Is the future of bitcoin safe? A triangulation approach in the reality of BTC market through a sentiments analysis

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Abstract
Bitcoin (BTC) prices are fluctuating continuously to the extremes. The Bitcoin market witnessed a crash during the second quarter of 2021 that was purely guided by the investors’ sentiments. Are the Bitcoin prices influenced only by market sentiments or do any factors influence them? In this paper, we applied a triangulation approach; mixed-methods research was used in which a qualitative study was complemented by a quantitative method. Both the qualitative and quantitative data of time periods 2016–2021 were examined to find whether the Bitcoin market prices are influenced by market sentiments. For analysing market sentiments, the posts and sentiments from 2016 to 2021 of an internet forum “Bitcointalk” were used. For strengthening the findings of qualitative analysis, we used quantitative data of the BTC market. We also used search data from Google Trends for providing further insights. Our research shows a crossmatch between quantitative trends on Bitcoin market prices and qualitative matrix of sentiments. We have also observed an artificial investment intention in the form of digital nudges playing the field of the Bitcoin market to boost investment.

Keywords Bitcoin · Cryptocurrency · Investor sentiments · Bitcointalk · Google Trends · Digital nudges

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1 Introduction

Bitcoin is exhibiting tremendous growth in value and popularity. Twelve years after its inception in 2008 by the pseudonymous coder Satoshi Nakamoto, Bitcoin price has been skyrocketing to unprecedented heights. A vital characteristic of the cryptocurrency market is that currency prices fluctuate based on people’s perceptions and opinions. Many investors are attracted to Bitcoin due to its high liquidity, low transaction costs, and easy transaction across the internet (Zheng et al., 2019). However, the price of Bitcoin is influenced by market sentiments (Eom et al., 2019). Sentiments—investors’ thoughts, feelings, and moods regarding an asset—influence the BTC market prices. There is a correlation between Bitcoin’s price and changes in search query volumes of people (Karalevicius et al., 2018). Wołk (2019) also supported this argument, explaining further that the cryptocurrency price depends heavily on social media sentiments and web search analytics tools such as Google Trends.

Currently, cryptocurrency holders worldwide are in a panic as the Bitcoin prices are fluctuating wildly. They are sliding down and climbing up continuously. Tesla CEO Elon Musk’s tweet on 12 May 2021 saying that his company would no longer accept Bitcoins started the BTC market meltdown. Bitcoin fell by 40% from its record high levels of $65,000 to $31,000 on the same day. Experts blame Musk’s tweets for the great fall of the BTC market. This sudden fall in the BTC value shows the influence of a single tweet on the value of the world’s largest cryptocurrency. Naturally, a question arises: are the sentiments of investors responsible for the crash of Bitcoin? In this paper, we address this question by examining the effect of these sentiments on the BTC market. We compare the quantitative data of the BTC market with the corresponding qualitative data and assess the insights of the relationship between the frequency of emotions and the time-series line-up of BTC prices. Our research also tries to find out the trend variation in price by taking qualitative and quantitative data, which makes this article novel and unique.

2 Background of the study

Bitcoin is a digital currency that is not backed by any tangible or intangible assets of intrinsic value (Reserve et al., 2018). The fundamental price of Bitcoin is zero, as there is no intrinsic value associated with Bitcoin (Cheah & Fry, 2015). Hence, the BTC market cannot be predicted according to economic valuation models such as the fundamental and technical analyses. The existence of herding in the crypto market and the non-existence of an intrinsic value makes it harder to identify Bitcoin’s fair value by the investors. This may sometimes lead to overvaluation or undervaluation. We can also see an excessive optimism in investors who may be influenced by the intentional digital nudges through social networking forums in the BTC market. In addition, bubbles can emerge faster and more
robustly due to irrational herding, social pressure, and bandwagon effect (Kaiser & Stockl, 2020). Moreover, fundamental analysis, technical analysis, investment planning, and all the rationality assumptions of the modern financial theories are irrelevant in the current scenario of Bitcoin investment. Though there are numerous academic pieces of literature on the crypto markets, studies that examine the cross-relationship of qualitative data on investors’ sentiments and quantitative data on the Bitcoin market prices are rare. However, such studies would be a valuable addition to crypto literature.

