



# CRYPTOCURRENCY SENTIMENT ANALYSIS

How do traders and the public really feel about cryptocurrencies? Do people trust cryptocurrencies? What is the outlook for new, emerging cryptocurrencies? This work aims to answer these questions in order to provide investors with the whole picture of the trading environment to aid them in their future decision making.

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## Background

The term “cryptocurrency” first appeared in the digital world in 1983, when the first concept of electronic money called “ecash” was conceived. Many other concepts and systems were developed over the years, but it wasn’t until 2009 with the creation of bitcoin, that cryptocurrencies gained traction in the trading world. It was the first decentralized cryptocurrency and the first to implement a cryptographic hash function as its proof of work.

Since then, more than 4,000 other cryptocurrencies have been created; more than 200 cryptocurrency exchanges are operating; and most importantly, a new way of exchanging value has been introduced to both businesses and economies.

To deal with cryptocurrency trades, some ticker apps had emerged. A ticker is a report of stock’s price variations, more specifically a “tick” is any change on the price. Additional information is also contained on tickers, like volume of shares or any other content that might be useful to investor. Biticker is a ticker for cryptocurrency, in addition to showing price variation on the most popular cryptocurrencies it also has a section of the latest news of different cryptocurrency related portals.

Unfortunately, cryptocurrencies have not come without bringing some negative side effects. Hacking, fraud, scams, and scandals have plagued the cryptocurrency exchange environment almost since it was first introduced.

Amidst all the controversies and uncertainty, investors are the ones who are taking most of the risk associated with cryptocurrencies, they must always be up to date with the latest news in order to make informed decisions, especially when it comes to new investments on new tokens. However, regular news outlets might not be enough, since cryptocurrencies are highly dependent on user adoption and trust, the environment is sensitive to how users feel about current and new tokens.

This is where sentiment analysis comes into play. If there is too much distrust or controversy surrounding a particular currency, investors can make the correct decision to shy away from it. Having this component in an app provides easily accessible information and faster decision making.

By having both regular news sources, and other investors’ and traders’ opinions at hand, investors can have the complete overview of the cryptocurrency trading environment in order to aid them in their investment decisions.

## Personas Definition

In the previously designed context, we have identified 3 different types of personas we want to reach.

- **The beginner:** Mainly young professionals, in the age range of 23-28, tech savvy but with not much knowledge on the cryptocurrency subject. They started to get interest in this after the boom, they've read a couple of blogs about it and invested a few euros just to try and are not expecting a big return from it. They always get the trendiest apps, so they are familiar with apps like Splitwise (for splitting bills with others), Mint (for keeping track of expenses) or N26 (mobile bank). They don't have the means to invest big amounts thus they are the smallest group in terms of money, but big in terms of number of people.
- **The cryptocurrency geek:** The age group is between 30-40. They know a lot about cryptocurrency and are completely engaged with it. Fully promoters, would take every opportunity available to speak about this topic, they see it as an ideology. Have invested a fair amount and got interesting returns, but also been badly affected from the drops in their portfolios. Always looking for new technologies and products valuable to the crypto community. This is the largest group.
- **The traditional investor:** Oldest group, above their 40's. Vast experience investing in stocks and properties. They have studied extensively the subject, but still are very careful in trusting this new technology. Thanks to their deep knowledge in finance, they have invested big amounts in the right moments and had great returns. They are always observant of new technologies but still struggle with the learning curve. The group may not be as big as the previous but their high purchasing power makes them a significant fraction.

To help better understand these personas and their behavior, in the next pages are examples of each of them.

# Lisa

age: 24

residence: Manchester

education: Bachelor Degree of Fine Arts

occupation: Designer

marital status: Single



*"I'm always in for trying new technologies, especially when is giving me a few bucks back"*

She has read a couple of blogs about cryptocurrency and invested a few euros just out of curiosity

## Comfort With Technology

INTERNET



SOFTWARE



MOBILE APPS



SOCIAL NETWORK



## Criteria For Success:

Balance between personal and professional development

## Needs

- Any technology that helps make her life hassle free

## Wants

- To understand in a easy and quick way where to put her money
- To be updated on the latest tech trends

## Values

- Fast and well developed apps

## Fears

- Loosing money, for her every dollar counts

# Nate

age: 32

residence: New York

education: Information Technology Management

occupation: Business Intelligence Consultant

marital status: Single



*"I would like people to be more interested in cryptocurrency and blockchain and the impact this will make on the world"*

