# Bitcoin-Blockchain Phenomenon:
# An Investigation on News Titles Influence

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*Abstract* **- The research purposed would explain, not the bitcoin-blockchain (BTC-BC) phenomenon per se, considering a good level of knowledge on the themes, but focusing the attention on two implicit connotations that these "disruptive technologies" involve. The investigation conducted by the authors considers a sentiment analysis on news titles influence during the period 2015-2018 supported by a field analysis. That approach based on framing activity would intersect different study areas from innovation, economics, psychology, behavioral analysis, marketing and decision-making. Innovations should be studied under different aspects considering their probable wide range impacts on several fields. The exploratory approach to investigate something new would be interesting and useful to open windows of discussion and interpretation. The research focuses the two main factors of marketing strategies: scarcity and persuasion. The aim would be to validate these concepts in BTC-BC phenomenon as a kind of implicit marketing strategy.**

*Keywords: Bitcoin-Blockchain, Media Influence, Scarcity, Persuasion, Decision Making*

> *"Their principal merit, however, arises from their beauty, which renders them peculiarly fit for the ornaments of dress and furniture. No paint or dye can give so splendid a colour as gilding. The merit of their beauty is greatly enhanced by their scarcity".*                -Smith, 1776-

## I. INTRODUCTION

The ever increasing news about bitcoin, the huge breakout in prices during the end of 2017 and the media ferment about the "disintermediated money" (Rainero et al., 2019) assume the trigger role to this research. In that direction, the word-of-mouth (WOM) (Kozinets et al., 2010) communication moves and attracts marketers' attention (Hsieh, Hsieh & Tang, 2012). The authors bases the research design on the fact that bitcoin could be considered more in general as a social learning phenomenon (Rainero & Modarelli, 2019). In specific ambits it could represent financial and economic phenomenon or on the side of its underlying technology (blockchain), an organizational one.

In these perspectives, bitcoin would influence real life in its entirety. News about it could be able to modify or manipulate people decisions. It is true that the decision making process is quietly rational, but on the other hand, internal and external influences (that case) can occur. What mentioned above gives to bitcoin a strong force to generate impact not so much related to its intrinsic entities and characteristics, but in its communicative outcome.

The research objective would be very focused and concise in verifying the presence of external influences (positive, negative, neutral, not congruent or double) (Wilson, Wiebe & Hoffman, 2005; Bandura, 1965; Bryant & Zillman, 2002; McQuarrie & Phillips, 2005; McQuail, 1979) through sentiment analysis (Pang & Lee, 2008) on news titles collected thanks to BTCworldnews.com from January 2015 to January 2019.

The authors would confirm the assumptions on the presence of scarcity and exclusivity perception, higher perceived value and persuasion (Cialdini, 1983; O'keefe, 2002) as a kind of implicit marketing strategy behind bitcoin success and its powerful social impact also through blockchain technology application.The authors opt for a validation survey in which people would affirm their perceptions about bitcoin-blockchain (BTC-BC).

## II. REFERRING SCENARIO AND RESEARCH OBJECTIVES

Nowadays, people would be affected by advertising campaigns. The aim would be to increase human desire to possess objects. According to reinforcement on the attractive power of products, marketers uses words and figures to promote objects, sometimes linking values, appeal and status symbols.

Another attractive method in marketing strategies would be to suggest scarcity or limitation of quantity. In fact, limited editions (i.e. related to books, cars, cellphones etc.) are continuing to appear on the media. The limited editions often costs more than the standard products (Worchel, Lee & Adewole, 1975). This view suggests that something of interest would be appreciated in scarcity perception able to increase the attractive force on customers.

The perceived value of scarce products (i.e. commodities, rare goods etc.) would be a weapon of influence (Cialdini, 1983).

Brock (1968), used scarcity as crucial focus point of his study. Brock (1968) used the term "commodification" referring to the situation able to set the perceived scarce availability related to an object. He focused the research on the persuasive power of communication. In 1975, research conducted by some American professors (Worchel, Lee & Adewole, 1975) required several persons to evaluate chocolate biscuits. A certain number of cookies has been placed in a jar and a scarce number of them (the same type) has been placed in another one. The scarcer amount of cookies received a higher interest than the larger ones, but they were exactly the same product without differences out of quantity.

That experiment would be exhaustive to explain the idea that poorly available products would be more appealing and interesting than the others.

As suggested by Cialdini (1998), through the influence process and persuasion, people would generate and manage changes in social life.

Each process could be handled to foster growth and to move people manipulating habits in different directions (Cialdini & Trost, 1998).

According to what aforementioned, the authors' aim would be to provide an answer to the following research questions.

**RQ1: are news about bitcoin-blockchain phenomenon considerable persuasive?**

To answer that question the authors provide a precise analysis based on a specific period 2015-2018, segmenting it in three parts with the objective to provide a clear frame of advancement state in multiplicity of news appeared on the different media, collected by BTCworldnews.com.

