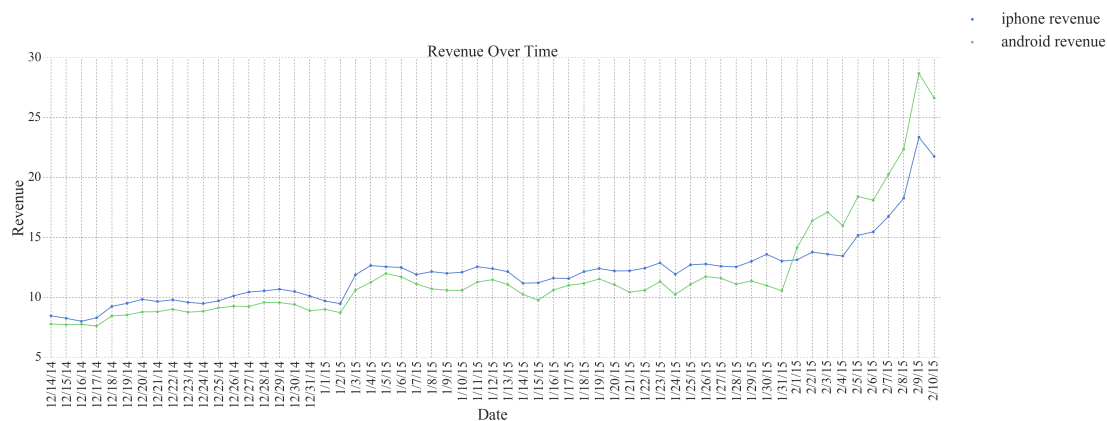


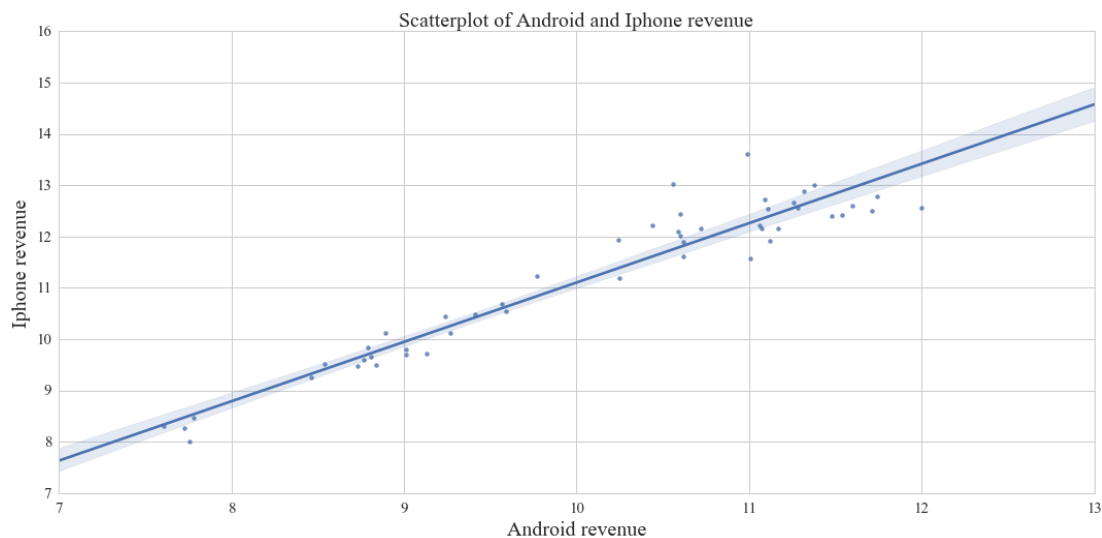
Incremental Revenue Impacted By Product Launch

