



# Study of Bitcoin's Legality and Related Challenges

إعداد

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### **Abstract**

Bitcoin is a cryptocurrency and a worldwide decentralized payment system. The network is conducted through peer-to-peer transactions and these transactions are verified by using cryptography technology. In this paper, we present a systematic survey that covers the security and privacy aspects of Bitcoin.

The purpose of this research is to remark the Bitcoin, we start by presenting an overview of the Bitcoin protocol and its major components along with their functionality and interactions within the system. This article will now try to define bitcoin in a way that might shed some light on it. The Bitcoin notional unit of exchange created by the Bitcoin system can be further fractionated (down to a "Satoshi"). And this article aims to describe how Bitcoin functions.

The purpose of this paper is twofold. First, we discuss how the law might regulate bitcoin and other cryptocurrencies to provide the benefits, ranging from low-cost international money transfers and decentralised resilient operation to competitive innovation, while mitigating the harms –specifically the use of cryptocurrencies in extortion, money laundering and other crimes, and the difficulty that crime victims experience in getting

redress. We show that where the relevant case law is used as a basis, it becomes much easier to track stolen bitcoins than previously thought. Second, towards regulation was to bring bitcoin exchanges within the financial system by applying anti-money-laundering (AML) regulations to them. Finally, we discuss many technical and legal challenges surrounding Bitcoin as a digital currency.

**Keywords:** Cryptocurrency, Bitcoin, International Legislations, securities, Timestamp Server, Challenges.

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### **1. Introduction**

Bitcoin is a system of property that replicates the functions of legal instruments (deeds) and institutions (public records offices) without relying on legal institutions or even the law itself to coordinate the transfer or enforcement of property interests.<sup>1</sup>

Bitcoin is also a decentralized electronic payment system introduced by Nakamoto. It is based on peer-to-peer (P2P) network and a probabilistic distributed consensus protocol. In Bitcoin, electronic payments are done by generating transactions that transfer bitcoins among users. The destination address (also called Bitcoin address) is generated by performing a series of irreversible cryptographic hashing operations on the user's public key. In Bitcoin, a user can have multiple addresses by generating multiple public keys and these addresses could be associated with one or more of her wallets. The private key of the user is required to spend the owned bitcoins in the form of digitally signed transactions. Using the hash of the public key as a receiving address provides the users a certain degree of anonymity, and it is recommended the practice to use different Bitcoin address for

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<sup>1</sup> Eric D. Chason, How Bitcoin Functions as Property Law, William & Mary Law School Scholarship Repository Vol. 49:129, 2019, p.134, Available at: <https://scholarship.law.wm.edu/facpubs>

each receiving transaction<sup>1</sup>. Bitcoin account, free of charge, without any kind of centralized verification process, or even a demand for a genuine identity<sup>2</sup>.

This research has three major sections. The first section answers some basic questions about Bitcoin and the operation of the Bitcoin network and its interaction with the current dollar-based monetary system. In Second Section, we discuss several security threats associated with the development, implementation, and use of bitcoins. and we Present the state-of-the-art proposals that either countermeasure a security threat or enhances the existing security in Bitcoin. Third Section, we discuss the legality and challenges of the use of bitcoins.

The rest of the paper is organized as follows. In First Section, we present a brief overview of Bitcoin which includes the description of its major components along with their

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<sup>1</sup> M. Conti, E. Sandeep Kumar, C. Lal, and S. Ruj, "A Survey on Security and Privacy Issues of Bitcoin," in IEEE Communications Surveys & Tutorials, vol. 20, no. 4, pp. 3416-3452, Fourth quarter 2018, DOI: [10.1109/COMST.2018.2842460](https://doi.org/10.1109/COMST.2018.2842460)

<sup>2</sup> Böhme, Rainer, Nicolas Christin, Benjamin Edelman, and Tyler Moore. 2015. "Bitcoin: Economics, Technology, and Governance." Journal of Economic Perspectives, 29 (2): 213-38. <https://www.aeaweb.org/articles?id=10.1257/jep.29.2.213>

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functionalities and interactions. In Scend Section, we discuss a number of security threats associated with the development, implementation, and use of bitcoins. and we Present the state-of-the-art proposals that either countermeasure a security threat or enhances the existing security in Bitcoin. We discuss the anonymity and privacy threats towards the use of bitcoins along with their existing solutions.