**RQ2: could news titles about bitcoin-blockchain phenomenon reflect an implicit marketing strategy based on perceived innovation value through scarcity and persuasion affecting decision-making?**

To answer that question the authors provide a precise analysis based on the specific period above mentioned. At theoretical level, the authors lead back the discourse to the concepts of scarcity and persuasion, well explicitated in economics, marketing, strategies and other fields as psychology. The aim would be to shape the lines of BTC-BC phenomenon, on one hand due to scarcity connected with the desirability and value perception, that intrinsically characterize bitcoin and on the other one, to the RQ1 through sentiment and field analysis.

The first part of the paper considers the literature review on scarcity and persuasion perception strategies under different lens, but especially marketing related to the RQs.

The second part focuses the attention on BTC-BC phenomenon based on scarcity and persuasion supported by a sentiment analysis and a framing approach to build the methodological paradigm that includes coding maps and influence perceptions.

Results and discussion conclude the paper through the field analysis validation, considering a sample (38 males and 29 females) selected through specific characteristics. The age fixed between 18 and 29 years old students (n.21 of economics and n.46 others faculties; total sample n.67). The decision to apply a questionnaire to these subjects is due to the higher impact that the innovation investigated would have in the future for them and to generate heterogeneity of the probable user and applicant population. To avoid other influence, exogenous, the sample shows predominant characteristics of medium knowledge on the theme.

### III. SCARCITY PERCEPTION STRATEGY

The Merriam-Webster Dictionary defines scarcity as the quality or state of being scarce. Scarce would be the deficiency in quantity or number compared with the demand: not plentiful or abundant becoming unavailable, in other words, not possible to get or use. By contrast, the definition of available would shape the presence or ready for immediate use available resources.

Restrictions to the opportunity to possess something or to do experience through objects would signify a kind of freedom loss. Facing this loss of freedom, people would have the tendency in desiring limited objects. This loss also would influence the perceived value and desirability motivation that move people to possess those objects. Researchers shows that purchase restriction strategies would be used as informational cues by customers to evaluate offers (Aggarwal, Jun & Huh, 2011; Howard, Shu, & Kerin 2007).

Promotional strategies including messages about scarce availability of a product would create a sense of urgency/anxiety in buyers' behaviours. Scarcity messages can help raise a product's perceived value, and consequently, influence the consumer's intention to purchase it.

Cialdini (1983) expressed that the idea related to potential loss in freedom perception linked with decision-making process, plays a crucial role in human habits and decisions. In fact, people would be moved and more motivated by the thought of losing something than by the thought of gaining something of equal value. In this case, people think that rare objects would be typically better than those that are of easier

availability. In fact, people often use objects' availability to decide about their quality (perceived).

So when scarcity tends to increase, or something/someone interfere with people possibility to acquire an object of desire, they tend to react against these obstacles and try to acquire the object desired with more passion, more motivation than before, as a question of honor.

When people freedom reach to acquire something limited and/or the object of desire tends to be less available, the desire to acquire it would be increased and enhanced.

It would be possible for marketers to artificially reduce the availability of products offered giving a false signal of quality perception among customers (Lee & Mukherjee, 2011).

The scarcity effect has been conceptualized by Cialdini (1987) during his study on social influence. Cialdini (1987) suggested that the "scarcity", or the limited availability of a product, would generate a strong desire to acquire this scarce good. That process would unavoidably affect decision-making. In fact, in addition to the media persuasion would have been generated the cause of the rush and competition to acquire (also at huge price) BTC, moved by the motivation of profit opportunity for a good, that per se, shows zero value (Cheah & Fry, 2015).

In the same way, it would be observable the increment of interest and applications of blockchain technology in large spectrum for every sector.

In other words, it seems that people tend to establish a mental association in terms of the rarer a product would be, the more value (perceived) it would have.

Scarcity would be a fundamental concept in economics. Economists are concerned with both the scarcity of means (represented by budget lines) and the scarcity of goods (represented by supply curves). According to the traditional micro-economic theories of price and demand, the scarcity of goods lead to higher prices (Lynn, 1989). Something of limited availability due to market circumstances were perceived as more costly and more unique than something abundantly available (i.e. gold and diamonds).

Availability of goods influences consumers' preferences, and this effect is mediated through perceptions of uniqueness and cost evaluations (Verhallen & Robben, 1994).

Lynn's (1991) meta-analysis shows, following Brock's (1968) commodity theory, that scarcity would enhance the value of what could be possessed. The scarcer a good would be, more value would be acquired increasing its level of desirability and the motivation to possess it.

A good could be made more desirable, and with more perceived value through the manipulation of its scarcity, not always true, often only thanks to perception tricks (Verhallen & Robben, 1994).

Researchers in different fields suggests that scarcity would affect in a positive manner consumers' perceptions and behaviours in decision-making, modifying the product power

of attraction (Szybillo,1975). Other researchers add to the discourse concepts as expensiveness and desirability, perceived quality and taste (West, 1975; Lynn, 1989; Verhallen & Robben, 1994; Fromkin, Williams & Dipboye, 1973; Atlas & Snyder, 1978; Ringold, 1988;; Worchel, Lee, & Adewole, 1975).

Researchers shows that many brands implement scarcity messages and campaigns promoting limited editions of specific products (Balachander & Stock, 2009; Gierl & Huettl, 2010). Typically, brands can implement two types of scarce availability for some products: (1) limited-time and (2) limited-quantity (Cialdini, 2008). These kind of strategies are both present in BTC System (Guttmann, 2014).

