BA4318 Business Data Processing with Python

Estimation of the Usage of Twitter and Facebook

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Overview

This document describes the aim and the details of end of the term project of BA 4318 Business Data Processing with Python. The selected business problem for this project is estimating the growth in the total number of users of Facebook and Twitter for the last quarter of 2018. In order to do that, some forecasting methods have been applied with Python. While estimating the number of users, first the growth rate of the world population has been found and then the growth rate of the users. Because it has been assumed that the number of users will be increase as the world population increases. Therefore, if the growth rate of the social media is equal to the growth rate of world population, it can be said that a real increase in the number of users actually has not been observed.

Data gathering

As it was briefly explained in the overview section of our report, the data gathering mainly consisted of getting the data in a quarterly basis concerning the users of Twitter and Facebook. However the data we have obtained for the World population is in years. The reason we wanted to include the population of the entire world is that we wanted to see if the success of these social media intermediaries are due to the natural increase in the entire world or due to their success.

The data was retrieved from statista.com and it is properly referenced in the references section of our report.

Data inspection and understanding

We consider ourselves to be lucky when we looked at our data. The data set did not have any missing values and showed figures that were in line with each other. There did not seem to be any distress in the data whatsoever.

As you can see in the Figures 1.1, 1.2 and 1.3, we can observe a steady increase in the Facebook usage and World population. However, we can clearly see that Twitter is in a dire situation where there is no steady increase but on the contrary there seems to be a slight decrease. We can infer that at least for the population and Facebook, there is a trend and there is no seasonality for any of them.

Applied methodology

What we wanted to do was to first estimate the next quarter for all three data sets using the best forecast tool we have. In order to see what methodology to consider using, we have ran tests with all of them in order to determine the one with the lowest error.

The forecast methods we have used are as follows; moving average, simple exponential smoothing, Holt-Winters' and Holt's methods. After selecting our training and test data, we have applied the method with the lowest error.

Our intuition towards using an analysis method that is applied to data sets with trend and no seasonality was right in the end. For all three series, the best method was Holt's. So, we have conducted our forecasts accordingly.

Overall results

When we forecasted the remaining periods for all three series and looked at the growth rates, the results we have obtained were striking. The population of the World is forecasted as 7,612,338,500 for the year 2018, with the twitter users being 323,440,2711, and Facebook users 2,318,387,220. The growth rates in this order are as follows, 1.088%, -1.989% and 8.896%.

The results clearly show that while World population is increasing at a steady rate, Facebook is much more faster than it. However, Twitter seems to be losing users at a higher rate than the increase in population.

References

Facebook users worldwide 2018. (2018, October 1). Retrieved January 15, 2019, from https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/

Twitter: Number of active users 2010-2018. (2018, October 1). Retrieved January 15, 2019,from https://www.statista.com/statistics/282087/number-of-monthly-active-twitter-users/

Development of the world population from 1950 to 2030 (in billions). (2017, June 1) Retrieved January 15 2019, from https://www.statista.com/statistics/262875/development-of-the-world-population/

Appendix:

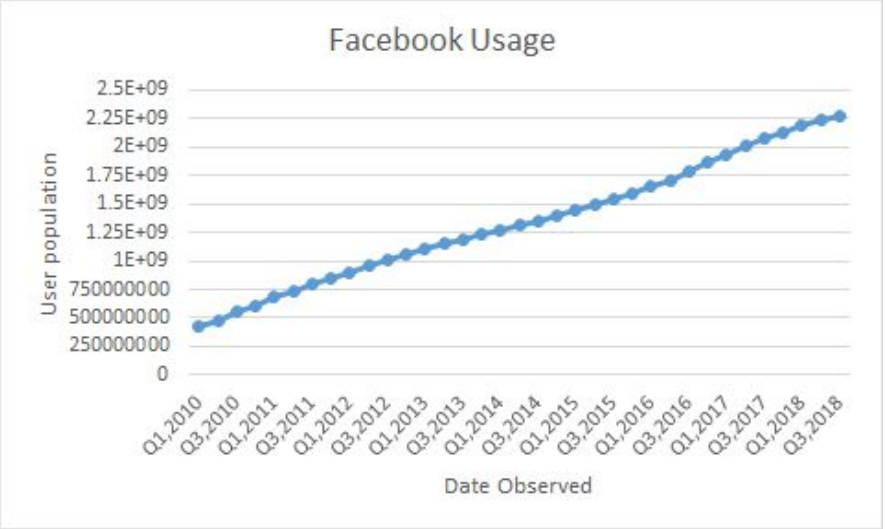

Figure 1.1: Facebook Usage

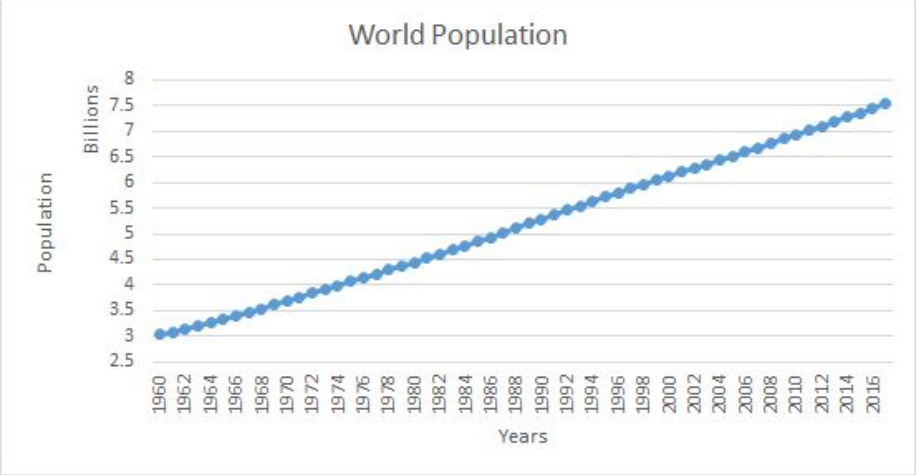

Figure 1.2: World Population

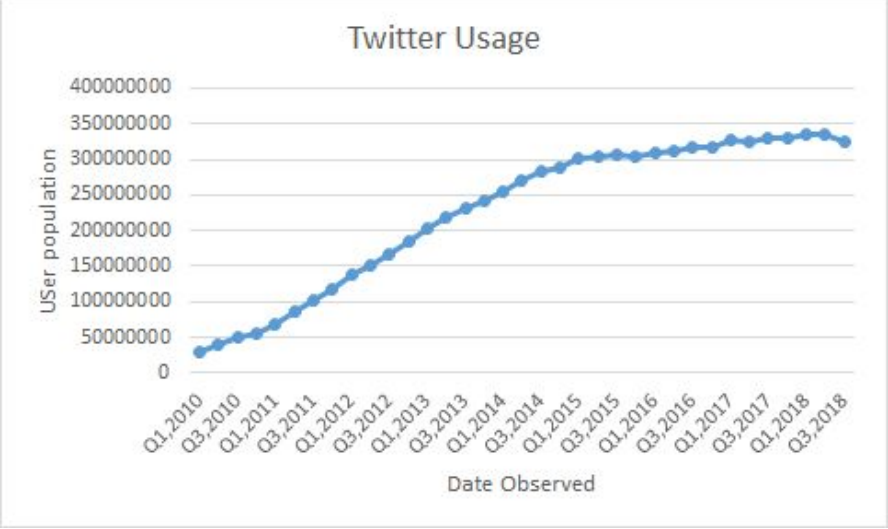

Figure 1.3: Twitter Usage