RESEARCH ARTICLE

A DETAILED STUDY ON CRYPTOCURRENCY AND ITS MARKETING THROUGH TWITTER

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ARTICLE INFO	ABSTRACT
	During the last decade, new technologies have played a major role in the economic exchanges all over the world. Platform-based digital currencies are equipped and widespread and the use of the internet has made an online payment and digital wallets a significant part of our lives through which, users can acquire, transfer or pay money. The recent boom in the use of cryptocurrencies has gathered a lot of attention in the economic market. The focus of the study is to assess the awareness, usage of crypto currencies among youngsters and business people, also to identify marketing strategy, public attention and opinion about cryptocurrencies. This research adopted the survey and sentimental analysis. The major finding shows that there is a neutral objectivity among the targeted people and the Twitter creates more awareness in social media. There is a lot of cryptocurrencies available in the market, but people aware of very few and feel that it is risky to invest in it. Many respondents are interested to use in the future if the government comes forward to regulate it. The friends/ relatives play an influencing factor in the investment in cryptocurrency.

INTRODUCTION

The cryptocurrency is an electronic money designed with cryptography to work as a medium of exchange that uses secure transactions. To control its creation, the hiding of user's identities and verifying the transfer of assets was used (Farhrat Fatima, 2016). Cryptography is a computer technology used for securing, hiding information and for authentications. To prevent scam and manipulation, every user of a cryptocurrency can concurrently record and verify their own and other's transactions. The digital transaction recordings are known as a "ledger" and it is available in public. The transactions are confirmed by the network nodes using cryptography and recorded in a blockchain. The blockchain is openly distributed ledger and it records all transactions details. This system requires no trust. This unique positive quality is known as "trustless". Bitcoin was the first decentralized cryptocurrency invented by Satoshi Nakamoto and made worldwide payment system. It works without a particular administrator or central bank and released as open-source software in 2009. Many attempts were failed to create digital currency in the nineties, finally he found a way to construct it (Bonneau, Miller, Clark, Narayanan, Kroll, Felten, 2014). Some of the top listed cryptocurrencies in the market are Ethereum (ETH), Ripple (XRP), Litecoin (LTC), Darkcoin (DARK), TRON. Eachcryptocurrency has own prototype and algorithms.

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Some of the merits in cryptocurrency are lower fees, immediate settlement, access to everyone, recognition at the Universal. Mining is the concept of generating the cryptocurrency by solving the complex mathematical problems or two successful transactions. All the transactions were recorded as a block form. Those who are solving the transaction will append to get rewarded with some of that cryptocurrency. In India, a new form of cash in the digital market has been raised suddenly and people came to know about Cryptocurrency and changed their focus to the new technology investments with it. It provides a level of safety and secrecy. Faked or reversed transactions cannot happen and this led to encouragement for professional and amateur speculators to invest in cryptocurrencies. At the same time, people should be aware of the risk and the volatility of the market. It is associated with the illicit activity, particularly on the dark web. There are many risk factors in this technology, whereas the Government has not made any regulatory mechanism. The Reserve Bank of India has not approved crypto currency. Crypto currency community was mushroomed with interested people who want to know about cryptocurrency information (Nishad Girish Chavan, Smita Kapase, 2017). Users should be cautious about the connotations when buying the cryptocurrencies. The general acceptability of cryptocurrencies in India is quite low. It is not odd to find savvy businesses accepting cryptocurrency as consideration for the sale of goods and services. The Indian government considering a proposal to introduce a crypto currency similar to bitcoin. It was named as 'Lakshmi'. The