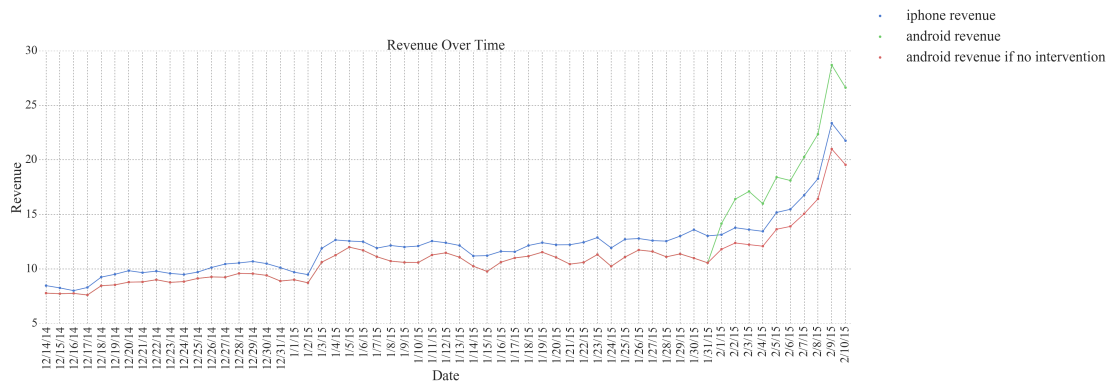
- From the time series plot, we can see the revenue of iphone and android were parallel before the launch date
- Android revenue was immediately increased after the launch date and above iphone revenue
- Meanwhile, iphone revenue was also increased after the launch date due to unknown reasons (discount, promotion etc)



Method1

- From the scatter plot, we can see a linear relationship between android revenue and iphone revenue
- If Twitter had not launched product for android, I would expect a parallel time series line which is slightly below the blue line (iphone revenue)
- A linear regression model (regressor:iphone revenue) was used to predict android revenue (the red line) after 02/01/2015 with the assumption of no launch for android
- The absolute incremental revenue impacted by product launch is the difference between actual android revenue and predicted android revenue





Method1

- Similarly, If the company had launched product for iphone, I would expect a parallel time series line which is slightly above the green line (android revenue)
- A linear regression model (regressor:android revenue) was used to predict iphone revenue (the red line) after 02/01/2015 with the assumption of launch for iphone
- The absolute incremental revenue impacted by product launch is the difference between predicted iphone revenue and actual iphone revenue