As assumed by Atlas and Snyder (1978) people would tend to associate scarcity with higher prices. The same considerations have been made by Fromkin et al. (1971) and Worchel et al. (1975). On the other hand, expensiveness would enhance the desirability of goods because higher priced items would be status symbols and synonym of higher quality (Monroe and Petroshius 1981; Veblen, l965). These observations would suggest a kind of equation in which scarcity means expensiveness; expensiveness would enhance quality perception and status symbols, increasing motivation (Deci, 1971; Ryan & Deci, 2000) to acquire.

The following model explains the concept in a graphical way facilitating to understand the nexus existing between the scarcity and motivation to acquire something (Table. 1).

TABLE I.        REPRESENTATION BASED ON SCARCITY PERCEPTION AND DECISION-MAKING
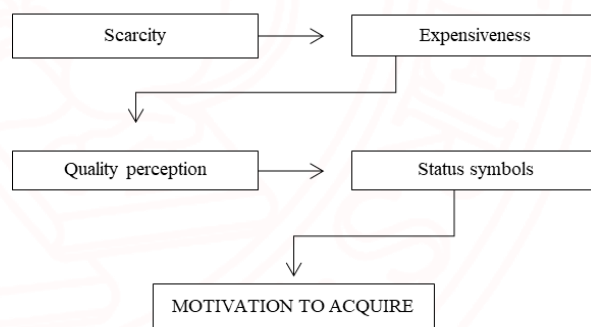


Source: our elaboration

Often people do not have access to all the information able to create a knowledge context in which accurately evaluate products in its entirety and those of the competitors.

When people activate the mental representation based on scarcity and higher perceived value (sometimes enhanced by marketing influencing strategies), the desirability force immediately would generate a choice to buy on the wave of emotion.

## IV. PERSUASION PERCEPTION STRATEGY

Emotion and persuasion would be an interesting and an old topic especially in psychology field (Ray & Batra, 1983), but not only. Over the last 50 years, social scientific persuasion research has flowered. In fact, relevant researches have been conducted in different fields about social sciences (i.e. sociology, political science, communication, psychology, and anthropology, environmental studies, public health, medicine, marketing, advertising, law, business, education etc.).

This would reflect the pervasiveness of persuasion in human social life, assuming that human decision-making would be shaped by persuasive communication.

The Merriam-Webster Dictionary defines the verb to persuade as the possibility to move by argument, entreaty, or expostulation to a belief, position, or course of action, and persuasion as the ability to persuade.

Effective advertising, in other words, persuasive advertising would win in competitive situations thanks to persuasion force and multiplicity of influencing messages due to repetition. Born in psychology field, the concept of persuasion is becoming important in advertising and behavioral analysis (O'Shaugnessy & O'Shaughnessy, 2004).

That would have greater impact on the people's inferences and behavior (Ray & Batra, 1983). Persuasive messages would be involved in promotions, for example press releases to the media. These strategies would be incentives organizations use to modify or manipulate in a certain way the good or service value perceived by the customers.

A coupon, contest, reward, or price discount would be all sales promotions. For example personal selling, now filtered by media, would involve face to face persuasion to sell product as the case of door to door sellers. These strategies are identifiable as sources shaped to persuade the receiver in taking actions or making decision in the present or in the future.

Advertising repetition is concerned with the presentation of the same message repeatedly. The importance of repetition and message coordination in advertising highlight the major distinction between viewing advertising as a solitary stand-alone stimulus versus seeing it as an ongoing campaign.

To make advertising effective and more relevant, it would be necessary to consider multiple exposures over an extended time period and from various sources (Rodgers & Thorson, 2012). In fact, the marketers' challenge is to make advertisements relevant to as many people as possible.

The persuasive press inference suggests that public opinion would be influenced by the media content.

News articles had a significant effect on participants' judgments of public opinion (Gunther, 1998).

So communication content may be viewed as an end product, the content useful to be investigated would be words or images from online sources or traditional ones (i.e. newspaper, as the case object of study) (Riffe, Lacy & Fico, 2005).

Laad & Lenz (2009) during their study suggest an interesting view on influence and persuasion that newspaper would have on people opinion. The case bases on using panel data on prominent British newspapers before the 1997 United Kingdom general election. They studied the persuasive power of the news media. By comparing readers of newspapers and not readers of these ones, they estimated that several papers would be able to persuade a considerable share of their readers to vote for Labour.

On that empirical base, at methodological level, the authors decides to conduct a content analysis on news titles influence, focused on bitcoin and blockchain themes, that would be reciprocally interconnected.

## V. BTC-BC SCARCITY AND PERSUASION

In marketing studies and campaigns, "scarcity" is used to influence customers' behaviours. Campaigns and messages based on limited quantities indicate that scarce availability generally has a positive effect on product evaluation. That would be due to the customers perception on superior value (Lee & Mukherjee, 2011)

Scarcity would have a more profound effect on a person's behavior when it is created a direct competition among customers.