plan was dropped and postponed for future. Crypto jacking is a new type of cyber-attack. The hackers use different techniques like web pages, web browsers to spread the threat and later use it for crypto mining. The malware is hidden in the system, then it generates a new token, generate Mining fees and observes more power from the CPU (Bajpai, Pranshu, 2018). Social media play a very important role in several aspects of our modern lives. Especially Facebook, Twitter, Slack are the major social media helpful for the development of cryptocurrencies all over the world. The usability of the internet in India is increasing day by day and youngsters are more actively participate in social media activities. They express their ideas by post, comment and share the opinion with others. It is more helpful to getcontact with experts who are involved in crypto currency. Through the online medium, they do discussion, exchange links, videos etc. for learning (Hernandez *et al.,* 2014). Twitter has a unique way of improving the knowledge of the users. It works as a tool for online discussion and attracted plenty of users. Social interaction is the biggest boost for many cryptocurrencies. The value of cryptocurrencies can fluctuate up and down in the trading market depending on the character of the news spread on the social media. The rapid sharing of information gave chance for traders to exit from the market before losing too much of their investment. Digital payments are made further easy. In India, Crypto currencies are bought and sold through the specific websites. Zebpay, Unocoin, Coinsecure, search trade are the most reputable and publicized company. Inside the country, if a user wants to buy or sell cryptocurrency they want to pay GST upto 18% (Dubey and team, v. (n.d.)). For all transactions, charges will apply to some percentage depending on the company theuser chooses. At present (April 2018) the finance department and Reserve Bank of India banned the cryptocurrency transactions and announced it as illegal system. The users are avoided to invest and afraid of breaking the relationship with the cryptocurrency wallets and bank accounts with a way forming period of three months (before July 5) (ET Bureau, Saloni Shukla) (NDTV Profit Team).

Review of literature

Virtual currency would help for the secure and safe transaction. The innovation of bitcoin attracted the people to participate in the bitcoin economy, must also take into consideration of risk factors. It was one of the first and best platforms for providing and promoting digital transactions. It is the correct time to substitute all aspects of fiat currency and the innovations in cryptocurrency transactions are made without a third party (Farhat Fatima, 2016). This reduces the threats of fiat currency. Every technology has some limitations and the cryptography too may be vulnerable to some hacks. This technology needs an improvement and adoption to help in the future transaction (Nishad Girish Chavan, Smita Kapase, 2017). Bitcoin was predefined with limited supply up to the 21million. It is easily recognizable, durable, as well as portable for the economics and it is the god of cryptocurrency. Normally the transaction through bitcoin takes 10 minutes. The users can buy any cryptocurrency with the bitcoin and no need to convert into fiat currency and buy. This is great advantage of bitcoin in the cryptocurrency world. It is the base and led to the development of many cryptocurrencies (Akshaya Tamradaman, Sangeeta Nagpure, 2017). Ethereum is a new type of cryptocurrency introduced in the year 2015. Vitalik Buterin was the founder and is based on the algorithm Ethash. Ethereum will manage a large set of data and more

transactions are done successfully. It takes ten minutes for transactions (DR. GAVIN WOOD, 2010). The Ripple cryptocurrency developed by Chris Larsen came to live in the year of 2012. It is a payment protocol and coded with the new type of algorithm called RPCA (Ripple Protocol Consensus Algorithm). When the user starts a ripple in the network, nodes are generated with the algorithm in few seconds and gives security for every transaction. The harmony of cryptocurrency is in public payment system and real-time gross settlement. It allows for quick convergence and flexibility in the network (David Schwartz David, Noah Youngs Nyoungs, Arthur Britto, 2014). The Blockchain technology is a public ledger functionality to solve both financial and non-financial industry problems. The backbone of Bitcoin is blockchain technology. Business applications are created using the blockchain and many start-ups were working on it. Numerous large-scale financial institutions are investing in current business models. The distributed ledger of all transactions or digital events that are been executed and shared among users. Once the information is entered it cannot be erased (Michael Crosby *et al.,* 2016).

