

# EFFECT OF TWITTER TWEETS ON THE SHORT TERM STOCK PRICES AFTER DONALD TRUMP'S PRESIDENCY

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## **Abstract:**

In this paper we are analysing the short term stock movements on the basis of public sentiments expressed on twitter and other social media is the basic purpose of this research. Public sentiments and opinions about various matters are perfectly represented in social media (especially twitter). Many researches have tried to prove that some of the tweets may be correlated with the DJIA. This proposal is to observe and analyse how stock price changes are correlated with tweets that contain public opinions or sentiments. Also whether there exists a correlation between stock indexes and tweets as well as with VIX (volatility index). Will just following what's happening on twitter helps in predicting the stock market the next day? Can a single person who one day decides to type a few words affect the entire market? If it does how long will it affect.

Index words: *Volatility Index, Dow Jones Industrial Average, Twitter, Public sentiments*

## **I. Introduction**

In this era of information communication speed has become faster. Before the introduction of internet, trading used to be a time consuming process. News and information took time to reach all sections of society in the free market. Now information is at the fingertips of people as hot as they are born. Can a single person who one day decides to type a few words affect the entire market? If it does how long will it affect.

Social media is one of the sources of information about company's financial conditions, on the other hand, the frequency stock trading market does not lack the efforts to understand better the information released on social media. Through conducting an analysis of Tweets, the results can be used as indicators in predicting stock prices. Twitter is a very popular microblogging website where people follows those they are interested and communicate with them through tweets. It was launched in 2006 and now it has got more than 336 million monthly active users worldwide as of January 2018(Stipp, 2018). Twitter's popularity has led to a lot of attention of researchers involving various streams of research. For example, by examining the follower network, (Java & Song, San Jose, California — August 12 - 12, 2007)found that there is a great variety in users' intentions. Also, (Romero, 2010)showed that the correlation between popularity and

influence is weaker than it might be expected, because most users are passive information consumers and do not forward the content to the network.

There is also prior work on analysing correlation between web buzz and stock market. (Antweiler, 2004) determine correlation between activity in Internet message boards and stock volatility and trading volume. Various social media platforms like twitter have a very widespread reach to the public. More importantly, this widespread reach has been increasing rapidly over the years and is expected to grow in future (Dossani, 2011).

One of the known examples of short stock predictions by analysing Tweets is claimed by an advertising company in Austin, Texas a software product monitors the president's Tweets, extracts the Tweets, and when a specific company is mentioned, an algorithm decides to shorten the stocks in real time based on sentiment analysis of the Tweets demonstrates a negative sentiment. Twitter is changing the nature of our public discourse. Accounting and financial information released through traditional reports are sources of information for investors. This information is then made public for specific periods and for specific purposes. Many countries' political leaders are using social media as one of the key platforms to deliver messages to the public. Current (45th) President of the U.S.A., Donald J. Trump, has posted more than 35.9 thousand Tweets on his official account (@realDonaldTrump) and had about 39.5 million followers as of September 2017.

The efficient market hypothesis (EMH) states that financial market movements depend on news, current events and product releases and all these factors will have a significant impact on a company's stock value(Fama, 1965)Twitter has got a lot of popularity in recent times.

The information derived from tweets are useful for making predictions.(Paroubek, 2010).In this paper, we are going to analyse how Twitter posts are influencing S&P 500 index.

We have taken Twitter as one of the social medium of cyber universe because of the following reasons:

- The best social media which satisfies both social interaction and informative content is twitter (Ramsden, 2018).
- Considering the vast user base tweets allows information to spread as fast as possible like a virus.
- Free information highly relevant for investors and other stock market followers(Belbey, 2015).
- All major press and news release institutions have twitter accounts and helps us to get most up to date information.

The reason for taking S&P 500 index is because the volatility of this index is high as compared to other stock indexes. This index alone has more than \$7 trillion market capitalisation. We have taken an American stock index for the analysis because it is the country with largest share of twitter users(Lipman, 2014). The time span (after Donald Trump's presidency) is sort because twitter has become more popular by the time Mr. Trump became the president of the United States of America(Shen, 2017). In addition to above, collection of historical data for more than a year will be challenging and might result in a generalised analysis.

## **II. Review of Literature**

The advent of social media has provided organizations and individual users a diverse set of tools and channels for disseminating messages and eliciting feedback, often in real time and with extensive reach.

