

CHAPTER V CONCLUSIONS AND SUGGESTIONS

5.1 Conclusion

Based on the research results and discussion that have been conducted, several conclusions are obtained as follows:

1. Google Search Trends data for the keyword "Kopi Kenangan" during the period January 2021 to June 2026 produce 66 monthly observations. The data show a fluctuating pattern with an increasing tendency at the end of the period, but they must still be interpreted as a relative popularity index of searches.
2. The SSA method can be applied to Google Trends data through the stages of embedding, SVD, grouping, reconstruction, and forecasting. This process is capable of capturing the main data pattern, although residuals still remain in several periods.
3. The best SSA configuration is obtained at $L = 7$ and $r = 5$. This configuration is used as the final model because it produces the best evaluation values in the testing scenario carried out.
4. The evaluation results of the best model show MAE of 16.65, MSE of 430.96, RMSE of 20.76, MAPE of 24.74%, sMAPE of 27.78%, and MASE of 2.3101. These values show that SSA performs better than the tested baselines, but its accuracy is still classified as moderate.
5. The 12-month forecasting results for July 2026 to June 2027 show that the index lies within the range of 95.57 to 100.00. These results only describe the tendency of public search interest and must not be interpreted as predictions of sales or actual demand.

The summary of the final forecasting results is presented again in Table 5.1 as part of the conclusion.

Table 5.1 Summary of Twelve-Month Forecasting Results

Period	Forecast
2026-07	95.57
2026-08	98.75
2026-09	100
2026-10	97.71

Period	Forecast
2026-11	100
2026-12	100
2027-01	100
2027-02	100
2027-03	100
2027-04	100
2027-05	100
2027-06	100

Table 5.1 shows that the forecast results reach high values in several periods. Because the Google Trends scale has an upper limit of 100, these results need to be interpreted as the upper limit of relative search popularity.

5.2 Research Limitations

This study has several limitations that need to be considered so that the results are not overinterpreted:

1. The data used are only Google Trends indices, so they cannot explain sales, transactions, number of customers, or actual demand.
2. The model is univariate and has not included external variables such as promotions, social media, product prices, number of outlets, or certain events.
3. The amount of data, namely 66 monthly observations, is still relatively limited for building very strong forecasting conclusions.
4. The MAPE and sMAPE values indicate moderate performance, so the results must not be claimed as highly accurate predictions.
5. The baselines used are basic comparisons. This study has not conducted a comprehensive comparison with multivariate or deep learning models.
6. Walk-forward validation has been added, but the historical period is still limited, so further research is still needed.

5.3 Suggestions

Based on these limitations, the suggestions for future research are as follows:

1. Future research can add actual data such as sales, transaction volume, number of outlets, product prices, promotions, and social media to test the relationship between Google Trends and business indicators.

2. Further research can compare SSA with ARIMA, SARIMA, Prophet, ETS, LSTM, or hybrid models in greater depth.

3. Validation can be strengthened with rolling-origin evaluation or longer walk-forward validation so that model performance does not depend on a single testing period.

4. Data frequency can be increased to weekly or daily if the data are available and stable, so the model can capture short-term changes better.

5. Interpretation of results must continue to distinguish between public search interest and actual demand so that academic conclusions do not overclaim.