

CHAPTER V

CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

Based on the research findings and discussions regarding the forecasting of basic commodity prices in East Java using the hybrid ARIMA–LSTM method, the following conclusions can be drawn:

1. The performance of the hybrid model across the three regions exhibits varying characteristics depending on the commodity type and the Consumer Price Index (CPI) level of each respective region. Surabaya, as the region with the highest CPI, consistently displays the most robust and stable hybrid model performance for the rice and cooking oil commodities, maintaining high R^2 values up to the 30-day horizon. In Banyuwangi, the region with the lowest CPI, the hybrid model for the rice commodity is outperformed by the standalone ARIMA at the 14-day horizon, and its accuracy drops significantly at the 30-day horizon. However, for the cooking oil commodity, Banyuwangi emerges as the region with the highest and most consistent performance across all horizons compared to the other regions. Meanwhile, Madiun, as the region with a moderate CPI, shows a performance that briefly matches Surabaya's for the rice commodity. However, for cooking oil, Madiun records a significant decline in accuracy as the horizon extends, and it consistently demonstrates the lowest performance across all horizons for the Commercial Chicken Egg commodity.
2. The performance of the hybrid ARIMA–LSTM model demonstrates superior accuracy compared to the standalone models across high, low, and moderate CPI regions. Based on the evaluation results, the hybrid model achieves the lowest RMSE values for nearly all basic commodities across all forecasting horizons, as presented in Table 4.109 through Table 4.117. Overall, these results indicate that the hybrid model is capable of enhancing forecasting accuracy compared to standalone models, albeit at the cost of higher computational time.

5.2. Recommendations

This study still has several limitations, and further refinements are necessary to improve future research. The researcher provides the following recommendations and insights for future work:

1. Expand the research scope by applying the hybrid ARIMA–LSTM model to other basic commodities to test the performance consistency of the hybrid ARIMA–LSTM framework against different data characteristics.
2. Broaden the range of parameters within the testing scenarios to enable more accurate forecasting results.