

# ***THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT***

## **Digital Currency: Bitcoin an Emerging Challenge to Present Banking Systems: A Case Study**

**J. Gopalkrishnan**

Lecturer, Department of Marketing, Hampshire Business School, Farnborough, United Kingdom

**J. Hammond**

Student, Hampshire Business School, Farnborough, United Kingdom

### ***Abstract:***

*There has been large confusion over what Bitcoin is and how it should be classified; a couple of terms used to describe Bitcoin include an online transfer, digital-currency and a virtual payment system. This paper will seek to clarify these misconceptions through an analysis, against the properties of Bitcoin.*

*Until recently online currencies have failed to achieve widespread adoption, Bitcoin is the most successful of its kind due to its decentralised nature. This means the network is able to remove all third parties like governments and high street banks. Such innovative technology has not been present within our current monetary system, so this has led the research to evaluate the government as a critical part to the success or failure of Bitcoin.*

*There was also a curiosity to explore the risks associated with removing government intervention as the network has attracted the attention of nefarious users. Issues such as security and stolen Bitcoins (hacking) were raised as the key factors stemming from its disintermediation.*

### **1. Introduction**

There is an importance in fostering innovation within all industries in order to promote growth and opportunity (Randall, 2005). Richard Branson has compared his Virgin Galactic venture to the likes of Bitcoin by stating they are both bold entrepreneurial technologies (Branson, 2014). Bitcoin has been defined as;

“An electronic payment system based on cryptographic proof instead of trust” (Satoshi, 2008).

Essentially Bitcoin users are relying on an online software in place of a third parties and governments. Removing what is seen as a core function in today’s society is likely to cause controversy in society. This aspect of external regulation and the possibilities in damaging or promoting the growth of Bitcoin, will be critically evaluated within this work.

However, in order to understand how the regulations apply we must first identify what Bitcoin is classified as. This will be done by comparing the properties of Bitcoin to existing and historical methods of trade to find out if any existing laws directly affect Bitcoin.

The growth of Bitcoin has accelerated over the years and the number of merchants accepting the digital-currency currently stands at over 100,000 businesses (Cuthbertson, 2015a). This market worth over £2 billion cannot be ignored or left unregulated which has led the study to investigate the key questions of:

### **2. Digital Currency**

Satoshi Nakamoto’s 2008 paper, “Bitcoin: A Peer-to-Peer Electronic Cash System” has been the founding document in Bitcoin literature. This dissertation will centre arguments around the works of: Nikolei Kaplanov’s “Bitcoin, the Private Digital Currency and the Case against Its Regulation” (2012) Jerry Brito and Andrea Castillo’s research paper, “Bitcoin: A Primer for Policymakers” (2013) and Andy Yee’s, conceptual framework for regulating Bitcoin (2014). Satoshi’s work is more of a technical document that explores Bitcoin’s origins. For this reason, it has not been selected for review. However, it has certainly been the most influential work for these academics. Due to the rapidly evolving nature of Bitcoin, use of mainly contemporary materials to extract the most innovative and accurate views on how Bitcoin is used and the regulations surrounding it.

#### ***2.1. How Bitcoin Works***

The concept of a decentralised medium of exchange was first proposed by Wei Dai in 1998, and eventually put into effect by Nakamoto who created the software named Bitcoin (Dai, 1998; Nakamoto, 2008). Control of the software was handed over to the open source network, this depends on public users (known as miners) operating in a peer-to-peer system. Literature has explained the term miner to be people or groups of people, volunteering their time and computer power to solve complex math problems (Kelly,

2014: King, 2014). Once the problem is solved new Bitcoins are created and the miners are rewarded with a percent of these new coins. Here we can see how mining solves the problem of providing secure transactions without a central authority.

When the new Bitcoins are created they are distributed through the block-chain. The block-chain is a ledger that records all Bitcoin transactions. Because of this feature, Yee (2014) argues there is a misconception of Bitcoin being anonymous and instead users operate under a pseudonym (fake name). This proves Kaplanov's statement to differ when he stated Bitcoin was relatively anonymous (2012 p. 14). The variation between definitions shows how quickly technology is evolving over just a two year period. The reality is all Bitcoin transactions are recorded, but online users remain far more anonymous than using traditional banking systems.

