TwitterAnalysis

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Loading the libraries

```
options(scipen = 999) #avoid the scientific notation
library(twitteR)
library(writex1)
library(bitops)
library(tidytext)
library(devtools)
library(sentiment)
library(quanteda)
library(quanteda.textstats)
library(quanteda.textstats)
```

Getting Data

Based on the tweets from 4 different mobile manufacturing companies and then we will be doing text analysis and visualization for this companies.

We will be using twitter developer portal to get acces to tweets from twitter website.

```
consumer_key = "3N1fyHxwhVAVs5BCXzuQ8vbXV"
consumer_secret = "IVf6acHFxRWVQ006HNlDP9hygz0Xx1XkZdKF9cMZlbL717AIQu"
access_token = "1458218683017347078-UTwl4ULAneM8wgDJypPXsU2KNhI8pU"
access_token_secret = "4mLTYRLgJHSEoeV3qdz10WT7NdjwOH95AgvA8QCULhr0e"
setup_twitter_oauth(consumer_key,consumer_secret,access_token,access_token_secret)
```

```
## [1] "Using direct authentication"
```

Mobile Companies

We will be using data from the below mentioned companies: 1) Motorola 2) Xiaomi 3) Oneplus 4) Samsung

```
tweetsMotorola = userTimeline('MotorolaUS', n = 1000)
tweetsXiaomi = userTimeline('Xiaomi', n = 1000)
tweetsOnePlus = userTimeline('oneplus', n = 1000)
tweetsSamsung = userTimeline('SamsungMobile', n = 1000)

tweetsDfMotorola = twListToDF(tweetsMotorola)
head(tweetsDfMotorola,2)
```

```
##
text
## 1 @JoeStep92374964 So sorry for the inconvenience this may have caused. Since you have mentioned that you have spoken… ht
tps://t.co/R17f6Bjvlq
## 2
                                       @JPrice02 We're sorry for any inconvenience. If you wish to reconsider, we are standi
ng by to help. -Erwin
                                                          created truncated
##
    favorited favoriteCount
                                   replyToSN
         FALSE
                           0 JoeStep92374964 2022-07-23 13:06:04
## 1
## 2
         FALSE
                                    JPrice02 2022-07-23 00:51:55
                                                                      FALSE
             replyToSID
                                          id replyToUID
##
## 1 1550718119001427968 1550829601890467841 1594103780
## 2 1550642166065659904 1550644844086820864 22788127
##
                                                       statusSource screenName
## 1 <a href="https://www.sprinklr.com" rel="nofollow">Sprinklr</a> MotorolaUS
## 2 <a href="https://www.sprinklr.com" rel="nofollow">Sprinklr</a> MotorolaUS
    retweetCount isRetweet retweeted longitude latitude
## 1
               0
                      FALSE
                                FALSE
                                             NA
## 2
                0
                      FALSE
                                FALSE
                                             NA
                                                      NA
```

```
tweetsDfXiaomi = twListToDF(tweetsXiaomi)
head(tweetsDfXiaomi,2)
##
text
## 1 It is a beautiful thing to discover your own approach to style and hear your soul speak. #Xiaomi12Lite... https://t.co/L3
1RfFZybZ
## 2
           Look exquisite, be confident, and stay determined with #Xiaomi12Lite at your side. #MyStyleMyShot https://t.co/uT
VwCxkgtW
##
     favorited favoriteCount replyToSN
                                                     created truncated replyToSID
         FALSE
                          245
                                   <NA> 2022-07-23 13:00:12
                                                                  TRUE
## 1
                                                                              <NA>
##
         FALSE
                         431
                                   <NA> 2022-07-22 13:00:10
                                                                 FALSE
                                                                              <NA>
                      id replyToUID
## 1 1550828122404167680
                                <NA>
## 2 1550465728775704584
                                <NA>
##
                                                                      statusSource
## 1 <a href="https://prod1.sprinklr.com" rel="nofollow">Sprinklr Publishing</a>
  2 <a href="https://prod1.sprinklr.com" rel="nofollow">Sprinklr Publishing</a>
     screenName retweetCount isRetweet retweeted longitude latitude
## 1
         Xiaomi
                          25
                                  FALSE
