Rancang Bangun Sistem Informasi Manajemen dan Otomatisasi Inventory Berdasarkan Tindakan Medis Gigi
Berbasis Website di Klinik Gigi Tentang Dental
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INTISARI

RANCANG BANGUN SISTEM INFORMASI MANAJEMEN DAN OTOMATISASI INVENTORY BERDASARKAN TINDAKAN MEDIS GIGI BERBASIS WEBSITE DI KLINIK GIGI TENTANG DENTAL

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Saat ini, pengelolaan inventory perangkat dan material medis di Klinik Gigi Tentang Dental masih berjalan secara konvensional. Hal ini memicu berbagai masalah seperti ketidaksinkronan data persediaan, lambatnya pembaruan stok, *human error* dalam mencatat, serta hambatan dalam mengawasi kondisi stok dan masa kedaluwarsa barang secara seketika. Di samping itu, pemakaian material medis untuk prosedur perawatan pasien belum terhubung langsung dengan sistem *inventory*, yang mengakibatkan pengurangan stok dikerjakan secara terpisah. Sebagai solusi atas isu-isu ini, dikembangkanlah sebuah sistem informasi manajemen dan otomatisasi *inventory* berbasis web. Sistem ini mengintegrasikan tindakan kedokteran gigi dengan memanfaatkan kerangka kerja *Software Development Life Cycle (SDLC)* pendekatan *waterfall*, serta didukung oleh platform Laravel, Next.js, dan MariaDB. Aplikasi ini mengadopsi prinsip *First In First Out (FIFO)*, *struktur Bill of Materials (BOM)* yang disesuaikan dengan jenis perawatan, fitur *predictive inventory alert* berlandaskan algoritma *Moving Average*, *expired management*, dan notifikasi melalui antarmuka web, email, serta pesan WhatsApp. Hasil pengujian memperlihatkan bahwa perangkat lunak ini mempermudah pelacakan, monitoring, dan pengendalian *inventory* secara lebih padu dan real-time. Merujuk pada evaluasi User Acceptance Testing (UAT), sistem ini mencapai skor 88,57% (kriteria “Sangat Baik”), yang mengindikasikan kelayakannya dalam mendukung kelancaran pengelolaan *inventory* di Klinik Gigi Tentang Dental.

Kata kunci: Sistem Informasi, Inventory, FIFO, Bill of Materials, Predictive Alert, Laravel, Next.js

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ABSTRACT

DESIGN AND DEVELOPMENT OF A WEB-BASED INVENTORY MANAGEMENT AND AUTOMATION INFORMATION SYSTEM BASED ON DENTAL MEDICAL TREATMENTS AT TENTANG DENTAL CLINIC

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Currently, inventory management for medical equipment and supplies at Tentang Dental Clinic still relies on conventional methods. This situation leads to various issues, including stock data discrepancies, delayed updates, recording errors, and challenges in monitoring product expiration dates and stock levels in real time. Furthermore, the consumption of medical supplies during patient treatments is not yet linked directly to the inventory system, requiring separate stock deductions. To overcome these challenges, a web-based automated inventory management information system was developed. The proposed system integrates dental procedures by employing the Software Development Life Cycle (SDLC) waterfall approach, utilizing Laravel, Next.js, and MariaDB platforms. It adopts the First In First Out (FIFO) principle, a treatment-specific Bill of Materials (BOM) structure, predictive inventory alerts based on the Moving Average algorithm, expired management, and multi-channel notifications via web interface, email, and WhatsApp. The findings demonstrate that this system simplifies inventory tracking, monitoring, and control in a cohesive and real-time manner. Based on the User Acceptance Testing (UAT) evaluation, the application achieved a score of 88.57% (classified as "Very Good"), proving its feasibility to support and enhance inventory operations at Tentang Dental Clinic.

Keywords: Information System, Inventory, FIFO, Bill of Materials, Predictive Alert, Laravel, Next.js