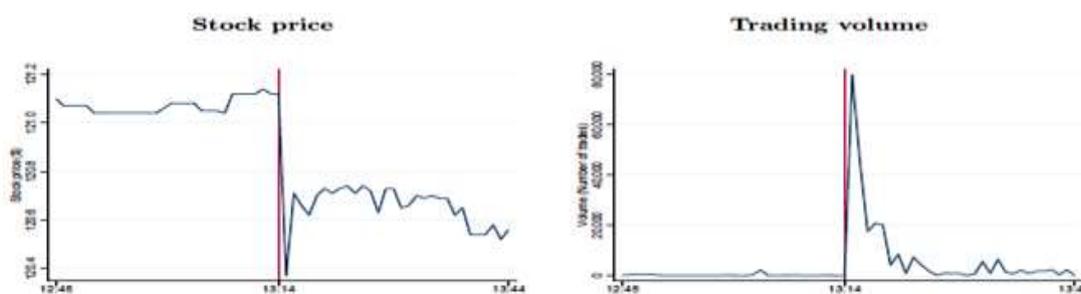
(Kaplan & Haenlein, 2010, Paris) classified the social media into six categories, namely: blogs, social networking sites e.g. Facebook, LinkedIn, Twitter; virtual second worlds e.g. Second Life; collaborative projects e.g. Wikipedia; content communities e.g. YouTube and virtual game worlds. Social media enables

dynamic interaction among organizations, groups and individuals, allowing them to act as passive and active participants in online conversations, and as concurrent producers and consumers of internet content.

(Singh & Sonnenburg, 2012) The rich feedback mechanisms embedded in social media platforms serve as open channels for crowd sourcing. According to the Financial Times, even the individual act of clicking web links while searching for information in the internet can be considered as contributing to a crowd sourcing activity, since search engines such as Google monitor and aggregate the number of clicks that web pages receive and use these as basis for ranking its search results.

Social media marketing is also an organization's strategic and systematic use of social media platforms, online communities, and social networks to convince stakeholders that its causes are meaningful (Neti, 2011). However, this is only possible if a social media campaign possesses the right messengers, message, and environment. Following are some of the tweets that spiked up the market or crashed.

-Stock price of Toyota falls after President Donald trump threatens the company regarding taxes (Kurov & Wolfe, 2018).



The figure shows the price and trading volume of Toyota ADRs in the 60-minute window around 13:14 on January 5, 2017 when then President-elect Trump tweeted: "Toyota Motor said will build a new plant in Baja, Mexico, to build Corolla cars for U.S. NO WAY! Build plant in U.S. or pay big border tax." The figure is constructed using minute-by-minute transaction data from Genesis Financial Technologies.

Figure 1. The figure shows the price and trading volume of Toyota ADRs in the 60-minute window around 13:14 on January 5, 2017 when President Trump tweeted

(Oh, 2011) investigated only stock microblogging platforms and came out with the result that the investors are strongly influenced by trending sentiment on stock microblogging platforms.

(Zhang, 2011) dealt with correlating the emotional outbursts of audiences on twitter with the next-day stock prices of firms. However, stock microblogging activities and emotional outbursts on twitter cannot be controlled by firms themselves, hence there is a need to study those social media platforms and activities which are sensitive to firms' strategies.

(Ruiz, 2012) addressed correlation of traded volume change and stock price change of a company with the company's twitter activity. They were able to find out a convincing correlation between the same-day traded volume and a feature which quantified the number of connected posts on twitter.

However, correlation with stock prices came out inconclusive. Finding out a relationship with stock prices has wide implications. This paper will deal with deep social media analysis and specifically relate stock price changes.

### **III. Research design**

#### **Statement of the problem**

The impact on certain tweets on the entire U.S. equities market has a major impact on Traders and investors. Seemingly no company is safe from the short-term pricing volatility created by a tweet. No matter the scope of an entity's core business, if it is publicly traded, then statements issued by some users via Twitter can impact valuations.

According to the study by the Wall Street Journal, known as the "Trump Target Index," addressed this problem. Here, about 12 stocks were impacted by Trump's Twitter releases during the election year of 2016 through the first quarter of 2017. The prices of the stock fell drastically in the initial days and then there was a subsequent recovery of prices. One of the most important aspects of Donald Trump's successful run to the White House, and subsequent administration, has been his personal Twitter use. Trump has been a user since 2009, with more than 20 million followers and issuing more than 30,000 tweets. An active user of Twitter, Trump address the citizens of the U.S. directly without the need of mainstream media outlets.

