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ABSTRAK

Pengelolaan perpustakaan di SMK Al-Asy'ari saat ini masih bersifat konvensional, sehingga menimbulkan kendala signifikan dalam efisiensi pencatatan sirkulasi dan lamanya waktu pencarian referensi buku. Penelitian ini bertujuan mengimplementasikan sistem informasi perpustakaan berbasis web dengan mengintegrasikan teori *Artificial Intelligence* (AI) melalui penerapan algoritma *Breadth-First Search* (BFS) pada fitur katalog cerdas. Pendekatan yang digunakan adalah metode *Research and Development* (R&D) dengan model pengembangan *Waterfall* yang mencakup tahapan analisis, desain, pengodean, dan pengujian. Proses penggalan data dilakukan melalui observasi langsung, wawancara dengan pustakawan serta guru, dan penyebaran kuesioner. Pengujian sistem dievaluasi berdasarkan standar kualitas ISO 25010. Temuan data menunjukkan uji kelayakan *Functional Suitability* dan *Portability* mencapai hasil sempurna 100%. Pengujian *Performance Efficiency* mendapatkan skor 83% dengan kecepatan muat 1,7 detik. Hasil uji *Usability* dari 20 responden memperoleh skor 86% yang masuk dalam kategori Sangat Layak. Algoritma BFS juga terbukti berhasil merekomendasikan buku secara akurat melalui penelusuran relasi graf. Kesimpulannya, sistem perpustakaan berbantuan AI ini sangat layak diterapkan untuk mempermudah sirkulasi data dan mempercepat penelusuran buku di sekolah.

Kata Kunci: Sistem Informasi, Perpustakaan, *Artificial Intelligence*, *Breadth-First Search*, ISO 25010.

Nur Azizatur Rokhmah. 2026. *Library Information System with Artificial Intelligence (AI) Assisted Catalog Feature at Al-Asy'Ari Vocational School*. Thesis, Informatics Education Study Program, Faculty of Teacher Training and Education, Trunodjoyo University, Madura. Advisor: Laili Cahyani, S.Kom., M.Kom.

ABSTRACT

Library management at SMK Al-Asy'ari is currently conventional, causing significant constraints in the efficiency of circulation recording and the time required to search for book references. This research aims to implement a web-based library information system by integrating Artificial Intelligence (AI) theory through the application of the Breadth-First Search (BFS) algorithm in the smart catalog feature. The approach used is the Research and Development (R&D) method with the Waterfall development model, which includes the stages of analysis, design, coding, and testing. The data collection process was carried out through direct observation, interviews with librarians and teachers, and the distribution of questionnaires. System testing was evaluated based on the ISO 25010 quality standard. The data findings indicate that the feasibility test for Functional Suitability and Portability achieved a perfect score of 100%. The Performance Efficiency test obtained a score of 83% with a loading speed of 1.7 seconds. The Usability test results from 20 respondents obtained a score of 86%, which falls into the "Highly Feasible" category. The BFS algorithm was also proven successful in accurately recommending books through graph relation traversal. In conclusion, this AI-assisted library system is highly feasible to be implemented to facilitate data circulation and accelerate book searching in the school.

Keywords: *Information System, Library, Artificial Intelligence, Breadth-First Search, ISO 25010.*