

Implementing Demand Forecasting System to Enhance Inventory Management Efficiency for SMEs



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ABSTRACT

We would like to introduce a web-based warehouse management application designed to assist small and medium-sized enterprises (SMEs), particularly those in the electro-deposition paint (EDP) sector. The purpose of this system is to simplify the stock management process and minimize human error in raw material recording.

The primary focus of this project is the implementation of a Demand Forecasting feature designed to predict future raw material needs based on historical data from the past three months. The Demand Forecasting feature we will develop will use linear regression methods and monthly data processing to estimate the amount of material needed for that month, thereby preventing stock shortages or surpluses. Additionally, this web application includes a notification feature aimed at alerting users if any raw material falls below the minimum threshold.

In addition to the main features mentioned above, this project includes features specific to each role. The author has developed features for the management and driver roles. The management role can access reports of all activities, such as item usage, delivery progress, and other operational data. Meanwhile, the driver role is responsible for updating the delivery note status for example, changing it from 'Outgoing' to 'Delivered'.. The web application's UI will be developed using Bootstrap v5.3, jQuery, DataTables, and SweetAlert, with MySQL used for data storage. All development for this project was carried out using Visual Studio Code (VSCode), with a local server using XAMPP.

Testing results show that the prediction feature operates as intended, with a low error rate and reliable results in assisting users with the raw material procurement planning process. This system effectively assists in the planning and availability of raw materials for these SMEs.

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