**Cover sheet**

**NATIONAL UNIVERSITY OF SINGAPORE**

**SP1541 EXPLORING SCIENCE COMMUNICATION THROUGH POPULAR SCIENCE**

**Assignment: Science News Article (Second Submission)**

Name: Claudeon Reinard Susanto

Matriculation No.: A0239079R

Tutorial Group: S19

Major(s): Data Science and Analytics

Discipline of the selected research article: Quantitative Finance/Data Science

\*Delete as appropriate

**Using Twitter to predict cryptocurrency prices**

Interestingly, the microblogging platform can be used to predict the unpredictable.

By: Claudeon Reinard Susanto, 13 November 2022

Most of us have probably heard of cryptocurrency before, but what does it actually mean?

In simple terms, cryptocurrency works like the digital cash in your phone’s banking app which you can use to transfer money to friends or buy things on Amazon or Shopee.

However, cryptocurrency’s main advantage lies in how each individual cryptocurrency token is secured and chained to one another, which makes hacking or counterfeiting almost impossible. Cryptocurrency is also faster as third parties like banks are not needed to verify and manage transactions; they are already verified using complex mathematical algorithms.

But why should you care about cryptocurrency? Due to its advantages, this new technology is set to become the norm in the near future. Apps such as Google Pay and Bitpay are currently working on allowing users to transfer, buy, and sell crypto tokens from anywhere to anyone with greater speed and security than your normal banking app. With this, cryptocurrencies will replace the dollar sign in your digital wallet.

Hopefully, now you’re convinced to switch to cryptocurrency. But there’s one big problem with that, especially for newcomers who want to start buying crypto but don’t know where to start.

Just like how we look for discounts at supermarkets, we would want to buy crypto when prices are low and avoid buying when prices are high. However, cryptocurrency prices are highly volatile and fluctuate greatly even in one hour. So, deciding the exact time to buy crypto is difficult, unless we know when prices would rise or fall.

If we can really predict crypto prices, we would be able to buy crypto at the moment when prices are at their lowest. We can also make some serious cash by selling them at the exact time when prices are at their highest.

So far, one way to predict prices is by looking at factors that are known to influence prices directly. Cryptocurrency is a new technology, so there has only been limited research done on such factors. Some of these known factors include news sentiment, exchange rates, and the current political situation. However, sourcing for some of this information requires us to depend on news channels’ reporting timing. This lag in information is not always helpful in predicting the constantly fluctuating cryptocurrency prices.

Unlike the relatively slower news channels, social media like Twitter provide real-time updates of posts provided by users. Millions of these posts contain users’ opinions about almost anything, including cryptocurrency.

Some of you might think that Twitter posts are unreliable. Unsurprisingly, this is not far from the truth. However, we also cannot deny the fact that even posts containing false information -- especially from public figures like Elon Musk and Donald Trump -- can greatly influence public opinion. And we know that public sentiments can influence behaviors and markets.

Knowing this, business analysts and researchers Kraaijeveld and De Smedt at the University of Edinburgh wondered if Twitter posts can influence the cryptocurrency market. If this is the case, Twitter can be used as an indicator to predict prices. Yet, until now, nobody has done any research on this.

So, the two researchers wanted to test if Twitter has the power to predict cryptocurrency prices. For this reason, they were the first to study the relationship between Twitter and crypto prices for multiple cryptocurrencies.

As a start, they collected millions of tweets from Twitter for two months. To ensure that only relevant posts are collected, the researchers collected only those with keywords and hashtags such as “crypto” and “#bitcoin” among many others. But each tweet contains lots of words and can be very messy, so how did the researchers study them?

Each word in a post can be scored positive, negative, or neutral depending on its emotions (for example the words “bad”, “okay”, and “exciting” have negative, neutral, and positive scores respectively). We can then figure out if the post has an overall negative or positive sentiment on cryptocurrency by determining if there are more positive than negative words and averaging the word scores.

By doing this for all posts posted within an hour, they were able to determine the average Twitter sentiments.

Next, the average sentiments are compared with cryptocurrency prices. The researchers discovered that Twitter sentiments highly correlate with how prices move in an hour: when the majority of tweets have a positive outlook on cryptocurrency, prices tend to rise, while prices tend to fall when sentiments are negative.

