

ABSTRAK

Pengelolaan piutang dan pembayaran distributor pada UMKM Pabrik Kerupuk Anugrah di Desa Bangbayang saat ini masih dilakukan secara konvensional menggunakan buku besar fisik. Metode tersebut rentan terhadap kesalahan perhitungan matematis (*human error*), menyita banyak waktu dalam mengkalkulasi sisa tagihan agen, serta berisiko tinggi mengalami kehilangan atau kerusakan arsip data transaksi. Penelitian ini bertujuan untuk merancang dan membangun aplikasi *monitoring* piutang berbasis *mobile* yang sederhana, ergonomis, dan fungsional guna memecahkan masalah administrasi keuangan pada tingkat usaha mikro.

Pengembangan sistem mengadopsi metode *Prototype* yang memfasilitasi keterlibatan pengguna untuk mengevaluasi fungsionalitas aplikasi secara iteratif. Perangkat lunak dibangun menggunakan kerangka kerja *Flutter* dan ditopang oleh arsitektur basis data awan *Firebase Realtime Database* yang mengadopsi struktur *Multi-Tenant*. Sistem ini dibekali dengan fitur keamanan berlapis melalui autentikasi *Firebase* dan sensor biometrik perangkat (*Local Authentication*). Untuk mengoptimalkan operasional pabrik, sistem dirancang mampu melakukan kalkulasi saldo secara otomatis dan sinkron (*real-time*), mengintegrasikan fungsi pengiriman struk digital secara langsung melalui aplikasi *WhatsApp*, serta menghasilkan rekapitulasi data arsip berformat PDF.

Hasil pengujian fungsional menggunakan instrumen *Black-Box Testing* menunjukkan bahwa seluruh fitur transaksi dan logika komputasi aplikasi dapat beroperasi dengan tingkat keberhasilan 100% tanpa adanya malafungsi (*bug*). Selanjutnya, pengukuran tingkat penerimaan pengguna yang dievaluasi melalui kuesioner *System Usability Scale* (SUS) diperoleh skor akhir sebesar 80. Secara empiris, aplikasi ini terbukti sangat layak, mudah digunakan (*userfriendly*), dan secara efektif mampu memodernisasi tata kelola piutang pada operasional UMKM Pabrik Kerupuk Anugrah.

Kata Kunci: *Monitoring* Piutang, UMKM, Aplikasi *Mobile*, *Flutter*, *Firebase*, *Prototype*, *System Usability Scale*.

ABSTRACT

The management of accounts receivable and distributor payments at UMKM Pabrik Kerupuk Anugrah in Bangbayang Village is currently carried out conventionally using physical ledger books. This method is highly susceptible to mathematical miscalculations (human error), consumes a significant amount of time in calculating the remaining agent bills, and carries a high risk of losing or damaging transaction data archives. This study aims to design and develop a mobile-based receivable monitoring application that is simple, ergonomic, and functional to resolve financial administration issues at the micro-enterprise level. The system development adopted the Prototype method, which facilitates user involvement in evaluating application functionality iteratively. The software was constructed using the Flutter framework and supported by a Firebase Realtime Database cloud architecture that adopts a Multi-Tenant structure. This system is equipped with multi-layered security features through Firebase authentication and device biometric sensors (Local Authentication). To optimize factory operations, the system is designed to perform automatic and synchronous (realtime) balance calculations, integrate the function of sending digital receipts directly via the WhatsApp application, and generate archive data recapitulations in PDF format. Functional testing results utilizing the Black-Box Testing instrument indicated that all transaction features and application computational logic could operate with a 100% success rate without any malfunctions (bugs). Furthermore, the measurement of user acceptance evaluated through the System Usability Scale (SUS) questionnaire yielded a final score of 80. Empirically, this application is proven to be highly feasible, user-friendly, and capable of effectively modernizing the management of receivables in the operations of UMKM Pabrik Kerupuk Anugrah.

Keywords: Accounts Receivable Monitoring, MSME, Mobile Application, Flutter, Firebase, Prototype, System Usability Scale.