BITCOIN – AN INNOVATIVE PAYMENT METHOD WITH A NEW TYPE OF INDEPENDENT CURRENCY

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ABSTRACT

Bitcoin is a type of crypto-currency that was launched in January 2009 as an emerging digital phenomenon in the financial technology realm by an unknown computer scientist using the pseudonym Satoshi Nakamoto. It is an innovative and independent currency that uses cryptography for its creation and for performing secure transactions. The aim of this article is targeted to introducing into the bitcoin's technology. The survey results and empirical research show that despite the bitcoin benefits over the currency of central authority people do not believe in this crypto-currency because of its speculative character.

Key words: bitcoin, crypto-currency, Blockchain, virtual currency, money

INTRODUCTION

Bitcoin is an extremely interesting example of innovation and online co-work. Bitcoin is a virtual currency, or a form of crypto-currency with its origins dating back to beginning of 2008, it exploit cryptography in its creation, transactions and security. Satoshi Nakamoto is the pseudonym of an anonymous programmer which is the founder of Bitcoin. Many people believed one of the motive in the creation of the virtual currency was the 2008 financial crisis. Bitcoin was produced to eliminate fiscal responsibility and trust from governments, central banks and other third parties, removing the peril of the inflationary whims and other economic tools employed by central banks and governments. Bitcoins are available to be purchased through online exchanges, nonetheless many people choose to mine for them. Mining for Bitcoins is obtained through a mathematical process using powerful computer GPUs or dedicated mining rigs. The amount of bitcoins is defined to be exactly 21 million. When Bitcoins already mined or purchased they are stored in digital wallets, which are available as desktop software, mobile apps and web wallets. Regardless using cryptography, security issues remain a cause for anxiety. Despite the fact that there are much of cryptocurrencies in active use today, Bitcoin is by far the most attractive and widely used. (1, 2, 3)

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BLOCK CHAIN

A main innovation of virtual currency systems is the use of a public ledger called the "block chain" that allows payments to be made in a decentralized way. Bitcoin's block chain is fundamental to its operation. The block chain is a distributed, public ledger of all previous Bitcoin transactions, which are stored in groups known as blocks. Every node of Bitcoin's software network – the server farms and terminals, run by individuals or groups known as miners, whose endeavor to yield new Bitcoin units result in the recording and confirmation of Bitcoin transactions, and the periodic formation of new blocks – contains an identical record of Bitcoin's block chain. Because new Bitcoin transactions steadily appear, the Bitcoin block chain, though with limited supply, grows over time. As long as miners proceed their work and record recent transactions, the Bitcoin block chain will always be a work in progress. In other words, there's no prearranged length at which the block chain will stop growing. Typically, miners create a new block chain, which includes all prior transactions and a new transaction block, every 10 minutes. Every two weeks, Bitcoin's source code is projected to adjust to the amount of mining power dedicated to creating new block chains, conserving the 10-minute average creation interval. If mining power increased during the most recent two-week interval, new block chains become more difficult to create during the following two-week interval. If mining

power decreases, new chains become easier to create. Bitcoin's block chain is the exclusive moderator of Bitcoin ownership – no complete record exists anywhere else. The block chain also operate as a payment processing system, like Visa or PayPal, with the miners working as the system's employees. A Bitcoin transaction hasn't technically occurred until it's added to the block chain, at which point it becomes irreversible – unlike traditional payment processors. Bitcoin also doesn't have any standardized system for refunds. During the window between the transaction itself and the moment it's added to the block chain, the respective Bitcoin units are actually held in the middle – they can't be used by either party to the transaction. This suspend duplicate transactions, known as double-spending, and protects the system's principle. (4)

