**Cover sheet**

**NATIONAL UNIVERSITY OF SINGAPORE**

**SP1541 EXPLORING SCIENCE COMMUNICATION THROUGH POPULAR SCIENCE**

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

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**Using Twitter to predict cryptocurrency prices**

Study shows that Twitter has the power to forecast highly unpredictable cryptocurrency prices in a timely manner, potentially

By: Claudeon Reinard Susanto, 30 September 2022

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

In simple terms, cryptocurrency works like the digital wallet in your phone’s banking app which you can use to transfer money to friends or buy things on Amazon or Shopee. Both cryptocurrency and money in your banking app are digital; which means they don’t exist as physical objects in the real world.

The main difference between the cash in your digital wallet and cryptocurrency lies in its security. Unlike cash in a digital wallet, hacking or counterfeiting cryptocurrencies is almost impossible as each individual token (a cryptocurrency unit) is secured using complicated mathematical algorithms and is chained to one another. So, if you want to forge a token, you would have to hack billions of other tokens which could take anywhere between hundreds to thousands of years.

Cryptocurrency is also faster because they do not require a third party like banks to manage and verify transactions, which is why more and more people have switched to this speedier and more secure alternative.

But why should you care about cryptocurrency? Due to its advantages, cryptocurrencies are 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 are set to replace the dollar sign in your digital wallet.

Switching from cash to cryptocurrency sounds just fine and dandy. But there is one big problem with that, especially for newcomers who want to switch to 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, crypto prices are highly volatile and fluctuate greatly even in one hour. So, deciding when to buy crypto is difficult because we cannot possibly predict when prices would drop.

In contrast, if we know exactly when prices would drop or rise, we can make some serious cash by buying at the lowest price and selling at the highest price. Prediction of crypto prices is thus key to maximizing returns.

One way to predict prices is by looking at factors that are known to influence cryptocurrency prices. Cryptocurrency is a relatively 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 the government and news channels’ reporting timing. This lag in information may not always be 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.

Knowing this, business analysts and researchers Kraaijeveld and De Smedt at the University of Edinburgh wondered if Twitter users’ opinions can influence crypto prices. If this really is the case, Twitter could possibly be used to predict crypto prices in a timely manner. Yet, until now, nobody has done any research on this.

So, the two University of Edinburgh researchers wanted to test if Twitter really 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.

Just like how there are various currencies in the world such as USD, EUR, and SGD, there are more than 12,000 different cryptocurrencies. Still, the overwhelming majority of previous studies on cryptocurrency only focused on one such currency: Bitcoin. Unlike past studies, this time Kraaijeveld and De Smedt studied nine different cryptocurrencies, which in total covered almost 80% of the market. For this reason, the study was the first to study the relationship between Twitter and crypto prices for multiple cryptocurrencies.

As a start, the two researchers collected posts from Twitter for two months. Millions of these posts are stored on a computer and the collection would be updated automatically when there are new posts about cryptocurrency on the Twitter website.

Imagine each post with lots of words as a class full of people deciding if they should go on a trip after exams. Each person’s vote can count as yay, nay, or neutral depending on their opinion on the said class trip. The final stance of the class is then determined by counting all the votes to find out if there are more yays than nays.

Using a similar procedure, each word in a post can be scored positive, negative, or neutral depending on its emotions (for example “bad” and “exciting” have negative and positive scores respectively). We can then figure out if the post has an overall negative or positive opinion on cryptocurrency by summing up and then averaging the word scores. By doing this for all posts posted in an hour, we would be able to determine the average sentiment for all Twitter users.

The average sentiments are subsequently compared with cryptocurrency prices. The researchers found that the average Twitter sentiments in one hour highly correlate with how crypto prices move: when the majority of posts have a positive outlook on cryptocurrency, prices tend to rise, while prices tend to fall when Twitter sentiments are largely negative.

Surprisingly, despite Twitter’s chaotic and unstructured nature, the researchers discovered that it can actually be used to predict cryptocurrency prices; just by examining Twitter 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 and the government. However, the scope of this study is limited as it only focused on 1-day and 1-hour predictions, so it is still unknown if predicting prices in the long term is possible using this method. On top of that, this study only examined whether it is possible to predict prices using Twitter; it did not address the question of how to predict prices and if the prediction would be accurate.

With that being said, the results of this study show great promise. Future studies can potentially combine both artificial intelligence and Twitter sentiments to make an accurate and timely prediction of crypto prices. In the future, you might be able to consult an AI relying on Twitter data before making big decisions on crypto.

(word count)

**References:**

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