ON
BIOMETRIC AUTHENTICATION AND CASHIER DRAWER MONITORING
WITH THE INTERNET OF THINGS (CASE STUDY: PROMO COUNTER
PALEMBANG CELL)**

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The security system for the cash drawer at the Palembang Cell Promo Counter, which still uses mechanical locks, carries risks of key duplication and loss, as well as the lack of an access log, making it difficult to monitor the system during two-shift operations. This study aims to design a smart cash drawer lock system based on fingerprint biometrics and the Internet of Things (IoT). The system's hardware uses an ESP32 microcontroller as the control center, an AS608 fingerprint sensor for primary authentication, a servo motor to operate the lock, and an FC-51 infrared sensor to detect the drawer's position. Access history data—including cashier ID, time, and authentication status—is transmitted wirelessly via Wi-Fi to be stored in a Supabase database and displayed in real-time on a monitoring website dashboard. Functional testing using the Black Box Testing method showed a 100% success rate. The fingerprint sensor accurately recognized user access rights, the drawer automatically relocked when closed, and all activity logs were successfully synchronized to the monitoring website without any data loss.

Keywords: *Cash Drawer, Biometric, Fingerprint AS608, Internet Of Things*