When customers compete each other, the seller would reach benefits from that competition. Marketers often create competition and urgency sense in buying habits, in addition to perceived scarcity through limited term and quantity strategies.

Aggarwal, Jun & Huh (2011) suggest that in the case of limited term strategies buyer do not compete. Their advantage deriving from promotional offers starts by meeting the deadline set by the seller. By contrast, limited quantity strategies would restrict the set of units. Each purchase decreases the number of available units of the others. That would create a sense of uncertainty. The uncertainty would make a sentiment of "special buyer". This perception would amplify the value of the product indirectly due to the limited number of items available.

The motivating effect (Deci, 1971; Ryan & Deci, 2000) would go beyond its monetary value (Schindler 1989). In bitcoin and blockchain application the sense of uniqueness would be replaced respectively by the perception to be "a smart investor" and "a smart user or early applicant".

The interesting aspect refers to the finished stock of 21 million units of "virtual coin". The majority of bitcoin production took place in the first two years. In 2024, about 94% of the total stock will be on market. From 2024 to 2140 the overall offer will be finally completed (Capoti et al., 2015).

Paradoxically, the "bitcoin rush" becomes faster both on the supply side and on the demand one thanks to the system based on a finite stock, able to function due to a "labor market" based on inversely proportional incentives for the "miners" (Rainero et al., 2019).

The sense of scarcity, that characterizes bitcoin (Capoti et al., 2015), and exclusivity around a new controversial

technology, added to a pervasive media ferment, would have been able to create the peak of interest, on one hand in investments, and on the other one on the possible tool application in different fields.

As reported in the findings part, according to the field analysis, the frequency related to the value perception of bitcoin would appear highly focused on "profit opportunity". Perceived value and profit opportunity would be interconnected with scarcity concept.

Marketers often use scarcity appeals in advertising and promotion. Products would be different as vehicles, coins, pens etc. produced in limited quantities and promoted as rare, scarce, difficult to obtain and less available. The pervasiveness of this scarcity would make the behavioural impact on decision-making, affecting customers' perception and their evaluations and judgements: the so called "scarcity effect" (Lynn & Bogert, 1996).

That would be the core topic of the study. The scarcity would be, on one hand, an intrinsic character of bitcoin and blockchain related to few applications nowadays existing in several fields (i.e. blockchain application for Food & Beverage sector by the first multinational in Europe) not necessarily to be validated, by contrast, persuasiveness would be considered through news titles quantity among the years about the themes.

O'keefe (2002) suggests that printed texts would be visual objects (i.e. new titles) (even if not accompanied by pictures) that would have a little systematic persuasion.

The authors purpose a sentiment analysis based on news titles influence and a field analysis on people perceptions to validate assumptions.

Considering the qualitative connotation of the analysis, the heterogeneity of the observation and possible subjections to perceptive variability, the authors try to follow a categorization approach based on titles coding about arguments and related behavioural influence that words used in news titles appeared on web between 2015 and 2019 could have created a kind of positive persuasion on decision-making.

The concept of message frames and framing effect, continue to permeate research methodology in social sciences. On that consideration, it would have been possible to shape a sentiment analysis as a task able to identify positive and negative opinions, emotions, perceptions, influences and evaluations.

The majority of works structured on sentiment analysis has been conducted at the document level.

A typical approach to sentiment analysis would start through a lexicon of positive and negative words and phrases. Under these conditions words would be considered with an ex ante prior polarity, totally decontextualized (Wilson, Wiebe & Hoffman, 2005).

The analysis conducted by the authors would base a starting point on the words that evoke something positive or negative and not congruent, implementing a second phase including

double influence and neutral. The news titles not congruent and with double and neutral influence have been eliminated because, for the former, the news titles lack of reference about BTC-BC, that would be present in the content not considered in the type sample, equally indexed by the website BTCworldnews.com; the latters (double and neutral) have been eliminated because of their dubious influence.

That has been possible thanks to the words interpreted through the context and sensitive approach of meanings. Problems on salience and multiplicity of news from different sources can occur in sentiment analysis. To face these problems, it has been conducted the research and subsequent analysis human sensitivity-based on news titles (from January 2015 to January 2019) extracted by the web site BTCworldnews.com. On one hand, the web site used as instrumental tool for the study, has been treated as a filter hub in collecting the major notices about bitcoin, and consequently its relation with blockchain from different sources.

At methodological level the authors uses framing approach (Entman, 1993) through news titles. In this sense, news titles would appear as a framed selection of contents, synthetized and powerful in their impact on human perceptions and subsequent influence on decision-making.

As attested by Entman (1993) framing essentially involves selection and salience. In this sense, to frame would mean to select some aspects of a perceived reality making them more salient in textual communication. In fact, framing activity highlights some parts of information about an object that would be the subject of a communicative approach.

According to what mentioned, the framing activity would elevate salience of information.

An increase in salience would enhance the probability that receivers will perceive the information discerning meaning, processing it and storing it in memory for further decisions.

In the authors' approach, news titles assumes that role enhanced by filters adopted in the searching engine provided by the web site investigated as crucial hub.