The technology was highly specified for time management, security, andnonerasablity. The communication is high speed in the network and is used for the mining process. The Government must accept this new technology and get information in-depth. It is very helpful for the development of the competitive technology world (Wei-Tek Tsai *et al.,* 2016). The researcher explains from all aspects of technological, economic, social and regulatory perspective. Electronic online payments system are a new expansion of serving the payment in fast and easily accessible manner. Four types of the payment system, online credit card, online electronic cash, electronic-check and smart-card-based electronic-cash are brief in the research. All cards have some features and differ from each other also the methods of each payment are very procedure (Zon-Yau Lee *et al.,* 2002). Account based system and Token-based system are the two types of payment used in e-commerce website and business purpose. Both the system has merits and demerits. Credit and debit card are said to be Account based and Electronic cash is token based system. Both the system communicates with the internet through a mediator called Mediating system. It provides security and generates the billing statement implies for all the transactions. Some characteristics which are related to the user ease of use, applicability, convertibility, security, and trust. The unrelated characteristics are scalability, divisibility, interoperability, and authorization (Dennis Abrazhevich, 2001). Mainstream media was one of the major reason for the development of cryptocurrency and reached a large audience. Facebook, Twitter, Reddit, Slack are some of the specific social media took part and provide more knowledge about virtual currency. Other than this, many apps were introduced for news about cryptocurrency and its daily updates. The post and share of information have influenced the user and fluctuate the rate of currency each day. Social media provides a lot of data, links, online discussion, and expert's reviews for the better understanding of the alternative currency (Mai *et al.,* 2015). In Twitter, the information sends in the form of message, tweets or a group of friends (followers). It was integrated with various web applications and made a way for a research platform in data and opinion mining, based upon the opinion reflected in the tweet. It can be classified as positive/ negative/neutral. The data are cleaned by the removal of words other than English languages, special symbols, and links. Then the cleaned data

were filtered by subjective/objective classification, out of many neutral tweets as possible based on query-based results (Anthony *et al.,* 2010). The customer perspectives are identified by twitter sentimental analysis. Natural language processing techniques will be more accurate for analyzing a sentiment in the machine-based learning approach. The developer access the twitter data with the help of Twitter API (Aliza Sarlan *et al.,* 2014). A microblogging service which is used for a real-time analysis of public sentiment towards presidential candidates in the 2012 U.S election. Sentiment analysis can help to analyze events conducted during the election time. The opinion of the people gets instantly, while traditional content analysis takes more days to complete (Hao Wang *et al.,* 2012). Cryptocurrency industry is growing enormously all over the world and also has risk factors. One of the highly publicized company Mt. Goxfacesmajor thefts and the Government shutdowns. The reason was customers owned cryptocurrency were hacked and security breached. It was a heavy loss for legitimate coin owners. The new feasible solution was implemented for the deficiencies and developed new coins by the industry. Then it was completed successfully by eclectic Silicon Valley programmers. The industry follows the rules and regulation properly which they gave back their currency to each customer (Ryan Farell, 2015). The new technologies are easily observed and adopted by the younger generation rather than older. The Government needs to take consideration on unawareness of the existing technology and facts of information. Cryptocurrencies are a new idea and will definitely help India but still, Indians are not prepared for it. At least the Government needs to make sure people use digital payments and then move to the virtual currencies. It might take a few years for the adaptation of digital money (Anmol Mehrotra and Vanishree, 2018).

METHODOLOGY AND DATA COLLECTION

The focus of the data collection is to identify the awareness, usage, impact of cryptocurrencies among youngsters and business people, also identifies marketing strategy and public opinion. This research adopted the survey and sentimental analysis. The data are collected in the month of December 2017 to March 2018.

Sentiment analysis

Sentiment analysis is a qualitative research method used to analyze the text, letters, emotions, opinions, computational linguistics and so on. The tools are very useful for analyzing the review of product, brand etc (Medhat *et al.*). The writer's written attitude towards the topics is analyed in subjective and objective. The analysis result will be classified in positive, negative and neutral format. The researcher chose Twitter data analysis of cryptocurrency.

