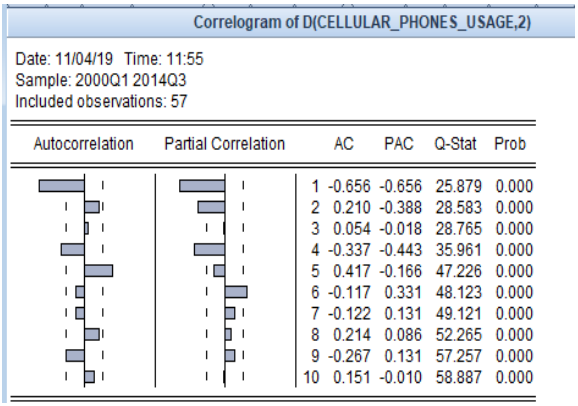
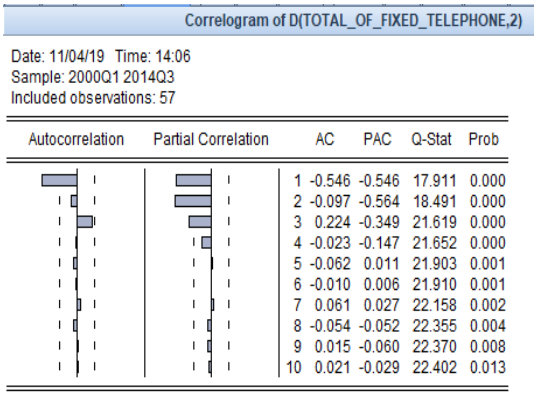
According to results of ADF test, the probability value = 0.000 < 0.05. Reject the null hypothesis. Therefore, the series is stationary at 5% level of significance. As per the results of PP test, the probability value = 0.0001 < 0.05. Reject the null hypothesis. Therefore, the series is stationary at 5% level of significance.

Figure 6: Correlogram for cellular phones usage



	AC	PAC	Q-Stat	Prob
1	-0.656	-0.656	25.879	0.000
2	0.210	-0.388	28.583	0.000
3	0.054	-0.018	28.765	0.000
4	-0.337	-0.443	35.961	0.000
5	0.417	-0.166	47.226	0.000
6	-0.117	0.331	48.123	0.000
7	-0.122	0.131	49.121	0.000
8	0.214	0.086	52.265	0.000
9	-0.267	0.131	57.257	0.000
10	0.151	-0.010	58.887	0.000

Figure 7: Correlogram for fixed telephone lines usage



	AC	PAC	Q-Stat	Prob
1	-0.546	-0.546	17.911	0.000
2	-0.097	-0.564	18.491	0.000
3	0.224	-0.349	21.619	0.000
4	-0.023	-0.147	21.652	0.000
5	-0.062	0.011	21.903	0.001
6	-0.010	0.006	21.910	0.001
7	0.061	0.027	22.158	0.002
8	-0.054	-0.052	22.355	0.004
9	0.015	-0.060	22.370	0.008
10	0.021	-0.029	22.402	0.013

In Figure 6, the significant cutoff lags of ACF and PACF plots are 1,4,5 and 1,2,4,6 respectively. In Figure 7, the significant cutoff lags of ACF and PACF plots are 1 and 1,2,3 respectively.

Model Fitting

After considering all possible models, an ARIMA (1,2,1) model was identified as the best fitted model with minimum AIC is equal to 28.298 for forecasting the cellular phones usage in Sri Lanka and an ARIMA (2,2,1) was identified as the best fitted model for forecasting the fixed telephone lines usage in Sri Lanka with

Figure 8: Output for ARIMA (1,2,1) model

Dependent Variable: D(CELLULAR_PHONES_USAGE,2)
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 11/04/19 Time: 11:56
Sample: 2000Q3 2014Q3
Included observations: 57
Convergence achieved after 20 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5286.383	13921.40	0.379731	0.7057
AR(1)	-0.427722	0.117927	-3.627018	0.0006
MA(1)	-0.615109	0.092196	-6.671766	0.0000
SIGMASQ	9.72E+10	1.16E+10	8.388353	0.0000

R-squared	0.569705	Mean dependent var	11992.42
Adjusted R-squared	0.545349	S.D. dependent var	479460.7
S.E. of regression	323289.8	Akaike info criterion	28.29816
Sum squared resid	5.54E+12	Schwarz criterion	28.44153
Log likelihood	-802.4975	Hannan-Quinn criter.	28.35388
F-statistic	23.39048	Durbin-Watson stat	2.041512
Prob(F-statistic)	0.000000		

Figure 9: Output for ARIMA (2,2,1) model

Dependent Variable: D(TOTAL_OF_FIXED_TELEPHONE,2)
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 11/04/19 Time: 14:08
Sample: 2000Q3 2014Q3
Included observations: 57
Convergence achieved after 36 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-781.6311	8641.572	-0.090450	0.9283
AR(1)	-0.525842	0.124134	-4.236098	0.0001
AR(2)	-0.386833	0.170329	-2.271098	0.0273
MA(1)	-0.544235	0.152297	-3.573504	0.0008
SIGMASQ	2.20E+10	3.57E+09	6.153672	0.0000

R-squared	0.584402	Mean dependent var	-176.7719
Adjusted R-squared	0.552433	S.D. dependent var	231941.2
S.E. of regression	155169.6	Akaike info criterion	26.85245
Sum squared resid	1.25E+12	Schwarz criterion	27.03167
Log likelihood	-760.2949	Hannan-Quinn criter.	26.92210
F-statistic	18.28026	Durbin-Watson stat	2.065050
Prob(F-statistic)	0.000000		