As more miners join the network, with aims of completing the algorithm problems, the sophisticated software makes the maths problems harder (Kaplanov, 2012). This enables the supply of Bitcoin to be systematically controlled and removes the need for human intervention.

Mining is the original ways of acquiring Bitcoins. Kaplanov (2012) claims the two other ways were through direct purchase and purchasing through an online exchange. There are multiple exchanges that facilitate the conversion of Bitcoin and offer different services; Coinbase, MtGox and BitPay are among the most popular conversion sites. Reading suggests there should be a fourth manner in attaining Bitcoins which was not proposed by Kaplanov, this being through donations. Rand Paul, an American republican minister announced his political party would be accepting Bitcoin donations in his 2016 campaign (Cuthbertson, 2015b). This emphasises the necessity for regulatory control over Bitcoin as anonymity in political donations already stirs angst in society. It can be argued that in order to be accepted as a form of currency systems need to be created that will assure and encourage users in this new economy.

### 3. Bitcoin as a Medium of Exchange

#### 3.1. *The Original form of Exchange*

First we will examine Bitcoin against different types of economical exchanges, Friedman defines this as "Any medium of exchange must be a store of value or temporary abode of purchasing power and also implies a unit of account or standard of value." (1971. as cited Hartmann, 1999, p.12)

Some economists assume barter to be the original form of exchange (Smithin, 1999; Kettell, 2001). In his writings Kaplanov (2012) familiarises Bitcoin with the barter approach and claims both modes involve a transaction between only two parties and is a medium of exchange at its purest form. However Ingham (2004) challenged this view, and instead established trading and temple money (offerings) to exist prior to this (Chown, 1997; Bordo, 1989).

None the less, both Bitcoin and barter both operate without a tangible asset which is why Kaplanov wrote "Bitcoins would essentially be a barter contract" (2013, p.22). In opposition to these views stands Glyn (2010), who argued the primary characteristic of barter is the face to face proximity which does not subsist in the Bitcoin environment. If Bitcoin was found to relate most closely to barter, laws such as the uniform commercial code (U.S) or the UN's equivalent (UNCITRAL) could be imposed on Bitcoin transactions and thus restrict its abilities to perform freely (United Nations, 1979).

#### 3.2. *The Gold Standard*

Advances from barter contract were made when the gold standard perspective infiltrated the markets during the 1800's; this meant gold was used to define the value of a currency (Eichenberger, 1997; Bryan, 2010). This is one of multiple commodity theories in existence, yet gold is seen to be most relevant due to its popularity and test over time.

Characteristics that made gold a suitable commodity include its homogeneity, portability, durability and scarcity or fixed supply (Gallarotti, 1995; Eichenberger, 1997). Kaplanov (2012) make us aware the process of mining for Bitcoin was essentially made to mimic the act of digging for precious metals. This common ground between the concepts stems from supply; the maximum number of Bitcoins available is capped 21million just as the supply of gold is not infinite (Gotthelf, 2005; Katz and Holmes, 2008). This fixed limit is a form of self-regulation for Bitcoin enabling the currency exist without government intervention.

Brito and Castilo (2013) consider the gold standard to be a theory that promotes intrinsic worth and tangibility which conflicts with Bitcoins digitalised nature (Clarke and Clarke, 2011; Econ, 2014; Weigand, 2014). In agreement is Mellor who reasoned the gold standard "leads to the assumption money can only function effectively if it is scarce and valuable" (2010 p.8). Although Bitcoin and gold do share similar attributes, the majority of authors have highlighted intrinsic value as the missing link between these monetary systems. This makes the concept inapplicable to Bitcoin so the associated laws on trading commodities should not be enforced into the Bitcoin network (Bryan, 2010).

#### 3.3. *Bitcoin as a Currency*

Modern economists Serletis (2006) Singh and Stella (2012) see money having a number of functions, these key components include durability, transportability and divisibility. While similarly Hartmann (1999) states "Money serves as a medium of exchange, as a store of value and as a unit of account." Bitcoin is able to satisfy all the criteria presented by Hartmann, but issue of durability raises some questioning as a result of price fluctuations (Krugman, 2000).