### **2. Overview of Bitcoin core features as a digital technology**

In the current technological context, Bitcoin has already been examined in several publications. The phenomena is examined from a variety of angles. They first look at the history of cryptocurrencies before discussing what drives people to use Bitcoin and what prevents them from doing so, how secure Bitcoin transactions are, and other topics.

Bitcoin has a lot of positive elements despite all the negative press it has received. The decentralization of Bitcoin is the first advantageous feature.

Second, Bitcoin will convert the entire global financial system into one that enables extremely quick transactions to happen not

only during business hours but rather at anytime and anywhere for a very low transaction cost. Cheap-value transactions will be encouraged by these low transaction costs.

## 2.1. Background of Currency

In the latter half of the twentieth century, credit cards, mobile wallet and all the other electronic forms of money were created, which the need to define this new form of exchange.<sup>1</sup> The European Commission on Banking and Finance defined electronic money as: “Electronically, including magnetically, and stored monetary value as represented by a claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions which is accepted by a natural or legal person other than the electronic money issuer”<sup>2</sup>.

In 1982, David Chaum proposed the first digital currency ever; however, his proposal was not very popular and ended up being commercialized in 1994 along with the creation of Digi Cash.<sup>3</sup> In

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<sup>1</sup> Litwack, S. Bitcoin: Currency Or Fool’s Gold? A Comparative Analysis Of The Legal Classification Of Bitcoin.

Temple International & Comparative Law Journal, 29(2), 309-348. 2015.

<https://sites.temple.edu/ticlj/files/2017/02/29.2.litwack-ticlj.pdf>

<sup>2</sup> (e.u. commission banking, 2014).

<sup>3</sup> Jury. Online (2020), <https://Jury.Online> (Last Visited Jan. 8, 2022).

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1996, e-gold was created in the Caribbean and became the forerunner to today's digital currency<sup>1</sup>.

In 2003, e-gold suspicions of the use of e-gold in criminal crimes increased. Four years later in 2007, the U.S. government shut down e-gold. In 2009, Satoshi Nakamoto first introduced Bitcoin in a research paper.<sup>2</sup> Bitcoin was introduced as a digital currency that only existed in an electronic form.<sup>3</sup> over, Bitcoin use has grown substantially; attention by the press has surged, and

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<sup>1</sup> Cryptography Means 'Secret Writing In Greek, But The Science Of Cryptography Encompasses More Than Just Secret Writing, Which Is Referred To As Encryption. Cryptography Can Also Be Used To Prove Knowledge Of A Secret Without Revealing That Secret (Digital Signature), Or Prove The Authenticity Of Data (Digital Fingerprint).'' Andreas M. Antonopoulos, Mastering Bitcoin: Programming The Open Blockchain 55 (2d Ed. 2017). <https://unglueit-files.s3.amazonaws.com/ebf/05db7df4f31840f0a873d6ea14dcc28d.pdf>

<sup>2</sup> The Launch Titled "Bitcoin: Bitcoin: A Peer-To-Peer Electronic Cash System" [Nakamoto 2008], With The System Toshi Nakamoto. The Concept Of The Currency Was Presented In An Article Titled "Bitcoin: Bitcoin: A Peer-To-Peer Electronic Cash System" [Nakamoto 2008], With The System Being Put Into Operation On 3 January 2009. See Witold Srokosz, Tomasz Kopyćciański, Legal And Economic Analysis of the Cryptocurrencies Impact On The Financial System Stability, Journal Of Teaching And Education, Cd-Rom. Issn: 2165-6266 :: 04(02):619-627 (2015), P. 624. <http://www.universitypublications.net/jte/0402/pdf/f5n180.pdf>

<sup>3</sup> Alanoud Alajmi, Rehana Parveen, an overview of bitcoin's legal and Technical challenges, Journal of legal, Ethical and Regulatory Issues, Volume 22, Special Issue 1, 2019, P.3. <https://www.abacademies.org/articles/an-overview-of-bitcoins-legal-and-technical-challenges-7863.html>



recently Bitcoin caught the attention of Congress, being the subject of two Senate hearings.<sup>1</sup>