He knows a lot about cryptocurrency and is completely engaged with it

## Comfort With Technology

INTERNET



SOFTWARE



MOBILE APPS



SOCIAL NETWORK



## Criteria For Success:

Being able to use his knowledge in technology to drive the change

## Needs

- Constant feed on the cryptocurrency environment
- More time to dedicate to the subject

## Wants

- Decentralized systems
- At least a decent return on his investments

## Values

- Good communication from cryptocurrency teams

## Fears

- Lack of adoption
- Not being sufficient updated on the matter

# Charles

age: 46

residence: Chicago

education: MBA

occupation: CFO of small company

marital status: Married with kids



*"Keeping my portfolio diversified is important, but more important is to not compromise my data while doing it"*

He has studied extensively cryptocurrency trading, but still is very careful in trusting this new technology

## Comfort With Technology

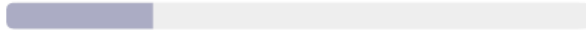
INTERNET



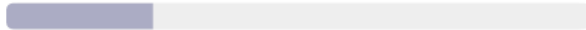
SOFTWARE



MOBILE APPS



SOCIAL NETWORK



## Criteria For Success:

Getting bigger returns, but reducing the risk

## Needs

- Ensured security on his transactions
- Customer Service
- Easy to use features

## Wants

- Returns on his investments
- Stability for he and his family

## Values

- Smooth and simple transactions
- Time-saving

## Fears

- Data breaches

## Blue Hat



- The goal is to help investors make a decision
- An app that provides information might be a good tool
- Focused on cryptocurrencies
- The app must provide real time data
- The app must include the social factor
- The app can show information filtered by a specific topic

**How do we approach this problem?  
What are the ground rules?**

## Green Hat



- The social media information could be filtered by multiple languages
- The social media information could be filtered by the sentiment (positive, negative, etc..)
- The app can include a feature to select information regarding a certain topic

**What are some alternatives?How can we innovate?**

## Red Hat



- Investors will appreciate having up to date information in their phones
- Investors might not like the app design
- We fear investors would prefer other apps
- Investors will feel safe about their investing decisions

**How does this make us feel?How will customers feel?**

## White Hat



- 81% of adults in the US have a smartphone (pewglobal)
- 76% of adults in the UK have a smartphone (pewglobal)
- 67% of internet users visit from mobile
- People who prefer cryptocurrencies: 17% are millennials, 9% Generation X, 2% Baby Boomers
- every 3 seconds there is a post on social media about Bitcoin

**What do we know?What does this tell us?**

## Black Hat



- There are similar apps in the market
- Investors do not care about what people say
- It's not innovative enough
- Not a lot of people have cryptocurrencies
- Traders are not interested in analyzing topics