At a recent conference held in London guest speaker Vinay Gupta explained the differences in systems when he proposed "Block-chains result in greater transparency, openness and efficiency, whereas the movements of cash are not recorded or made publicly

available” . Another issue that distances Bitcoin from fiat-currency is argued by Connell (2014) who points out. “Bitcoins, and other digital-currencies, still have no legal recognition as currencies in any major jurisdiction.”

Regardless of this unknown legal status, Kaplanov (2012) suggests Bitcoin should be treated as a digital-currency (Grinberg, 2011: Dopierała and Borodo, 2014). As of yet the researcher agrees with Kaplanov in finding the term digital-currency most suited to Bitcoin because of the matching characteristics transposed to a digital market.

### 3.4. *Bitcoin as a Banking Service*

Literature also suggests Bitcoin performs as a banking service due to the core function of facilitating monetary transfers (Chatain et al, 2008: Gardener and Versluijs, 2001). The banking sector is heavily regulated, Bitcoin however avoids this and operates lot more efficiently making it one of the main advantages for using the digital-currency. Plassaras (2013) estimates users make savings of up to 50% compared to traditional banks as a result of digitalizing financial institutions. Performing this service in such different ways suggests the motives are different between each institution implying the networks should be regulated in different ways.

Yermack (2013) noticed the shift towards digital-currencies has resulted in a system that lacks solid infrastructure, insurance and acknowledgement of debt (Hallsmith and Lietaer, 2011: Cencini, 1997). These attributes clearly define the differences between the services, supporting this is MyWallet, a software that allows you to access an online wallet where personal Bitcoins are stored. They openly state “We are not a bank; you retain complete ownership of your Money. We cannot view your balance, see your transactions or make payments on your behalf” (Blockchain, 2015). Here the issues of a decentralised currency are highlighted as there is no third party to rely on or to make inquiries, and ultimately “everything can be solved with a matter of maths instead of people” (Peter Todd Conference 08/12/2014, Appendix A).

However it was in a paper written by Maftai in 2014 where it was recognized “Digital or virtual currency defines an emerging market, which strengthens the payment landscape” Brito and Castillo (2013) also state Bitcoin is not necessarily a replacement for traditional currencies, but rather a new payment system. This implies combining both sectors would reduce strain and reinforce current systems. The arguments presented here brings light to the varying aspects of high-street banks and despite some common ground, it is reasonable to deduce Bitcoin does not constitute as a traditional banking service.

### 3.5. *Bitcoin as an Investment*

“An investment operation is one which, upon thorough analysis promises safety of principal and an adequate return. Operations not meeting these requirements are speculative” (Graham and Dodd, 1988 as cited in Hiriyyappa, 2008 p.28). According to this definition Bitcoin is considered speculative as there is no promise of safety, so transactions can be seen as high risk (Liaw, 2011). Speculators that rush into buying Bitcoin, for factors such as increased media coverage, drive prices to unstable heights . These actions coincide with the herd movement investment theory in which the increased irrational movements then makes Bitcoin an unstable store of value particularly in the year 2013 (Stanyer, 2006: Snopek, 2011: Crowder et al, 2012).

Brito and Castillo (2013) claim there is an opposing concept whereby volatility and risk are the factors attracting investors to convert their savings into Bitcoin. This concept implies Bitcoin is being used as an investment technique by people who follow the risk-return spectrum, also made known to us by Drucker as the high risk high reward strategy (Drucker, 1996).

Kaplanov’s work argued hoarding and using Bitcoins as a savings investment has harmed the adoption of Bitcoin by causing additional price fluctuations, which further campaigns against the use of Bitcoin as a banking service. Britco and Castillo agree and take Kaplanov’s point further to say when Bitcoin is used as a medium of existence (used straight away in transactions) “volatility is irrelevant as prices are adjusted.” Thus this literature suggests volatility and speculation are both key variables in the Bitcoin ecosystem, yet it has not been deliberated how current bitcoin users see these factors influencing Bitcoin.