                                            FALSE
                                                          NΑ
                                                                   NΑ
                                                                   NΑ
## 2
         Xiaomi
                           38
                                  FALSE
                                            FALSE
                                                          NA
```

```
tweetsDfOnePlus = twListToDF(tweetsOnePlus)
head(tweetsDfOnePlus,2)
```

```
##
                                                                                                       text
                          Low light = blurry nights? Keep things sharp with the #OnePlus10T <U+0001F4F8>
## 1
  2 What went into the #OnePlus10T's camera? Let's find out<U+0001F399><U+FE0F> https://t.co/8AJ7AF30jd
     favorited favoriteCount replyToSN
                                                    created truncated replyToSID
## 1
         FALSE
                         176
                                   <NA> 2022-07-23 14:00:01
                                                                 FALSE
                                                                             <NA>
                         182
##
         FALSE
                                   <NA> 2022-07-23 11:00:00
                                                                 FALSE
                                                                             <NA>
##
                      id replyToUID
## 1 1550843179389227010
##
  2 1550797874933276677
                                <NA>
##
                                                                   statusSource
## 1 <a href="https://twitter.com" rel="nofollow">Twitter for Advertisers</a>
     <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>
     screenName retweetCount isRetweet retweeted longitude latitude
                          13
                                 FALSE
                                            FALSE
## 1
        oneplus
                                                         NA
                                                                   NA
## 2
        oneplus
                                 FALSE
                                            FALSE
                                                         NA
                                                                   NΔ
                          16
```

```
tweetsDfSamsung = twListToDF(tweetsSamsung)
head(tweetsDfSamsung,2)
```

```
##
text
## 1
                  Privacy is nothing without strong security. Your privacy. Secured. #SamsungKnox\n\nWhich feature makes you
feel safe on your phone?
## 2 "What was once a novelty three years ago, is now the preferred choice for millions." TM Roh, President & Head of M
X... https://t.co/9CJngoKDK0
##
     favorited favoriteCount replyToSN
                                                    created truncated replyToSID
## 1
         FALSE
                         206
                                   <NA> 2022-07-22 10:00:01
                                                                 FALSE
                                                                             <NA>
                                   <NA> 2022-07-21 01:07:52
##
         FALSE
                         292
                                                                 TRUE
                                                                             <NA>
                      id replyToUID
##
## 1 1550420391751045122
                               <NA>
## 2 1549924084913688576
                                <NA>
##
               <a href="https://bn.co" rel="nofollow">Brand Networks Composer</a>
## 1
  2 <a href="https://studio.twitter.com" rel="nofollow">Twitter Media Studio</a>
        screenName retweetCount isRetweet retweeted longitude latitude
## 1 SamsungMobile
                             24
                                    FALSE
                                               FALSE
                                                            NA
                                                                     NΑ
## 2 SamsungMobile
                             31
                                     FALSE
                                               FALSE
                                                                      NΑ
                                                            NA
```