The rest of the article is structured as follows: Sect. 3 provides an extensive literature review and theoretical underpinnings of related studies on BTC. Section 4 discusses the core objectives and research questions of the study, and subsequently, Sect. 5 deals with methodology. The results and discussion are presented in Sect. 6. The conclusion and future research openings are provided in Sect. 7, while policy implications have been noted in Sect. 8. The results of our paper could be useful to policymakers and regulators who wish to have insights into the BTC market and its future development.

3 Literature review

3.1 Theories on the growth of BTC

Bitcoin is virtual money derived from mathematical cryptography and conceived as an alternative to government-backed currencies (Cheah & Fry, 2015). Even though it was operationalised in 2009, Bitcoin caught the attention of the mainstream investors only in 2012. At the global level, the sudden growth of Bitcoin happened in a brief span, say 10 years. The crypto market has since then had the first-generation, second generation and third generation of currencies, of which those in the third generation are still in their infancy (Hendrickson & Luther, 2021; Schilling & Uhlig, 2019). However, recently the crypto user base is dramatically increasing worldwide. Bitcoin and other digital currencies may have a sizeable long-term effect on both cash and payment systems (Brandvold et al., 2015). Cryptocurrencies embody innovative technology, high-security architecture, prosperity in functionalities, and investment opportunity as assets that make them attractive to computer scientists, venture capitalists, and investors (Klein et al., 2018). Hong et al. (2018) suggested that the factors that lead to the growth of cryptos are the extremely high costs associated with the use (medium of exchange and store of value) of fiat currencies and the extremely low costs associated with the use of the cryptos. Moreover, the failure of fiat currency in countries such as Zimbabwe and Lebanon has added to the popularity of the crypto movement. People started hearing about cryptocurrencies when Bitcoin came into the picture. Hence, it is often regarded as the father of cryptocurrencies, and all other cryptocurrencies are referred to as altcoins (Sovbetov, 2018). The recent news that El-Salvador has accepted BTC and officially adopted it as legal tender was a surprising and positive news to Bitcoin fans all over the world.
3.2 Pricing of Bitcoin

Cryptocurrencies do not have an underlying value such as fiat currencies, corporate stocks and bonds. The cryptocurrencies are more demand sensitive, so the market value depends more on how well known the currency is (Pärlstrand et al., 2015). Since its inception, Bitcoin has been the most popular cryptocurrency, so its market value too has been rising in an unprecedented manner. Since Bitcoin belongs to a global arena, its value is fundamentally identical across different markets. Therefore, the price is globally determined and cannot be influenced over a more extended period by the individual markets across countries.

Kapar and Olmo (2021) established a long-run relationship between Bitcoin and a set of variables with power to explain the dynamics of cryptocurrency using cointegration methods. Bitcoin is procyclic, driven by investors’ interest in cryptocurrency, and is positively correlated to the market portfolio. Nowadays, Bitcoin follows the trend exhibited by financial markets and cannot be considered as a purely alternative asset. The uncertainty of global economic policies have had both positive and negative causal impacts on Bitcoin returns. However, it cannot always be viewed as a new basket for eggs (Qin et al., 2021). The significant factors that affect Bitcoin pricing are returns on the S&P 500, NIFTY 50, SENSEX30 and other popular market indices.

Traditional asset valuation models fall short of effectively explaining recent developments in Bitcoin price. However, some of the financial models suggest that Bitcoin is currently overpriced (Pano & Kashef, 2020). Moreover, Minsky’s financial instability hypothesis (Beshenov & Rozmainsky, 2015) seems a better fit in explaining Bitcoin’s recent price developments than any of the proven economic theories available as mentioned by Joost van der Burgt¹. While examining the association of the Bitcoin price crash risk with economic uncertainty, it is evident that economic uncertainty displays a significant negative correlation with Bitcoin price crash risk. Research by Kalyvas et al. (2020) indicates that when economic uncertainty is high, the crash risk of Bitcoin is low. Moreover, the behavioural factors have insignificant relation with Bitcoin crash risk. In such cases, investors can hedge against the economic uncertainty influence of other financial assets by investing in the BTC market. The theory proposes that since the Bitcoin market is moving against the macro fundamentals of the economy, emotions are the primary determinant of demand of the Bitcoin market.