**What doesn't work?What could go wrong?**

## Yellow Hat

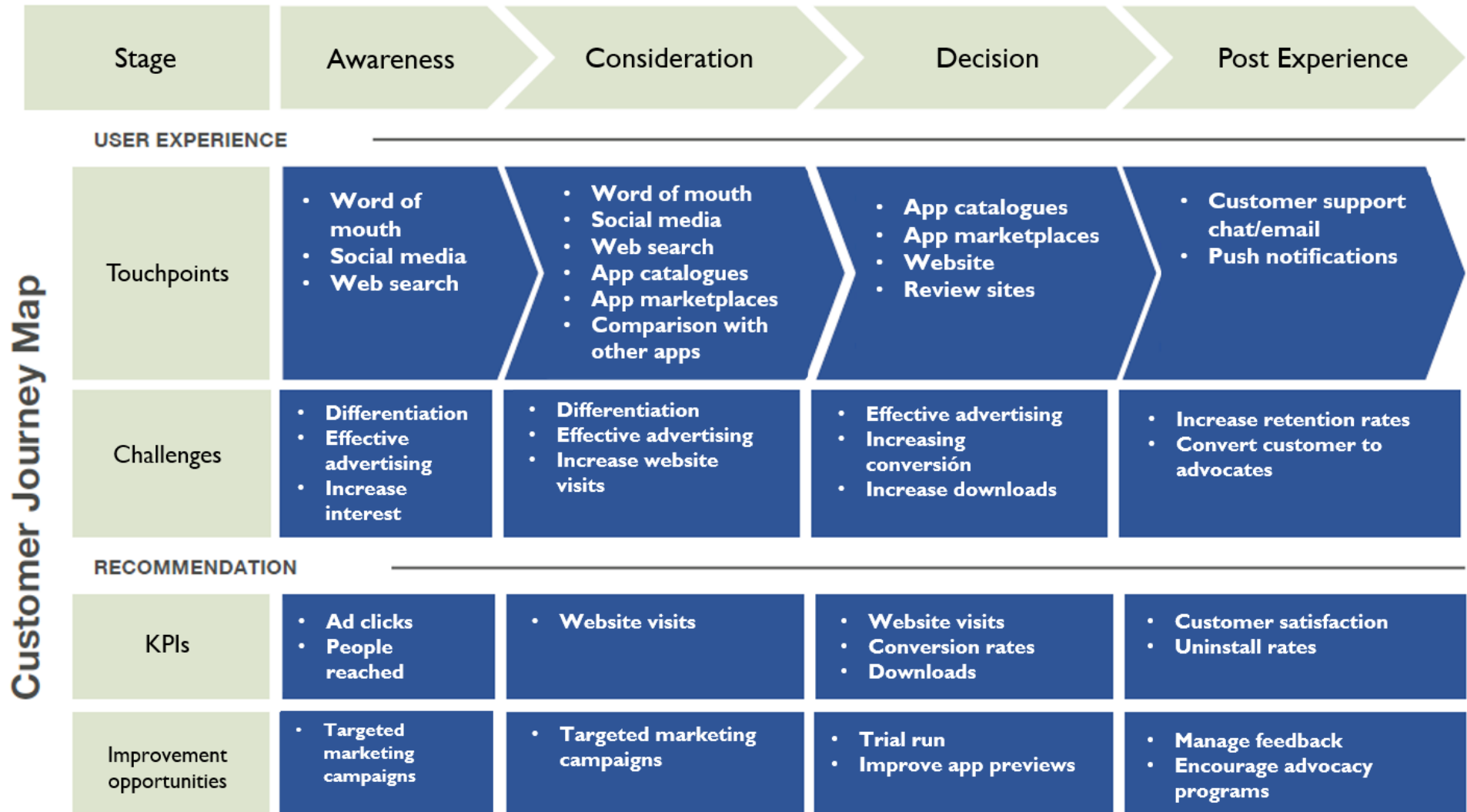


- Investors will be able to look at various variables that influence cryptocurrency market
- One access point to aid investors to make a decision
- No other apps have information about social media for traders
- It is based on known techniques
- Relatively easy to implement

**What works?What are the benefits?**



## Customer Journey Map



Our customer journey is composed of the following stages:

1. **Awareness:** The user has heard about the application and its sentiment analysis feature. The user has many touchpoints in this stage, so it is imperative to create effective advertisement that will increase the customer's interest and make him consider downloading the application.
2. **Consideration:** The user is contemplating whether or not it would be worth downloading this app. In this stage the user is comparing different apps to see which might work better for him. Differentiation is key, and an engaging website or campaign can help the user reach the following stage.
3. **Decision:** The user has determined our app and its features the best match for him. The most obvious way to measure results of this stage is to track the number of downloads the application has. It is important to accelerate the entry to this stage; this can be done through better previews of the application and its features.
4. **Post-Experience:** Once the user has downloaded the application, the focus changes to **retain** the user. This can be achieved through high quality customer support and constant improvement on features and service. At this point we can also “restart” the customer journey; current users can be offered incentives to recommend the application to other potential users, thus starting awareness through word of mouth.

## Definition of the selected Idea

Considering the thinking hats' analysis and the context of the problem, the best solution is to build a new feature on the Biticker app. Although Biticker already has a news' section, it requires the user going through lots of news and reading them almost in full to understand what is going on.

The new section will have a sentiment list (like the price list) on the different tokens, indicating if this is positive, negative or neutral, it will also have the possibility to look at the trend of the sentiment in the last weeks or months. The sentiment analysis will be done on tweets containing the name of the cryptocurrency.