MINING

Mining is the process of appending transaction records to Bitcoin's public ledger of past transactions which is named Blockchain as it is a chain of blocks. The block chain works to confirm transactions to the rest of the network as having taken place. Bitcoin nodes use the block chain to differentiate legitimate Bitcoin transactions from attempts to double-spend coins that have already been spent elsewhere. Mining is consciously designed to be resource-intensive and difficult so that the number of blocks found each day by miners remains steady. Individual blocks must contain a proof of work to be considered valid. This proof of work is confirmed by other Bitcoin nodes each time they receive a block. Bitcoin uses the hashcash proof-of-work function. The fundamental purpose of mining is to allow Bitcoin nodes to reach a secure, counterfeit-resistant agreement. Mining is also the method used to introduce Bitcoins into the system: Miners are paid any transaction fees as well as a "reward" of newly created coins. This both serves the purpose of spread new coins in a decentralized way as well as motivate people to provide security for the system. (5) Bitcoin mining is so called because it match the mining of other commodities: it requires effort and it slowly makes new currency available at a rate that match the rate at which commodities like gold are mined from the ground. (6)

BITCOIN WALLETS

In order to store, spend and transfer a user's mined or purchased Bitcoins, user's needs a Bitcoin wallet which is actually a virtual „wallet" or „safe-deposit box". There are three different types of Bitcoin wallets available to users, software, hardware wallets, and web wallets.(1) Though wallets theoretically protect against the theft of Bitcoin units that aren't currently being used, they're vulnerable to hacking – especially public wallets used by Bitcoin exchanges, online marketplaces, and specialized websites that exist solely to store Bitcoin wallets known as "web wallet services". (4)

BITCOIN EXCANGES

Bitcoin exchange companies allow users to exchange Bitcoin units for fiat currencies, such as the U.S. dollar and euro, at volatile exchange rates. Many Bitcoin exchanges also exchange Bitcoin units for other cryptocurrencies, including less popular alternatives that can't directly be exchanged for fiat currencies. Most Bitcoin exchanges have a fee, typically less than 1%, of each transaction's value. Bitcoin exchanges ensure that the Bitcoin market remains liquid, setting their value relative to traditional currencies – and allowing holders to profit from speculation on fluctuations in that value. That said, Bitcoin users must understand that Bitcoin's value is subject to turbulent changes – weekly moves of 50% in either direction have exist in the past. Such fluctuations are unheard of among stable fiat currencies. (4).

SURVEY ANALYSIS

An online poll was held between 17 January 2017 and 17 May 2017 involved a total of 50 people, including 25 men and 25 women. 76% of all respondents are youngsters between 19 and 30 years of age. The rest of the respondents are almost proportionally distributed by age groups up to 60 years of age and over. 44% and 48% of respondents said they live in a large and medium-sized city respectively. 56% of respondents have completed secondary education and 28% have a Bachelor's degree. The people who are studying are 42%, the people who work - 26% and the people who work and study are 24%. Regarding income, 76% of respondents are defined as middle income earners. 66% responded that they had a slight perception of bitcoin, while 34% did not know what it was and understood the existence of this phenomenon from this survey. 70% responded that they still do not use bitcoin, 28% said they did not intend to use it, and only one person claimed to use bitcoin. 80% of respondents are of the opinion that bitcoin will not replace the current fiat currencies controlled by governments. Analyzing the survey results, young people who study or work, populate large cities, and defined themselves as middle-income earners, know or at least once have heard the term Bitcoin. About 70% of them say

they are not using Bitcoin, but the rest of the respondents would never use Bitcoin. 80% of all the people who participated in the poll support the view that Bitcoin will not replace normal money. This group includes people who do not know what is Bitcoin, but the majority are know about existence and do not trust this speculative e-currency. **(Table 1)**

Table 1. *Survey*

What is your gender?	Count
Female	25
Male	25
How big is the place where you lives?	**Count**
Big city	22
Small town	3
Village	1
Mid-sized city	24
What is your age?	**Count**
19 - 30 years	38
31 - 40 years	3
41 - 50 years	5
51 - 60 years	2
60+ years	2
What degree of education do you have?	**Count**
Bachelor's degree	14
Master's degree	3
Primary education	1
Professional Bachelor	4
Secondary education	28
Social Status?	**Count**
Unemployed	2
Retiree	2
Worker	13
Student	21
Working student	12
What is your incomes?	**Count**
High incomes	2
Low incomes	10
Middle incomes	38
Do you know what a Bitcoin is?	**Count**
Yes I know	20
No	17
I have heard about it	13
Are you using Bitcoin?	**Count**
Not yet	35
Yes	1
Not yet and I would not use it	14
Do you think Bitcoin can replace fiat currencies?	**Count**
Yes	10
No	40

