

A photograph of two women standing in front of a rustic wooden wall. The woman on the left has dark curly hair and is wearing a white short-sleeved shirt and dark pants. The woman on the right has blonde hair, wears glasses, a white short-sleeved shirt, and dark jeans. They are both smiling and looking at a smartphone held by the woman on the left.

Investing just got social

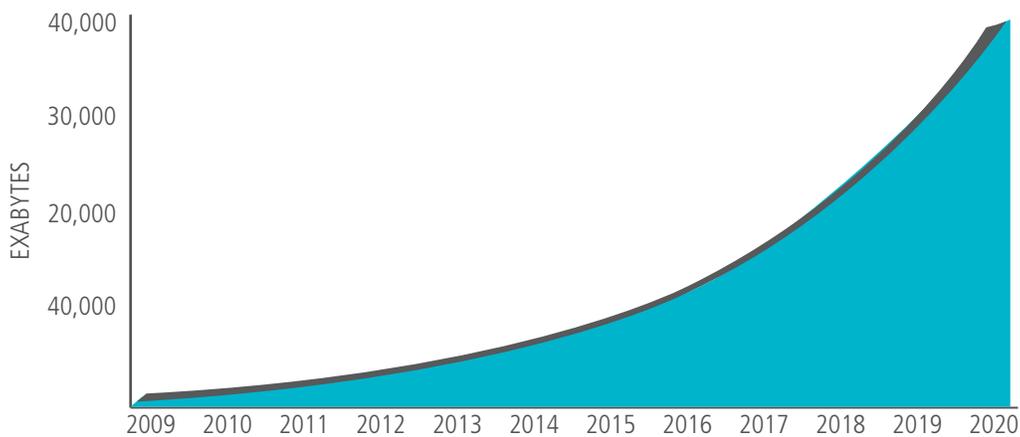
This report explains how social media's big data¹ has evolved from the consumer products world to the financial world as money managers seek an informational edge to enhance their investment processes. The exponential growth of investment-related content on social media provides a vast dataset to analyze in order to identify actionable insights which can potentially identify stocks that will outperform.

Powerful Technologies Can Unlock Investment Insights from Big Data

BIG DATA, ARTIFICIAL INTELLIGENCE & NATURAL LANGUAGE PROCESSING

The internet has connected the world as never before, breaking down informational barriers and allowing us to share and collaborate in ways previously unimaginable. Big data has come to represent the collective information that is available from varying sources all over the world. Big data analysis can yield a wealth of knowledge that can be used to track, explain, and potentially predict, the big picture.

The Digital Universe: 50-fold Growth from the Beginning of 2009 to the End of 2020



Source: IDC's Digital Universe Study, sponsored by EMC, December 2012. 2016-2020 growth is estimated. There is no assurance that the projections will be met.

Processing and making sense of big data is beyond what any individual could analyze on their own. Advances in artificial intelligence (AI) techniques used in big data analysis allows for a deeper understanding of vast amounts of data, specifically data from the ever growing social media landscape. While AI may conjure thoughts of cyborgs and robots, at its core, AI is designed to help process data, make sense of it, and act on it.

Natural Language Processing (NLP) is the branch of computer science that deals with the interpretation, meaning, classification, and sentiment analysis of text. Advances in NLP techniques allow for more accurate sentiment analysis than ever before. Moving beyond traditional key word searches, Natural Language Processing today has evolved to provide individuals insights regarding the contextual meaning of datasets.

