ABSTRAK

EGA YUNAN ELMI.

IMPLEMENTASI SISTEM OTOMATISASI INVOICE TAGIHAN ENERGI LISTRIK MENGGUNAKAN WHATSAPP WEBJS
Dibimbing oleh RETNO AITA DIANTARI , ST. MT IPM., ASEAN Eng.

Perkembangan teknologi informasi telah mendorong digitalisasi di berbagai sektor, termasuk dalam layanan kelistrikan. PT PLN (Persero) menghadapi tantangan berupa keterlambatan pembayaran tagihan listrik oleh pelanggan yang berdampak pada peningkatan tunggakan dan menurunnya efisiensi arus kas (cash flow). Untuk mengatasi hal tersebut, penelitian ini merancang dan mengimplementasikan sistem otomatisasi pengiriman invoice tagihan listrik berbasis web menggunakan Node.js yang terintegrasi dengan WhatsApp melalui library whatsapp-web.js.

Sistem ini dibangun untuk mengirimkan pesan invoice secara otomatis, real-time, dan terjadwal kepada pelanggan melalui WhatsApp, berisi informasi tagihan, identitas pelanggan, serta batas waktu pembayaran. Pengembangan dilakukan menggunakan metode Extreme Programming (XP) yang meliputi tahapan planning, design, coding, dan testing. Data pelanggan dan tagihan disimpan dalam basis data MySQL dan diproses oleh server Node.js.

Hasil implementasi menunjukkan bahwa sistem mampu mengirimkan invoice secara otomatis dengan tingkat keberhasilan pengiriman 100% pada uji data simulasi sebanyak 5 pelanggan. Notifikasi yang dikirim berhasil diterima oleh pelanggan sesuai jadwal tanpa keterlambatan, serta meningkatkan efisiensi distribusi informasi tagihan. Sistem ini diharapkan dapat membantu PLN dalam mendukung program tunggakan nihil dan meningkatkan kepuasan pelanggan melalui penyampaian informasi tagihan yang cepat dan mudah diakses.

Kata kunci: Invoice Otomatis, Node.js, WhatsApp-web.js, PLN, Notifikasi Tagihan, Extreme Programming (XP)

ABSTRACT

EGA YUNAN ELMI.

IMPLEMENTATION OF AN ELECTRICITY BILL INVOICE AUTOMATION SYSTEM USING WHATSAPP WEBJS

Supervised by RETNO AITA DIANTARI , ST. MT IPM., ASEAN Eng.

The rapid advancement of information technology has accelerated digital transformation in various sectors, including the electricity service industry. PT PLN (Persero) faces challenges related to delayed electricity bill payments, which increase the amount of outstanding arrears and affect the company's cash flow efficiency. To address this issue, this research designs and implements an automated electricity bill invoice system based on a web platform using Node.js, integrated with WhatsApp through the whatsapp-web.js library.

The developed system automatically sends real-time and scheduled invoice messages to customers via WhatsApp, containing essential billing information such as customer ID, total bill, and payment due date. The development process uses the Extreme Programming (XP) methodology, which consists of the stages of planning, design, coding, and testing. Customer data and billing information are stored in a MySQL database and processed by the Node.js server to generate personalized notifications.

The implementation results show that the system successfully sends invoices automatically with a 100% delivery success rate during simulation tests involving five customers. All notifications were delivered on time according to the scheduled intervals. The system improves billing information distribution efficiency and provides an effective tool to support PLN's "Zero Arrears" (Tunggakan Nihil) program while enhancing customer satisfaction through faster and more accessible information delivery.

Keywords: Automated Invoice, Node.js, WhatsApp-web.js, PLN, Billing Notification, Extreme Programming (XP)