## VI. SENTIMENT AND FIELD ANALYSIS FINDINGS

Some researchers observe that the area of sentiment analysis and opinion mining have recently enjoyed by academics (Pang & Lee, 2008). If on one hand sentiment analysis considers the emotions through the words expressed by customers, affecting decision-making about companies' marketing strategies, the same analysis could be conducted on the sentences, phrases, metaphors, used to influence behaviours, emotions and decision-making in customers' habits, as an interrelated connection.

Thanks to a parallelism, BTC-BC, could be investigated through the influence effect operated by news and text influence (O' Keefe, 2002).

As stated by Bryant & Zillman (2002) the news media would be not the only source of information or orientation to issues of public concern. McQuail (1979) affirms that the mass

media would be highly diverse in content and in forms of organization and include a very wide range of activities which could have effects on society.

The authors, focus the attention on news titles, provided by online sources, because of the actual routinely behaviours in information seeking on the web. Meho and Haas (2003) suggests that the 88% of respondents to their research uses to seek information on electronic resources.

Before explication of data, a distinction would occur between effects and effectiveness. McQuail (1979), separates the former referring it to the consequences of mass media operation, the latter to the capacity in achieving certain objectives, attracting large audiences or influencing opinions and behaviours. That consideration would enhance authors' focused observational channel. The media ferment about BTC-BC in the last two years (n.3.122 in total of which with positive influence 1.615 from 2017 to 2018), probably creates kind of mass media influence (Bandura, 1965; Giles & Shaw, 2009; Bryant & Zillman, 2002; McQuarrie & Phillips, 2005; McQuail, 1979), like implicit persuasion-based marketing strategy on human behaviours related to an innovation tool.

Usage of metaphors, may be advantageous because they would be able to render the customer more receptive to multiple and distinct positive inference about the tool object of advertisement (McQuarrie & Phillips, 2005). In the same way, to write an article and individuate a title for it, would be able to reproduce a marketing strategy, rendering receptive the reader (Ricketson, 2004) and subsequently influencing its perceptions. The authors analyze the probable humans' behavioural influence due to news titles about BTC-BC through humans' perceptions accuracy.

Reproducing Tversky and Kahneman (1981) purposal based on negative and positive messages framing their impact on decision-making behaviour. The authors, filtering the referring period and the subject (bitcoin-blockchain), extracts n. 5.138 news titles through the analysis conducted. The method provided favors a textual interpretation, using the reader capabilities in discerning the possible influence. Through that approach, it has been possible to code each title relating it to a specific topic (Tab. II) and types of influence provided related to the number of news have been graphically reported (Tab. II, III, IV, V). The results of the amount complexity of news title analyzed and influence provided have been reported in Graph.I (news quantity trend 2015-2018) and graph. II (news positive influence trend 2015-2018).

TABLE II.   NEWS TITLES ANALYSIS: INFLUENCE AND ARGUMENT CODE

| INFLUENCE | ARGUMENT CODE |
|---|---|
| **Positive** | News titles explaining how bitcoin-blockchain works |
| | News titles attesting to the use of bitcoin-blockchain at institutional level and / or in large private companies |
| | News titles that proves motivated interest in bitcoin-blockchain at institutional level and / or of large private companies |
| | News titles about opening websites / stores / banks etc. that accept / exchange bitcoin and/or use blockchain |
| | News titles on future perspectives and applications for |

| INFLUENCE | ARGUMENT CODE |
|---|---|
| | bitcoin-blockchain usage |
| | News titles about bitcoin-blockchain process improvements |
| | News titles about increasing price/ value / interest on bitcoin-blockchain |
| **Negative** | News titles about arrests and scams on bitcoin-blockchain |
| | News titles of closing sites / stores / banks etc. that accept / exchange bitcoin and/or deny blockchain application |
| | News titles about hacking to blockchain systems and bitcoin wallets |
| | News titles on bitcoin tax regulation |
| | News titles on issues and warnings related to bitcoin-blockchain |
| | News titles about excessive consumption for mining activities on bitcoin-blockchain |
| | Skeptical news titles about bitcoin-blockchain |
| **Neutral** | News titles containing neutral influence effect |
| **Double** | News titles containing double influence effect as: *"Bitcoin is worth more than ever, but it is losing strength"; "Bitcoin: the future of money or just hype"* |

Source: our elaboration

TABLE III.   *NEWS TITLES ANALYSIS INFLUENCE PERCENTAGE (2017-2018)*

| INFLUENCE | | | | | |
|---|---|---|---|---|---|
| Positive | Negative | Not congruent | Neutral | Double | Total |
| 1615 | 717 | 211 | 496 | 83 | 3122 |
| 51,73% | 22,97% | 6,76% | 15,89% | 2,66% | 100% |

Source: our elaboration

TABLE IV.   NEWS TITLES ANALYSIS INFLUENCE PERCENTAGE (2016-2017)

| INFLUENCE | | | | | |
|---|---|---|---|---|---|
| Positive | Negative | Not congruent | Neutral | Double | Total |
| 1159 | 295 | 3 | 7 | 12 | **1476** |
| 78,52% | 19,99% | 0,20% | 0,47% | 0,81% | **100%** |

Source: our elaboration

TABLE V.   NEWS TITLES *ANALYSIS* INFLUENCE PERCENTAGE (2015-2016)