Sentiment Analysis

The below score indicates whether the tweets are positive, negative or neutral

4 Positive

2 Neutral

0 Negative

```
finalExtractedTweets = rbind(tweetsDfMotorola, tweetsDfXiaomi, tweetsDfOnePlus, tweetsDfSamsung)
encodeSource <- function(x) {</pre>
 gsub("<a href=\"http://twitter.com/download/iphone\" rel=\"nofollow\">Twitter for iPhone</a>", "iphone", x,fixed=TRUE)
 }else if(x=="<a href=\"http://twitter.com/#!/download/ipad\" rel=\"nofollow\">Twitter for iPad</a>"){
    gsub("<a href=\"http://twitter.com/#!/download/ipad\" rel=\"nofollow\">Twitter for iPad</a>","ipad",x,fixed=TRUE)
 }else if(x=="<a href=\"http://twitter.com/download/android\" rel=\"nofollow\">Twitter for Android</a>"){
   gsub("<a href=\"http://twitter.com/download/android\" rel=\"nofollow\">Twitter for Android</a>","android",x,fixed=TRUE)
 } else if(x=="<a href=\"http://twitter.com\" rel=\"nofollow\">Twitter Web Client</a>"){
   gsub("<a href=\"http://twitter.com\" rel=\"nofollow\">Twitter Web Client</a>","Web",x,fixed=TRUE)
 } else if(x=="<a href=\"http://www.twitter.com\" rel=\"nofollow\">Twitter for Windows Phone</a>"){
    gsub("<a href=\"http://www.twitter.com\" rel=\"nofollow\">Twitter for Windows Phone</a>","windows phone",x,fixed=TRUE)
 }else if(x=="<a href=\"http://dlvr.it\" rel=\"nofollow\">dlvr.it</a>"){
   gsub("<a href=\"http://dlvr.it\" rel=\"nofollow\">dlvr.it</a>","dlvr.it",x,fixed=TRUE)
  }else if(x=="<a href=\"http://ifttt.com\" rel=\"nofollow\">IFTTT</a>"){
   gsub("<a href=\"http://ifttt.com\" rel=\"nofollow\">IFTTT</a>","ifttt",x,fixed=TRUE)
  }else if(x=="<a href=\"http://earthquaketrack.com\" rel=\"nofollow\">EarthquakeTrack.com</a>"){
   gsub("<a href=\"http://earthquaketrack.com\" rel=\"nofollow\">EarthquakeTrack.com</a>","earthquaketrack",x,fixed=TRUE)
 }else if(x=="<a href=\"http://www.didyoufeel.it/\" rel=\"nofollow\">Did You Feel It</a>"){
    gsub("<a href=\"http://www.didyoufeel.it/\" rel=\"nofollow\">Did You Feel It</a>","did you feel it",x,fixed=TRUE)
 }else if(x=="<a href=\"http://www.mobeezio.com/apps/earthquake\" rel=\"nofollow\">Earthquake Mobile</a>"){
    gsub("<a href=\"http://www.mobeezio.com/apps/earthquake\" rel=\"nofollow\">Earthquake Mobile</a>","earthquake_mobile",x,
fixed=TRUE)
 }else if(x=="<a href=\"http://www.facebook.com/twitter\" rel=\"nofollow\">Facebook</a>"){
    gsub("<a href=\"http://www.facebook.com/twitter\" rel=\"nofollow\">Facebook</a>","facebook",x,fixed=TRUE)
 }else {
    "others"
 }
}
finalExtractedTweets$tweetSource = sapply(finalExtractedTweets$statusSource,function(sourceSystem) encodeSource(sourceSyste
tweetsSentiment<-sentiment(finalExtractedTweets$text) # instead used amazondf$text</pre>
finalExtractedTweets$polarity <- tweetsSentiment$polarity # Polarity denotes whther the tweet is neagtive, positive or neutr
al
```

