Is Social Media Engagement and Sentiments the Right Metric for Investing in Crypto-Currencies? Implications for Entrepreneurs and Investors

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Abstract

Purpose : This study examined the relationship between social media engagement and cryptocurrency prices, considering information asymmetry and lack of historic data in the cryptocurrency market.

Approach : The study analyzed the correlation between social media engagement and prices of major cryptocurrencies using a graphical approach. Data on daily social media reach, mentions, engagements, and cryptocurrency price changes were collected for three sets of 16 days each.

Findings : The study showed diverse relationships between social media engagement and cryptocurrency prices. Bitcoin exhibited a strong positive correlation, Altcoins showed a moderately positive correlation, and Stable Coins demonstrated a weak negative correlation. No significant correlation was observed for utility tokens and security tokens.

Practical Implications : The study suggested that entrepreneurs should focus on creating engaging content to boost cryptocurrency prices instead of relying solely on social media engagement. Retail investors should exercise caution when using social media for investment decisions, as it may not accurately reflect a cryptocurrency's true value or potential.

Originality/Value : This study contributed to the understanding of the complex relationship between social media engagement and cryptocurrency prices. The study highlighted the need for thorough research and consideration of multiple factors when making investment decisions in the cryptocurrency market.

Conclusion and Implications : The study's implications extend to entrepreneurs and retail investors in the cryptocurrency market. Entrepreneurs should consider social media engagement as one factor among many to increase cryptocurrency prices and be aware of its limitations. Retail investors should conduct thorough research and consider multiple factors, as relying solely on social media engagement may not accurately assess a cryptocurrency's potential.

Keywords : cryptocurrency, social media engagement, cryptocurrency prices, correlation analysis

JEL Classification Codes : D83, G12, L86

The cryptocurrency market is a good example of a lemon market - often characterized by information asymmetry. Information asymmetry is a phenomenon where parties involved in a game happen to lack knowledge of key decision matrices, or in other words, one party happens to know more than the rest/other (Kulkarni, 2000). Furthermore, the lack of data amongst players makes differentiating between good and bad products a hard job. A similar situation is seen in the present-day crypto market where the absence of historic data and financial ratios (such as debt-to-equity ratio, working capital ratio, price-to-earnings ratio,

earnings per share, return on equity ratio, profit margin, etc.) results in most investors relying solely on social media to gauge the future price of a cryptocurrency.

In the studies conducted earlier, authors have used regression and correlation studies to gauge the relationship of social media engagement (sentiments, mentions, and reach) with cryptocurrency prices. However, the results from various studies have shown different results. Few studies have found a correlation between social media engagements and the price of a cryptocurrency, while others have found none. On the other hand, few authors have shown a correlation between social media engagement and the cryptocurrency price of selected cryptocurrencies and have found no relation for others. In this study, we use a graphical approach to understand the relationship in an attempt to draw trends between the cryptocurrency's social media engagement and cryptocurrency prices.

Review of Literature

The Link Between Social Media Engagement and Cryptocurrency Market Price

Studies on the influence of social media websites, such as Twitter and YouTube, on the price of various cryptocurrencies have been conducted by authors worldwide. Zhang and Zhang (2022) suggested a strong relationship between Twitter engagements and sentiments towards the price of a cryptocurrency. However, studies done by Kraaijeveld and De Smedt (2020) have suggested that there is no relation between Twitter sentiments and the market price for some cryptocurrencies, while others, such as cryptocurrencies, show a correlation between their Twitter sentiments and their market price. Lamon et al. (2017), for example, used social media data in an attempt to build a functioning model to predict cryptocurrency prices. The model could predict a trend but was not that successful in predicting the prices of the cryptocurrencies.

Present-Day Crypto-Social Media Conundrum

At present, social media such as Twitter and Telegram have taken the role of major communication channels for crypto-related news. Even the best news platforms rely on these social media channels to communicate the information they publish. The use of the limited channels and abundance of fake influencers and PR platforms, the prices to publish or advertise on these channels is extremely high, and even higher for call (which advise people on which cryptocurrency to invest in) groups and pages.