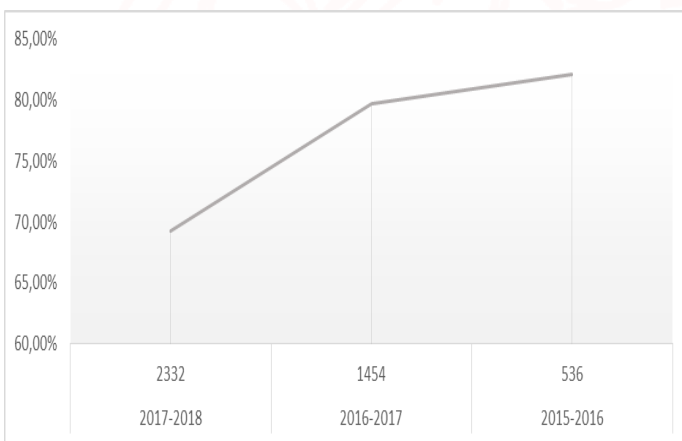| INFLUENCE | | | | | |
|---|---|---|---|---|---|
| Positive | Negative | Not congruent | Neutral | Double | Total |
| 440 | 96 | 0 | 1 | 3 | 540 |
| 81,48% | 17,78% | 0,00% | 0,19% | 0,56% | 100% |

Source: our elaboration

GRAPH.I NEWS QUANTITY TREND (2015-2018)
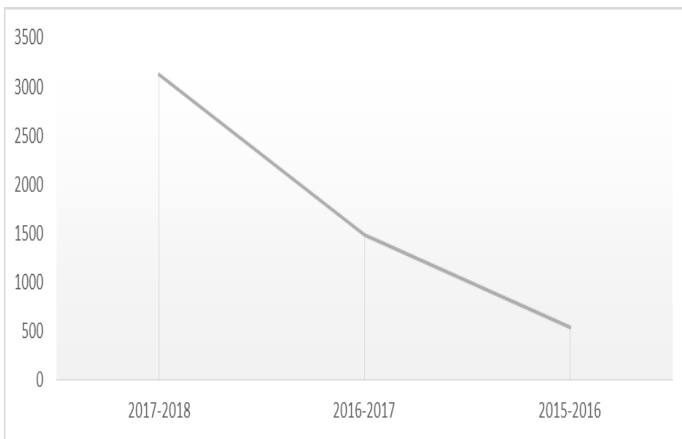
Source: our elaboration

GRAPH.II NEWS POSITIVE INFLUENCE TREND (2015-2018)



Source: our elaboration

The highest amount of news has been observed in the last period (2017-2018 coinciding with the highest price peak of bitcoin).

On the field analysis side, the sample has been involved to answer questions about their perceived influence after reading eight different news titles blocks about BTC-BC themes. The sample has been called to answer and grading the perceived influence on a pentenary Likert scale. The investigation has been interesting to frame people perceptions and influence on BTC-BC, but also at methodological level the field analysis conducted on the sample in relation to news title influence (Graph.III), has been useful to shape the referring paradigm to categorize the kind of influence pushed (Tab.II).

The results have been reported in the following graph.III. To facilitate reading, the authors' aggregates answers grades reporting scarce, not much and indifferent influence through the scale from 1 to 3 and 4-5 representing higher level of influence (perceived).

GRAPH.III NEWS TITLES INFLUENCE ON THE SAMPLE
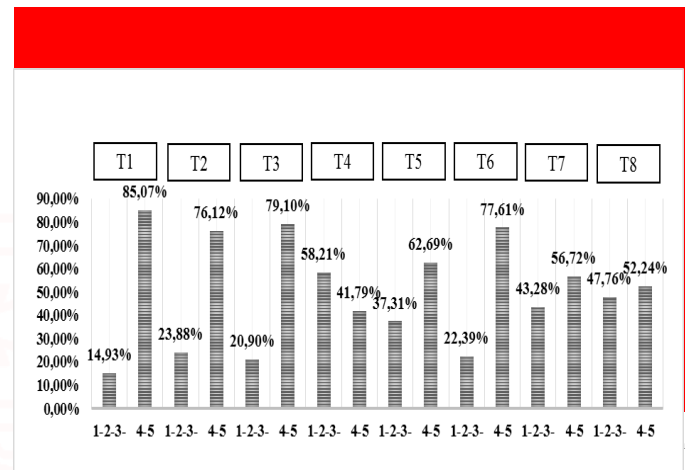


The table VI reports the news titles purposed for the field analysis to the sample.

TABLE VI. *NEWS TITLES PURPOSED*

| |
|---|
| T1. Blockchain revolution: how new technology will change our lives |
| T2. Blockchain: 5 companies test the new technology |
| T3. The economist who predicted the 2008 crisis: "bitcoin the biggest bubble in history" |
| T4. Central Bank of South Africa starts bitcoin regulatory experiments - Starbucks now accepts bitcoin |
| T5. Professor of economics: "bitcoin will make many millionaires" |
| T6. Bitcoin: bubble or earning opportunities? |
| T7. Bitcoin is a good cover against the system and could be the new gold - Bitcoin is expected to increase by 165% thanks to D. Trump |
| T8. Bitcoin mining is a family business for both father and son - A high school student becomes a millionaire thanks to bitcoin |

Source: our elaboration

T1. The answers to the title 1 purposed shows the 85,07% of influence. That kind of result would be probably due to the direct effect that words used would have on people lives (direct interest).