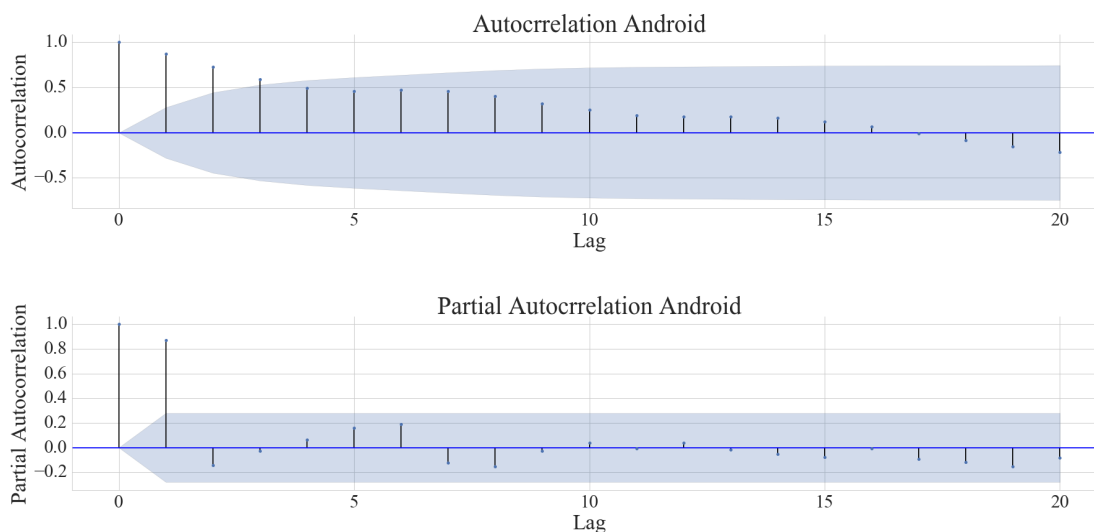
Result1

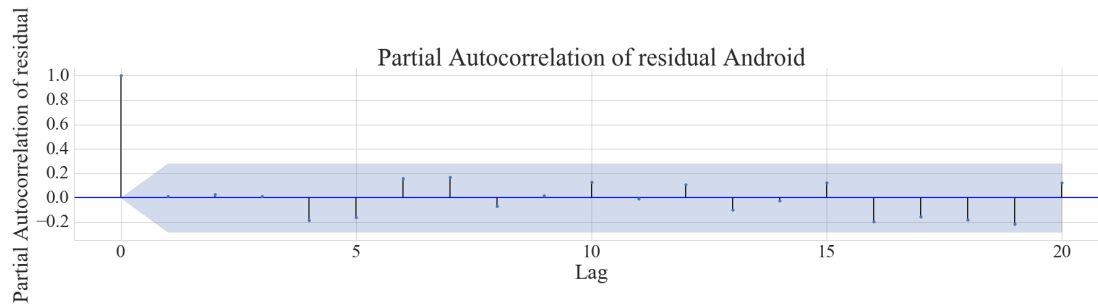
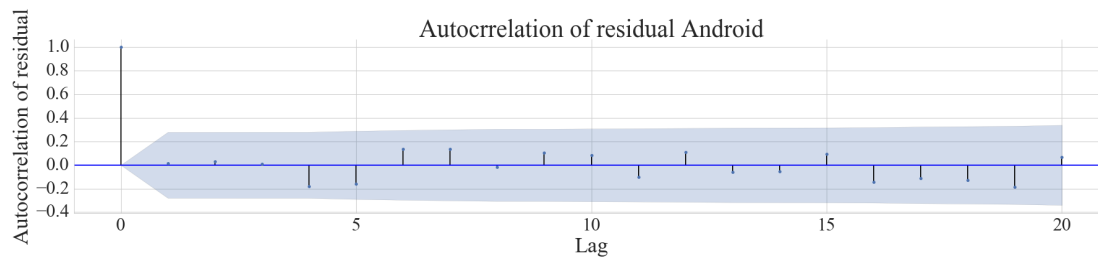
- The table below shows incremental revenues for both android and iphone between 02/01/2015-02/10/2015
- The incremental revenues of android and iphone are the same on each day because method1 is based on an assumption that the launch impact is the same on both platforms

	android incremental revenue	iphone incremental revenue
2015-02-01	2.353042	2.596271
2015-02-02	4.017969	4.445625
2015-02-03	4.880723	5.404661
2015-02-04	3.904491	4.319984
2015-02-05	4.779998	5.290489
2015-02-06	4.209418	4.655980
2015-02-07	5.210288	5.766428
2015-02-08	5.934490	6.569084
2015-02-09	7.700866	8.524844
2015-02-10	7.077533	7.834414

Method2

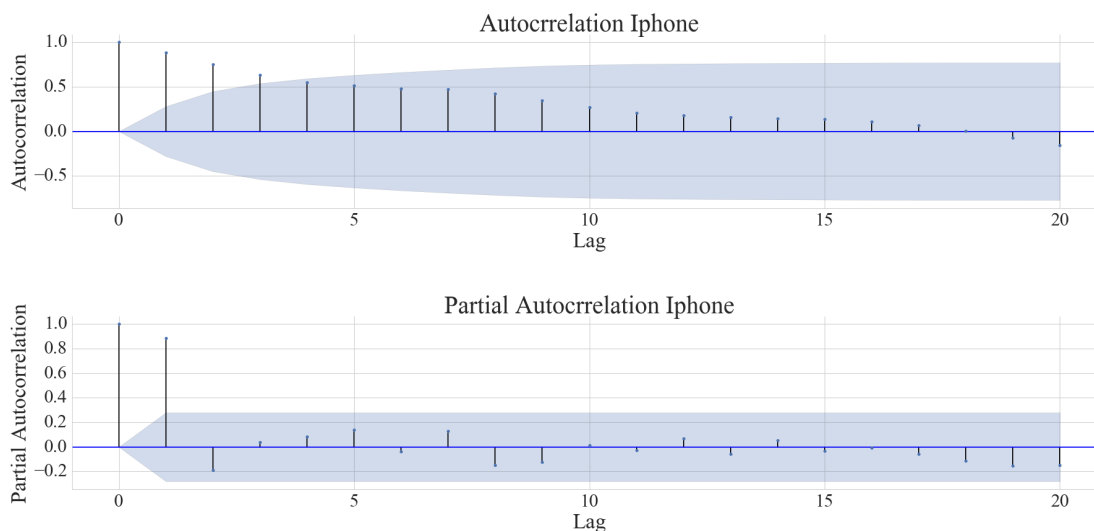
- If the company had not launched product for android, I would expect a parallel time series line which is slightly below the blue line (iphone revenue)
- An ARMAX model was used to predict android revenue after 02/01/2015 with the assumption of no launch for android
- Based on the ACF and PACF plots, I chose an ARMAX model with AR(1), MA(2) and an independent variable iphone revenue
- Based on the ACF and PACF plots of residuals, there were no significant correlations between residuals after a model fit
- The absolute incremental revenue impacted by product launch is the difference between actual android revenue and predicted android revenue

