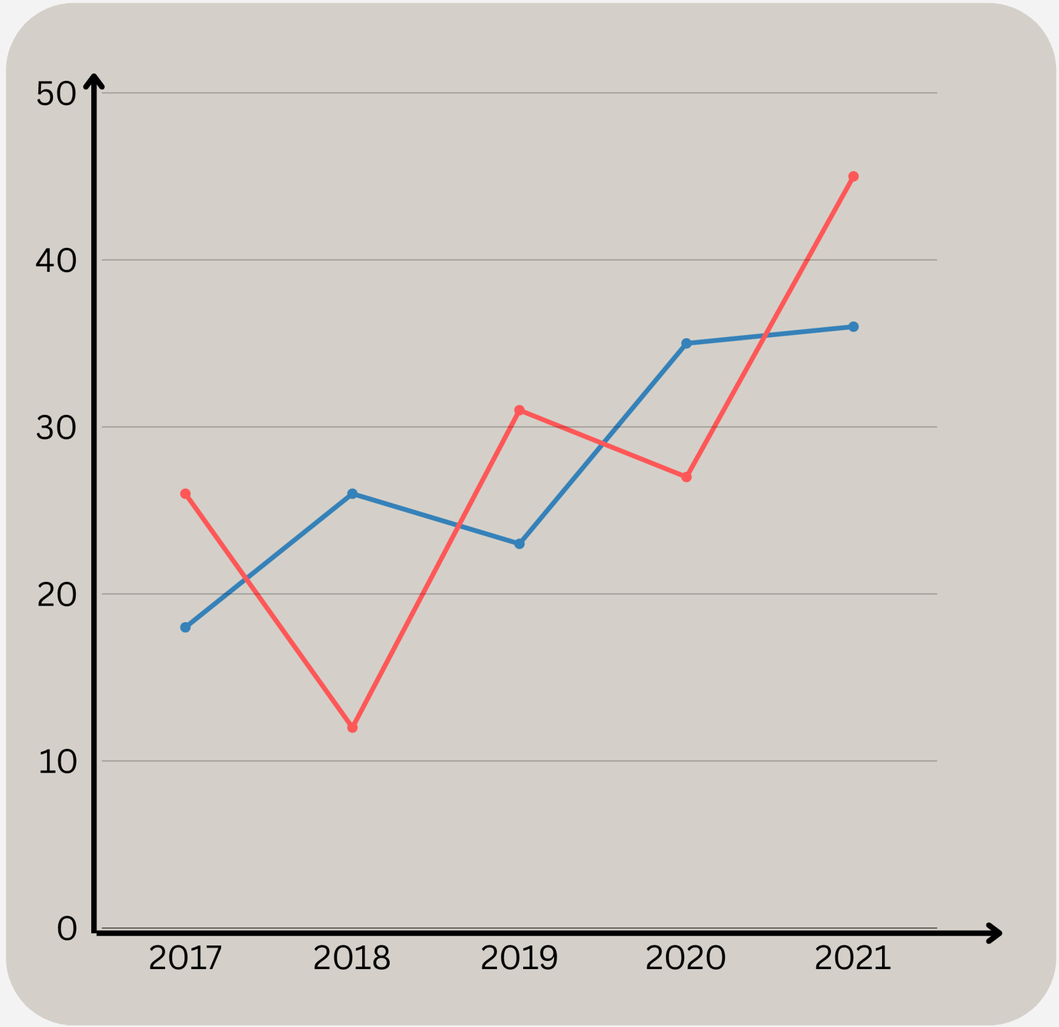


E-PROCUREMENT

TIMESERIES FORECASTING

CONTENT

- ABSTRACT
- PROBLEM STATMENT
- METHODOLOGY
- RESULTS
- CONCLUSION
- FUTURE ENCHANCEMENT

ABSTRACT

The process of government procurement is a vital aspect of any economy, but it can be difficult to predict the outcomes of tenders. This project aims to explore the potential of machine learning algorithms in predicting the outcomes of government tenders using a time series approach. The study focuses on analyzing historical data of tenders issued by the government over a specific period to identify patterns and trends that may be used to make informed predictions about future tender outcomes. The time series aspect of the project will allow for the consideration of cyclical and seasonal effects that may influence the tender outcomes. Several machine learning models, including **ARIMA, LSTM,** and **SARIMA**, will be tested and compared to determine their effectiveness in accurately predicting the outcomes of government tenders

PROBLEM STATEMENT

- The government e-procurement tender system generates a large amount of time series data, including historical procurement data, bidding data, and other relevant variables.