T2. Shows 76,12% of influence, probably due to the interest related to the few starting application of blockchain technology (perceived scarcity) and future interest about the tool.

T3. and T5. have been selected because of their source dependence characteristics. The authoritativeness of the source (Professor of economics for both T3.-T5.) and the conflicting content about BTC: T3.- bubble (negative influence) and T5.- profit opportunity (positive influence), reach about the same percentage of perceived influence, respectively 79,10% and 62,69%. The latter probably mitigated by the scarce risk propensity of the sample involved.

T4. appears scarcely influence-based (41,79%) probably due to the source dependence of the news title purposed that on one hand, widely recognized at institutional level, but perceived in a distant way from the place of the investigation (Italy).

T6. would represent a doubt, a kind of double influence, that in this case shows a positive influence (77,61%), but ignored by the sentiment analysis to avoid confusion.

T7. shows 56,72% of positive influence.

This level could have been affected by the political connotation of the news titles content (a political subject added to two positive influences about BTC).

T8. the news titles purposed could create the base for a positive influence on decision-making due to the frame of family business for father and son, that shapes a kind of simple activity perception added to the possibility to be millionaire thanks to BTC as a high school student.

In fact, the results related to perceived influence appears 52,24%. The data would be probably mitigated by the lower risk propensity of the sample involved.

The field analysis has been conducted to extract additional data and information about behavioral influence of words, specifically to validate the assumptions related to influence due to persuasion, higher level of perceived value and scarcity that characterizes BTC-BC phenomenon. The table VII reports data about frequency of expressed perception by the sample. The 61,19% of the sample affirms (at perceptive level) that BTC would be profit opportunity.

Perceived value and profit opportunity would be strictly connected with the scarcity concept in investment system and commodities (i.e. gold). On the other hand, the medium-scarce knowledge of the sample about the theme, would explain the polarization on the "profit opportunity" (Tab.VII).

That, would implicate the higher perceived value due to scarcity and competition to acquire a certain quantity of the BTC good, ignoring the scarcity perception that would intrinsically characterize bitcoin ("good for collectors" and "scarce good" by origin), unconsciously related to "profit opportunity" and associated to "future money", probably because of external influence.

TABLE VII.    *BTC PERCEPTION*

| Answers | Frequency | (%) |
|---|---|---|
| Good for collectors | 4 | 5,97% |
| Scarce good | 6 | 8,96% |
| Profit opportunity | 41 | **61,19%** |
| Future money | 23 | **34,33%** |
| Scam | 10 | 14,93% |

Source: our elaboration

## VII. CRITICAL INTERPRETATION OF FINDINGS

According to the research approach, it would be possible to affirm the existence of different points of view, intersecting different fields of study, epistemiologies and perspectives that contribute to build a wide range of interpretative paradigms around the referring frame in which would be possible to operate and to research taking in place relationships, interconnections and reciprocal influences.

In the authors' view and under the lights of the data, the perceived value of bitcoin-blockchain phenomenon, could be interpreted as a kind of marketing strategy. The people interest would have enhanced thanks to unconscious (implicit) persuasive and massive campaign of news ferment, as well as price level (in the case of bitcoin), and further application of its underlying technology (in the case of blockchain). That implicit strategy has been probably able to modify people decision-making through perceived value about BTC-BC.

The news amount would appear greater in quantity among the period referred to the bitcoin price breakthrough (2017-2018). The number of news (attesting persuasion) would reveal the interest on the themes, according to the assumption of bitcoin and blockchain as an implicit marketing strategy, the pillar of persuasiveness would be validated by the multiplicity and repetitiveness of the news messages in the referring period.

On the other hand, an interesting point of view has been reported in Graph.II. The positive influence of the news titles would tend to decrease in the last period observed (2017-2018). That would be probably due to the more consciousness, awareness and the increased criticism and skepticism about controversial themes (bitcoin – blockchain) that acquire more social interest starting from November 2015 and May 2017 (Rainero & Modarelli, 2019).

## VIII. LIMITS AND FUTURE PERSPECTIVES

On one hand, the limit of research could be underlined about the difficulty to map the whole news scenario on bitcoin-blockchain. The authors refers only to a specific notices hub, that could operate a gatekeeping selection. On the other hand, the accuracy of human perception could be mined by subjectivity around the analysis and the difficulty (also adopting a coding scheme and criteria to frame the arguments) that would be present in categorizing influence. In fact, the analysis could not precisely define and shape the influence on certain persons.

Guilford (1959) assumed that personality would be a unique set of traits. In psychology, researchers suggest that traits influence behavior and perceptions (Endler & Magnusson, 1976; Menkhoff, Schmidt & Brozynski, 2006; Bargh & Pietromonaco, 1982).

