

ABSTRAK

Penelitian ini bertujuan untuk mengembangkan dashboard *Business Intelligence* berbasis Microsoft Power BI guna mendukung analitik akademik dan alumni di SMAN 4 Bangkalan. Penelitian ini dilatarbelakangi oleh pengelolaan data akademik, ekstrakurikuler, dan alumni yang masih tersimpan dalam file Excel terpisah sehingga proses analisis dan pelaporan belum berjalan secara efektif dan efisien. Penelitian ini menggunakan metode *Business Intelligence Roadmap* yang terdiri atas tahapan *Justification*, *Planning*, *Business Analysis*, *Design*, *Construction*, dan *Deployment*. Data yang digunakan merupakan semester genap meliputi data akademik, ekstrakurikuler, dan alumni pada tahun ajaran 2022/2023, 2023/2024, dan 2024/2025 yang tersimpan dalam 45 file Excel. Proses *Extract, Transform, Load* (ETL) dilakukan menggunakan Python untuk membersihkan, mentransformasi, dan mengintegrasikan data ke dalam tabel fakta dan tabel dimensi. Sebagai kontribusi utama penelitian, *data warehouse* dirancang menggunakan pendekatan *Galaxy Schema* dan diimplementasikan pada SQLite untuk mendukung integrasi data serta proses analitik secara efisien. Data yang telah diproses kemudian divisualisasikan melalui dashboard interaktif menggunakan Microsoft Power BI. Dashboard yang dihasilkan mampu menyajikan informasi mengenai rata-rata nilai, distribusi nilai, status ketuntasan, partisipasi ekstrakurikuler, status alumni, perguruan tinggi tujuan, jurusan alumni, serta tren alumni. Pengujian sistem dilakukan menggunakan *User Acceptance Testing* (UAT) dengan melibatkan 34 responden. Hasil pengujian menunjukkan bahwa empat variabel penilaian memperoleh persentase sebesar 94%, 89%, 91%, dan 93% yang seluruhnya termasuk dalam kategori sangat baik. Hasil tersebut menunjukkan bahwa dashboard yang dikembangkan layak digunakan sebagai alat bantu analitik dan pendukung pengambilan keputusan berbasis data di SMAN 4 Bangkalan.

Kata kunci: *Business Intelligence*, Power BI, ETL, *Galaxy Schema*, SQLite, *User Acceptance Testing*.

ABSTRACT

This study aims to develop a Microsoft Power BI-based Business Intelligence dashboard to support academic and alumni analytics at SMAN 4 Bangkalan. The study was motivated by the fragmented management of academic, extracurricular, and alumni data stored in separate Excel files, resulting in inefficient analysis and reporting processes. This research adopted the Business Intelligence Roadmap methodology consisting of the Justification, Planning, Business Analysis, Design, Construction, and Deployment phases. The data used in this study included academic, extracurricular, and alumni data from the 2022/2023, 2023/2024, and 2024/2025 academic years stored across 45 Excel files. The Extract, Transform, Load (ETL) process was carried out using Python to clean, transform, and integrate the data into fact and dimension tables. As the main contribution of this study, the data warehouse was designed using the Galaxy Schema approach and implemented in SQLite to support efficient data integration and analytical processing. The processed data were then visualized through interactive dashboards using Microsoft Power BI. The resulting dashboards provide information on average scores, score distribution, completion status, extracurricular participation, alumni status, destination universities, alumni majors, and alumni trends. System evaluation was conducted using User Acceptance Testing (UAT) involving 34 respondents. The results showed that the four evaluation variables achieved percentages of 94%, 89%, 91%, and 93%, respectively, all of which were categorized as excellent. These findings indicate that the developed dashboard is feasible to support data-driven analysis, decision-making processes, and the evaluation of academic and alumni activities at SMAN 4 Bangkalan.

Keywords: Business Intelligence, Power BI, ETL, Galaxy Schema, SQLite, User Acceptance Testing.