

ABSTRAK

Perluasan jaringan air bersih pada PERUMDA Tirta Musi Palembang memerlukan pengelolaan data calon pelanggan dan penentuan prioritas wilayah yang terstruktur dan objektif. Keterbatasan anggaran pembangunan pipa dinas serta kondisi geografis memerlukan proses seleksi yang tidak lagi mengandalkan pencatatan manual. Penelitian ini bertujuan membangun Sistem Informasi Perluasan Jaringan berbasis website menggunakan metode *Weighted Product* (WP) sebagai pendukung keputusan yang dikembangkan dengan metode *Rapid Application Development* (RAD). Sistem memproses pendaftaran calon pelanggan secara online dan menghitung skala prioritas berdasarkan enam kriteria teknis operasional, yaitu Jarak ke pipa induk (C_1), biaya tambahan (C_2), kondisi lokasi (C_3), koneksi pipa (C_4), jenis galian (C_5), dan kondisi sanitasi (C_6). Fungsionalitas aplikasi diuji menggunakan Blackbox Testing untuk memastikan keandalan fungsi pada hak akses Calon Pelanggan, Operator, Admin, dan Manajer. Hasil pengujian menunjukkan bahwa kalkulasi algoritma WP dalam sistem berjalan dengan akurat dan sesuai dengan perhitungan manual. Berdasarkan simulasi sepuluh data uji, sistem berhasil mengurutkan prioritas pemasangan berdasarkan tingkat kelayakan teknis lapangan dan efisiensi biaya galian calon pelanggan secara objektif. Implementasi sistem membantu pihak perusahaan mengoptimalkan efisiensi pengambilan keputusan, mengamankan penyimpanan arsip, dan mempercepat pelaporan data secara transparan sesuai visi Smart Company Perumda Tirta Musi.

Kata Kunci: Sistem Informasi, Perluasan Jaringan, *Weighted Product*, Website, PERUMDA Tirta Musi.

ABSTRACT

The expansion of clean water networks at PERUMDA Tirta Musi Palembang requires structured and objective prospective customer data management and priority area determination. Limitations in pipe construction budgets and geographical constraints necessitate a selection process that no longer relies on conventional manual records. This study aims to develop a web-based Network Expansion Information System using the Weighted Product (WP) method as a decision support system, designed through the Rapid Application Development (RAD) software development life cycle. The system processes online registration and automates priority scale ranking based on six technical operational criteria: distance to pipe (C_1), additional cost (C_2), location condition (C_3), pipe connection (C_4), excavation type (C_5), and sanitation condition (C_6). System functionalities were evaluated using Blackbox Testing to ensure reliability across four user roles: Prospective Customers, Operators, Admins, and Managers. The testing results demonstrate that the WP calculations within the system execute accurately in full conformity with manual calculations. Based on ten simulation test data, the system successfully ranked the installation priorities according to the prospective customers' technical feasibility and operational excavation costs. The system assists the utility company in optimizing decision-making efficiency, securing data archival, and accelerating transparent report generation in line with Perumda Tirta Musi's smart company vision.

Keywords: Information System, Network Expansion, Weighted Product, Website, PERUMDA Tirta Musi.