

## Automated Fixed Asset Management System with Predictive Analytics

Neil Vincent D. Alvior<sup>1</sup> and Jake R. Pomperada<sup>2</sup>

<sup>1,2</sup>University of Negros Occidental-Recoletos, Bacolod City, Philippines

**Introduction:** Traditional asset management methods often relied on manual data entry and pen-and-paper means, which can be prone to errors and lead to loss of data. For this study, the researcher presents the development of an Automated Fixed Asset Management System with Predictive Analytics, which aims to modernize and streamline asset tracking and maintenance within an organization. The limitations provided by the traditional approach of asset management is addressed by the integration of QR code technology for real-time asset tracking and machine learning algorithms for predictive maintenance and lifecycle forecasting.

**Methodology:** The system was developed using Laravel and implemented with web technologies to ensure cross-platform compatibility. The asset identification was done through QR codes, while Linear Regression and Random Forest algorithms were employed for predictive analytics. The system is divided into separate modules, comprising of the dashboard, user, asset, report, and settings modules. Offline functionality was also embedded to cater to environments with unreliable internet access. Unit and integration testing was implemented throughout the development to ensure that each module met performance and security requirements.

**Results:** With the QR code integrated, the system can successfully track and monitor a company's assets. Predictive analytics enabled users to forecast maintenance needs and asset depreciation, leading to better resource allocation and reduced downtime. A survey for the system's User-Friendliness, Compatibility, Reliability, Interactivity, Learning Reinforcement, and Dynamic Environment was conducted on Yusay Credit & Finance Corporation's IT, Audit, and Accounting department, providing this evaluation with a sample size of 12 respondents. Evaluation metrics reflected high performance, supporting the system's ease-of-use aspect and intuitiveness, with the survey's mean score being 4.60, equivalent to an "Excellent" rating on the Pomel scale for evaluation. Backup features and audit trails further enhanced reliability, while the interface's intuitiveness facilitated user adoption with minimal training.

**Conclusion:** The Automated Fixed Asset Management System with Predictive Analytics proved effective in replacing manual asset management methods. By automating tracking and applying predictive models, it enhanced operational efficiency, accuracy, and data security. The results demonstrated significant improvement in asset visibility, cost control, and maintenance planning.

**Practical Value:** Organizations can adopt this system to streamline asset management processes, minimize operational costs, and optimize asset utilization. The system's scalability and adaptability make it suitable for small and medium-sized enterprises.

**Direction for Future Research:** To ensure that the system continues to improve, integration with procurement and financial systems is recommended. It is also ideal to consistently update and maintain its machine learning models using live data, ensuring the system's accuracy and efficacy. Further studies may also explore the use of alternative AI models and blockchain integration for enhanced asset tracking transparency and security.

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CORRESPONDENCE: [alviornevincent@gmail.com](mailto:alviornevincent@gmail.com)

ORCID: <https://orcid.org/0009-0006-6881-5769><sup>1</sup>