Sentiment Analysis on Twitter Data

Twitter sentiment analysis is used to study the user opinions, emotions through tweets of user posts. Tweets are collected through the Twitter API available on the Twitter website itself. A unique token is generated, and then the user accessed the tweets. The following packages were installed to access data from the Twitter API: library(twitter), library(devtools), library('RCurl'), library ('ROAuth'), library('base64cnc') and library('httr'). The setup_twitter_oauth function were used to set up the authentication and to get the tweets search Twitter()

function were used. The following code was used to retrieve the required data:Tweets<-searchTwitter(#deletefacebook, n=800, lang = en), Tweets<searchTwitter(#cambridgeanalytica, n=1000, lang = en), Tweets<-searchTwitter(#elonmusk, n=1000, lang = en), Tweets<-searchTwitter(#datapriv=acy, n=1000, lang = en) and Tweets<-searchTwitter(#databreach, n=1000, lang = en) (Anthony K Jose, Nipun Bhatia, Sarath Krishna S, 2010).

Using the keywords such as Cryptocurrency, Bitcoin, etc. and hashtags like #crypto, #blockchain etc. 1216 Tweets are collected in the excel format at the end of the result. The collected 1216 tweets are segregated manually by text and natural language. The twitter sentiment analysis did not test the links, special symbols and numerical. After segregation, 596 tweets were ready for analysis. The next sentence of the tweets is analyzed in the Lexicon based approach method (Baccianella *et al.*). This method is used to identify the words which are good, bad with a range of values and words are predefined with computational linguistics. (Taboada *et al.,* 2011). The result of tweets tabulated in the pivot table. The numbers of positive, negative and neutral tweets were counted and overall subjective and objective confidence level ranges are showed in the table.

Survey method

The preparation of questionnaire were based on the four parameters they heard about on cryptocurrency and the way to adopt the technology, preference to use crypto currency and the influencing factor for usage, future investments. Youngsters, business persons who are above the age of 18 and currently living in the Chennai city is the sample population for the research problem. The researcher chose the snowball technique to fix the size of the sample (Biernacki *et al.,* 1981). Each parameter has a minimum of 4 questions. Based on the answer of each parameter, futher questions were asked. For example, if a person not heard about the cryptocurrency he/she will submit the form with that question itself. A total of 16 questions were prepared, some of the questions have many sub-questions to details in depth. The time taken to fill the survey was less than 10 minutes. The researcher chooses the digital medium to collect data for the survey. From the subject referral, another two more people were identified. In the same way more people were identified. The Google form is used to access and get details from target people with the updated technology of data collection. Many referrals were contacted through cell phone and survey link were shared to them. At the end, 161 respondents filled the survey. The researcher analysed the data and double entry of the same data was removed and finally 157 respondents were sele and cted.

Interpretation findings

Sentiment Analysis of Tweets Data: The collected 596 tweets were tested for sentiment analysis. The total numbers of tweets classified on opinion and emotions are given in Table 1.

Table 1. Pivot table of analysis

Polarity	Count of Tweets
Negative	89
Neutral	478
Positive	29
GRAND TOTAL	596

From the Table 1, it is clear that the neutral count is high. The marketing of the cryptocurrency in twitter gives a neutral impact on customers. People have more negative emotions and opinions to the cryptocurrency on twitter. In a single tweet, each word with certain values is calculated based on subjective and objective of the tweet. The overall value was calculated from 0 to 1 range.
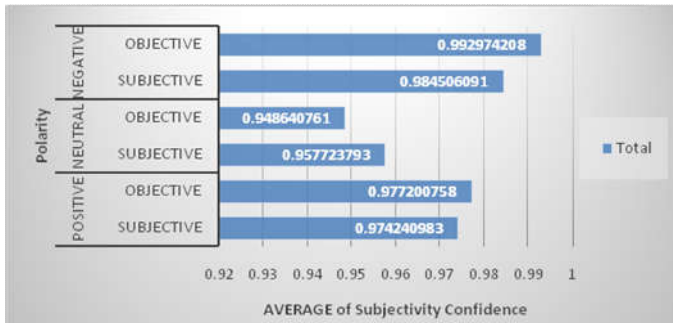

Figure 1. Average Value of Subjectivity Confidence vs. Polarity

In Figure 1, represents the clear data for the subjectivity and objectivity confidence level of polarity. The subjective of the negative value is high (0.98) and as well as the objective value (0.99). The people have more negative views on cryptocurrency. From the analysis, the polarity is negative, subjective (emotion expressed in the sentence) is less than the objective (text analysed in context). In positive polarity, the objective is more than the subjective. Neutral have more subjective than objective. From the twitter sentient analysis result, more neutral emotions and opinions were expressed to the cryptocurrency. The graph represents the clear data for the subjectivity and objectivity confidence level. Negative polarity has more objective than subjective confidence. People shared their experiences, information, and facts on twitter.

