

ABSTRACT

In an increasingly competitive industrial era, efficient material management is a key element in achieving operational success for companies. Material management encompasses various critical functions such as planning, scheduling, purchasing, storage, and distribution of materials. With the advancement of technology, the adoption of cloud-based material management information systems has become increasingly urgent to enhance efficiency and flexibility in material management. The main challenges include a lack of process integration, inconsistent inventory management standards, and limited knowledge and experience in implementing cloud-based systems.

This research proposes an innovative solution in the form of an integrated cloud-based material management system. This system is designed to standardize inventory management, enhance visibility and control over material flow, and provide a flexible platform tailored to the company's needs. A web-based application named Hyperial is developed to facilitate material management by connecting three types of users: Material Management Admin, Vendor, and Project Manager. The main feature lies in the Admin panel, where material management processes occur, allowing Admin to manage the inflow and outflow of materials from Vendors and Project Managers.

The proposed solution is based on decision matrix analysis, indicating that a web-based information system application is the most appropriate alternative with the highest score of 0.785, surpassing mobile and desktop applications. Cloud-based storage is chosen as the solution with a total score of 7.08, demonstrating its superiority in user aspects, availability, scalability, interoperability, and usability. In the frontend part, ReactJS is selected as the best framework with a total score of 8 due to its superior performance compared to VueJS and AngularJS. For the backend, ExpressJS is determined as the best choice with a total score of 8.7, outperforming NestJS and MeteorJS. The system testing process was thoroughly conducted using Black Box Testing with Katalon Studio and White Box Testing with Jest, ensuring that the Hyperial application functions according to specifications and is free from bugs. Therefore, the combination of a web-based application with cloud storage, using ReactJS as the frontend framework and ExpressJS as the backend framework, is the optimal solution to be implemented based on this analysis.

Keywords: *material management, cloud-based information system, Hyperial, ReactJS, ExpressJS, process integration, operational efficiency.*