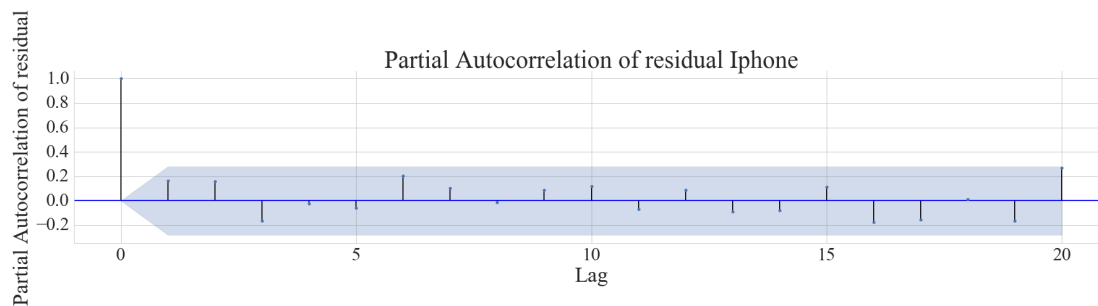
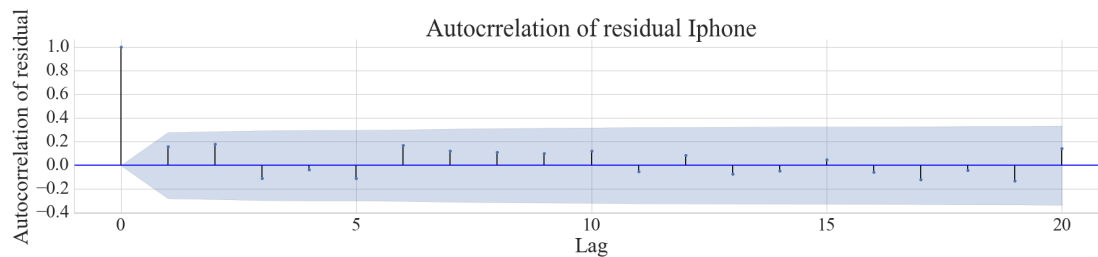




Method2

- Similarly, If the company had launched product for iphone, I would expect a parallel time series line which slightly above the green line
- An ARIMAX model was used to predict iphone revenue after 02/01/2015 with the assumption of launch for iphone
- Based on the ACF and PACF plots, I chose an ARMAX model with AR(1), MA(2) and an independent variable android revenue
- Based on the ACF and PACF plots of residuals, there were no significant correlations between residuals after a model fit
- The absolute incremental revenue impacted by product launch is the difference between predicted iphone revenue and actual android revenue





Result2

- The table below shows incremental revenues for both android and iphone between 02/01/2015-02/10/2015
- The incremental revenues of android and iphone are more or less same on each day because method1 is based on an assumption that the launch impact is the same on both platforms

	android incremental revenue	iphone incremental revenue
2015-02-01	2.987867	2.895529
2015-02-02	4.292476	4.401597
2015-02-03	5.195202	5.355954
2015-02-04	4.166909	4.278659
2015-02-05	5.276376	5.233146
2015-02-06	4.733538	4.600681
2015-02-07	5.900966	5.696892
2015-02-08	6.813732	6.485771
2015-02-09	9.220675	8.399742
2015-02-10	8.394475	7.722956