minimum AIC is equal to 26.852. The corresponding test results are shown in the below Figure 8 and 9.

Model Adequacy Checking

Heteroscedasticity Test

$H_1: No\ presence\ of\ ARCH\ effect$

$H_1: Presence\ of\ ARCH\ effect$

According to results of Heteroscedasticity Test, the probability value 0.5349 >0.05. Do Not Reject the null hypothesis. Therefore, there is no ARCH effect at 5% level of significance. The probability value 0.1042 >0.05. Do Not Reject the null hypothesis. Therefore, there is no ARCH effect at 5% level of significance.

Serial Correlation Test

$H_1: No\ presence\ Serial\ Correlation$

$H_1: Presence\ of\ Serial\ Correlation$

In both models, the Durbin-Watson Statistic is closed to 2 and it implies there is no serial correlation at 5% level of significance.

Forecasting

To checking the forecasting accuracy of models, the Mean Absolute Percentage Error (MAPE) is 1.403 and 0.976 respectively.

According to forecasting plots, ARIMA (1,2,1) and ARIMA (2,2,1) models have a strong potential for forecasting the usage of cellular and landline phones.

Conclusion

In this study two ARIMA models were fitted to forecast the quarterly cellular phones and landline phone usage in Sri Lanka. Here, ARIMA (1,2,1) and ARIMA (2,2,1) were the best models with minimum AIC 28.298 and 26.852 for cellular phones and landline phone usage respectively. And then 20% of the data were used to forecast and the Mean Absolute Percentage Error (MAPE) of the forecasted models were 1.403 and 0.976. Also, a model adequacy checking was carried out to inspect the validity of these models and it was concluded that the models were adequate. It is clear that the performance of the both ARIMA models selected here are quite impressive and the actual and predicted values seems to be related to each other.

Keywords: *AIC, ARIMA, ACF, MAPE, PACF*