**Time Forecasting Time Series Forecasting Model**

Time series forecasting is a critical aspect of data analysis, especially in fields such as finance, supply chain management, and e-commerce. This report presents an overview of a time series forecasting model developed to predict daily metrics related to an e-commerce dataset, specifically focusing on daily orders, payment values, and average prices.

**Methodology**

1. **Data Preprocessing**:
   * The raw dataset is cleaned and transformed to create a time series representation. Key metrics are aggregated daily to create a new DataFrame that contains:
     + Daily number of orders
     + Total payment value
     + Average price of products sold
   * Missing values in the aggregated dataset are handled using forward fill to ensure continuity in the time series.
2. **Scaling**:

* The daily metrics are scaled using MinMaxScaler to normalize the values, facilitating effective training of the LSTM model.

1. **Sequence Creation**:

* Sequences of fixed lengths (e.g., 7 days) are created from the scaled data to prepare it for input into the LSTM model.

1. **Model Development**:

* An LSTM (Long Short-Term Memory) neural network is utilized due to its effectiveness in capturing temporal dependencies in time series data. The architecture includes:
  + Two LSTM layers with dropout for regularization.
  + A dense output layer to predict the three metrics simultaneously.

1. **Training**:

* The model is trained on 80% of the data, using Mean Squared Error as the loss function and Adam as the optimizer.

1. **Evaluation**:

* The model's performance is evaluated using Root Mean Squared Error (RMSE) and Mean Absolute Error (MAE) for each of the three predicted metrics.

The developed LSTM-based forecasting model demonstrates promising results in predicting daily metrics for an e-commerce dataset. By continuing to refine the model and exploring additional features, we can further enhance its accuracy and utility for decision-making in the e-commerce space.