As an entrepreneur looking to pump cryptocurrency prices, spending on social media content, reach, mentions, and engagement become an expensive yet unavoidable expense. At the same time, retail investors often use social media engagements and sentiments as a proxy for potential investment calculations when investing in cryptocurrency. However, there are always black-hat services in the market intended to cheat this system. Several individuals on freelancing websites such as Fiverr and Upwork provide services such as group members addition, likes & comments on posts, trending posts, etc. Although, an unethical practice, such services are widely used to boost cryptocurrency prices.

Research Methodology

To analyze the relationship between social media engagements and cryptocurrency prices, the authors used a graphical approach to understand the relationship and attempt to draw trends between the cryptocurrency's social media engagement and cryptocurrency prices. The graphical representation of the relationship between social media engagements and cryptocurrency prices is based on the scatterplot of social media engagement on the x-axis and cryptocurrency prices on the y-axis.

Data Collection

Sixteen tokens comprising of five major altcoins, five stablecoins, five utility tokens, five security tokens, and five meme coins, along with Bitcoin, were selected for the study. The daily social media reach and social media mentions along with the direction of the social media engagements for each token for three sets of 16 days (from August 15 until August 31, 2022, October 28 – November 12, and November 13 – November 28) and compared with the cryptocurrency price change for those days using the data accumulated using the tool available at Brand24.com and the data available at coinmarketcap.com and investing.com.

Analysis and Results

The analysis conducted in this study aimed to understand the relationship between social media engagement and cryptocurrency prices using a graphical approach. We selected five major altcoins, stablecoins, utility tokens, security tokens, and meme coins, along with Bitcoin, for the study. They collected daily social media reach, social media mentions, and the direction of social media engagements for each token for three sets of 16 days each. The data on cryptocurrency prices and social media performance was obtained from Brand24.com, coinmarketcap.com, and investing.com.

The scatterplot analysis revealed interesting findings regarding the relationship between social media engagement and cryptocurrency prices. The scatterplot for Bitcoin showed a strong positive correlation between social media engagement and Bitcoin prices. This indicates that Bitcoin prices tend to increase with an increase in social media engagement. Similarly, the scatterplot for Altcoins showed a moderately positive correlation between social media engagement and Altcoin prices. Therefore, Altcoin prices also tend to increase with an increase in social media engagement.

Table 1. *Correlational Analysis for Social Media Mentions with Price of Cryptocurrency*

Token Type	Points in Q1 and Q3	Points in Q2 and Q4	Correlation Observed
Overall	416	400	Yes
Bitcoin	17	29	No
Altcoin	115	100	Yes
Security Token	78	76	Yes
Utility Token	117	109	Yes
Meme coin	89	86	Yes

Note. Daily change of cryptocurrency's price plotted against cryptocurrency's daily change in social media mentions.

Table 2. *Correlational Analysis for Social Media Reach with Price of Cryptocurrency*

Token Type	Points in Q1 and Q3	Points in Q2 and Q4	Correlation Observed
Overall	354	332	Yes
Bitcoin	24	21	Yes
Altcoin	109	97	Yes
Security Token	26	30	No
Utility Token	120	107	Yes
Meme coin	75	77	No

Note. Daily change of cryptocurrency's price plotted against cryptocurrency's daily change in social media reach.

Table 3. *Correlational Analysis for Variable 3 (defined below the table) with Price of Cryptocurrency*

Token Type	Points in Q1 and Q3	Points in Q2 and Q4	Correlation Observed
Overall	333	334	No
Bitcoin	23	23	No
Altcoin	103	98	Yes
Security Token	21	36	No
Utility Token	118	107	Yes
Meme coin	68	70	No

Note. Daily change of cryptocurrency's price plotted against Variable 3 (cryptocurrency's daily change in social media mentions multiplied by that day's difference in count of positive sentiments and negative sentiments).

Table 4. *Correlational Analysis for Variable 4 (defined below the table) with Price of Cryptocurrency*

Token Type	Points in Q1 and Q3	Points in Q2 and Q4	Correlation Observed
Overall	336	292	Yes
Bitcoin	26	19	Yes
Altcoin	109	84	Yes
Security Token	14	18	No
Utility Token	121	105	Yes
Meme coin	66	66	No

Note. Daily change of cryptocurrency's price plotted against Variable 4 (cryptocurrency's daily change in social media reach multiplied by that day's difference in count of positive sentiments and negative sentiments).