In this sense, news titles attesting fraud thanks related to bitcoin-blockchain would create a positive influence on criminal traits and negative on the others. In the same way, news about tax regulation could be appreciated or not, depending on people traits.

These cases have been reconducted to negative perspectives on that base: (1) for the first case, assuming that fraud would create repulsion to generalized sample of people, and deviant propensity to crime would be a minority; (2) for the second case, the tax regulation could have a negative effect on perception and decision making, creating repulsion against external role imposition (Oliver, 1991).

Other perspectives able to enhance the research could enact statistical words analysis and the possibility to investigate with the same methodology a wider sample of news titles. On the other hand a content analysis, if possible, could furnish deeper study on the theme.

## IX. CONCLUSIONS

The research purposed shows the bitcoin-blockchain (BTC-BC) phenomenon under the lens of external influence, the media influence affecting decision-making.

The authors focus the attention on two main connotations proper of marketing strategies: scarcity and persuasion.

At methodological level a sentiment analysis has been conducted and in addition a field analysis would validate the theoretical assumptions. The former has been conducted on news titles influence during the period 2015-2018 thanks to the support of BTCworldnews.com used as specialized filter-hub collecting the main news on the theme around the world.

The field analysis conducted with questionnaires, would validate the considerations discussed in the results. The approach used to construct the sentiment analysis bases on framing activity to create a code map discerning the different perceived influence through human sensitivity (positive, negative, not congruent, neutral, double).

The research intersects different study areas from innovation, economics, psychology, behavioral analysis, marketing and decision-making. Innovations require to be studied through different methods and especially through exploratory approaches, considering every single aspect of their probable wide range impacts on social life.

The research provided would open a new horizon of discussion according to the interpretation of the BTC-BC phenomenon as a kind of implicit marketing strategy in which scarcity perception and persuasion would be the trigger of decision-making and breakthrough of interest level about these themes around the world.
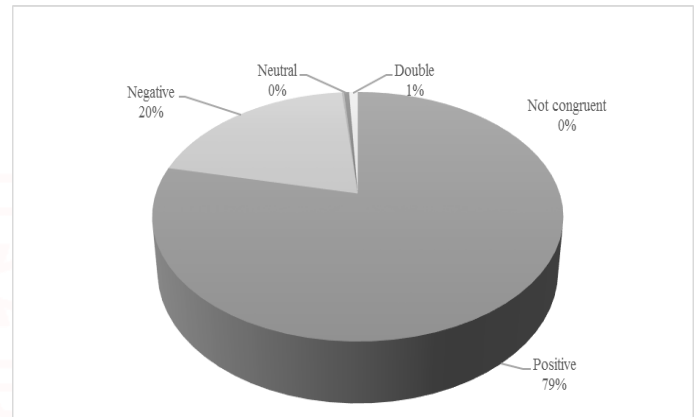
ATTACHMENTS
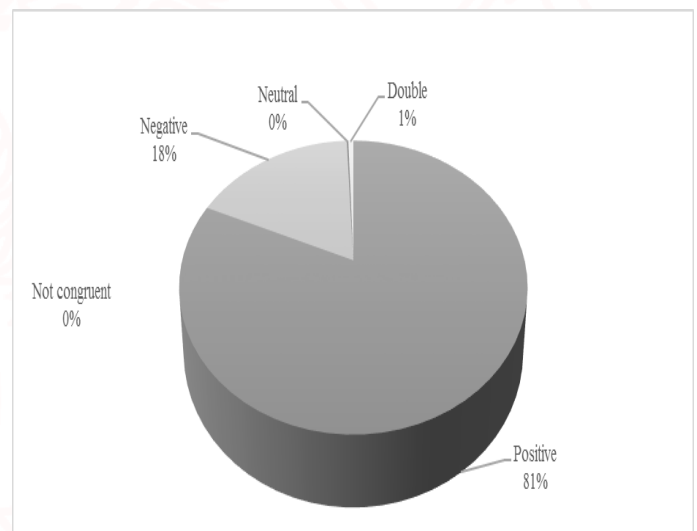
TABLE VIII.    *NEWS TITLES ANALYSIS (2017-2018)*
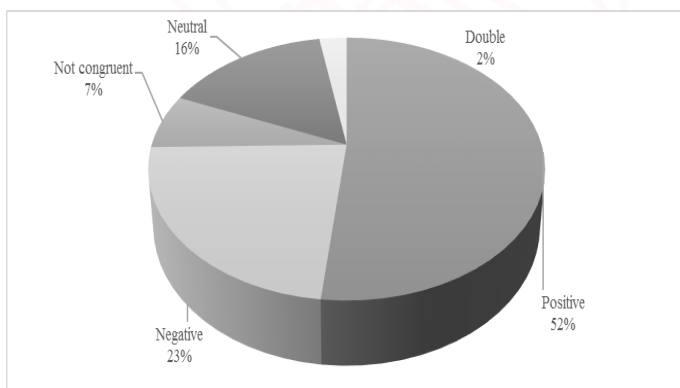


Source: our elaboration

TABLE IX.    *NEWS TITLES ANALYSIS (2016-2017)*



Source: our elaboration

TABLE X.    *NEWS TITLES ANALYSIS (2015-2016)*



Source: our elaboration

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