3.3 Investors’ bias and price volatility of BTC

Bitcoin has unique risk-return characteristics, follows a different volatility process when compared with other assets, and is uncorrelated with other assets. Hence, Bitcoin’s excess returns and volatility have somewhat resembled a more speculative asset than gold or the U.S. dollar (Baur et al., 2018). The volatility of Bitcoin

¹ https://www.frbsf.org/banking/files/Fintech-Edge-April-2018.pdf.
is extreme, and the prices fluctuate considerably over longer horizons and daily (Bariviera, 2017; Baur & Hoang, 2021). Bitcoin is about eight times more volatile than the stock market and close to 20 times more volatile than the U.S. dollar (Harvey, 2018). In this scenario, this statement of Harvey is significant, “finance, as we know it today, will be disrupted shortly; indeed, Bitcoins are the beginning of this disruption”.

Kraaijeveld and Smedt (2020), Wołk (2019), Pano and Kashef (2020), and Price and Burnie (2019) are of the opinion that the volatility of the cryptocurrency market is attributed to news, messages, and posts on social media. Since cryptocurrency is one of the new-age currencies, investors are more reliant on social media for speedy information than conventional media. Several authors such as Shen et al. (2019), Colianni et al. (2015), Pano and Kashef (2020), Kraaijeveld and Smedt (2020) etc., have examined the link between investor attention, Bitcoin returns, and its trading volume. Their sentiments analysis revealed the volatility by employing posts from Twitter as a measure of attention rather than Google Trends. The frequency and direction of tweets is a significant driver of next-day trading volume and realized volatility, further supported by linear and nonlinear Granger causality tests. Considering these facts, investor sentiments, emotions, and behavioural bias could be significant factors in the price movement of cryptocurrencies.

3.4 Status of qualitative research approach in Bitcoin market research

Qualitative analysis is not seen much in Bitcoin literature, even though investors think beyond the logic of theories while investing. During this pandemic situation of COVID-19, since everybody is panicking about the uncertain future, the influence of investors’ fear sentiment on Bitcoin price dynamics is unpredictable. Chen et al. (2020) and Ali et al. (2020) observed that during the period of market distress, Bitcoin behaves like traditional financial assets such as gold. Hence, this conceptualisation may not be desirable for investors to allocate resources to Bitcoin to reduce risk exposure. The actual BTC market has not served as a haven during the pandemic. However, the price of Bitcoin is mainly driven by investors’ interest in cryptocurrency and not by macroeconomic fundamentals or financial ratios (Kristoufek, 2018). Gurdgiev and O’Loughlin (2020) examined price dynamics of cryptocurrencies and found that they are influenced by the interaction between behavioural factors behind investor decisions and publicly accessible data flows. In this background, conducting a sentimental analysis is useful to understand the influence and direction of investor sentiment on the price direction of the BTC market.

3.4.1 Sentimental effect of Bitcoin prices

Sentiment analysis is the act of extracting and measuring the subjective emotions or opinions expressed in the text (Abraham et al., 2018). Its purpose is to conduct opinion mining to determine the writer’s attitude towards a particular item (Vijayaragavan et al., 2020). Recent sentiment analysis algorithms can detect positive and negative emotion strength in short informal texts with a reasonable
degree of success (Dang-Xuan et al., 2013). Investors also use social media for posting their views, opinions, and feelings. Behavioral sciences and related scientific literature have investigated evidence of the relationship between social media and cryptocurrency price fluctuations. Apart from conventional social media such as Facebook and Twitter, several cryptocurrency forums such as ADVFN, Moon forum, Blackhat world, Bitcointalk, Crypto compare etc. are influencing the market in a significant manner. “Bitcointalk” is divided into several sections such as Bitcoin discussion, coin mining, technical help, and Bitcoin economics, where investors can share their views (Jawaheri et al., 2020). These social media and investors’ forums are to be examined by academicians for providing practical insights to the investors through sentimental analytics (Fernández Vilas et al., 2021).

