

INTISARI

Kajian ini dilatarbelakangi oleh kebutuhan akan data spasial pertanahan yang berkualitas dan terintegrasi guna mendukung kebijakan pendaftaran tanah sistematis lengkap (PTSL). Permasalahan yang ditemukan antara lain belum optimalnya kualitas foto tegak dan data spasial bidang tanah hasil pengumpulan data fisik terintegrasi, dan saat ini masih ditemukan bidang tanah anomali. Penelitian ini bertujuan untuk mengkaji, mengevaluasi dan meningkatkan kualitas data spasial foto tegak (akurasi geometri dan semantik), mengkaji ketelitian sisi, luas, kualitas data spasial bidang tanah, dan menganalisis anomali bidang tanah.

Penelitian ini dilaksanakan melalui pengolahan ulang data foto udara hasil akuisisi tahun 2023 dengan penambahan Titik Kontrol Tanah (TKT) sesuai kaidah teknis maupun tanpa penambahan TKT (memaksimalkan proses *re-Aerial Triangulation*). Pengujian akurasi geometri didasarkan pada Standar Nasional Indonesia (SNI) 9135-1:2022, sedangkan akurasi semantik mengacu pada skala *National Imagery Interpretability Rating Scale* (NIIRS) berdasarkan tabel *Imagery Assessment and Reporting Standard* (IRARS). Data bidang tanah dianalisis dari sisi ketelitian sisi dan luas berdasarkan Juknis Peraturan Menteri Negara Agraria/ Kepala Badan Pertanahan Nasional (PMNA/ Kepala BPN) Nomor 3 Tahun 1997, dan kualitas data spasial (*polygon area*, *near distance*, dan *circularity ratio*) mengacu pada SNI ISO 19113:2011. Penelitian ini juga mencakup analisis spasial terhadap bidang tanah anomali yang diklasifikasi sesuai petunjuk teknis yang telah dimodifikasi.

Hasil penelitian menunjukkan bahwa pengolahan ulang foto tegak telah berhasil meningkatkan kualitas akurasi geometrik dan interpretabilitas semantik. Sebagian besar sampel bidang tanah yang dianalisis menunjukkan kualitas sangat baik hingga baik, serta memenuhi standar akurasi jarak dan luas. Selain itu, jumlah bidang tanah anomali mengalami penurunan signifikan, sehingga menyisakan anomali < 10% per kelurahan. Penelitian ini membuktikan bahwa pengumpulan data fisik terintegrasi yang dilaksanakan sesuai kaidah teknis dan evaluasi yang ketat dapat menghasilkan data spasial pertanahan yang valid dan reliabel dalam mendukung berbagai kebijakan pertanahan di masa depan.

Kata Kunci: Pengumpulan data fisik terintegrasi, Kualitas data spasial, Foto tegak, Anomali bidang tanah, Data pertanahan valid dan reliabel

ABSTRACT

This study was motivated by the need for high-quality, integrated land spatial data to support the comprehensive systematic land registration (PTSL) policy. Problems identified include the suboptimal quality of vertical photographs and land parcel spatial data from integrated physical data collection, and the continued discovery of anomalous land parcels. This study aims to assess, evaluate, and improve the quality of vertical photographic spatial data (geometric and semantic accuracy), assess the accuracy of sides, area, and quality of land parcel spatial data, and analyze land parcel anomalies.

This research was conducted by reprocessing aerial photography data acquired in 2023 with the addition of Ground Control Points (TKT) in accordance with technical principles, or without the addition of TKT (maximizing the re-Aerial Triangulation process). Geometric accuracy testing is based on Indonesian National Standard (SNI) 9135-1:2022, while semantic accuracy refers to the National Imagery Interpretability Rating Scale (NIIRS) based on the Imagery Assessment and Reporting Standard (IRARS) table. Land parcel data were analyzed for side and area accuracy based on the Technical Guidelines for Regulation of the Minister of Agrarian Affairs/Head of the National Land Agency (PMNA/Head of BPN) Number 3 of 1997, and spatial data quality (polygon area, near distance, and circularity ratio) referred to SNI-ISO 19113:2011. This study also included spatial analysis of anomalous land parcels classified according to modified technical instructions.

The results showed that reprocessing of vertical photographs successfully improved geometric accuracy and semantic interpretability. Most of the analyzed land parcel samples demonstrated very good to good quality and met distance and area accuracy standards. Furthermore, the number of anomalous land parcels decreased significantly, leaving anomalies at <10% per village. This research proves that integrated physical data collection carried out in accordance with technical principles and strict evaluation can produce valid and reliable land spatial data to support various land policies in the future.

Keywords: *Integrated physical data collection, Spatial data quality, Vertical photographs, Land parcel anomalies, Valid and reliable land data.*