

INTISARI

Nilai kemantapan kondisi jalan di Kabupaten Pemalang yang cenderung inkonsisten yakni mengalami kenaikan dan penurunan yang diakibatkan oleh keterbatasan anggaran yang dialokasikan serta prioritas penanganan jalan yang belum tepat sasaran atau sistem manajemen aset perkerasan jalan yang belum berjalan dengan maksimal, sehingga seringkali menghasilkan dokumen pelaksanaan anggaran penanganan jalan yang tidak berdasarkan analisis komprehensif. Oleh karena itu, diperlukan penelitian mengenai bagaimana mengevaluasi nilai kondisi fungsional perkerasan, mengetahui biaya penanganan jalan hingga merekomendasikan program penanganan paling efektif terhadap kondisi eksisting perkerasan jalan.

Provincial Kabupaten Road Management System (PKRMS) dan *Highway Development and Management version 4 (HDM-4)* merupakan sistem manajemen pengelolaan aset jalan yang dipergunakan sebagai alat bantu bagi pengelola jalan dalam pengambilan keputusan mengenai perencanaan, pemrograman dan pembiayaan aset jalan secara efisien dan efektif. Keduanya mendukung pengambilan keputusan berbasis data seperti indikator kinerja jalan (*Surface Distress Index* dan *International Roughness Index*), data volume lalu lintas, biaya kebutuhan pemeliharaan serta ketersediaan anggaran.

Kondisi fungsional perkerasan eksisting jalan di Kabupaten Pemalang secara umum mantap untuk ketiga ruas yang diteliti (Ruas Jalan Temuireng-Kendaldoyong, Kalirandu-Temuireng dan Tegalmati-Loning) dengan analisis SDI berupa kondisi baik 55,32%, sedang 11,35%, rusak ringan 5,67% dan rusak berat 27,66%. Sedangkan berdasarkan analisis IRI, kondisi baik 62,22%, sedang 11,57%, rusak ringan 16,89% dan rusak berat 9,32%. Program penanganan paling efektif terhadap kondisi eksisting perkerasan saat kondisi awal baik yaitu program penanganan Preservasi, kondisi awal sedang yaitu program penanganan PKRMS dan kondisi awal buruk yaitu program penanganan Modifikasi. Perbandingan hasil analisis program penanganan jalan dengan anggaran terbatas yaitu di PKRMS total kebutuhan biaya sebesar Rp 11.021.360.000,00 untuk jangka waktu pendek (5 tahun). Sedangkan di HDM-4 total kebutuhan biaya sebesar Rp 14.565.707.895,00 untuk *life cycle cost* 20 tahun.

Kata kunci : SDI, IRI, PKRMS, HDM-4, *life cycle cost*.

ABSTRACT

The inconsistency in road condition values in Pemalang Regency characterized by fluctuating improvements and deteriorations is primarily attributed to limited budget allocations and suboptimal prioritization in road maintenance interventions. These challenges indicate that the existing pavement asset management system has not been functioning optimally, often resulting in road maintenance budgeting documents that lack a comprehensive and data driven analytical foundation. Therefore, this study aims to evaluate the functional condition of road pavements, analyze road maintenance costs, and recommend the most effective treatment programs based on the current pavement conditions.

The Provincial Kabupaten Road Management System (PKRMS) and the Highway Development and Management Model Version 4 (HDM-4) are road asset management tools used to support decision making in the planning, programming, and financing of road infrastructure in an efficient and effective manner. Both systems utilize data driven approaches by incorporating performance indicators such as the Surface Distress Index (SDI) and the International Roughness Index (IRI) as well as traffic volume, maintenance cost requirements, and available budget data.

The overall functional condition of road pavements in Pemalang Regency is generally stable across the three assessed segments: Temuireng–Kendaldoyong, Kalirandu–Temuireng, and Tegalmati–Loning. Based on SDI analysis, the pavement conditions were classified as good (55.32%), fair (11.35%), slightly damaged (5.67%), and severely damaged (27.66%). According to IRI analysis, the classifications were good (62.22%), fair (11.57%), slightly damaged (16.89%), and severely damaged (9.32%). The most effective treatment programs for the existing pavement conditions were identified as follows: Preservation for pavements in good initial condition, PKRMS-based treatments for fair conditions, and Modification programs for poor conditions. A comparative analysis of treatment programs under budget constraints revealed that the PKRMS approach required a total cost of IDR 11,021,360,000.00 over a five-year short-term period, while HDM-4 projected a total life cycle cost of IDR 14,565,707,895.00 over a 20-year period.

Keywords: SDI, IRI, PKRMS, HDM-4, life cycle cost.