

# Business Intelligence from Twitter

## Executive Summary

Social media platforms are becoming ever valuable to businesses today. These platforms provide additional means for increased outreach and marketing, public relations, and customer relationship management. With so many platforms—and so many active users on each platform—comes difficulty in aggregating and understanding the rich data they provide.

Twitter is perhaps the most fluid and responsive of the popular social media platforms. For example, when Osama Bin Laden was killed in 2011, the news of his death traveled faster through Twitter than through any other network. It is vital that companies tap into the power of the Twitter platform and become aware of the conversations surrounding their business.

This VBA program gathers recent tweets surrounding a given company (any keyword, username, or hashtag) and evaluates the tweets for certain characteristics. It parses the tweets' language to try to determine the mood of the tweets, and provides aggregate data regarding the generalized current reputation of the company on Twitter. It also displays the top three tweets for the given search, as well as any tweets that were flagged to be positive or negative (in terms of mood). This program can be a part of the marketing or public relations managers' toolkits.

## Implementation

Below is a high-level overview of the VBA procedure. In the VBA source code, comments are included that correspond to the points below, referenced by the number code (e.g. "2.1.1").

1. Get user input and conduct the search
  - 1.1. If no input is provided or the user clicks "Cancel", the program is terminated
  - 1.2. User input is URL encoded for proper transmission to and parsing by the Twitter server
  - 1.3. Data sent and retrieve via Web Query
  - 1.4. Data saved to temporary worksheet

2. Gather intelligence from search results and construct the results worksheet
  - 2.1. Define typical phrases found in opinionated tweets
    - 2.1.1. Positive and negative language samples are stored in arrays
  - 2.2. Check tweets for phrases
    - 2.2.1. Algorithm for extracting tweets from Web Query results is defined
    - 2.2.2. Each tweet is compared against the positive and negative language arrays for matches
      - 2.2.2.1. Matches and counts are stored for later reference
  - 2.3. Create results worksheet (appropriate sheet name is assigned based on existing worksheets)
    - 2.3.1. Header with search metadata (query, query type, date) is rendered
    - 2.3.2. Basic formatting is applied to the sheet (background colors, font colors and weights, etc.)
    - 2.3.3. Data is rendered to the sheet (aggregate counts, overall health indicator, top tweets, etc.)
    - 2.3.4. Positively tagged tweets are rendered, if any
    - 2.3.5. Negatively tagged tweets are rendered, if any
    - 2.3.6. Finish up and polish formatting
3. Temporary data-holder worksheet removed

## Learning and Conceptual Difficulties

The most challenging part of this type of project is correctly parsing the mood of non-standardized text. With the complexity of human communication comes great difficulty for computers to correctly identify meaning. For this reason, tweets flagged as positive or negative are reproduced to the user for manual review. However, simple text matching does an adequate job much of the time and can provide at least some value to the user of the program.

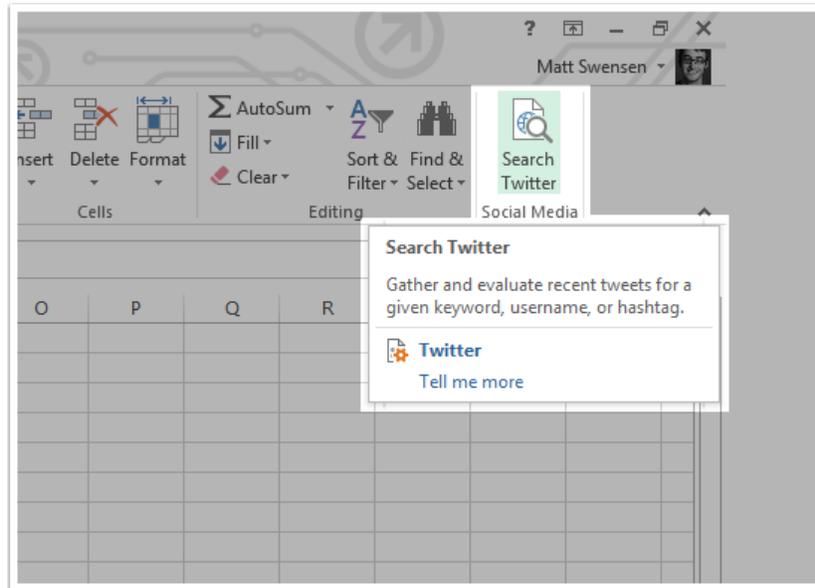
## Assistance

The only portion of the program that I did not write myself was the function that received a string input and returned a URL encoded version of said string as output. I found during the development of my program that the special characters that signify usernames and hashtags on Twitter (the at symbol and pound sign, respectively) needed to be encoded properly to prevent the Twitter search engine from returning an error. I searched Google to see if VBA had a URL encoding/decoding implementation out of the box, and learned that it did not but that various implementations were