GROWTH OF SOCIAL MEDIA

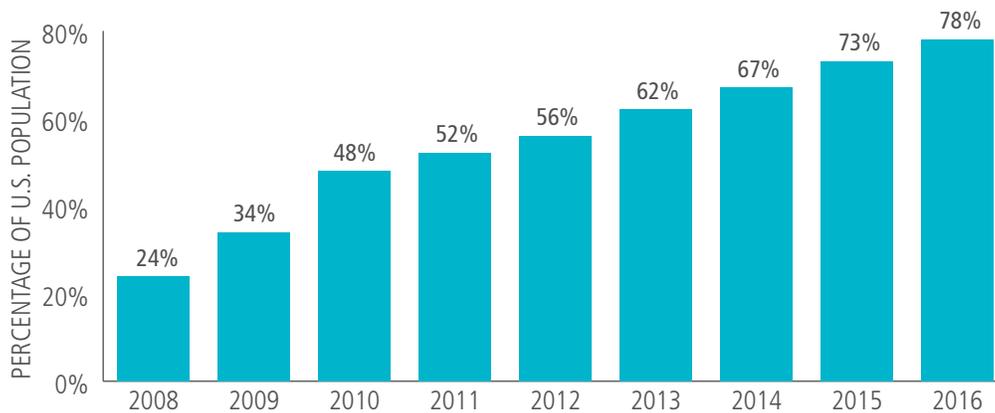
The emergence of social media has opened up numerous new forums for people to express their opinions and share experiences. In the U.S., 78% of the population has a social network profile. Headlines cross Twitter feeds faster than news networks. The proliferation of social media has created a vast set of data that can be analyzed to understand behaviors, trends and sentiments and ultimately help make better decisions.

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Percentage of U.S. Population with a Social Network Profile from 2008 to 2016



Source: Edison Research; Triton Digital. As of January 31, 2016. 2016 data is an estimate.

SOCIAL MEDIA USES IN THE WORLD OF BRAND AND CONSUMER ANALYTICS

Consumer product companies were the first to use predictive analysis from social media to help them identify marketing insights and manage their brands. Across the social media landscape, individuals routinely express their opinions of a product, experiences within a store, and general encounters with various brands. Large technology companies such as salesforce.com and IBM offer numerous social media monitoring tools to help the world's leading brands capture insights from social media conversations.



“The proliferation of social media has created a vast set of data that can be analyzed to understand behaviors, trends and sentiments and ultimately help make better decisions.”

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ADOPTION OF SOCIAL MEDIA ANALYTICS WITHIN THE FINANCIAL WORLD

The investment world – which has always been on the lookout for new ways to gain an informational advantage – has likewise recognized the value of big data. Today's leading asset managers routinely incorporate big data analytics within their investment processes.

Early attempts at stock sentiment analysis included offline (phone, paper) surveying, in-store questionnaires, and even door-to-door polling. However, it is well documented that people often say one thing when participating in a survey but then act in a different manner. Searching for deeper insights with respect to a company's investment merits, hedge funds and other asset managers deployed specialty research firms to position canvassers at physical store locations, counting customers and conducting ad-hoc polls in an effort to understand sales patterns and product demand. Not only were these methods time-consuming and resource-intensive, they were also limited in the number of people they could reach.

“Today's leading asset managers routinely incorporate big data analytics within their investment processes.”

