



A comparative study of Bitcoin's price fluctuations and Twitter sentiments

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Abstract

During the last few years, the scrutiny of Bitcoin and other cryptocurrencies as legally regulated components of financial systems has been increasing significantly. Bitcoin is one of the biggest cryptocurrencies in terms of capital market share and trading volumes. This study is going to determine whether the sentiments in Twitter discourse about Bitcoin have an influence on the overall market and pricing of Bitcoin trades. The study aims to reveal the correlation between the volatility of the price of Bitcoin and how it relates to the sentiments in Twitter discourse. A large dataset of tweets mentioning Bitcoin has been amassed from the Twitter API between the months of February and July 2021, which will then be analysed against the Bitcoin trade performance. For this study, different predictive and descriptive models were applied that are equally important for data analysis. The sentiment for overall daily discourse has been categorised into three polarities, i.e., positive, neutral and negative using the VADER sentiment analysis. The overall polarity is then derived from a compounded and normalised dataset of each of the above-mentioned valencies for any given day. As a result, this study gives an understanding of price fluctuation in Bitcoin trade in comparison with contemporary Twitter sentiments. Since the data is largely curated to produce a crude relationship between Bitcoin trading price and the overall Twitter sentiment contemporary to the trade, it foregoes several other factors that may affect trade thereby incurring limitations that may otherwise hint at a relatively deeper correlation. By utilising this study, it is hoped that potential Bitcoin buyers may make better and informed decisions about their purchases and that this study could be generalised to a broader analysis of social media discourse and how such means of communication could be used to drive consumer choice. Our results unequivocally prove that Twitter sentiments have a slight impact on the price and trading volumes of Bitcoin but the cryptocurrency has a unique way of sailing the storm of negative sentiments.

Keywords: Blockchain, Bitcoin, Twitter, Sentiment Analysis, Social Media, Cryptocurrencies