To summarise

- The impact of tweets on the entire U.S. equities market has a major impact on traders and investors. A single tweet is able to divert the market!
- No company is safe from the short-term pricing volatility created by tweets of accredited personalities and investors.
- Since most number of twitter users are in America, NYSE has been taken for data purposes.
- Short term prices of shares are highly unpredictable due to such online pings.

The research gap exists due to the following factors. There are many research papers on factors affecting stock prices. Anything that play with people's emotions or thoughts can affect buying or selling decision. Twitter is a social media platform with millions of users where information (true / fake) is available. Not many research has been done on how much can a single tweet affect the stock prices in a short span of time. This paper is limited to happenings after Donald Trump's presidency. Data collection is restricted to secondary data due to time constraints and to reduce cost for the research. Cyber universe is a broad concept. But, for the purpose of this research it has been reduced a few social interactive platforms.

#### **Research Objectives –**

- 1.) Examine using relevant data the nature and extent of a relationship between cyber universe transactions and short term stock prices of selected companies of NYSE, if at all any relationship exists.
- 2.) Understand whether people's sentiments and decisions are influenced by the cyber universe transactions of their idols, role models or celebrities.
- 3.) Evaluate whether the timeline i.e. the period of Donald Trump's presidency is suitable for the purpose of our study.