Analysis of Survey Data: The survey conducted among the youngsters, traders and business persons around Chennai. The respondent gender profile is 111 male, 44 female, and 2 respondents didn't wish to say their gender attended the survey. The survey was filled more by the youngsters from the age group 18-26. The number of respondents heard about the cryptocurrency is 83 persons and 74 persons did not know about the cryptocurrency. The age profile of the respondent awareness of the cryptocurrency is shown in Table 2.

Table 2. Awareness about Cryptocurrency in age wise

Age	Yes	No
18-22	28	29
22-26	26	23
26-30	3	13
30-40	12	13
Above40	5	5

The number of respondent from 18-26 age is more aware of the cryptocurrency is proved from the above table. The medium used to know about crypto currency among most of the respondents are Twitter, newspaper, blogs, and through friends, relatives. The respondents are more aware of bitcoin in the cryptocurrencies list. Ethereum, Ripple, and Dark coin have a minimum level. Among those, 22 females and 61 males have an idea about the cryptocurrencies. Many respondents are more aware of more than one crypto currency. The respondents already aware of cryptocurrency in a certain period of time and visit any institute for learning or know more about cryptocurrency are given in

Table 3. Count of Respondent visited centre to learn cryptocurrency

Months	Aware percentage	Visited any centre to learn	
		No	Yes
2-4 months	30%	22	3
4-8 months	32%	24	2
8-12 months	13%	11	--
more than 1year	25%	16	5

Table 3. From the data table, the awareness of crypto currency was high in the gap of 4-8 months. Totally 10 members visited the centre's to learn cryptocurrency. The usage preference of Social media to study or get news / information about the cryptocurrency are mostly is high with twitter medium to learn and study with the percentage of 37. Twitter is more used for learning and updates about the cryptocurrency. The 13 respondents were in cryptocurrency community and 17 members following various cryptocurrency related pages. It created a great impact on respondents and to spread the technology in the easy way. In India, cryptocurrency can be brought / sold in specific exchanges available in the market. The half of the respondents knows about the exchanges of fiat to virtual currency. Zebpay, Unocoin websites were known to the respondent. The number of respondents invested in any of the crypto currencies is 17 respondents and 66 responses not invested in any of the cryptocurrencies. The invested respondents with their monthly income below 10k were 3 respondents, 2 respondents were in 10k to 20k earnings, 4 respondents revenue in 20k to 40k and 8 respondents earning above 40k. From the survey, personal income above 40k is more interested to invest in various cryptocurrency. Some of the reasons for choosing cryptocurrency among respondents were the small amount to invest and gets multiplied in a few months. The instant transaction, more business people use it for immediate transfer of money in highly secured way anywhere in the world. Instant transactions, no third party, highly secured, international trade are some of the reasons. The reasons behind not to invest are half of the respondents lack knowledge and 16 respondents had an insecure feeling to use the technology. Some respondent had an economic problem to invest and not interested to gain money without working. The influencing factor of cryptocurrencies failure to convince the respondent is shown in Table 4.

