Tracking crypto pump-and-dump operations on social media

July 7 2022, by Magali Gruet

Credit: Unsplash/CC0 Public Domain

The practice is unethical, yet not illegal per the SEC. Cryptocurrency scammers have found a way to make a quick profit through social media platforms like Twitter and Telegram, using the pump and dump method.

In short: they buy coins when the price is low, team up to create the buzz and get the price of this coin to rise, then sell theirs for a profit.

Researchers at USC's Information Sciences Institute (ISI) have conducted a study to track and shut down this phenomenon.

Mehrnoosh Mirtaheri, graduate research assistant at ISI who led this work, started to analyze tweets related to the stock market—where pump and dump operations are illegal—then shifted her focus to cryptocurrencies. "These coins are not regulated at all, there is no control, so a lot of people try to manipulate the price by using social media to create false hype about them," Mirtaheri said, adding that she saw an opportunity to raise awareness about this questionable practice.

The modus operandi is always the same.

"The attack starts with a group of people buying a specific coin, then they send messages to Telegram channels to make a bigger group aware of the pump and dump operation, with the instructions to buy then to sell when it reaches a specific price," she said. "They all buy the coin, create enthusiasm about it, the price goes up, then they all dump the coin at the same time, making money off of it: the delta between the buying and the selling price. People who are not in on the scam end up losing a lot of their investment."

Those operations are conducted on small volume coins so a small group of traders can have an impact on their price. For popular coins like Bitcoin, it would take someone with a massive following to increase or decrease their value.

The scammers also "recruit gullible participants on Twitter to help them pump the coins, and use bots to amplify the phenomenon," added Mirtaheri.

About 80% of the conversations were initiated by them. Those bots were easy to identify when Mirtaheri conducted her research: "Many Twitter accounts were clearly fake: they all had a photo of a dog as a profile picture, and they were created at the same time," she said.

Fred Morstatter, ISI research team lead and USC research assistant professor who also worked on this project, is infuriated by this practice.

"Pump and dump schemes are frauds, they are meant to defraud average people of their assets. In the context of more traditional securities like stocks , it's highly illegal," he said. But it is not well regulated in the space of cryptocurrency, it is not explicitly illegal."

Analyzing conversations and tweets, their algorithm alerted them when a pump and dump operation was about to happen.

Sami Abu-El-Haija, USC Ph.D candidate who also worked on this project, said they wanted to "correlate the tweets and the fluctuation of cryptocurrency to see if the price was influenced by social media."

Turns out, it was. Greatly.

"Whenever there was a spike, we started to look at what people were saying about those coins around the time of the spike, before and after," Abu-El-Haija said. "We made a machine learning model that could consume social signals, identify patterns, and analyze this data, and we saw the cluster of people who were communicating with each other."

The USC ISI-led researchers also showed that a smaller group of people were directly connected because they were dumping their coins a tad earlier than everybody else, initiating the drop of the coin and making the biggest profit.

So where do we go from there? Mirtaheri's goal is to help small investors.

"We should use this research to create a warning system for individuals, to show them the likelihood that a coin is being pumped, so they can be cautious when buying it, she said, adding that this could take the form of an app.

Morstatter concurs: "I would like to see our work help the average person. If they had an awareness that the value behind the coin they are buying is not legitimate they could make better decisions. That is the end game," he said.

"The FTC will not have the bandwidth to stop and arrest everybody behind every pump and dump operation. If a person could have a sense this is a scam, it would be great."

Morstatter believes that banks could offer this tool to their customers. Mirtaheri also mentioned services like PayPal who are starting to enable crypto trading on their platform.

"Pump and dump schemes fall under the jurisdiction of the SEC or CFTC, depending on the specific asset in question. The FTC does, however, have the jurisdiction to investigate deceptive claims and unfair practices related to cryptocurrency investments and we are interested in understanding how cryptocurrency scams proliferate on social media," explained the FTC to USC.

Aram Galstyan, research professor of computer science and principal scientist at USC Information Sciences Institute, pointed out that "the cryptocurrency market is not regulated by the Securities and Exchange Commission (SEC) or any other agency which produces a fertile ground for all types of manipulations. The research presented in the paper can help to build tools for monitoring the markets and generating warnings when a suspected pump and dump is unfolding."

As of June 2022, the SEC, the government regulatory agency that investigates securities scams such as insider trading and pump and dumps, did not have any plan on implementing crypto regulations, to the great displeasure of Hester Peirce, the Securities and Exchange Commissioner. Peirce accused the U.S. government to be apathetic on this topic in an interview with CNBC saying: "There's a lot of fraud in this space, because it's the hot area of the moment. [What] does concern me is the way that we've sort of dropped the regulatory ball." Contacted by USC, the SEC did not wish to make any comment on this matter.

Greg Ver Steeg, USC Viterbi research associate professor of computer science and senior research lead at ISI, believes that the methodology used in this research can help fix broader issues.

"Increasingly, we see individuals, companies, and states trying to use social media to manipulate users for their own purposes. Identifying these schemes is a necessary first step toward mitigating the potential damage."

This work was published in *IEEE Transactions on Computational Social System* in June 2021.

More information: Mehrnoosh Mirtaheri et al, Identifying and Analyzing Cryptocurrency Manipulations in Social Media, *IEEE Transactions on Computational Social Systems* (2021). DOI: 10.1109/TCSS.2021.3059286

Provided by University of Southern California