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Forecasting Future Sales Using Arima

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Abstract

Background: Forecasting future sales is one of the most important issues that goes beyond all strategic decisions and planning effective retail operations. For a profitable retail business, accurate demand forecasting is critical to organizing and planning production, purchasing, transportation and labour [1]. Forecasting is an important aspect of every business's decision-making process since it allows you to foresee your goals and adjust your strategy to boost future sales or productivity. In this article, ARIMA, Auto Regressive Neural Network (ARNN), XGBoost, SVM, Hybrid ARIMA-ARNN, Hybrid ARIMA-XGBoost, Hybrid ARIMA-SVM, and STL decomposition (using ARIMA, Snaive, XGBoost) are sold for-Predicts pharmaceutical Rossman company [2].

Objectives: The benefits of forecasting are useful for decision making, problem solving, and business strategy development. When it comes to researching the newspaper industry, there are several factors that can influence supply and demand. People are starting to use digital media in their daily activities, including the shift from newspapers to electronic news.

Methodology: ARIMA is used for short-term forecasting. In long-term simulations, these results may not be constant. ARIMA can be defined as a combination of two autoregressive (AR) models integrated into a moving average (MA) model. The notation for the autoregressive integrated moving average is ARIMA (p,d,q). p is the order of the AR process, d is the differential order, and q is the order of the MA process [3].

Results and discussion: We have calculated the monthly sales of employee of the company perrin-freres. The training data is consisting of 5 months of data of the year 1964 (January to May), and the testing data consists of 4 months of data (June to September). The proposed method has shown the RMSE value is 90.021.

Conclusions and future work: This article explores the applications various machine learning method, hybrid models and decomposition methods to estimate the revenue from Rossman's business. This result suggest that this model can be used future sales. In future works, we will develop the complimentary model that use a combination of qualitative and quantitative method to generate reliable forecast and improve forecast reliability.

References

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