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Title:

Twitter's reaction to the recent cryptocurrency dip in June 2022(1419 words)

Introduction:

"Cryptocurrency is an advanced digital currency that is gotten by cryptography, numerous digital currencies are decentralized organizations dependent on blockchain innovation an appropriated record authorized by a different organization of computers [1]." Over the course of its brief existence, the cryptocurrency market has changed unpredictably and at an unparalleled rate. More than 550 cryptocurrencies have been created since the public launch of the original cryptocurrency, Bitcoin, in January 2009. Bitcoin grew, from being worth a few cents to reaching an all-time high of around $69,000 in November 2021. Although its supporters have long claimed that it would act as a hedge against excessive inflation, this has not happened. Bitcoin has decreased along with high-growth tech stocks as inflation has risen. Cryptocurrencies are not an exception to the trend of speculative assets losing appeal as a result of rising interest rates. Along with bitcoin the other cryptocurrencies also saw a crash. It is important to note that since its inception, there has bitcoin (or crypto in general) has seen three strong growth years. In every instance, there was a collapse the next year. This time, the fall happened in January 2022, with two strong declines, after ending 2021 at $50,000. The first, at the beginning of the month, reduced it to $40,000; the second, towards the month's end, briefly dropped it down to below $33,000 before briefly recovering. Many anticipated that the price would keep dropping, but instead, it stabilized and rose to about $45,000 in mid-February. The price then fluctuated between $45,000 and $38,000 until early May, primarily due to the sudden drops in global financial markets brought on by the start of the war in Ukraine. The most challenging months of 2022 were May and June because, in addition to the extremely poor financial situation in international financial markets brought on by war, inflation, recession fears, and particularly strict monetary policies, a few major tsunamis struck the cryptocurrency markets (numbers taken from [2]). In light of the crash of bitcoin and other prominent cryptocurrencies, I am analyzing the sentiment among the general public and the self-proclaimed crypto "gurus" during the month of June 2022. I referred to multiple papers on the topic of sentiment analysis over cryptocurrency markets and these were the major ones: [3], [4], [5].

Research Question:

How is the perception of the crypto market crash different between a group of self-proclaimed crypto gurus and the general public on Twitter during the crash in June 2022?

Method

- **Data:**
  - I have collected the data from Twitter. I collected the tweets which used either of the following hashtags # cryptos OR #bitcoin OR #blockchain OR #BTC OR #Ethereum OR #ETH. Most of the papers I have referred to showed statistics of how the numbers are distributed among these hashtags. And it was clear that the above hashtags constituted most of the crypto-related tweets, hence my selection. Also, I was choosing a time duration that was crucial for both bitcoin and Ethereum based on the market rates. I have used a library that was not case sensitive, so the following hashtags in either upper or lower cases were scraped. I have also not included any retweets or replies.
  - I have collected the data using the library "snscrape" [6] a scraping tool for social networking services (SNS). It scrapes users, user profiles, hashtags, searches, threads, and

list posts without using Twitter's API and returns the discovered items [7]. I have also made extensive use of the pandas and NumPy libraries for data analysis.

- The time frame was the month of June when bitcoin saw one of the high-intensity dips. During the second week of June, bitcoin saw a massive low which was the last major dip this year, from 30,000 USD to 20,000 USD. This was one of the interesting time periods, so I wanted to know the sentiment around the topic at this time.