Table 4. Persuading factors for not to invest in cryptocurrencies

Persuade Factors	Yes	No	Maybe
Influenced	12	36	18
Friends/relatives advice not to invest	5	53	8
Word confusing	12	43	11
Any difficulty to invests	11	37	18

The investors have many ways to use the crypto currencies; some of the familiar websites are given below to identify the preference and usage of cryptocurrency exchange sites in Figure 2.
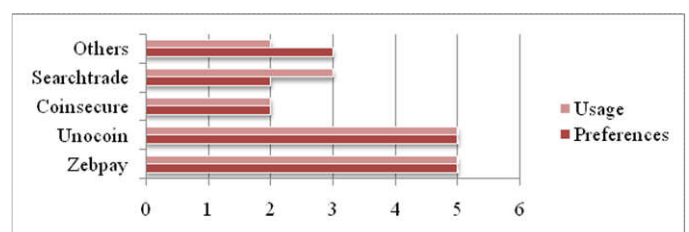

Figure 2. Rank to cryptocurrency Exchanges

From the bar diagram, Zebpay is more familiar with both usage and preference to invest, then comes Unocoin website. The Search trade usage comes third. The interface for the usage and maintenance of crypto currency is mobile apps than the websites. The mobile interface is more flexible to access and updates the information easily. Investors prefer to invest in Bitcoin and here, 12 respondents already invested in it. Other cryptocurrencies like Ripple, Ethereum etc. also were invested but with minimum investment. The usage of digital wallets to buy and sell off the invested coin by most investors are just invested in the preferred site; visited rarely to buy and sell the wallets currency. But 9 respondents daily visited their profile and check the balance. 6 respondents visited once in a week and 2 respondents visited once in a month. The invested 8 respondents have influence from their friends and relatives to do the virtual currency and the 9 respondents invested due to their own decision. The result shows that the influence factors of the environment are important to invest in cryptocurrencies.

Future: The using of crypto currency in the future will make many changes, responses decision at that time have a neutral decision of invested or investing actiontaken by them. The government banned the cryptocurrency, respondents expressed their views plot in Table 5.

Table 5. Age wise taken the views of cryptocurrency ban

Age	Cryptocurrency is banned by the government. Will you welcome it?		
	Yes	No	Maybe
18-22	7	10	12
22-26	6	13	4
26-30	5	4	4
30-40	4	6	3
above40	1	3	1

Most respondents are not interested in the government banning the cryptocurrencies. Few responses welcome it. If the government regulates the cryptocurrency in future, the respondent's opinion too changes as shown in Figure 3. The data represents that individuals have various ideas about the cryptocurrencies. The male gender has expressed more interest to invest in the future. Most of the respondents have awareness and interest to invest in cryptocurrencies.
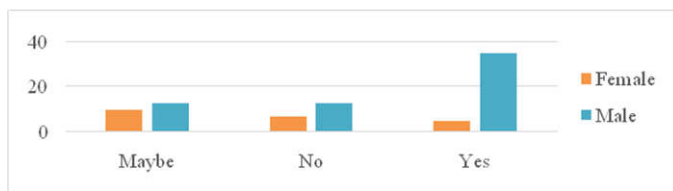

Figure 3. Responses interested to invest cryptocurrency in the future based on gender

Views on Cryptocurrencies: Cryptocurrency is sort of digital money when India is moving towards the digital format in almost all the sector, especially in finance through the move of Digital India. It is necessary to welcome this kind of new money transfers. But the problem in this kind of investment is that, it is not regulated yet. Even though several countries were trying to regulate it, no proper formation or regulations were made. Even the origin and the maintenance sector of cryptocurrency are not known properly. If all these things have a solution there will be a lot of opening for online transfer in this format. So regulating and adapting new rules for this currency will help the government to have investments other than the traditional level.

Conclusion

In the last lustrum, technologies have improved drastically and it continues. At the same time, every innovation has a level of risk when people often adopt new technologies and use in their lifestyle without any awareness. Cryptocurrency is a type of electronic payment system used for international trading, investment, exchanging money between two parties. Mining is another aspect of extraction of digital currency in the online system. At present, Facebook has also adopted the blockchain technology for improving their database and security. India, with the vision of digitization and promoting digital payments has the opportunity for adopting new technology. Regulation is needed for the new innovations otherwise it leads to illegitimate use and will not be governed by a central power. The cryptocurrency is not accepted by many of the customers due to various factors and incidents. But, blockchain is one of the major technologies which will be introduced and promoted in new technologies in a future generation, which will help to acknowledge the power of business and activities among youngsters especially in social media.

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