Crypto currency can be defined as digital currency created based on blockchain technology. It stands to reason that it is not issued by central banks of states and is not attached to official currencies. Crypto currencies are voluntarily accepted by market participants as a means of payment (exchange) transmitted and stored electronically. The problems and opportunities of digital currencies have become the fore point. Their economic component was discussed at the meetings of the World Bank, the European Central Bank, the Ministry of Finance and the Central Bank of Russia, Switzerland, Germany, Japan, the United States and a dozen other countries. The course of researchers of electronic money and crypto-currencies has formed among scholars of Western schools whose representatives are J. Mathonis, a member of the Bitcoin Foundation board, as well as

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<sup>1</sup> On November 18, 2013, the Senate Committee on Homeland Security and Governmental Affairs held a hearing on Beyond Silk Road: Potential Risks, Threats, and Promises, available at <http://www.hsgac.senate.gov/hearings/beyondsilk-road-potential-risks-threats-and-promises-of-virtual-currencies>. On November 19, the Senate Committee on Banking, Housing, and Urban Affairs held a hearing on The Current and Future Impact of Virtual Currencies, available at [http://www.banking.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing\\_ID=955322ccd648-4a00-a41f-c23be8ff4cad](http://www.banking.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing_ID=955322ccd648-4a00-a41f-c23be8ff4cad).

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the former chief economist of the IMF, a professor at the Sloan School of Management at the Massachusetts Institute of Technology S. Jones.<sup>1</sup> Moreover, the emergence of exchange-traded funds (ETFs) for Bitcoin and related derivatives could pave the way for further investor engagement. Most recently, the war in Ukraine has further sparked interest in cryptocurrencies and raised questions about their regulatory oversight<sup>2</sup>.

There has been a huge rise in cryptocurrencies ever since the invention of the Bitcoin system.<sup>3</sup> While some, like Ethereum, emulate Bitcoin's decentralized design,<sup>4</sup> others, like Ripple, are adopted directly by banks. Indeed, at the time of our most recent

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<sup>1</sup> Valeriy I. PRASOLOV, Aspects of Crypto Currency's Legislative Regulation, p. 262, Utopía y Praxis Latinoamericana, 2018, vol. 23, no. 82, July-September, ISSN: 1315-5216 2477-9555, DOI: <https://doi.org/10.5281/zenodo.1509820>, Available at: <https://www.redalyc.org/articulo.oa?id=27957591021>

<sup>2</sup> For Example, A Bitcoin ETF Was Launched In Canada In March 2021, While The Us Saw The First ETF For Bitcoin Futures Launched In October 2021 (Eg Todorov (2021)). On The Need For Regulation Of Cryptocurrencies In The Context Of The War In Ukraine, See Eg Chavez-Dreyfuss (2022) And Singer (2022).

<sup>3</sup> Liran Rosenfeld, The Number Of Cryptocurrencies Is Exploding. This Is How You Can Learn About The Different Altcoins and Safely Get Involved, Yahoo! (June 1, 2021), <https://www.yahoo.com/now/numbercryptocurrencies-exploding-learn-different-124923879.html>

<sup>4</sup> Anthony Lewis, The Basics Of Bitcoins And Blockchains An Introduction To Cryptocurrencies And The Technology That Powers Them (2018). <https://Worldcat.Org/En/Title/1023104674>

count, there were over 5,000 of these currencies, each with a different market capitalization<sup>1</sup>. The demand for these currencies has changed because of the introduction of new cryptocurrencies. Economic players could buy these currencies with conventional money or by any other means possible under the currency's framework. Additionally, they may trade one coin for another. You can carry out this discreetly<sup>2</sup>.

## 2.2. What is Bitcoin?

Simply put, Bitcoin may be compared to actual currencies like the US Dollar and Euro because it is a digital currency that exists in the cloud. Digital currency differs from actual money in that it is: "A means of trade that acts like a currency in some situations but does not have all the features of real money"<sup>3</sup>. Bitcoin is a

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<sup>1</sup> Today's Cryptocurrency Prices By Market Cap, Coinmarketcap, <https://coinmarketcap.com> (Last Visited Sept. 27, 2022) (Valuing The Market Cap Value For Bitcoin At Over \$813 Billion, For Birdchain Over \$373,000, As Well As Thousands Of Other Cryptocurrencies At \$10,000 Or Less).

