CHAPTER 5

SUMMARY AND FUTURE WORKS

5.1 Summary

The overall purpose of this study was to compare the GDP and unemployment trends in Malaysia by employing a broad range of datasets and complex data analysis. To achieve this, the study adopted a structured Data Science Project Life Cycle that included data collection, data pre-processing, EDA and time series analysis. The summarised key findings from the analysis are listed below:

- **Descriptive Statistics:** The summary showed elements such as mean, median, standard deviation, and range of the unemployment rates and GDP data. These statistics helped in getting an overall summary and spread of the data in terms of the median, mode and range.
- **Data Visualization:** The distribution and trends of data were compared using histograms, box plots and time series plots. They brought out any skewness, outliers, and temporal patterns in the data as a way of giving a deeper insight into the data.
- **Correlation Analysis:** It emerged that there is a moderate negative relationship between GDP and unemployment rates which indicate that high GDP is likely to be accompanied by low unemployment rates. This has implications on theories such as Okun's Law which posits a relationship between the rate of unemployment and the rate of growth.
- **Time Series Analysis:** The future unemployment rates were predicted using historical data through the use of ARIMA and Prophet models. The forecast results of both models were similar and reliable, where the ARIMA model was able to address the temporal characteristics, and the Prophet model could address the seasonality and trend characteristics.

As the research highlighted, economic development is the key to fighting unemployment. The negative association between GDP and unemployment implies that there is a requirement to adopt policies that encourage economic growth to help enhance employment opportunities and conditions in the labour market. Unemployment rate forecasts are useful in the formulation of economic policies and in the general planning for development.

5.2 Future Work

Despite the fact that this research has given a clear understanding of the link between the GDP and unemployment in Malaysia, there are still other areas of research that can be explored further to get a better understanding of this topic.

5.2.1 Incorporating Additional Variables

Future studies in this area could include incorporating the effects of other economic indicators such as inflation, interest rates, and external trade statistics.

- **Inflation and Interest Rates**: It may be possible to gain further insights into the nature of economic relationships and policy implications examining how these variables relate to GDP and unemployment levels.
- **Trade Data**: An assessment on the employment effect of export and import activities could reveal the relevance of exports in Malaysia's economy.

5.2.2 Advanced Analytical Techniques

The use of more sophisticated methods in machine learning may help enhance the quality and reliability of the forecasts.

- **Neural Networks:** The complex temporal dependencies in the data could be captured by using more advanced methods such as Long Short-Term Memory (LSTM) networks to produce more accurate forecasts.
- **Ensemble Methods:** The use of multiple forecast models could improve the predictive accuracy of the forecast and give better estimates.

5.2.3 Sectoral Analysis

Unemployment could also be analysed in terms of sectors in a bid to understand which sectors are most affected by the movement of the economic cycle and which sectors are the most immune to movements of the economic cycle.

- **Sector-specific Trends**: Knowledge of the trends in employment in the various sectors could be useful for developing some kind of strategies for intervention in sectors which may be most vulnerable to the state of the economy.
- **Resilience Factors:** It might be useful for formulating policies that would cause an improvement in the general economy to know what makes some sectors more resistant than others.

Conclusion

Therefore, this study has examined the relationship of GDP and the unemployment trends in Malaysia and has discussed how economic growth has an impact on unemployment levels. Such findings are useful for the formulation of policies and economic strategies and help achieve the goals of improving the Malaysian labour market and economic development. Future research should try to include more variables, use more sophisticated tools of data analysis and make sectoral analysis to extend the findings of this research and shed even more light on the relationships between GDP and unemployment rate.