### 3.6. *Crime*

Hacking is not the only threat and illegality when using a digital-currency, money laundering and the sale of illegal goods are among the nefarious activities associated with Bitcoin (Bryant and Bryant, 2010: Goetz, 2011: Turner, 2011). For the first time there is a worldwide system that operates in isolation to current governments which poses a massive treat in convicting criminals (Chatain et al, 2008). Trautman, (2014) believes most criminals are early adopters of new technology, meaning they may possibly hold an advantage over the state by being more involved and knowledgeable

## 4. **Limitations of the Study**

The study had a limited timescale which restricted access to potential questionnaire participants, a larger sample size from both questionnaires and information on exchanges would aid the study in increasing reliability.

Some of the possible sites that could be used for extrapolating Bitcoin data have questionable. Bitcoincharts.com was the site seen to have no alternative motive such as advertising or selling Bitcoins. Their content is based purely on facts and is updated regularly but there is no guarantee or control over the quality of data. A more reliable data source could be found from the London stock exchange who have launched an investigation into calculating an accurate beta value for Bitcoin, this has not yet been made available to the public but will add valued contribution to future studies (Watson, 2015).

## 5. Conclusions

The main principal of conducting this research was to determine how contemporary ways of bankings are emerging, where old trends are facing threat from disruptive ideas such as Bitcoin. The literature shows there has been no set classification imposed onto Bitcoin leaving the topic open for debate. Given this, it has made the regulation process slow and ambiguous. Security and volatility are both presented as threats within the market and play a key role in preventing growth in the digital industry.

## 6. Recommendations

It is essential governments respond to this new technology and give guidance to enhance innovations and update current systems. It is important to acknowledge the real economy could benefit from the efficient and cost saving properties digital-currencies retain. It is therefore recommended that regulators and businesses work together to enhance the existing financial system and maximise welfare.

Ultimately it is inevitable the laws will change and adjust according to social norms. Currently regulators are operating in volatile grounds thus a focus on education is the need of the hour. Both the public and the government need educating on using digital-currencies in order to make informed decisions on using and setting guidelines. These new policies should be flexible as it is likely the industry will continue to change and grow. Taking an adaptive approach like this will be complex and challenging so it is advised regulators seek advice from industry experts to expand their abilities. This should help them react more effectively in the future.

## 7. References

- i. Ayres, I, and Braithwaite, J. (1992) *Responsive Regulation : Transcending the Deregulation Debate*. Cary: Oxford University Press.
- ii. Bergman, M, M. (2008) *Advances in Mixed Methods Research : Theories and Applications*. London: SAGE Publications Ltd.
- iii. Biermann, F. (2014) *Earth System Governance : Earth System Governance : World Politics in the Anthropocene*. Cambridge: The MIT Press.
- iv. Blockchain. (2015) *My Wallet, be your own bank*. [Online] Available from: <https://blockchain.info/wallet> (Accessed: 05/02/2015)
- v. Bordo, M, D. (1989) *Money, History, and International Finance*. Chicago: University of Chicago Press.
- vi. Branson, R. (2014) *The Virgin Way: Everything I Know about Leadership*. Vauxhall: Ebury publishing.
- vii. Brenner, S. (2010) *Cybercrime: Criminal Threats from Cyberspace*. Santa Barbar: ABC-CLIO.
- viii. Brito, J and Castillo, A. (2013) *BITCOIN A Primer for Policymakers* [Online] Available from: [http://mercatus.org/sites/default/files/Brito\\_BitcoinPrimer\\_v1.3.pdf](http://mercatus.org/sites/default/files/Brito_BitcoinPrimer_v1.3.pdf) (Accessed: 03/10/2014)
- ix. Brito, J, Shadab, H and Castillo, A. (2014) *Bitcoin Financial Regulation: Securities, Derivatives, Prediction Markets, and Gambling*. [Online] Available from: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2423461](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2423461) (Accessed: 05/03/2015)
- x. Brown, I. (2013) *Research Handbook on Governance of the Internet*. Cheltenham: Edward Elgar Publishing.
- xi. Bryan, S. (2010) *Gold Standard at the Turn of the Twentieth Century : Rising Powers, Global Money, and the Age of Empire*. New York: Columbia University Press.
- xii. Bryant, R and Bryant, S. (2014) *Policing Digital Crime*. Farnham: Ashgate Publishing Ltd.