Final Results for Sentiment analysis on tweets

head(finalExtractedTweets,5)

```
##
text
## 1 @JoeStep92374964 So sorry for the inconvenience this may have caused. Since you have mentioned that you have spoken… ht
tps://t.co/R17f6Bjvlq
## 2
                                       @JPrice02 We're sorry for any inconvenience. If you wish to reconsider, we are standi
ng by to help. -Erwin
## 3
                                                                  @JPrice02 Please let us know if you need help arranging th
e repair (2/2) -Erwin
## 4 @JPrice02 We understand. A swollen battery is not a safety issue. It is rare but typically occurs on older batterie… ht
tps://t.co/mUXwIF3DvD
                       @JPrice02 Hi, we're sorry to hear that. May ask if you are still having issues with your apps and ga
## 5
metime? Thanks -Erwin
    favorited favoriteCount
                                  replyToSN
                                                         created truncated
                   0 JoeStep92374964 2022-07-23 13:06:04
## 1
        FALSE
## 2
        FALSE
                         0
                                   JPrice02 2022-07-23 00:51:55
                                                                     FALSE
                         0
## 3
        FALSE
                                   JPrice02 2022-07-23 00:35:35
                                                                    FALSE
## 4
         FALSE
                          0
                                   JPrice02 2022-07-23 00:35:07
                                                                     TRUF
## 5
         FALSE
                                   JPrice02 2022-07-22 23:44:56
                                                                     FALSE
##
             replyToSID
                                         id replyToUID
## 1 1550718119001427968 1550829601890467841 1594103780
## 2 1550642166065659904 1550644844086820864 22788127
## 3 1550633911218323457 1550640736571359233 22788127
## 4 1550633911218323457 1550640617901940736 22788127
## 5 1550620425583038464 1550627990064828418 22788127
##
                                                       statusSource screenName
## 1 <a href="https://www.sprinklr.com" rel="nofollow">Sprinklr</a> MotorolaUS
## 2 <a href="https://www.sprinklr.com" rel="nofollow">Sprinklr</a> MotorolaUS
## 3 <a href="https://www.sprinklr.com" rel="nofollow">Sprinklr</a> MotorolaUS
## 4 <a href="https://www.sprinklr.com" rel="nofollow">Sprinklr</a> MotorolaUS
## 5 <a href="https://www.sprinklr.com" rel="nofollow">Sprinklr</a> MotorolaUS
     retweetCount isRetweet retweeted longitude latitude tweetSource polarity
## 1
               0
                     FALSE
                               FALSE
                                           NA
                                                             others neutral
               0
                      FALSE
                               FALSE
## 2
                                            NA
                                                     NA
                                                             others neutral
## 3
               0
                     FALSE
                               FALSE
                                            NA
                                                     NA
                                                             others neutral
                      FALSE
                               FALSE
## 4
               0
                                            NA
                                                     NA
                                                             others negative
## 5
                      FALSE
                               FALSE
                                                             others positive
```

Extracting Results into excel to visualize in Tableau

#write_xlsx(finalExtractedTweets,'TweetsData.xlsx')

Text Analysis and Visualization

We will be first visualizing text for individual companies and generate some isnights

```
ourCorpusMotorola = corpus(tweetsDfMotorola,text_field = 'text')
ourCorpusXiaomi = corpus(tweetsDfXiaomi,text_field = 'text')
ourCorpusOnePlus = corpus(tweetsDfOnePlus,text_field = 'text')
ourCorpusSamsung = corpus(tweetsDfSamsung,text_field = 'text')
# Lets remove few stop words and punctuation
ourTokensMotorola <- tokens(ourCorpusMotorola, remove_punct = TRUE)</pre>
ourTokensXiaomi <- tokens(ourCorpusXiaomi, remove_punct = TRUE)</pre>
ourTokensOnePlus <- tokens(ourCorpusOnePlus, remove_punct = TRUE)</pre>
ourTokensSamsung <- tokens(ourCorpusSamsung, remove_punct = TRUE)</pre>
ourTokensMotorolaNS <- tokens select(ourTokensMotorola, stopwords('en'),selection = 'remove', min nchar =4)
ourTokensXiaomiNS <- tokens_select(ourTokensXiaomi, stopwords('en'),selection = 'remove' , min_nchar =4)
ourTokensOnePlusNS <- tokens_select(ourTokensOnePlus, stopwords('en'),selection = 'remove' , min_nchar =4)
ourTokensSamsungNS <- tokens_select(ourTokensSamsung, stopwords('en'),selection = 'remove' , min_nchar =4)
ourMatrixMotorola <- dfm(ourTokensMotorolaNS)</pre>
ourMatrixXiaomi <- dfm(ourTokensXiaomiNS)</pre>
ourMatrixOnePlus <- dfm(ourTokensOnePlusNS)
ourMatrixSamsung <- dfm(ourTokensSamsungNS)</pre>
# Top 5 features for each company
topfeatures(ourMatrixMotorola,5)
                                    # Motorola
##
     thanks
               sorry reaching
                                  phone
                                            help
##
        229
                 168
                                             101
topfeatures(ourMatrixXiaomi,5)
                                    # Xiaomi
                xiaomi #risetothechallenge
                                                                                check
##
                                              #mastereveryscene
##
                   121
                                         81
                                                              56
                                                                                   52
##
    #redminotellseries
##
topfeatures(ourMatrixOnePlus,5)
                                    # Oneplus
    #oneplus10pro
                          oneplus
                                     @oneplus_in #shotononeplus
                                                                            find
##
                               45
                                              32
                                                                              16
topfeatures(ourMatrixSamsung,5)
                                   # Samsung
```