<sup>2</sup> Meshel, Tamar and Yahya, Moin A., Crypto Dispute Resolution: An Empirical Study (October 5, 2021). Journal of Law, Technology and Policy, Vol. 2021, No. 2, 2021, Available at SSRN: <https://ssrn.com/abstract=3975500>

<sup>3</sup> Shavers, S. (2013). Application Of Fincen's Is Regulations To Persons Administering, Exchanging, Or Using Virtual Currencies. Department Of The Treasury Finance. <https://www.fincen.gov/resources/statutes-regulations/guidance/application-fincens-regulations-persons-administering>

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transnational decentralized money that is not governed by any institutional owner or a particular country and does not have a physical existence, making it different from other conventional paper currencies. The topic of how we earn Bitcoins emerges in this context, and there are three options: (1) exchanging Bitcoin for real money in person or online; (2) exchanging it for the purchase of products or services; or (3) mining. Mining is the process of using a computer's processing power to solve incredibly difficult mathematical puzzles to maintain the blockchain's open record and discover new Bitcoins<sup>1</sup>.

Bitcoin first appeared in January 2009, the creation of a computer programmer using the pseudonym Satoshi Nakamoto.<sup>2</sup> His invention is open source (its controlling computer code is open to public view), peer to peer (transactions do not require a third-

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<sup>1</sup> Alanoud Alajmi, Rehana Parveen, Opcit, P.3.

<sup>2</sup> We do not know the true identity, much less gender, of Satoshi Nakamoto. Satoshi Nakamoto may have been several individuals. However, the Japanese name is masculine (like, for example, David Smith), and Satoshi Nakamoto registered as a male on the internet sites where he first proposed Bitcoin. See generally Satoshi Nakamoto, WIKIPEDIA, [https://en.wikipedia.org/wiki/Satoshi\\_Nakamoto#Characteristics\\_and\\_identity](https://en.wikipedia.org/wiki/Satoshi_Nakamoto#Characteristics_and_identity)

party intermediary such as PayPal or Visa), digital currency (being electronic with no physical manifestation)<sup>1</sup>.

Like the US dollar, Bitcoin has no intrinsic worth because it cannot be exchanged for a specific amount of another good, such as an ounce of gold. A bitcoin does not have a physical form, it is not legal cash, it is not backed by any government or other legal organization, and a central bank does not control the amount of bitcoins available. Although transactions in the Bitcoin system are private, no conventional financial institutions are involved. The Bitcoin network is entirely decentralized, with all aspects of transactions being carried out by the system's users, in contrast to past digital currencies that had some central controlling person or institution<sup>2</sup>.

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<sup>1</sup> General background discussions about Bitcoin can be found at Bitcoin, available at <http://bitcoin.org/en/>; Jerry Brito and Andrea Castillo, Bitcoin: A Primer for Policymakers, Mercatus Center, George Mason University, 2013, available at <http://mercatus.org/publication/bitcoin-primer-policymakers>; and Federal Reserve Bank of Chicago, Chicago Fed Letter, Bitcoin: A Primer, 2013, available at <https://www.chicagofed.org/-/media/publications/chicago-fed-letter/2013/cfldecember2013-317-pdf.pdf>; and the Bank of England, The Economics of Digital Currencies, Quarterly Bulletin, Q3 2014, available at <https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2014/quarterly-bulletin-2014-q3.pdf>

<sup>2</sup> Edward V. Murphy, M. Maureen Murphy, Michael V. Seitzinger, Bitcoin: Questions, Answers, And Analysis Of

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The market capitalization of Bitcoin experienced its first spike at the end of 2017, but throughout the course of the following year, prices started to fall once more. Beginning in late 2020, when its dollar price soared sixfold within five months, bitcoin underwent its biggest dramatic upsurge to date.

In fact, a standout characteristic of cryptocurrency markets has been their significant volatility in comparison to other asset classes. Furthermore, prices continue to be susceptible to news and noise, such as public investor statements made on social media.

The cost of bitcoins fluctuates greatly. The price of bitcoin decreased significantly in the second half of 2017 (to just under \$20,000 per bitcoin), with significant price volatility. With a price of almost \$3,500 per bitcoin at the end of 2018, the estimated total worth of bitcoins issued was close to \$60 billion<sup>1</sup>.

