

# Machine Learning in demand forecasting for predictive stock management

## I. Overview

Our objective would be to train an AI model to predict and forecast consumer demand to help businesses apply more efficient Supply Chain Management. By training a model based on historical data, social media trends, and seasonal events, businesses will be better prepared on when they should restock and manage their inventory. According to different studies, different machine learning algorithms are already being explored on this topic and a study by Mario Angos Mediavilla et al. already categorized the best algorithm models for different applications. Furthermore, based on the study Deep learning with long short-term memory networks and random forests for demand forecasting in multi-channel retail<sup>1</sup> by Sushil Punia et al. Deep Learning is an effective model for demand forecasting applications.

## II. Problem

According to the article at <https://www.kardex.com/en-us/blog/warehouse-challenges> inventory control is the most significant challenge that warehouses and in turn establishments face. Therefore an AI that can help with demand forecasting can help employees and business owners to prepare better and implement a more efficient inventory management plan based on the expected consumer demand to reduce the likelihood of overstocking or understocking.

### III. Methods

We will explore different machine learning algorithms such as polynomial regression, deep learning, ANN, KNN and recommended algorithms by previous studies and compare results to determine which algorithm can produce the most accurate and precise results using historical data with seasonal events and social media trends