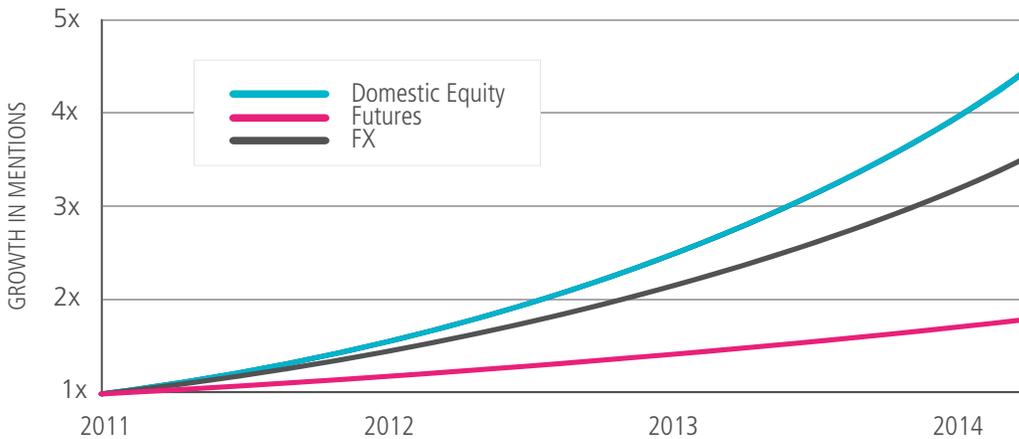
THE SOCIAL MEDIA GAME CHANGER



Today, millions of people voluntarily share their views not only about their own consumer behaviours and brand perception, but also their activities related to their investment ideas and portfolios. Over the past few years, the number of investment specific social media platforms has grown in response to increasing user adoption of social media as a forum for investment related discussion. During this time, user generated content has accelerated at an exponential rate. The result has been a proliferation in the breadth of discussion, depth of data and diversity of subject matter. Twitter’s adoption of the “Cashtag” methodology (\$+“TICKER”) in the summer of 2012 further enabled the growth of online content by providing a standardized structure to track stock specific discussions.

“With the introduction of cashtagging, discussions about individual stocks on social media has proliferated.”

Growth in Finance Discussion on Twitter



Source: GNIP. As of April 30, 2014.

FINANCIAL APPLICATIONS OF INVESTMENT INSIGHTS FROM THE SOCIAL MEDIA LANDSCAPE

Large quantitative hedge funds were early adopters in integrating social media analytics into their investment processes. This investment approach was further validated when leading financial data providers such as Bloomberg and Thomson Reuters began offering investment insights based on social media data to their subscribers. More recently, insights generated by social media analytics have been offered to retail investors of several large brokerage firms. TD Ameritrade and Fidelity now provide social scoring metrics to their clients in addition to traditional fundamental research and technical indicators.

CAN SENTIMENT PREDICT STOCK PRICES?

Traditional asset pricing theory, fundamental analysis, relative value and other factor based approaches are typical methods deployed by investors in determining the investment merits of stocks. These methods are proven over a long time horizon; however, they often fail to explain short and medium-term stock price fluctuations. So, what influences asset price movements over these time periods? In our view, the answer is sentiment. Numerous studies have shown that investor sentiment plays an important role in financial markets. Investors have historically relied on rudimentary survey-based measures of sentiment for insights. Investor surveys such as the University of Michigan Consumer Sentiment Index and the AAll investor sentiment survey suffer from limitations associated with traditional survey-based approaches including negative bias potential, low incentive for truth-telling and reporting time-lags. Sentiment indicators derived from insights from the social media landscape have a distinct advantage relative to traditional survey-based approaches. User comments within the social media landscape are voluntarily generated and posted in real-time. The desire for collaboration and attaining social influence further self-regulates the discussion while fostering an environment with a high incentive for truth-telling.

In fact, there are numerous research studies published by academia relating to the potential power of sentiment insights derived from social media. These academic research reports find compelling evidence linking investor sentiment data derived from the Social Media landscape in predicting future stock performance. Notably, In the report titled *"Identification of a Social Media Equity Factor Derived Directly from Tweet Sentiments"*, professors Jim Liew and Tamas Budavari found *"significant evidence that the characteristics of securities derived from social media information sources have significant power in explaining the time-series of daily returns"*, while Patrick Houlihan and Germán Creamer found a similar relationship in their research report titled *"Leveraging Social Media to Predict Continuation and Reversal in Asset Prices"*. Their research showed *"that message volume and sentiment from StockTwit messages contained information about future price changes."*

"The growing adoption of social media analytics by the investment community validates the value of big data."

"Sentiment indicators derived from insights from the social media landscape have a distinct advantage relative to traditional survey-based approaches."

"Numerous academic studies find compelling evidence linking investor sentiment data derived from the social media landscape in predicting future stock performance."

Summary

EXPONENTIAL GROWTH OF SOCIAL MEDIA'S BIG DATA

The exponential growth of online discussions about individual stocks and companies on social media platforms provides a rich new dataset.

