CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Introduction

The research discussed the process of modelling Seasonal Autoregression Integrated Moving Average (SARIMA) and Holt-Winters Exponential Smoothing methods used to forecast monthly zakat collection for the year 2020 of Lembaga Zakat Selangor (LZS), Pusat Zakat Negeri Sembilan (PZNS), and Pusat Pungutan Zakat (PPZ). In addition, the research also predicted the yearly zakat collection from 2020 to 2031 for Majlis Agama Islam dan Adat Melayu Perak (MAIPk). The study used the monthly data a zakat collection of Lembaga Zakat Selangor (LZS), Pusat Zakat Negeri Sembilan (PZNS), and Pusat Pungutan Zakat (PPZ) from January 2010 until December 2019 and to develop forecasting models using the methods represented in chapter 3. The main objectives of the research have successfully been achieved and satisfied using methods outlined in chapter 3.

5.2 Conclusion

Monthly zakat collections in LZS, PZNS, and PPZ of up to 12 months were predicted using zakat collections data from January 2010 to December 2019. While Yearly zakat collections in MAIPk of up to 12 years were predicted using zakat collections data from 1991 to 2019. Using the Seasonal-ARIMA and Holt-Winters forecasting methods, we investigated the most appropriate method for obtaining short-term out-of-sample forecast for LZS, PZNS, and PPZ. And using the ARIMA and

Single Exponential Smoothing (SES) forecasting methods, we investigated the most appropriate method for obtaining short-term out-of-sample forecast for MAIPk in this study. Using the accuracy measure statistics MAE, RMSE, MAPE, and MASE, the out-of-sample forecast accuracies of five Seasonal-ARIMA models and two Holt-Winters forecasting approaches were evaluated. These statistics were used to rank the forecast accuracies.

The ARIMA(1,1,1) $(0,1,0)_{12}$, was ranked first in an in-sample error accuracy measurement for Lembaga Zakat Selangor (LZS). In terms of forecast precision and accuracy, an in-sample forecast from the Seasonal-ARIMA approach outperforms any Holt-Winters approach. According to in-sample and out-of-sample of the error accuracy measurement for Pusat Zakat Negeri Sembilan (PZNS), the ARIMA(1,1,1)$(1,1,1)_{12}$ model was ranked first. In terms of forecasting precision and accuracy, a Seasonal-ARIMA in-sample and out-of-sample forecast outperform the Holt-Winters approach. The model ARIMA(0,1,1) $(0,1,1)_{12}$ was ranked first in in-sample and out-of-sample error accuracy measurement for Pusat Pungutan Zakat (PPZ). This suggests that a Seasonal-ARIMA in-sample and out-of-sample forecast surpasses the Holt-Winters technique in terms of forecast precision and accuracy.

For Majlis Agama Islam dan Adat Melayu Perak (MAIPk), the three ARIMA forecast models; ARIMA (0,1,1), and ARIMA (1,1,0) took the first, and second respectively. The Single Exponential Smoothing (SES) models with parameters $\alpha = 1.0$, $\alpha = 0.8$, $\alpha = 0.9$ and $\alpha = 0.7$ was ranked third, fourth, fifth and sixth positions respectively. This means that an in-sample and out-of-sample forecast from an ARIMA

approach outperforms any Single Exponential Smoothing (SES) approach in terms of forecast precision and accuracy.

In conclusion, we propose Seasonal-ARIMA as the most appropriate method for the short-term out-of-sample forecast of monthly zakat collection for LSZ, PZNS, and PPZ. Furthermore, we recommended ARIMA as the most appropriate method for the short-term out-of-sample forecast for MAIPk's annual zakat collection.

Forecasting techniques to accurately forecast zakat collection particularly in Lembaga Zakat Selangor (LZS), Pusat Zakat Negeri Sembilan (PZNS), Pusat Pungutan Zakat (PPZ), and Majlis Agama Islam dan Adat Melayu Perak (MAIPk), could be used to improve zakat distribution, thus improving zakat management performance. By using the future value of zakat collection as a reference for zakat distribution, this study can assist zakat institutions in managing zakat timelier and efficiently.

Furthermore, it may assist zakat institutions in reducing the gap between the zakat collection and zakat distribution. A more precise zakat collection forecast is able to optimize zakat distribution and help the zakat institutions to achieve zero surpluses. As a result, all the zakat beneficiaries (asnaf) especially the poor and needy can receive more equitable and timely financial aid from zakat institutions if zakat institutions are able to project accurately the amount of zakat to be distributed. Previous studies show that there is a surplus of zakat that is not distributed to the beneficiaries therefore, this forecasting method could avoid negative perceptions among zakat payers.

Ilyas et al. (2017), to forecast zakat collection, more zakat organizations should be involved. By incorporating newer and emerging forecasting techniques, more research should be done to improve the forecasting model's effectiveness. Al Parisi (2017) there is still a significant gap between zakat collection and zakat distribution, according to the report. As a result, we need good management, a lot of work, and complete cooperation from all parties involved, including zakat institutions, scholars, schools, and the government, to deal with this problem.

5.3 Limitation

Every research study must have a limiting issue that cannot be avoided when doing the research investigation. Several limitations have been discovered during the research process for this study. Lack of information needs for research. The information such as research articles are limited and hard to get since there is less previous research had been done regarding to this research that we doing and mostly research found are from outside of the country which out of topics that cannot be compared with our research topic made. Besides that, there also insufficiency of data need regarding to zakat collected in LZS, PZNS, PPZ, and MAIPk, as our research focus to how to predict zakat collection in LZS, PZNS, PPZ, and MAIPk. Since the information is considered as confidential and cannot be disclose the information, the article regarding the scopes that try to research is limited for this area and hard to get.