The public uses Google as a search engine; thereby, Google can give insight into people’s interests, and it can provide that search data in the format of ‘Google Trends’. Abraham et al. (2018) and Urquhart (2018) found that previous day price volatility and search volume in Google Trends are significant drivers of attention of Bitcoin. Previous studies show a connection between Bitcoin price and the sentiment of the public. This is evident in the study of Ahn and Kim (2020) who found that returns on Bitcoin, trading volume, volatility, and signed jump variations are all strongly linked to investor dissatisfaction. Chen et al. (2020) learned that the Bitcoin price had been influenced by the Corona virus outbreak, and it gives a clear picture that fear sentiment can affect the Bitcoin price dynamics. Ahn and Kim (2020) attempted to establish a relationship between sentimental aspects and Bitcoin price volatility, but they took only two variables into consideration: attention and disagreement. Moreover, they ignored other behavioural factors and emotions.

### 3.5 Herding behaviour and Bitcoin price

Poyser (2019) argued that the price of Bitcoin has never been stagnant since its inception. The price reached the level of $60,000, but then saw a sudden fall to $30,000 during the period of May 2020. If we analyse the market trend, we can understand that the market nowadays is heavily reliant upon sentiments, behavioural biases, and emotions. These ups and downs of price are majorly due to the tweets and comments of some influential personalities such as Elon Musk, the CEO of Space X and Tesla. It is a clear example of herding bias and sentimental effect.

Chen et al. (2020) considered only the fear sentiment and the Bitcoin price in assessing the price dynamics. The influence of personalities such as Elon Musk who have millions of followers on Twitter and other social media platforms was not considered. It is clear from recent events that their tweets and posts do have a significant influence on the trading trend, volume, and price of cryptocurrencies. Elon Musk had tweeted in February 2021 about Bitcoin, which created a remarkable hike in its price. In May 2021, he tweeted about Dogecoin, another cryptocurrency, which influenced people to sell Bitcoin and invest in Dogecoin instead for a while. This shows how sentiments and emotions impact the BTC price.
4 Objectives and evolving of research questions

This study is a mix of both quantitative and qualitative methods of research. It focuses on quantifying the relationship of Bitcoin prices with investor sentiments from 2016 onwards and analysing the correlation between the two. The study also goes deep into the reasons behind the price volatility by comparing the qualitative and quantitative data related to Bitcoin prices. The researchers explain the futuristic view of the BTC market by analysing the sentiments, emotions, and activities on the Bitcointalk forum and Google Trends. The qualitative and quantitative comparisons of Bitcoin price is a novel aspect that differentiates our study from previous ones. The present study sheds light on the following research questions.

1. Are Bitcoins fairly priced, overpriced or under-priced?
2. Do sentiments play a significant role in Bitcoin price movements?
3. Is Bitcoin overpriced due to market sentiments?
4. Is there any similarity found when we compare qualitative and quantitative data of BTC prices?
5. Do the biases of the investors dominate the Bitcoin market?
6. Do the tweets of famous individuals influence market trends?

5 Research methodology

A triangulation approach is considered suitable for blended research (Noble & Heale, 2019). This would increase the credibility and validity of research findings. For conducting qualitative analysis, data were captured from Bitcointalk—a Bitcoin forum. It is the most popular Bitcoin forum with more than 9,00,000 users who exchange interests, technical expertise, and experiences in developing Bitcoin (Jawaheri et al., 2020). It offers credible resources that guarantee a convenient volume for sentimental analytics (Fernández Vilas et al., 2021).