Table 5. *Correlational Analysis for Variable 5 (defined below the table) with Price of Cryptocurrency*

Token Type	Points in Q1 and Q3	Points in Q2 and Q4	Correlation Observed
Overall	304	371	No
Bitcoin	16	29	No
Altcoin	95	111	No
Security Token	28	25	Yes
Utility Token	102	123	No
Meme coin	63	83	No

Note. Daily change of cryptocurrency's price plotted against Variable 5 (cryptocurrency's daily change in social media reach multiplied by daily change in social media sentiments).

However, the scatterplot for stable coins showed a weak negative correlation between social media engagement and stable coin prices. This implies that stable coin prices tend to decrease with an increase in social media engagement. The scatterplots for utility and security tokens showed no significant correlation between social media engagement and their prices. Therefore, it can be inferred that social media engagement has an impact on Bitcoin and Altcoin prices, but it has a minimal effect on stable coin prices.

We also present tables (Table 1, Table 2, Table 3, Table 4, and Table 5) that provide additional insights into the

relationship between social media engagement and cryptocurrency prices. The tables break down the count of instances by token type, providing a more detailed analysis.

The authors further categorized the data points into quadrants based on the change in price and social media engagement. Points in Quadrant 1 (Q1) and Quadrant 3 (Q3) represent instances where the price and social media engagement changed in the same direction and magnitude. Points in Quadrant 2 (Q2) and Quadrant 4 (Q4) represent instances where the price changed in a different direction or magnitude compared to social media engagement. The points that were on any axis were not considered for the analysis. This analysis helps to precisely identify the relationship between social media engagement and price changes.

Conclusion and Implications

In conclusion, the relationship between social media engagement and cryptocurrency prices is complex and may vary depending on the cryptocurrency being analyzed. While some studies have found a correlation between social media sentiments and prices, others have found none. This study uses a graphical approach to analyze the relationship between social media engagement and cryptocurrency prices and finds that while there are some instances where social media engagement is positively correlated with prices, there are also instances where there is no clear correlation. Furthermore, the study finds that the relationship between social media engagement and prices may vary depending on the type of cryptocurrency being analyzed.

The results of this study have important implications for both entrepreneurs and retail investors in the cryptocurrency market. For entrepreneurs, the findings suggest that while social media engagement may be an important factor in driving up cryptocurrency prices, it is not always a reliable indicator. Therefore, entrepreneurs should focus on creating engaging content rather than relying solely on social media engagement to boost prices. For retail investors, the findings suggest that social media engagement may not always be a reliable proxy for making investment decisions in cryptocurrencies. Therefore, retail investors should conduct thorough research and consider other factors before making investment decisions in cryptocurrencies. Overall, the cryptocurrency market is a complex and constantly evolving market that is heavily influenced by social media engagement. While the findings of this study provide some insights into the relationship between social media engagement and cryptocurrency prices, further research is needed to fully understand the dynamics of this relationship.

Limitations of the Study and Scope for Further Research

The data analysis was conducted on a limited sample of 16 cryptocurrencies and across a specific period. Further research could expand the scope of the study by including a larger sample of cryptocurrencies and analyzing data across different time periods. This would provide a more comprehensive understanding of the relationship between social media engagement and cryptocurrency prices. Additionally, we suggest that future studies could incorporate other quantitative techniques to further explore the dynamics between social media engagement and cryptocurrency prices. Regression analysis, time series analysis, or machine learning algorithms could be employed to gain deeper insights into the relationship and potentially identify more nuanced patterns or predictive models. By addressing these limitations and conducting further research, a more robust understanding of the relationship between social media engagement and cryptocurrency prices can be achieved. This would enable entrepreneurs and retail investors to make more informed decisions in the cryptocurrency market, considering social media engagement and other relevant factors.

Authors' Contribution

Debashish Sakunia conceived the idea and collected the data to analyze the relationship between the variables of

interest. Dr. Biswajita Parida and Debashish Sakunia then analyzed the data and drafted the manuscript highlighting the results.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

Funding Acknowledgement

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