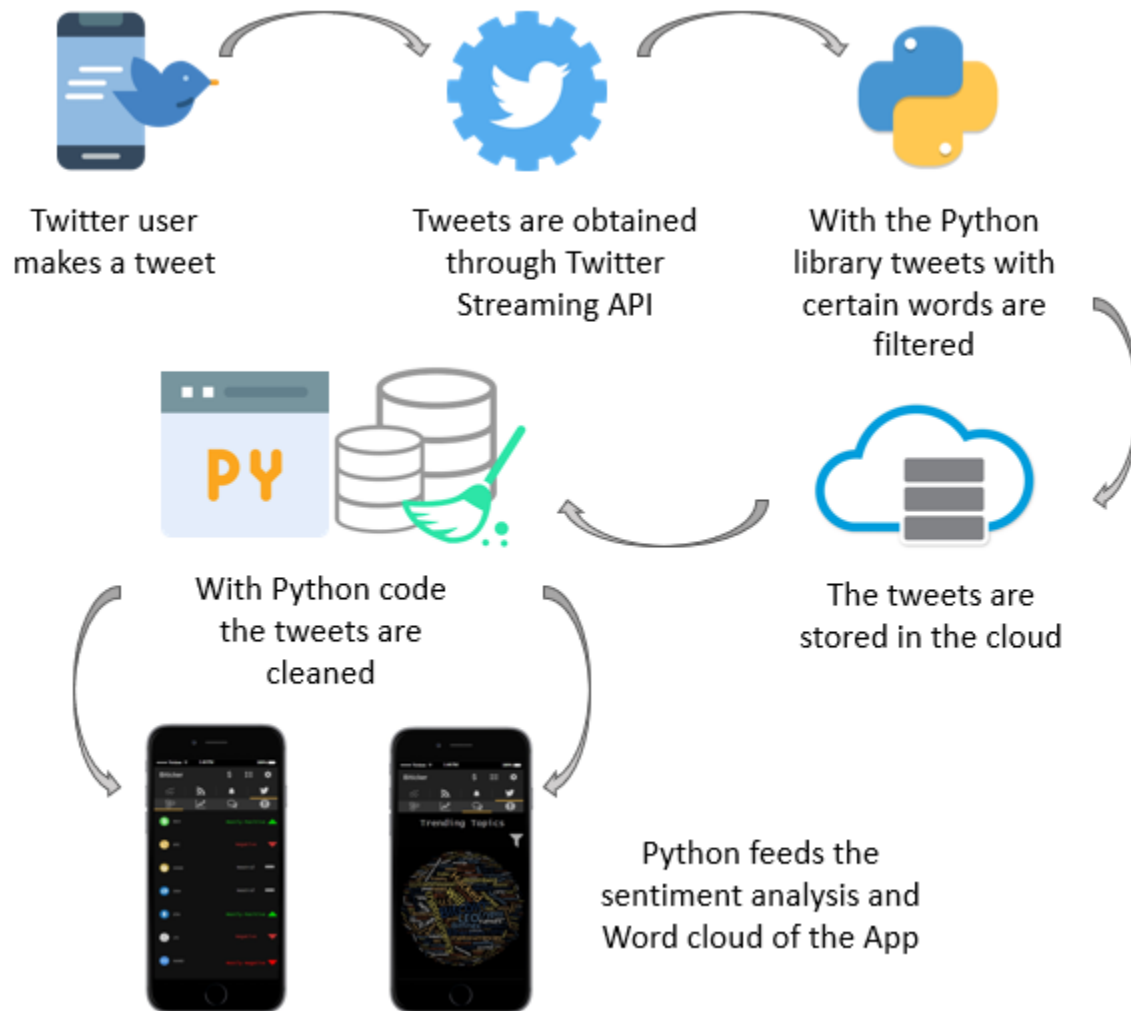
The other part of the new section will contain a clustering analysis of the most commented topics on tweeter related to cryptocurrencies, presented to the user as a word cloud. The user will have the possibility to select topics of interest and to see in a summarized way, what people are talking about it.

The user will also have the option of setting personalized notifications or alerts. For example, if he wants to know when certain token has a great increase in tweets mentions, or when a new scandal comes out.

The personas defined for the business as "cryptocurrency geek" and "traditional investor" are workers and have a very tight schedule, they don't have the time to dedicate to reading all the news, going to twitter and trying to understand what is going on. Because of that, this idea would be the perfect solution, since they would get easy access to daily and precise updates on the more important trends on this subject. The personalized notifications will also allow them to get updates only on the topics or currencies they consider important, for example, only the ones that they use.

The "beginner" persona would also benefit from it, since they need to understand what is happening without having a deep knowledge on finance or trading. This tool will help them get a better and clearer overview.

