



UNDERGRADUATE THESIS

DESIGN AND DEVELOPMENT OF AN ENTERPRISE INFORMATION SYSTEM FOR PESANTREN MANAGEMENT AND A DECISION SUPPORT SYSTEM FOR DETERMINING THE BEST STUDENT USING THE SIMPLE ADDITIVE WEIGHTING METHOD

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UNIVERSITAS PEMBANGUNAN NASIONAL VETERAN JAWA TIMUR
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ABSTRACT

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ABSTRACT

Modern Islamic Boarding School As-Sholihin Surabaya faces various operational challenges due to administrative management that is still carried out manually, including recording student data, attendance, leave permits, financial management, and information publication. In addition, the absence of an integrated system makes it difficult to make objective decisions in determining the best students. This study aims to design and build a web-based Enterprise Information System (EIS) integrated with a Decision Support System (DSS) using the Simple Additive Weighting (SAW) method. System development was carried out using the Agile Kanban methodology with MERN Stack architecture (MongoDB v8.0.23, Express.js v5.2.1, React.js v19.2.5, Node.js v22.19.0) and deployed via Vercel (frontend) and Railway (backend). The system encompasses six main modules, namely authentication, registration, publication, finance, staffing, and academic, with a Role-Based Access Control (RBAC) mechanism that divides users into six roles: General, Student, Guardian, Teacher, Staff, and Principal. The implemented DSS uses four assessment criteria, namely academic grades, achievement points, violation points, and attendance percentage. Validation of the SAW algorithm using the Spearman Rank Correlation Coefficient produced a value of $r_s = 1$, which proves a perfect positive correlation between the results of manual calculations and the system's automated computation. Functional testing using the Black-Box Testing method on all system modules showed results in accordance with specifications without any functional failures. Usability testing using the System Usability Scale (SUS) on 9 respondents produced an average score of 76.39, which falls in the Good category with an Acceptable level of acceptance, thus the system is declared feasible and operable by end users in the pesantren environment.

Keywords: Enterprise Information System, Decision Support System, *Simple Additive Weighting*, MERN Stack, *Agile Kanban*.

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