THE POTENTIAL TO GAIN AN INFORMATIONAL EDGE

Advances in AI and NLP technologies enable investors to harness this vast dataset to identify actionable investment insights about individual stocks, a task that a few years ago would have been impossible.

GROWING EVIDENCE THAT INVESTOR SENTIMENT CAN BE PREDICTIVE OF STOCK RETURNS

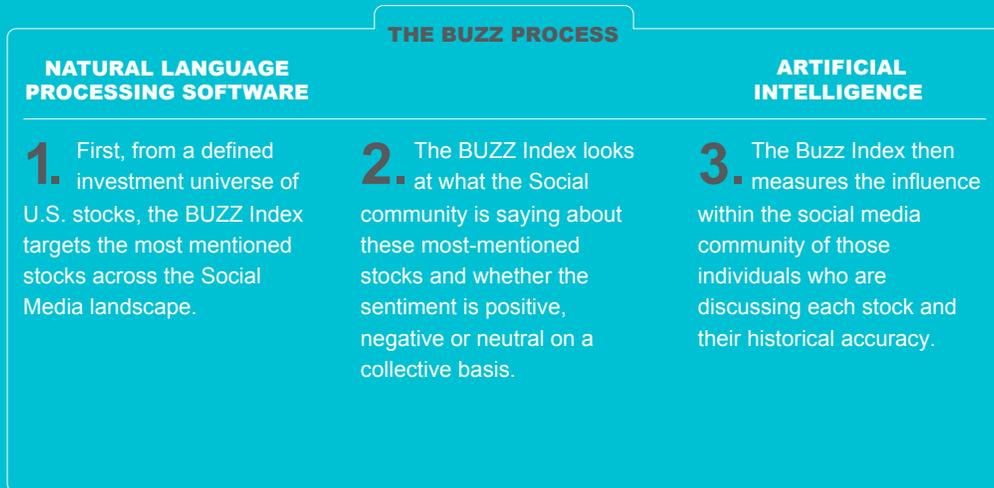
There is a growing body of academic research that links investor sentiment with future stock performance. See Appendix for a sample of related studies.

The **BUZZ Social Media Insights Index** (“**BUZZ Index**”) employs leading edge analytics to harness the investment insights from the **Social Media** community.

The **BUZZ Index** identifies **75 U.S. stocks** with the most positive investment insights collected from **Social Media’s Big Data**.



The data is filtered through an analytics model which utilizes **Natural Language Processing Algorithms** and **Artificial Intelligence** applications.



BUZZ SOCIAL MEDIA INSIGHTS INDEX

Index Holdings (As of August 18, 2016)

COMPANY	WEIGHT (%)
Alphabet Inc.	3.00
Apple Inc.	3.00
Valeant Pharmaceuticals International Inc.	3.00
Twitter Inc.	3.00
Alcoa Inc.	3.00
Walt Disney Co.	3.00
Tesla Motors Inc.	3.00
Sirius XM Holdings Inc.	3.00
Gilead Sciences Inc.	3.00
Abbvie Inc.	3.00
Facebook Inc.	3.00
Opko Health Inc.	3.00
Microsoft Corp.	3.00
Celgene Corp.	3.00
Intel Corp.	3.00
Sprint Corp.	3.00
Ford Motor Co.	3.00
Kinder Morgan Inc.	3.00
Boeing Co.	3.00
AT&T Inc.	2.53
Johnson & Johnson	2.42
General Electric Co.	2.28
General Motors Co.	1.71
Medivation Inc.	1.60
Nike Inc.	1.56
Biogen Inc.	1.39
CVS Health Corp.	1.36
Visa Inc.	1.26
Coca-Cola Co.	1.15
Procter & Gamble Co.	1.15
Nvidia Corp.	1.15
Amgen Inc.	1.08
United Parcel Service	1.06
Bank of America Corp.	0.97
International Business Machines Corp.	0.95
Lowe's Companies, Inc.	0.92
Pfizer Inc.	0.90
Merck & Co. Inc.	0.88
Energy Transfer Equity LP	0.87
Home Depot Inc.	0.81
Citigroup Inc.	0.80
Altria Group Inc.	0.80
Bristol-Myers Squibb Co.	0.80
Skyworks Solutions Inc.	0.77
Oracle Corp.	0.77
Cheniere Energy Inc.	0.68
United Technologies Corp.	0.67
Devon Energy Corp.	0.63
Cisco Systems Inc.	0.59
Mcdonald's Corp.	0.51
Mallinckrodt PLC	0.51
Williams Companies, Inc.	0.51
Wells Fargo & Co.	0.49