## Data Analysis Workflow



1. **Data Input:** A twitter's user tweets some related word to one of the cryptocurrencies or associated topics
2. **Data colection:** Tweeter Streaming API collects the tweets
3. **Data filtering:** Through python's Tweepy library's StreamListener the filtered tweets with certain words are obtained
4. **Data Cleaning:** With python code the tweets are cleaned, keeping only related word and the date of the tweet
5. **Sentiment Analysis and Word cloud:** In python the sentiment analysis and word cloud are perform
6. **Data Output:** Sentiment on different cryptocurrencies in a ranking and through time and word cloud of trending topics available to the app's users

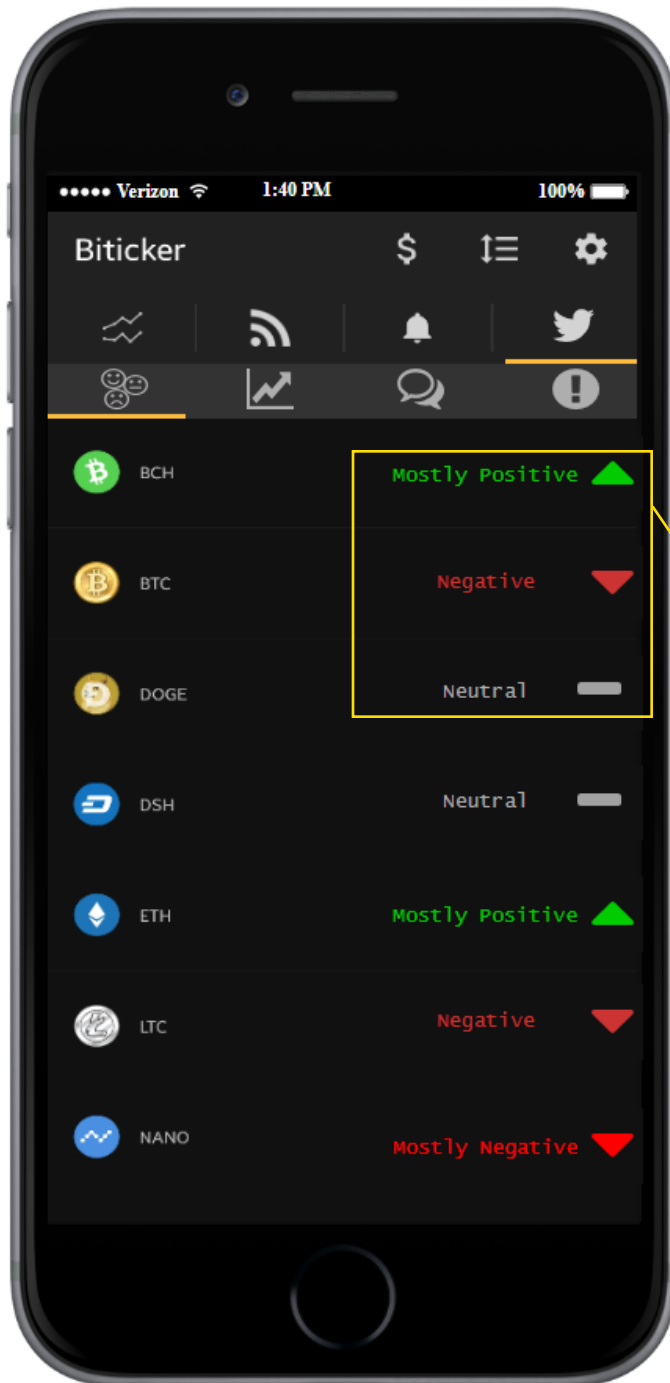
## Prototype



### Biticker Application Home

The user can change the currency for conversion.

Added menu for Sentiment Analysis.



## Current Sentiment

Displays how the current overall sentiment for each currency.

It can take the following values:

- Extremely positive
- Mostly positive
- Neutral
- Mostly Negative
- Extremely Negative



## Graph View

The user has different time frame options for sentiment visualization.

Graph shows what is the currency's overall sentiment for the selected time frame.

User can scroll to see the rest of the cryptocurrencies' information.