Surprisingly, despite being messy and wordy, the researchers discovered that Twitter posts have the power to predict cryptocurrency prices; just by examining these posts, we can get a sense of whether prices will move up or down in the next hour without relying on slower reporting from news channels.

Still, the scope of this study is limited as it only focused on 1-day and 1-hour predictions, so it’s still unknown if long-term price prediction is possible. On top of that, this study only explored whether it is possible to use Twitter to predict prices; it did not address the question of how to predict and if the prediction would be accurate.

With that being said, this study shows great promise to be applied in future research. In fact, the methods used to analyze Twitter sentiments in this study laid the foundations for other cryptocurrency analysts. Just recently, researchers at the University of Malta not only successfully forecasted the direction of cryptocurrency price movements, but they could also predict the extent of increase/decrease with a record 63% accuracy by relying on the same methods used in this study.

For the cryptocurrency newbie, fret not as graduate students from the University of Hong Kong have developed an AI advisor in a readily accessible website that can suggest what currency and the proportions to buy to maximize returns. Now that Twitter’s predictive power has been proven, the AI is programmed to summarize daily Twitter sentiments on the website. Hopefully, this Twitter-powered AI can help you understand market sentiments and guide your crypto decisions towards maximum profits.

(1000 words)

**References:**

**Chow, R. P. Y., Ho, K. T., & Chan, P. Y. (n.d.). *AI Investment Advisor in cryptocurrency*. MScCompSc Project COMP7705 MSP21007. Retrieved October 31, 2022, from https://wp.cs.hku.hk/2021/msp21007/**

**Critien, J. V., Gatt, A., & Ellul, J. (2022). Bitcoin price change and trend prediction through Twitter sentiment and Data Volume. *Financial Innovation*, *8*(1). https://doi.org/10.1186/s40854-022-00352-7**

Frankenfield, J. (2022, September 18). *Cryptocurrency explained with pros and cons for investment*. Investopedia. Retrieved October 2, 2022, from https://www.investopedia.com/terms/c/cryptocurrency.asp

Kraaijeveld, O., & De Smedt, J. (2020). The predictive power of public twitter sentiment for forecasting cryptocurrency prices. *Journal of International Financial Markets, Institutions and Money*, *65*, 101188. https://doi.org/10.1016/j.intfin.2020.101188

Yeo, H. (2021, April 30). *Using Twitter to forecast cryptocurrency returns #1 - how to Scrape Twitter for sentiment analysis*. Medium. Retrieved October 31, 2022, from https://medium.com/atoti/how-im-failing-my-twitter-sentiment-analysis-for-cryptocurrency-prediction-149a1730a6fd

|  |
| --- |
| **Reflective commentary**  In this news article, I used teleological appeal and exemplification to engage and inform the reader.  As cryptocurrency is still a relatively unknown concept, readers might not be interested in reading the article as they might think that cryptocurrency and the reported study would not have any impact on them whatsoever. Because of this, I used teleological appeal to pique their interest in the topic and the article by allowing them to appreciate the fact that cryptocurrencies will significantly affect them in the future as we transition towards crypto. Furthermore, teleological appeal is used to highlight how the study has practical applications that can benefit the reader directly. This was illustrated in the last section where an AI advisor based on the reported study’s methods can help the reader to maximize profits. This can effectively keep the reader engaged as they can better appreciate how the reported study is relevant to their private interests. However, this strategy is limited in effectiveness as some readers may not be interested in making financial gains and thus the study may not even be relevant to them at all. Regardless, most would be intrigued by the possibility of making profits by predicting prices using Twitter.  Secondly, as some concepts and processes are abstract and hard to understand, I used exemplification as a tool to make it easier for the reader to grasp these concepts. An example of this would be the concept of correlation in section 16 which is explained using concrete examples of movements of prices and sentiments. Through these examples, the reader can effectively understand and easily visualize the idea that prices and sentiments tend to move in tandem. Similarly, in section 14, specific words were used which can effectively explain the abstract process of sentiment analysis to the reader. Nevertheless, exemplification also has its drawbacks as sometimes examples do not paint the full picture. To illustrate this, there are cases where two variables move in different directions and are still correlated to one another. Nonetheless, exemplification gives a broad overview of an abstract concept and this is appropriate for non-specialist readers.  (349 words) |