- **Analysis:**
    - The data extracted was massive. There were ~10000 tweets per day during the first, third, and fourth weeks of June and ~25000 tweets per day on the second week of June which used the above-mentioned hashtags. The library snscrape could not be used for the random selection of tweets [8], so I had to use pandas to randomly pick 1000 tweets out of the massive dataset of tweets.
    - The next important step was to divide the users into the general public and self-proclaimed crypto gurus. This was done by looking at the Twitter handle or the username of the profile. If the profile name had either of the words: crypto, bitcoin, BTC, coin, crypt, Blockchain, Ethereum, or ETH, they were categorized as self-proclaimed "crypto gurus" and the rest of the users were categorized as "general public". The data I got was in the ratio 4:6 for crypto gurus to the general public.
    - Data Cleaning - Data cleaning was an important step prior to extracting the sentiments. Mentions, # symbols, symbols, and hyperlinks were removed from the tweet texts. The library TextBlob was used to find the subjectivity and polarity of a sentence. Polarity is defined in the range of [-1,1], where -1 represents a negative sentiment and 1 represents a positive sentiment. Negative words flip the polarity. Subjectivity is between [0,1]. Subjectivity is a measure of the amount of personal opinion and factual information in a text. Higher subjectivity indicates that the text contains personal opinions rather than facts [9]. The use of NLTK package was very helpful in removing stop words in English. Stop works, punctuations and emoticons were removed. Libraries, string, and regex were used in achieving these steps.
    - Based on the polarity of the tweet, an analysis score was determined for the tweet texts. If the polarity is less than or equal to zero, the analysis score was set to zero which meant that the tweet was negative. For a polarity greater than zero, the score was set to 1 which meant that the tweet was positive.
    - The positive and negative tweets made by both the self-proclaimed crypto gurus and the general public were then plotted using the libraries: matplotlib and seaborn.

Results:

Out of the 1000 crypto-related tweets studied during June 2022, only 34.5% were positive tweets which means that the majority of the population was upset about the crypto crash of the month. 65.5% of the tweets were negative. This was something that was expected since bitcoin slumped 37.3% in June. I further analyzed whether this was any difference between the general public and the self-proclaimed crypto gurus and could find that both populations had more negative tweets when compare to positive tweets (see table 1 and fig 1).

Crypto Guru	Positive Tweets	24.10%
	Negative Tweets	75.90%
General Public	Positive Tweets	41.40%
	Negative Tweets	58.60%

Table 1: Percentage of positive and negative tweets by the populations
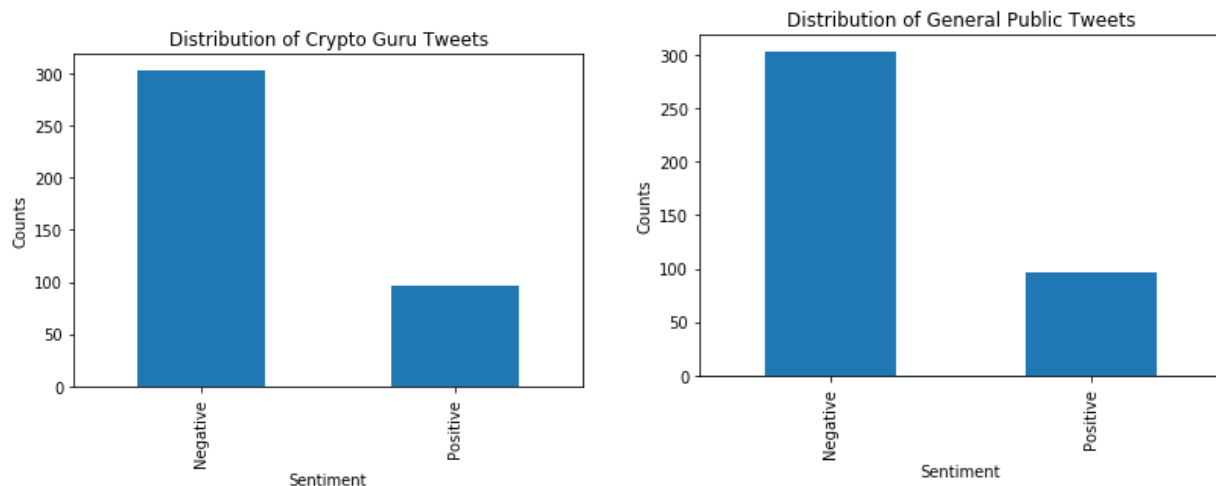
Fig 1.a Distribution of crypto guru tweets, Fig 1.b: Distribution of General public tweets