- However, the current system does not provide real-time insights on procurement trends, supplier performance, and market behavior. Therefore, there is a need to develop a time series forecasting model for government e-procurement tenders that can predict future procurement trends, identify potential risks and opportunities, and help policymakers make informed decisions.

- And there is a need to implement an electronic procurement (e-procurement) system that streamlines the procurement process, increases transparency, and ensures fair competition among bidders.

ARIMA

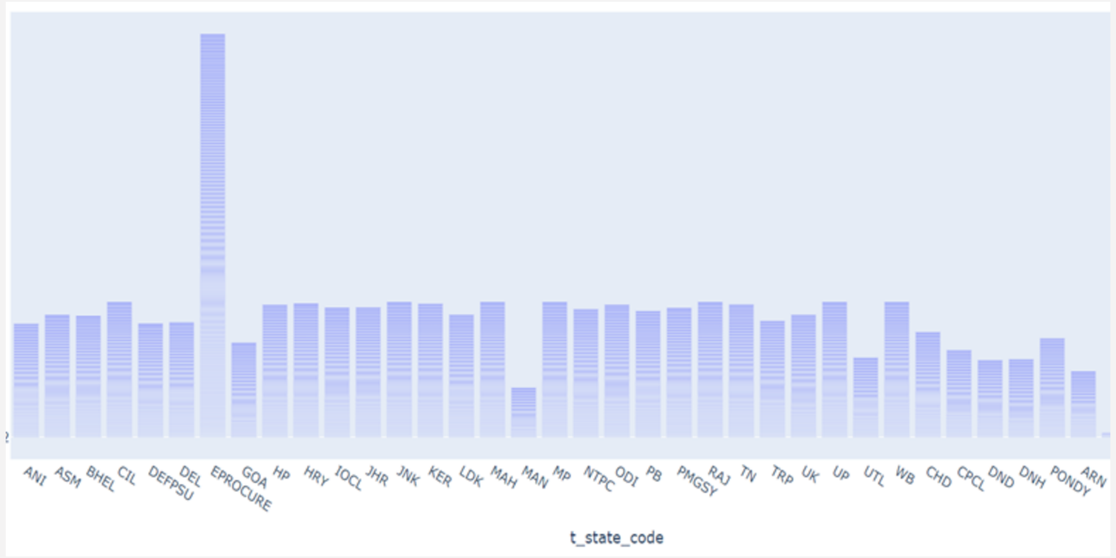
SARIMA

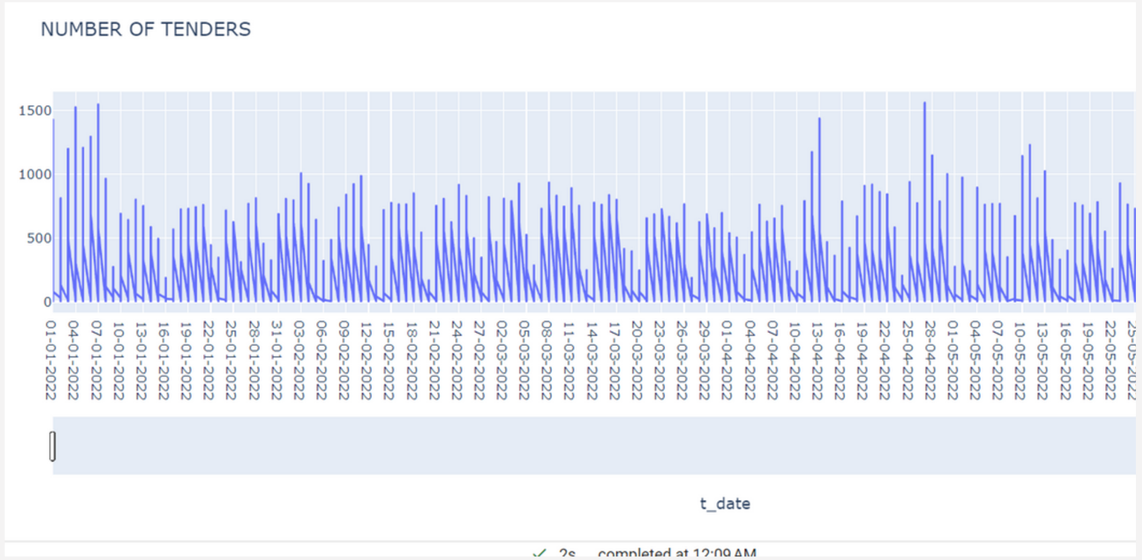
LSTM

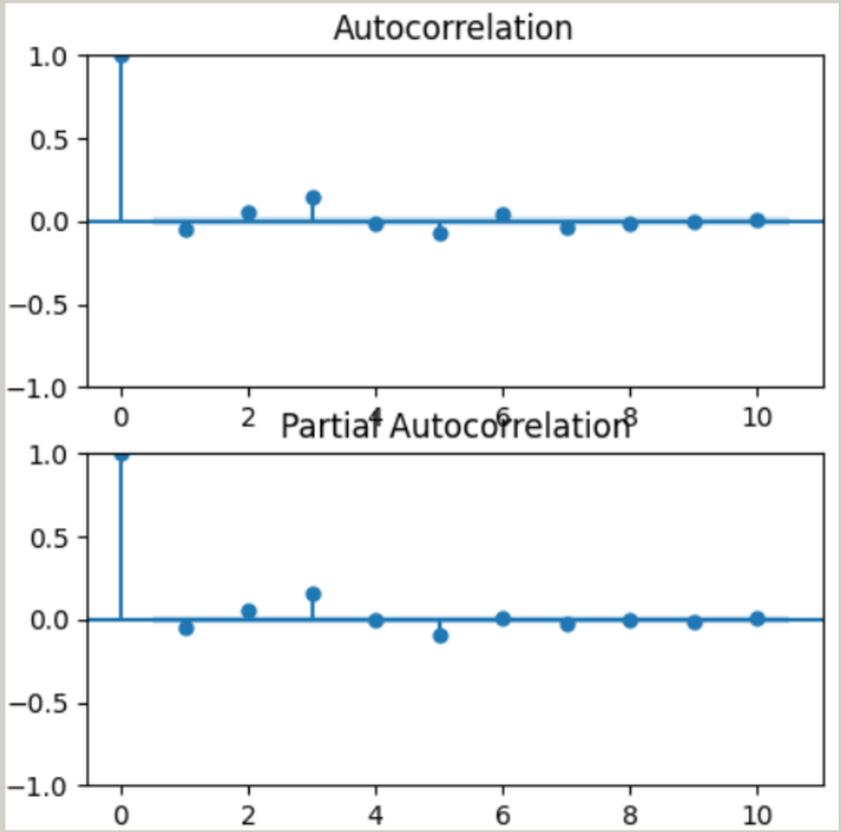
METHODOLGY

RESULTS

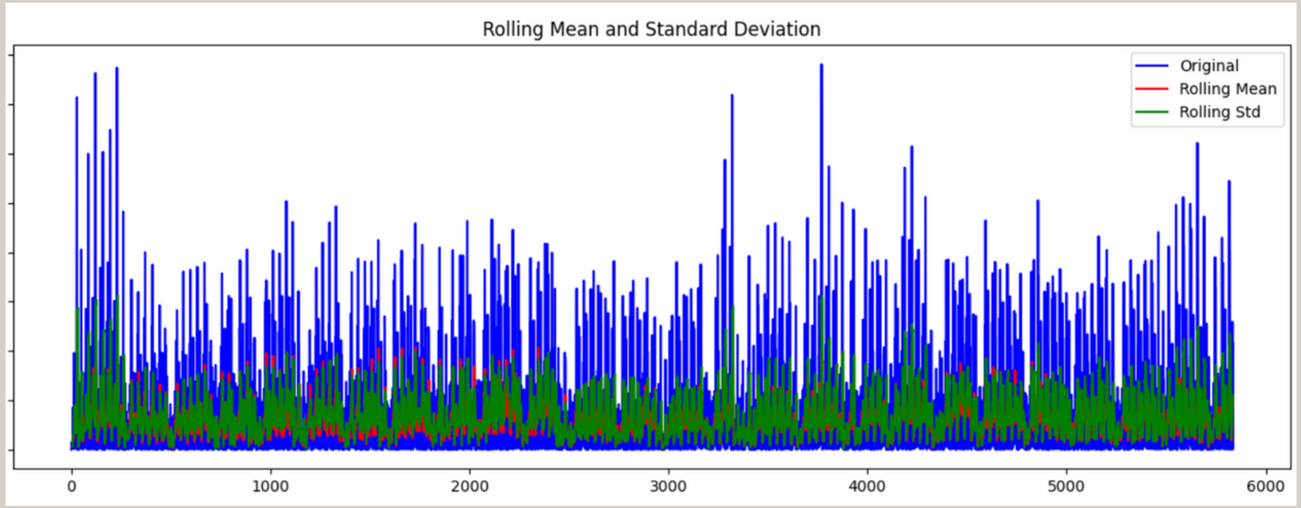
The result and discussion about the data and it's preprocesssing techniques used. The results of TIMESERIES models, after preprocessing are described.