**Conceptual framework**

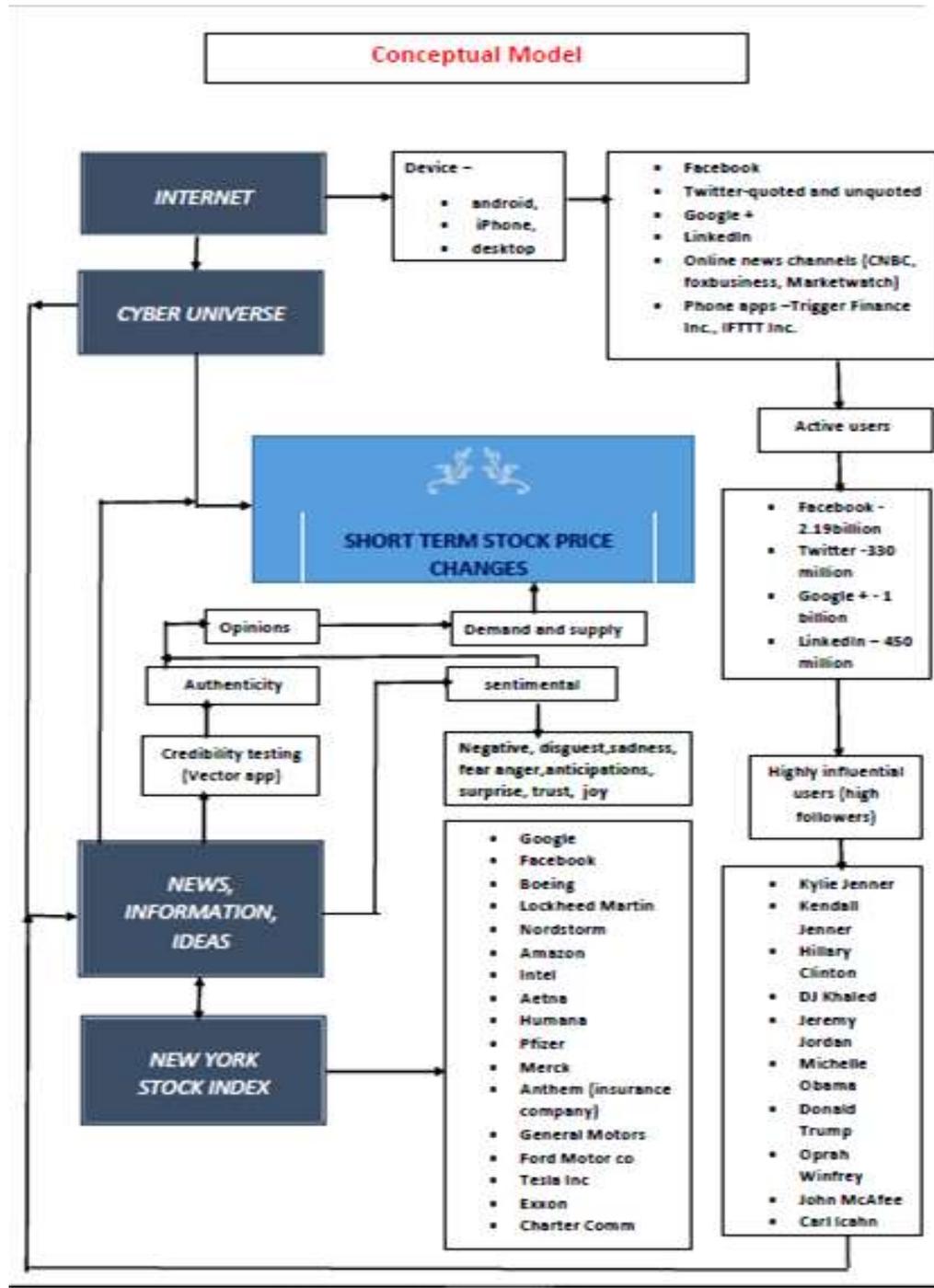


Figure 2: The figure shows the Theoretical and Conceptual Framework.

**Source of data**

This research is mainly quantitative in nature and for the purpose of data, secondary data has been used. Some of the main sources of data are from

1. [www.nyse.com](http://www.nyse.com)
2. [www.wsj.com](http://www.wsj.com)
3. [www.marketwatch.com](http://www.marketwatch.com)

4. [www.nyxdata.com](http://www.nyxdata.com)
5. [www.twitter.com](http://www.twitter.com)
6. [www.stockcharts.com](http://www.stockcharts.com)
7. [finance.yahoo.com](http://finance.yahoo.com)

### **Research Questions**

- 1) Does a correlation exist between cyber universe transactions and short term stock prices of selected NYSE companies?
- 2.) Are these short term stock prices sensitive to the cyber universe transactions of a selected class of persons who have significant following on the cyber universe?
- 3.) Do people act or are their sentiments affected by news reports before they ascertain its credibility?
- 4.) Is the period of Donald Trump's presidency an apt timeline for the purpose of our study?

### **Hypothesis**

The above research questions had led to the following hypothesis

H0: Short term stock prices of S&P 500 are not influenced by the role of celebrities and their tweets after Donald Trump's presidency.

H1: Short term stock prices of S&P 500 are influenced by the role of celebrities and their tweets after Donald Trump's presidency.

### **Data analysis tools**

The analysis of data will be done with the help of Excel/Spreadsheet and EViews and SPSS software.

### **Expected outcomes**

We are trying to show that a strong correlation exists between rise/fall in stock prices of a company to the public opinions or emotions about that company expressed on twitter through tweets. The main contribution of our work is the interpreting and analysis of tweets that can judge the type of sentiment present in the tweet. The tweets are classified into three categories: neutral, positive and negative. We are expecting to see an abnormal volatility in prices due to positive or negative emotions or sentiment of public in twitter about a company.

### **Limitations**

For the purpose of this research the following areas has been unexplored-

1. Other companies Listed in NYSE other than those taken for the purpose of research
2. Companies listed in other stock exchanges.

The research is limited to happenings after Donald Trump's presidency. Data collection is restricted to secondary data due to time constraints and to reduce cost for the research. Short term stock prices are not

only affected by tweets or false news from a few people but aggregate of all the investors and traders (Worrell et al., 2013). However, this research is limited to the habits of a few people. Cyber universe is a broad concept. But, for the purpose of this research it has been reduced to about 10 social interactive platforms, most importantly twitter.

#### **IV. Data analysis and interpretation.**

The parameters for data collection are as follows

1. Whether the company or person possess a twitter account, ‘
2. Wide follower base (more than a million)
3. Multiple post per month
4. Tweets are responsive to user’s comments

Table 1 showing percentage of change caused due to tweets.