5.1 Data and software

We examined posts written regarding Bitcoin for 5 years from 2016 to 2021 on Bitcointalk forum. The data collection process focused on gathering a set of posts for the summated keywords "Bitcoin", "Collapse", "Crash", "Drop", "Fear", "Fluctuate", "Fraud", "Greed", "Instability", "Manipulation", "Pessimistic", "Price fall", "Risk", "Slash", and "Uncertainty". We collected 6 years’ worth of data with the search term ‘Bitcoin Crash’ to analyse investors’ sentiments. For supporting the sentimental analysis, data from Google Trends on the Bitcoin price for 6 years from 2016 to 2021 were also used. In addition to this, we used the market data of Bitcoin to capture the effect of Bitcoin market trends and growth. NVivo software has been used for sentimental analytics and the data visualization was done with the aid of Tableau software. NVivo allows the researcher
to interrogate data at a particular level (Zamawe, 2015). Its word frequency results demonstrated a perfect fit with the social-tagging network analysis, which is an additional advantage of this software for qualitative research.

6 Results and discussion

The available theoretical literature speaks about the sentimental analysis of Bitcoin prices. Most of the articles reveal that there is a clear relationship between the volume of tweets and the market trends. Bollen et al. (2011) demonstrated that tweets could predict the market trend 3–4 days in advance with a good chance of success. Apart from tweets, the discussions in Bitcoin forums also play a significant role in Bitcoin’s price changes (Fernández Vilas et al., 2021). We analyzed Bitcoin price behaviour by comparing its variations with the number of posts in Bitcoin forums, particularly from Bitcointalk with Google Trends results.

We considered whether there is any relationship between posts in Bitcointalk and the Bitcoin market price changes. The influence of the frequency of Google searches on Bitcoin’s price movements was also studied. Furthermore, this research compares the effect of posts with negative and positive emotions on the Bitcoin market, which has never been dealt with in crypto academic literature.

The results of sentiments analysis show that Google Trends and Bitcoin forum posts were highly correlated with Bitcoin market prices. We also found a strong causal relationship between Bitcoin prices and the searches of the investors. More importantly, we found that this causal relationship is bidirectional, i.e., the search queries influence the prices and vice versa.

The reasons for the insights are related to the findings by Kristoufek (2013), who argued that speculation and trend-chasing dominate the Bitcoin price dynamics. When prices are moving above trend, the increased interest pushes the prices further. However, if the prices are below the trend, the growing bearish sentiments pulls the prices. These push and pull factors form an environment suitable for frequent sentimental behavior. This sentimental behaviour of investors is critical to predict the market.

6.1 Sentiments analysis of the Bitcointalk forum

The activity of the Bitcointalk forum has a direct relationship with the trend in the values of BTC (Fernández Vilas et al., 2021). The research demonstrates how chatter on Bitcointalk reflects the sentiments of users. For evaluating investors’ positive and negative opinions, data were captured from Bitcointalk discussions during the period 2016–2021 using various keywords.

Table 1 reports the sentiments of forum users and their corresponding reactions. Several terms were used for searching about Bitcoin in Bitcointalk. When we captured these posts using the NVivo extension, it was found that “Bitcoin price” is the most popular search term used in Bitcointalk. Out of 1558 comments captured using 14 negative keywords, 365 have been coded as very negative, 884 as moderately negative, 248
as moderately positive and 61 as very positive. For instance, “collapse” is the search keyword treated as a very negative sentiment by 21% of forum users, moderately negative by 68% and moderately positive by 11%. Almost 89% of forum users thus have a negative sentiment regarding the keyword “collapse” and only 11% of users have positive sentiments. Hence, the negative sentiments led the market of BTC during the experimental time of our research. Similarly, the forum users were assessed on other search keywords such as “crash”, “drop”, “fear”, “fluctuate”, “fraud”, “greed”, “instability”, “manipulation”, “pessimistic”, and “price fall” (For more details see Table 1).