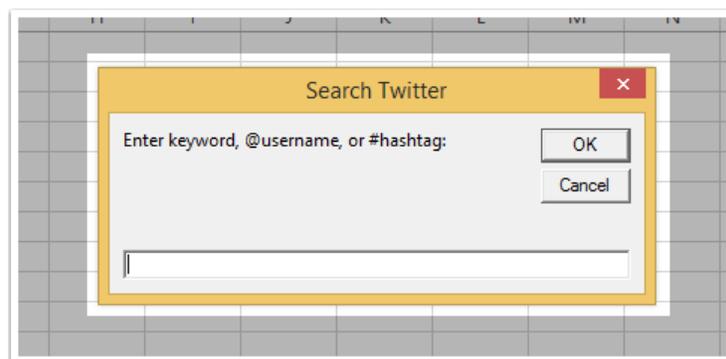
available on open-source and Q&A-type websites. I copied and pasted a suitable solution and referenced the source URL in a proximate VBA comment.

## Detail

After opening the workbook (“Twitter.xslm”), the user begins clicking the custom button entitled “Search Twitter,” located in the “Social Media” group on the Home Tab.

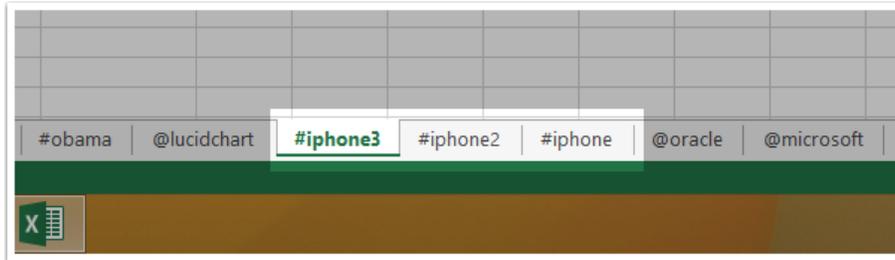


The user is then prompted for the desired search criteria. Regular keywords, usernames (preceded by “@”) and hashtags (preceded by “#”) are all supported.



At the conclusion of the process, a new worksheet is added to the workbook, with the user input being the title of the new worksheet. If the user had previously conducted an identical search, an appropriate digit (2, 3, 4, etc.) is appended to the search text to form the title of the new worksheet.

This non-destructive approach allows for keeping historical data and measuring trends over time if desired.



Information about the search is recorded at the top of the results worksheet.

A	B	C	D	E
1				
2	Search query:		obama	
3	Search type:		Keyword	
4	Date:		4/13/2014 13:57	
5				
6	Positive Tags Found:	0		
7	Negative Tags Found:	1		
8	Neutral Tweets:	20		
9				
10	Overall Health:	Bad		

The results of the analysis are then provided, along with an overall status that is calculated from the positive-to-negative tag count ratio. The first, second, and third search results are also reproduced so that the user can see what the first impressions are for others who may be searching the same text.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1														
2	Search query:		@lucidchart											
3	Search type:		Username											
4	Date:		4/13/2014 13:40											
5														
6	Positive Tags Found:	5												
7	Negative Tags Found:	0												
8	Neutral Tweets:	12												
9														
10	Overall Health:	Good												
11														
12	Top Tweet:	@alenguavo Download our iPad app from the app store. We don't currently have an Android app, but you can use Chrome. :)												
13	2nd Tweet:	How can I see my @LucidChart content in an IPAD or Android tablet?												
14	3rd Tweet:	messin with @lucidchart it's no omnigraffle but workable #layout												
15														
16	Positive Tweets:	.@lucidchart looks awesome, _and_ hooked us up with some free educational licenses. Thanks! HT @kathleenfisch												
17		@lucidchart love your app, never going back to visio or omnigraffle!												
18		Todav one of mv team used @lucidchart to draw "content strategv" represented as a pink database of magic and love. That is all.												