<b><u>Celebrity/Personality/ Companies Tweeted</u></b>	<b><u>Company affected, Date</u></b>	<b><u>Tweet</u></b>	<b><u>Increase or decrease in share price</u></b>	<b><u>Sentiment analysis ( +ve/-ve)</u></b>
President Donald Trump	Nordsrorm (JWN) (8 <sup>th</sup> Feb 2017)	Trump said his daughter has been treated “unfairly” by the company.	Shares dropped 0.7% over a span of 1 minute.	-ve
	Boeing (BA), (6 <sup>th</sup> December 2016)	Trump criticized costs for the Air Force One plane manufactured by the company	Shares jumped more than 9 percent through Tuesday’s close	-ve
	United Technologies(UTX) (Nov 24)	About working on a deal with Dow component to <a href="#">keep jobs at its Carrier unit</a> in Indiana	Shares gained 0.6% following thanksgiving holiday and advanced 2.9% on Tuesday	+ve
	Lockheed Martin(LMT) (Dec 12)	tweeted about the U.S. defence company’s <a href="#">F-35 fighter jet program</a> , calling it “out of control	Shares fell 2.5 percent on the day of the tweet	-ve
	General Motors (GM) (Jan 3)	Trump threatened a “big border tax” on GM for making its <a href="#">Chevy Cruze model in Mexico</a>	shares down nearly 5 percent	-ve
	Ford Motors (Nov 17)	“company <a href="#">would keep jobs in Kentucky</a> ”	Shares are up about 4 percent	+ve
	Fiat Chrysler (Jan 9)	Trump applauded the company for plans to invest in Michigan and Ohio plants	Drop of nearly 5% on Tuesday after French investigators referred the co. for	+ve

			prosecution over emissions	
	Toyota motors (TM)	Big border tax	Toyota's shares fell 1.7 percent Friday in Tokyo	-ve
	Apple Inc	Apple prices may increase because of the massive Tariffs we may be imposing on China. Make your products in the United States instead of China. Start building new plants now. Exciting! #MAGA	The company's stock fell nearly 1.6 per cent.	-ve
	Amazon	Paying "little or no taxes "	His tweet sent the stock down about 4 percent	-ve
Kylie Jenner	Snap Inc	...Ugh this is so bad	a 7 per cent drop in Snapchat's value	-ve
Oprah Winfry	<a href="#">Weight Watchers</a>	"Eat bread. Lose weight. Whaaatttt? #ComeJoinMe"	stock soaring 20 per cent last month	+ve
Elon Musk	Tesla	taking Tesla private and funding has been secured	Shares of Tesla Motors (\$TSLA) ended 11% up.	+ve
Tim Hrenchir	Westar energy	<a href="#">@WestarEnergy</a> linemen made a demonstration regarding electrical line safety 2day at Safe Kids Day at the <a href="#">@TopekaZoo</a>	Westar Energy dropped 4.5% post-market	-ve

## V. Findings and suggestions

Market sentiment helps investors understand a particular security or financial market. In order to compute sentiment for any tweet we have classified each incoming tweet into positive, negative or neutral. Follower's attitude can be used to identify variables such as emotion, tone, etc. A positive tweet is aggregated as  $M_t^{\text{Positive}}$  while total number of negative tweets as  $M_t^{\text{Negative}}$ . We have made use of Emoticons it is one of the simplest way to detect polarity i.e., positive and negative affect of a message as give in Table 1. Where  $M_t^{\text{Positive}}$  and  $M_t^{\text{Negative}}$  represent number of logarithm on a particular day t. Logarithm of bullishness ( $B_t$ ) measures the share of surplus positive and negative signals and also gives more weight to large number of messages in a specific sentiment (positive or negative). Message volume for a time interval t is simply defined as natural logarithm of total number of tweets for a specific stock index is given as

$$B_t = \ln \frac{1 + M_t^{\text{positive}}}{1 + M_t^{\text{negative}}}$$

Table 2: Emoticons and their variations

Emoticon	Polarity	Symbols
	Positive	:) :] :} :0) :0] :0} :-] :-} :-} =) =] =} =^ =^] =^} :B :-D :-B :^D :^B =B =^B =^D
	Negative	D: D= D-: D^: D^= :( :[ :{ :0( :0[ :^( :^[ :^{ =^( =^{ >={ >=( > : =( >[ >=(
	Neutral	:l =l :-l >.<><>_< :0 :0 =0 :@ =@ :^o :^@ -.- -_- -_- ' :x =x :# =#

## VI. Conclusion

This paper might prove that just checking on twitter for emotional outbursts of any kind gives predictors of how the stock prices will be moving the next day. In this paper, we will be very preliminary results, much more work is needed to verify it further. This is because the sample size for this study is limited. It can be concluded that celebrity tweets and stock prices shows significant relationship in this sample.

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