

ABSTRAK

Provinsi Jawa Timur memiliki tingkat kerawanan bencana alam yang tinggi, namun pengelolaan dan visualisasi data bencana masih memerlukan optimalisasi. Penelitian ini bertujuan untuk menerapkan *Business Intelligence* (BI) dalam analisis dan visualisasi data bencana alam di Provinsi Jawa Timur menggunakan metodologi *Business Intelligence Roadmap*. Data yang digunakan berasal dari dua sumber, yaitu data historis bencana alam periode 2019 - 2024 yang diperoleh dari Badan Nasional Penanggulangan Bencana (BNPB) dan data bencana alam tahun 2025 dari Badan Penanggulangan Bencana Daerah (BPBD) Provinsi Jawa Timur. Tahapan penelitian meliputi *Justification, Planning, Business Analysis, Design, Construction, dan Deployment*, dengan proses ETL dilakukan menggunakan bahasa pemrograman *Python* serta visualisasi data menggunakan *Microsoft Power BI*. Hasil penelitian berupa dashboard visualisasi data bencana alam yang menyajikan informasi secara komprehensif berdasarkan aspek waktu, jenis bencana, lokasi, jumlah korban, dan tingkat kerusakan. Pengujian sistem dilakukan menggunakan *User Acceptance Testing (UAT)* dan *System Usability Scale (SUS)* untuk memastikan kesesuaian fungsi dan tingkat kemudahan penggunaan dashboard. Hasil pengujian SUS memperoleh skor sebesar 82 yang termasuk dalam kategori *Excellent* dan *Acceptable*. Kesimpulan dari penelitian ini menunjukkan bahwa penerapan *Business Intelligence Roadmap* dan *Power BI* mampu menghasilkan dashboard yang informatif, mudah digunakan, serta mendukung pemahaman pola dan tren bencana alam di Provinsi Jawa Timur sebagai dasar pengambilan keputusan dan perencanaan mitigasi bencana berbasis data.

Kata Kunci: *Business Intelligence, BI Roadmap, Bencana alam, Provinsi Jawa Timur, visualisasi data, Power BI, User Acceptance Testing (UAT), System Usability Scale (SUS).*

ABSTRACT

East Java province has a high level of natural disaster vulnerability, but the management and visualization of disaster data still need optimization. This research aims to apply Business Intelligence (BI) in the analysis and visualization of natural disaster data in East Java Province using the Business Intelligence Roadmap methodology. The data used comes from two sources: historical natural disaster data from the period 2019–2024 obtained from the National Disaster Management Agency (BNPB) and natural disaster data for the year 2025 from the Regional Disaster Management Agency (BPBD) of East Java Province. The research stages include Justification, Planning, Business Analysis, Design, Construction, and Deployment, with the ETL process performed using the Python programming language and data visualization using Microsoft Power BI. The research results are a data visualization dashboard for natural disasters that presents information comprehensively based on time, type of disaster, location, number of victims, and level of damage. System testing was conducted using User Acceptance Testing (UAT) and the System Usability Scale (SUS) to ensure the functionality and usability of the dashboard. The SUS test results yielded a score of 82, which falls into the Excellent and Acceptable categories. The conclusion of this study indicates that the implementation of the Business Intelligence Roadmap and Power BI is capable of producing informative, user-friendly dashboards that support understanding of natural disaster patterns and trends in East Java Province, serving as a basis for data-driven decision-making and disaster mitigation planning..

Keywords: *Business Intelligence, BI Roadmap, Natural Disasters, East Java Province, Data Visualization, Power BI, User Acceptance Testing (UAT), System Usability Scale (SUS).*