TOWARDS DEMAND FORECASTING PROCESS AUTOMATION USING ARTIFICIAL INTELLIGENCE MODELS

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The accuracy of demand forecasting systems is a cornerstone of modern economic and operational strategies across various industries, from retail to healthcare. Effective demand forecasting not only optimizes resource allocation but also substantially boosts an organization's competitive edge.

The advent of Artificial Intelligence (AI) revolutionizes this domain by leveraging its formidable analytical capabilities to parse vast datasets and identify intricate patterns [1]. This paper delves into the development and scrutiny of innovative software components designed for AI-enhanced demand forecasting, focusing on multi-market dynamics including regions such as Europe, Asia, Central Asia, and Canada. By understanding the intricacies of these diverse markets, this study aims to refine the forecasting models for superior accuracy and efficiency [2], [3].

The process can be briefly described as follows:

1. Neural Network Evaluation. Determining the most effective types of neural networks suitable for demand forecasting. This includes examining architectures like Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs), with a focus on their ability to process time-series data and capture temporal patterns critical for accurate forecasting [3].

2. Accuracy Enhancement Analysis. Comparing the performance of neural networks against traditional demand forecasting methods, such as time series analysis. This involves quantifying improvements in forecasting accuracy and reliability, thereby substantiating the adoption of neural network-based models over conventional techniques.

Traditional demand forecasting methods often rely heavily on manual intervention, leading to inefficiencies and potential inaccuracies. This research identifies these challenges and proposes solutions through automation and advanced data analytics. The complexity of integrating and synchronizing multi-market data into a unified forecasting model also presents significant technical and analytical challenges.

This study advocates for the application of sophisticated AI models to automate the demand forecasting process.

References:

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