I then looked at who was majorly tweeting positively and who was majorly tweeting negatively. Surprisingly, it was the general public who had a substantially higher percentage of positive tweets about cryptocurrency (see fig 2). Both the populations had similar 46 and 54% number of negative comments.
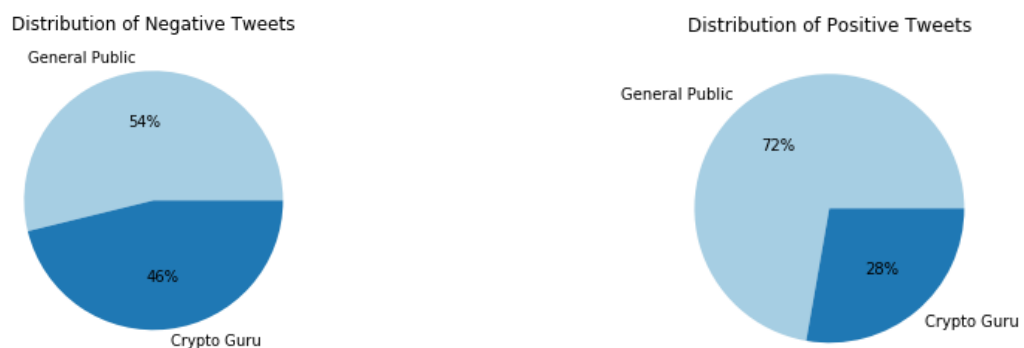

Fig 2.a: Distribution of negative tweets, Fig 2.b: Distribution of Positive tweets

Conclusion:

Both populations tweeted negatively more than they tweeted positively about cryptocurrency during the crypto market crash of June 2022. When analyzing the positive tweets during this time, it was the general public who had more positive tweets than the self-proclaimed crypto gurus. Both populations had almost the same number of negative tweets in this context (considering the 40-60 ratio).

Before the study, the expectation was that the crypto gurus would tweet in support of the crypto market and the general public would tweet negatively, but my analysis proved wrong. To answer the research

question, both the crypto guru population and the rest of the Twitter users had similar reactions towards the crypto market crash.

Limitations:

The major limitation was the unavailability of a computing capacity to process several thousands of tweets. I categorized the population of Twitter users into self-proclaimed crypto gurus and the general public based on the Twitter user names. This could have been done better if I could scrape the user description of the users and check for the same keywords in the description. Also, the tweets would contain Twitter bots, which I did not eliminate. This was out of the scope of this study and could be done in the future. I would also like to do an analysis of all the highs and lows of the crypto market.

References:

[1] https://www.investopedia.com/terms/c/cryptocurrency.asp

[2]https://www.forbes.com/advisor/investing/cryptocurrency/bitcoin-price-history/#:~:text=It's%20someti mes%20easy%20to%20forget,nearly%20%2469%2C000%20in%20November%202021.

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[4] Rouhani, S. and Abedin, E. (2020), "Crypto-currencies narrated on tweets: a sentiment analysis approach", International Journal of Ethics and Systems, Vol. 36 No. 1, pp. 58-72. https://doi.org/10.1108/IJOES-12-2018-0185

[5] Muhammad Abubakr, NaeemabImen Mbarkic Syed, Jawad Hussain Shahzadde, "Predictive role of online investor sentiment for cryptocurrency market: Evidence from happiness and fears" https://doi.org/10.1016/j.iref.2021.01.008

[6] https://github.com/JustAnotherArchivist/snscrape

[7] https://medium.com/dataseries/how-to-scrape-millions-of-tweets-using-snscrape-195ee3594721

[8] https://github.com/JustAnotherArchivist/snscrape/issues/164

[9] https://towardsdatascience.com/my-absolute-go-to-for-sentiment-analysis-textblob-3ac3a11d524