ultra

159

series

139

##

##

##

##

#galaxys22 #samsungunpacked

Wordcloud for most used words in the 5 companies

textplot_wordcloud(ourMatrixMotorola,max_words = 200) # Motorola

289

@bts_twt



textplot_wordcloud(ourMatrixXiaomi,max_words = 200)

Xiaomi

```
developed @ claytonboyd were flowered to claytonboyd sharkssummer bhotography power flowered stay dual sharkssummer bhotography power flowered stay dual sharkssummer bhotography power flowered flowered short experience flowered flowered
```

```
textplot_wordcloud(ourMatrixSamsung,max_words = 200)  # Samsung
```



Let's visualize plot for each company based on frequency of words which has been repeated atleast 10 times.

```
# Motorola
dfmIaugMoto = dfm(ourMatrixMotorola)
dfmIaugMoto = dfm_trim(dfmIaugMoto , min_termfreq=10)
textplot_wordcloud(dfmIaugMoto,max_words = 200 , min_size = 2)
```

receive feedback updates posting frustrationswelcome devices software android update first provide glad settings goodstylus inconvenience correct problem steps back please thank assist info razr share erwin feel help device sale motoalso ^{link}free hard <u>a</u>battery 6 Φ concern helloeage > wait working motorola region information caused upgrade teamavailable adates apologies writing tweetready coming

```
# Xiaomi
dfmIaugXiaomi = dfm(ourMatrixXiaomi)
dfmIaugXiaomi = dfm_trim(dfmIaugXiaomi , min_termfreq=10)
textplot_wordcloud(dfmIaugXiaomi,max_words = 200 , min_size = 2)
```

coming amazing styleenjoy power smart capture #xiaomiimagery color know want #xiaomi11tpro find come mobile #xiaomi12series also 2022share experience take object of the come mobile #xiaomi12series also 2022share experience take object of the challenge shot allook #masterevery scene of the camera check #xiaomi12lite every need photography global ready make #xiaomi12 thanks launch object of the composition of t

```
# Oneplus
dfmIaugOnePlus = dfm(ourMatrixOnePlus)
dfmIaugOnePlus = dfm_trim(dfmIaugOnePlus , min_termfreq=10)
textplot_wordcloud(dfmIaugOnePlus,max_words = 200 , min_size = 2)
```

```
@oneplus_usa
#oneplus10t launch
first smartphone
camera @petelau tike oneplus
like oneplus 9000
#oneplus10pro
#shotononeplus
just find
great phone
#oneplusbudspro
looking
```

```
# Samsung
dfmIaugSamsung = dfm(ourMatrixSamsung)
dfmIaugSamsung = dfm_trim(dfmIaugSamsung , min_termfreq=10)
textplot_wordcloud(dfmIaugSamsung,max_words = 200 , min_size = 2)
```

```
together https://t.co/bjvuzimdxu keep
  guess
                    capture
                                    nights
                awesome
                                    live
hear
                  #withgalaxy
                                   today
             #withgalaxy

even right

nightography
                                    think
                                   never
             #gal
captured
cityshare #O
                                    ∈next
 startready seriesgalaxy
는 waiting ´
    #teamsamsunggalaxy :
colors#galaxywatch4watch o
                                   year
              behind want or
 camera
           #galaxyzflip3 @ledeckaester
  dark
```