The overall average of negative sentiments was 78.25% and the overall average of positive sentiments was 21.75%. Moreover, we found that the real BTC market reacted according to the Bitcointalk forum’s attitude. The details of sentiments and the diagram to support the research arguments are exhibited in Table 1 and Fig. 1, respectively. The research findings support the theory of Vilas et al. (2021) that the activities and discussions held in the Bitcointalk influence the BTC market. Hence, we can unequivocally conclude that the Bitcoin forums and communities have a strong role in influencing the Bitcoin market prices.

| Sentiments   | Very negative (%) | Moderately negative (%) | Moderately positive (%) | Very positive (%) |
|--------------|-------------------|-------------------------|-------------------------|-------------------|
| Collapse     | 20.9              | 68.36                   | 10.50                   | 0.23              |
| Crash        | 31.3              | 42.52                   | 16.50                   | 9.63              |
| Drop         | 27.1              | 37.38                   | 30.51                   | 4.95              |
| Fear         | 24.5              | 46.70                   | 24.28                   | 4.50              |
| Fluctuate    | 5.35              | 56.26                   | 30.62                   | 7.78              |
| Fraud        | 17.46             | 67.12                   | 14.92                   | 0.49              |
| Greed        | 24.71             | 56.60                   | 16.51                   | 2.17              |
| Instability  | 21.10             | 70.60                   | 7.43                    | 0.87              |
| Manipulation | 9.08              | 78.04                   | 10.61                   | 2.27              |
| Pessimistic  | 57.39             | 5.07                    | 22.61                   | 14.93             |
| Price fall   | 0                 | 100                     | 0                       | 0                 |
| Risk         | 15.71             | 64.64                   | 17.82                   | 1.83              |
| Slash        | 32.53             | 27.20                   | 16.93                   | 23.33             |
| Uncertainty  | 21.2              | 66.38                   | 9.36                    | 2.96              |
| Average      | 22.04             | 56.21                   | 16.32                   | 5.4               |
| Overall Average | 78.25         | 21.75                   |                         |                   |
6.2 Long-run matching of BTC market prices and investor sentiments: Relationship between Google Trends and the BTC market during the period 2016–2021

The study examined the link between the Google Trends search frequency and the BTC market. We noticed that peaks in the search keyword “Bitcoin price crash” in Google search resulted in a fall in price in the BTC market. Figures 2 and 3 exhibit a relationship between the two time series data sets. A significant peak of the search
query ‘Bitcoin crash’ on Google Trends on 17 December 2017 was followed by a horrific crash of Bitcoin’s price. Its impact was visible in the following days: on 17 December 2017, the price of Bitcoin had been $19,783.06 and it dropped to $13,800 on 22 December 2017. The reason for this fall in price was clearly due to the emotions of investors. In addition, the launch of Bitcoin Futures helped to burst the bubble. The price of Bitcoin began to crash only a few days after the introduction of Bitcoin Futures on 11 December 2017 and suffered an 80% loss in the next year (Liu et al., 2020). Figures 2 and 3 report the price variation of the BTC market during 2016–2021 and “Bitcoin” search frequency in Google Trends during 2016–2021. We can find a similar result in the two diagrams. In other words, the prices in the BTC market and search frequencies in Google Trends are close matches. This means that the BTC market is guided by the investors’ emotions. As soon as news spreads, the investors start searching for the same in Google and take decisions accordingly. The search in Google Trends directly impacted the BTC market decision of whether to buy or sell. In short, the investors’ decision to buy or sell Bitcoin depends on the results of their Google searches. Thus, we can conclude that the ups and downs of the BTC market are determined solely by investors’ sentiments rather than economic and financial theories.