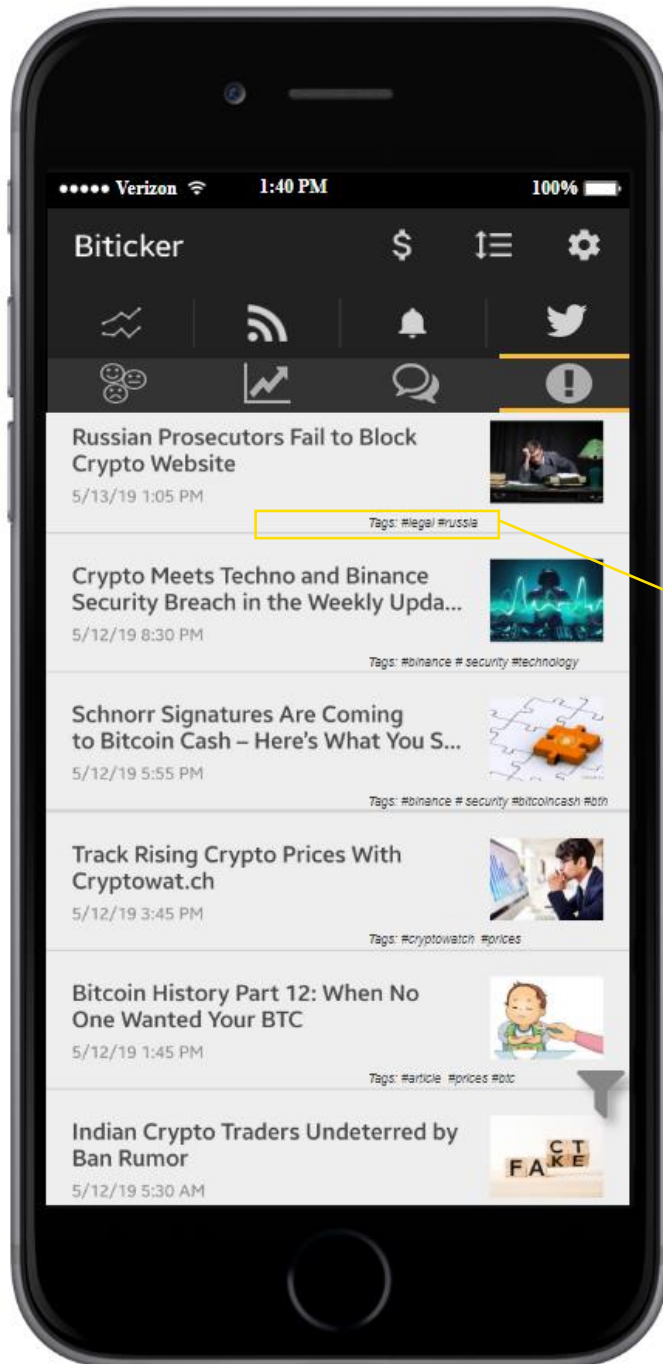
The current value of the currency is displayed, along with the percentual change from the previous time point. This allows the user to gauge the currency's sensitivity to the public's sentiment.



The user has filter either by different tags or by macro categories. Ex:

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## News Feed

The news feed will pull tweets or articles related to the tags or topics the user has chosen.

## Conclusion

- In the rapidly changing world we live in, information has become the single greatest asset for companies and people. Having up to date, relevant information can greatly impact the quality of the decisions we make. This is especially true when talking about money, investments, and cryptocurrencies.
- The newly developed sentiment analysis feature on the Biticker app was conceived to fill this need for investors. It is designed to help cryptocurrency investors ranging from unexperienced to full on dedicated investors.
- Social media information has a great influence in the market and this feature easily provides investors with a comprehensive glance of the current trends and market behavior. With an easy to navigate interface, this feature will provide real time, good quality information and it will open the way for safe, profitable investments for the users.

## References

1. Hansen, S. (2018, June 22). Guide To Top Cryptocurrency Exchanges. Retrieved from <https://www.forbes.com/sites/sarahhansen/2018/06/20/forbes-guide-to-cryptocurrency-exchanges/#8fcde1325722>
2. Cryptocurrency. (2019, May 14). Retrieved from <https://en.wikipedia.org/wiki/Cryptocurrency>
3. G., D. (2019, April 23). 60 Revealing Statistics about Smartphone Usage in 2019. Retrieved from <https://techjury.net/stats-about/smartphone-usage/>
4. Barton, C., & Barton, C. (2019, May 02). A summary of the most important stats involving cryptocurrencies. Retrieved from <https://www.finder.com/uk/cryptocurrency-statistics>
5. 5 Must-Read Cryptocurrency Predictions For 2019. (2019, April 21). Retrieved from <https://investinghaven.com/crypto-blockchain/5-must-read-cryptocurrency-predictions-2019/>