Visualization of all the 5 twitter accounts together

```
our_corpus <- corpus(finalExtractedTweets,text_field = 'text')
head(our_corpus,2)</pre>
```

```
## Corpus consisting of 2 documents and 17 docvars.
## text1 :
## "@JoeStep92374964 So sorry for the inconvenience this may hav..."
##
## text2 :
## "@JPrice02 We're sorry for any inconvenience. If you wish to ..."
```

```
# Lets remove few words and punctuation

our_tokens <- tokens(our_corpus, remove_punct = TRUE)
words_to_be_removed<-c() # Currently we are not removing any additional extra words
our_tokens_nonstopwords<- tokens_select(our_tokens, pattern = c(stopwords('en'), words_to_be_removed),selection = 'remove',
    min_nchar = 4)

# Document feature Matrix to show frequency of tokens in each document

our_matrix<-dfm(our_tokens_nonstopwords)
our_matrix<-dfm_trim(our_matrix, min_termfreq = 10, min_docfreq = 5)
nfeat(our_matrix) #number of tokens in all documents</pre>
```

[1] 475

#Most mentioned words

topfeatures(our_matrix,10)

##	#galaxys22	thanks #sams	sungunnacked	sorry
##	289	274	245	169
##	ultra	like	series	reaching
##	162	154	151	150
##	phone	help		
##	150	137		

topfeatures(our_matrix,30)

alaxys22 thanks #samsungunpacked sorry	orry
289 274 245 169	169
ultra like series reaching	hing
162 154 151 156	150
phone help know xiaom:	aomi
150 137 129 123	121
please hear check learn	earn
117 117 112 108	108
<pre>bts_twt galaxy understand share</pre>	hare
99 91 89 83	87
thank time #risetothechallenge experience	ence
85 84 81 78	78
look best hello ready	eady
75 75 74 74	74
epic need	
73 71	

```
set.seed(42)
```

textplot_wordcloud(our_matrix, max_words = 200, min_size = 1, max_size = 4) # All 5 companies combined

```
answer photographer mightography working apps sure free nightography working apps
                          light awesome features #redminote11series
  #xiaomi12lite #galaxytabs8 inconvenience global assist
                          latest today capture #risetothechallenge available #xiaomi12
           latest favorite night never live thank take motomobile photos low glad comes of hello helpphone galaxy join wait launch share ultra Sorry learn right waiting coming of the soon was coming of the soon wait launch to share ultra soon wait launch to share ultra soon wait waiting coming of the soon wait launch to share ultra soon wait launch to share waiting waiting the soon was soo
coming of look still 2022good time
                                                                                                                                                                                                                                             best or rical be
   nextcasejust#g
                                                                                                                                                                                                                                                                                                                                      stay gift
                                                                                                                                                                                                                                                                                                                                      every
                                                                                                                                                                                                                                                                                                                                                    2021
  world experience series
                                                                                                                                                                                                                                                                                        startbatterv
tell even make know first. Smart perfect -erwin xiaomi
                                                                                                                                                                                                                                      epic watch behind
                                                                                                                                                                                                                                        motorola shot
    information also understand
                                                                                                                                                                                                                                        great provide together
  game always #oneplus10pro
               concern devices #galaxyxbts
                                                                                                                                                                                                                                                                                             amazing meet
              #makenightsepic #mastereveryscene
    #xiaomi12series
                                                                                                                                                                                                                                                                     charging show
                                                                                                                                 smartphone samsung #xiaomi11tpro tweet
                                 feature
```

Better Visualization of wordcloud

for all the 5 companies

```
# Text plot showing visualization of all the companies together

corpus_subset(our_corpus, screenName %in% c("MotorolaUS", "Xiaomi", "oneplus", "SamsungMobile")) %>%
   tokens(remove_punct = TRUE) %>%
   tokens_remove(stopwords("english")) %>%
   dfm() %>%
   dfm_group(groups = screenName) %>%
   dfm_trim(min_termfreq = 5, verbose = FALSE) %>%
   textplot_wordcloud(comparison = TRUE, max_words = 200)
```