COMPANY	WEIGHT (%)
Schlumberger Ltd.	0.48
Regeneron Pharmaceuticals	0.48
Comcast Corp.	0.48
JPMorgan Chase & Co.	0.44
HP Inc.	0.44
Frontier Communications Corp.	0.44
Verizon Communications Inc.	0.43
Jetblue Airways Corp.	0.35
Las Vegas Sands Corp.	0.34
Delta Air Lines Inc.	0.29
Morgan Stanley	0.25
Marathon Oil Corp.	0.24
Herbalife Ltd.	0.24
Western Digital Corp.	0.24
Corning Inc.	0.23
American International Group	0.23
Priceline Group Inc.	0.17
Blackstone Group LP	0.16
Southwestern Energy Co.	0.15
Wynn Resorts Ltd.	0.14
Valero Energy Corp.	0.13
Macy's Inc.	0.13
Total:	100.00

Holdings are subject to change. An investor cannot invest directly in an index. The Fund will invest at least 90% of its net assets in securities that comprise the Underlying Index. Under normal conditions, the Fund generally will invest in all of the securities that comprise the Underlying Index in proportion to their weightings in the Underlying Index; however, under various circumstances, it may not be possible or practicable to purchase all of the securities in the Underlying Index in those weightings.

Appendix

The following is a sample of available research within the field:

1. "Twitter mood predicts the stock market" – Bollen, Mao, and Zeng (2011).
2. "Predicting Stock Market Indicators Through Twitter" – Zhang, Fuehres and Gloor (2011).
3. "Twitter and Stock Returns" – Forbergskog and Blom (2013).
4. "Generating Abnormal Returns Using Crowdsourced Earnings Forecasts from Estimote" – Drogen and Jha (2013).
5. "Web Sentiment Analysis for Revealing Public Opinions, Trends and Making Good Financial Decisions" – Bissattini and Christodoulou (2013).
6. "Trading on Twitter: The Financial Information Content of Emotion in Social Media" – Sul, Dennis, and Yuan (2014).
7. "Wisdom of Crowds: The Value of Stock Opinions Transmitted Through Social Media" – Chen, De, Yu, and Hwang (2014).
8. "The Value of Crowdsourcing: Evidence from Earnings Forecasts" – Bliss and Nikolic (2015).
9. "The Value of Crowdsourced Earnings Forecasts" – Jame, Johnston, Markov, and Wolfe (2015).
10. "Twitter Sentiment and IPO Performance: A Cross-Sectional Examination" – Liew and Wang (2015).
11. "Leveraging Social Media to Predict Continuation and Reversal in Asset Prices" – Houlihan and Creamer (2015).
12. "Identification of a Social Media Equity Factor Derived Directly from Tweet Sentiments" – Liew and Budavari (2015).
13. "Stock Return Predictability and Investor Sentiment: A High-Frequency Perspective" – Sun, Najand and Shen (2015).
14. "Structure in the Tweet Haystack: Uncovering the Link between Text-Based Sentiment Signals and Financial Markets" – Klusmann, Ebner & Konig (2015).



BUZZ

BUZZ SOCIAL MEDIA INSIGHTS INDEX

A Primer for Investors

IMPORTANT DISCLOSURES & DEFINITIONS

¹Big Data is a term for data sets that are so large or complex that traditional data processing applications are inadequate.

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