EMPIRICAL ANALYSIS

In the following empirical analysis is presented the relation between the interest of new users or potential investors and bitcoin price. The data for the price of Bitcoin was taken from the market price chart on Blockchain. Bitcoin market price chart is available in CVS form to download from Blockchain website. The data provided information about the market price of Bitcoin in USD for every day. The data from CVS file are imported in Microsoft Excel and the

results used in empirical analysis were calculated as average value for a week. The time frame is January 18th 2015 until January 14th 2017.

The term visibility (of Bitcoin) is used to denote the intensity of the interest of general public (in Bitcoin). The empirical data used for visibility was obtained through Google Trends. Google Trends is a metric provided by Google denoting how many times people used the Google search engine to search for a particular term. In this case, the term was "Bitcoin". Google provides the data with a weekly granularity (one data point per week), and is normalised so that the peak value is always 100. The output of Google Trends was downloaded as a CSV file and imported into a Microsoft Excel. The time frame is January 18th 2015 until January 14th 2017.(7)
The calculation of correlation between price and visibility is made in Microsoft Excel.

The result of correlation coefficient is 0.81 and the scatter plot diagram including a best-fit line are presented in **Table 2**. The analysis shows a very strong positive correlation between Bitcoin price in USD and visibility (measured in terms of number of Bitcoin searches in Google). In other words, the price of Bitcoin correlates with the public interest in Bitcoin. The created hype of rising price of Bitcoin rise the attractiveness of that currency and motivates people's interest in Bitcoin. Rising interest in Bitcoin results in excessive buying of Bitcoin and the price is driving up. Rising interest and rising price mutually influence each other. Bitcoin is a relatively new currency, its price formation is not well understood yet. It is attractive for some investors because its price volatility from which they could make a good profit.

Table 2. *Scatter plot diagram of price and visibility, weekly range*
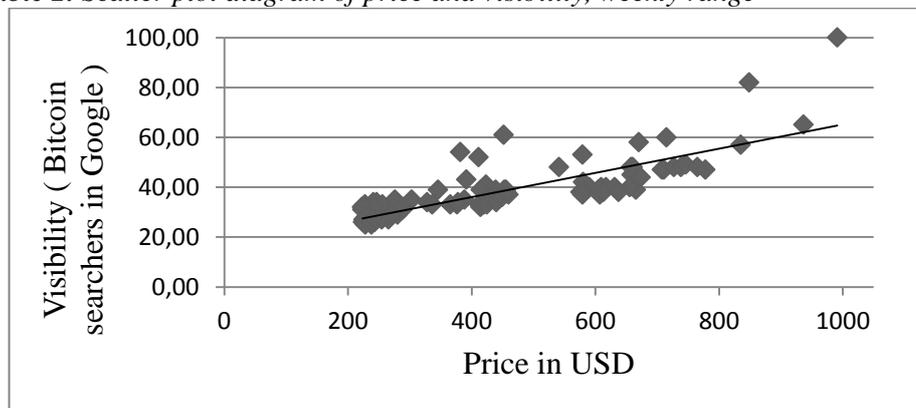
CONCLUSIONS

The fluctuation of Bitcoin's value also adds to its risk of using that new type of currencies. Bitcoin is not fixed to any real-world currency. Its value is determined by laws of supply and demand and trust and believing in the system. This has force to Bitcoin being used more as a speculative investment tool than a currency or payment system. Bitcoins are also not resistant to fraud. As of November 2013, approximately 850,000 bitcoins have been stolen from Mt. Gox exchange company. Since all Bitcoin transactions are irreversible, there is no helping tool for users who suspect they are or have been the victim of fraud. One can argue that consumers now have a choice: either pay higher fees for services that offer chargeback and refunds services in the case of fraud or pay lower fees for services with little to no recourse.

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