Fig. 3 “Bitcoin” search frequency in Google Trends during 2016–2021. Illustrates the price variation of Google Trends results during the period 2016–2021
6.3 Short-run matching of BTC prices to investors’ sentiments: Relationship between Google Trends and the BTC market during the period 2020–2021

Figures 4 and 5 exhibit the Google Trends data from June 2020 to June 2021 and the actual BTC market daily price data from June 2020 to June 2021. The impact of investor sentiments on the Bitcoin price is visible in Fig. 4. The search results for “Bitcoin crash” were highest on 16 May 2021, followed by a Bitcoin price crash to $38,249 on 24 May 2021 from $49,764 on 16 May 2021 in the BTC market. This crash is visible in Fig. 5. We can find a similar positioning in both diagrams, i.e., plotting of the Google Trends and the BTC market. In Fig. 4, the diagrammatic
presentation of Google Trends search query representation is matched with the actual BTC market position exhibited in Fig. 5. The fluctuations of both the diagram are a close match. If the BTC market prices were moving up, the same direction is visible in the Google Trends search frequency volume and vice versa.

Figures 2, 3, 4, and 5 support the assertion that sentiments and emotions play a very big role in the BTC market. The reason behind the Bitcoin crash during the month of May 2021 is purely due to the negative tweet of Elon Musk regarding Bitcoin, which made the investors panic and the demand for the Bitcoin dropped. Thus, it can be conclusively asserted that sentiments play a significant role in the demand and price of Bitcoin. Hence, we can conclude that the Bitcoin price is determined by market demand and not fundamental and technical variables.

7 Conclusions

This study has investigated the price volatility of Bitcoin both in the long run and the short term. We have made a comparison of both quantitative and qualitative analyses of Bitcoin price movements of both periods. This paper provides new insights regarding the causal direction between investor attention to Bitcoin and its price variations. We maintain that there is a strong causal relationship between the prices and search terms. Most importantly, this relationship is bidirectional, i.e., the search queries influence the prices, and the prices affect the search queries.

Since the intrinsic value of Bitcoin is zero, the investors cannot tell whether it is reasonably priced, overpriced or under-priced. The market forces determine the price of Bitcoin. It has also been observed that there is no face value or book value associated with Bitcoin. Hence, the investors are confused regarding the real value of Bitcoin. We were able to prove that investor sentiments and emotions are the pivot factors that determine the market prices of Bitcoin.

The knowledge realised from the literature tells us that there is an artificial investment intention in the form of digital nudges playing the field of the Bitcoin market (Mirsch et al., 2017). Our data analysis proved that this syndrome causes Bitcoin to be overpriced. Social media platforms such as Facebook, Twitter, Clubhouse, and other social media groups that promote Bitcoin add to the creation of price bubbles.

Across match has been found between quantitative trends on the Bitcoin market prices and qualitative matrices used such as Bitcointalk and Google Trends. The reason for this cross match is the cashing of investor sentiments in the market. We found that the biases of investors have influenced the Bitcoin market positively or negatively. Positive sentiments led to positive tweets, and as a reflection of the tweets the market shot up. On the other hand, negative sentiments have led to negative tweets, and the market went down. Even though money is being pumped into the crypto market, the majority of investors are doubtful about the future of the BTC market. The reason for this might be the influence of Warren Buffet and Paul Krugman who are very critical of the future of the BTC market.
8 Policy implications

We have noted that in the past six months, the top three crypto exchanges Wazirx, Coins witch Kuber and Coin DCX have blocked over two lakh accounts citing malicious activities such as tax evasion. News of other crypto currency frauds were reported from countries including the US, UK, France, Austria, Switzerland, and Germany. The biggest crisis faced by the regulators in the BTC market is that of people buying Bitcoins on one platform and sending it to unknown addresses. None have been successful in tracking down these unknown addresses. Even the crypto exchanges are unable to track them. The real issue behind all these crises is the lack of proper regulation. The crypto world is manipulated by a few select people in the world through their tweets and posts rather than the fundamentals of the BTC market. Recently, the BTC market is moving opposite of the other second generation and third generation cryptos. The prediction of the market using the theories are very difficult in crypt investment due to lack of fundamentals. At the outset, we would like to recommend that all national governments should draw up effective regulations to protect this investment avenue and to make it as investor friendly as possible. If the crypto market is allowed to move along with other financial markets, its spill over effects may influence stock and derivative market indices. We found some academic literature on this phenomenon. More studies on this aspect will be an asset to crypto literature and beneficial to investors and governments alike.

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