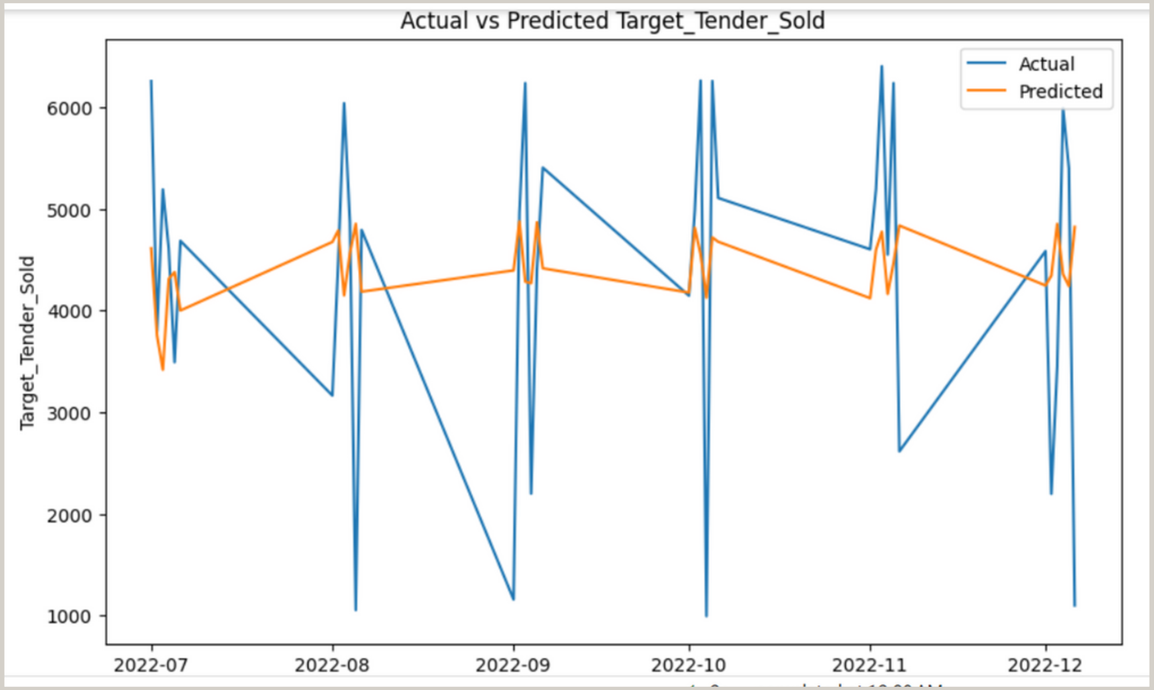


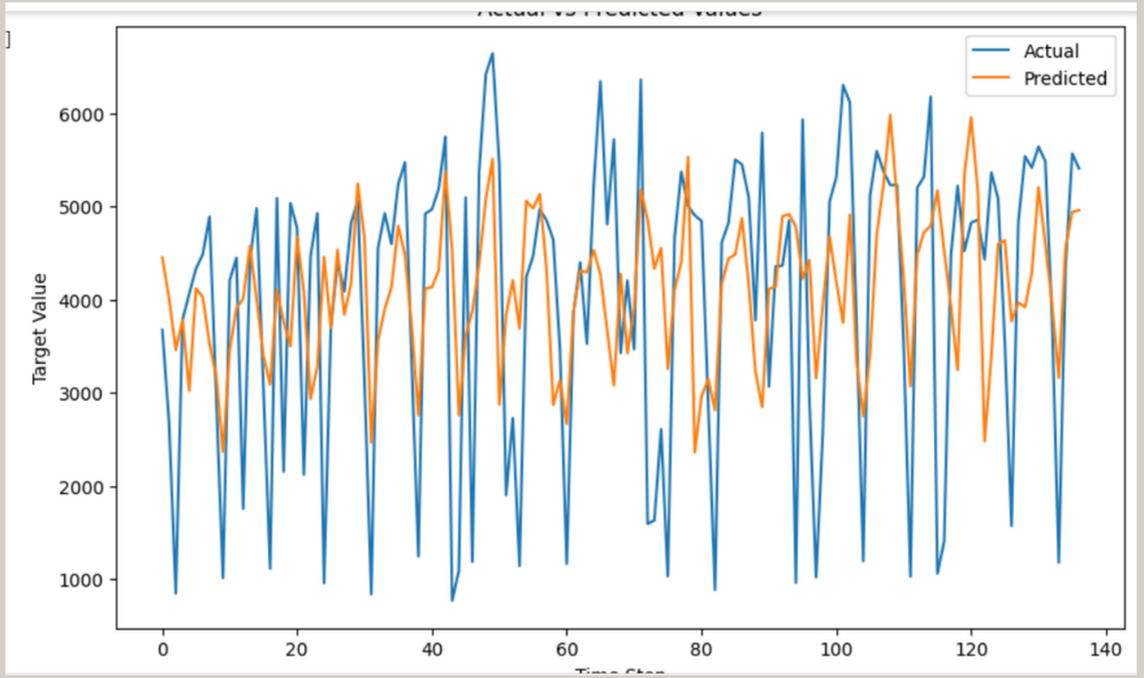


Choosing the best q and p from ACF and PACF plots in ARMA-type modeling



Rolling mean & rolling Standard deviation


Actual vs Predicted Target_Tender_Sold
Actual
Predicted
Target_Tender_Sold
6000
5000
4000
3000
2000
1000
2022-07
2022-08
2022-09
2022-10
2022-11
2022-12


Actual
Predicted
Target Value
6000
5000
4000
3000
2000
1000
0
20
40
60
80
100
120
140

CONCLUSION

MODEL	MSE	RMSE	MAE
ARIMA	2.751802	1658.8556	1305.9777
SARIMA	2.751802	1658.8556	1305.9777
LSTM	2.194614	1481.4231	1187.1256

Based on the result of Mean Squared Error (MSE) score, the LSTM model appears to be the best fit as it has the lowest MSE score of 2.1946 . The ARIMA and SARIMA models have identical MSE scores of 2.7518, which are slightly higher than the MSE score of the LSTM model.

FUTURE ENCHANCEMENT

- future enhancement for the government e-procurement tender timeseries forecasting project is the integration of machine learning algorithms to improve the accuracy and efficiency of the forecasting model. This could involve using advanced techniques such as deep learning, ensemble models, or reinforcement learning to analyze complex patterns and relationships in the procurement data and generate more accurate forecasts.

- Another enhancement could be the development of a user-friendly dashboard that allows policymakers and other stakeholders to easily access and visualize the forecasting results and insights, enabling them to make more informed decisions.

THANK YOU