The system processes approximately 250,000 transactions per day involving an estimated 150,000 bitcoins in total<sup>11</sup> (around

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Legal Issues, Congressional Research Service, October 13, 2015, P.1.

<https://sgp.fas.org/crs/misc/R43339.pdf>

<sup>1</sup> For The Latest Price, See: <https://www.coindesk.com/price/>

\$600 million)<sup>1</sup>. And The price closed at \$1,268 while a troy ounce of gold stood at \$1,233<sup>2</sup>.

Even so, the market remains highly concentrated and exit rates are high. At the beginning of 2022, Bitcoin accounted for 41% of total market capitalization, roughly 2.1 times the share of Ethereum, the next largest cryptocurrency. About 2,000 cryptocurrencies are deemed to be “dead coins”.<sup>3</sup> Several motives could be supporting institutional investors’ interest in cryptocurrencies.<sup>4</sup>

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<sup>1</sup> Carlos Conesa, Bitcoin: A Solution For Payment Systems Or A Solution In Search Of A Problem?, Documentos Ocasionales. N.º 1901. 2019, P.21. <https://ideas.repec.org/p/bde/opaper/1901.html>

<sup>2</sup> The Price Of Bitcoin By The Price Of Gold In September 2022 Rises To 11.8362, See <https://www.longtermtrends.net>

<sup>3</sup> As Estimated By Coinopsy, Which Defines Dead Coins As “Cryptocurrencies That Have Been Abandoned, Are Used As Scam.

<sup>4</sup> Raphael Auer, Marc Farag, Ulf Lewrick, Lovrenc Orazem And Markus Zoss, Banking In The Shadow Of Bitcoin?

The Institutional Adoption Of Cryptocurrencies, May 2022, P. 5, This Publication Is Available On The Bank For International Settlements Website.: <https://www.bis.org/publ/work1013.htm>

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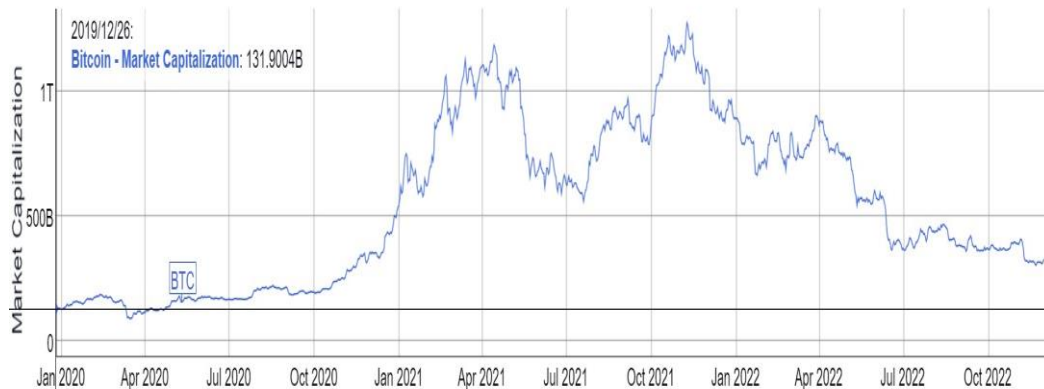


Figure 1. Bitcoin market capitalization from 2020 to 2022 (in billions of dollars).

Source: <https://bitinfocharts.com/comparison/marketcap-btc.html>

### 2.3. How Does the Bitcoin System Work?

Because it uses the principles of cryptography to validate transactions and control the creation of the currency itself,

Bitcoin is frequently referred to as a cryptocurrency.

Cryptography is the study of secure communication from the perspective of outsiders. Each transaction is recorded on a decentralised public ledger, also known as a distributed ledger or a blockchain, that is visible to all computers on the network but does not expose any personal information about the individuals involved. Each Bitcoin and each user are encrypted with a unique identity. Through the use of cryptographic methods, specialised users on the bitcoin network known as miners are able to compile



blocks of fresh transactions and compete to validate the validity of the transactions—that is, that the buyer has the Bitcoin being spent and has transferred that amount to the seller's account. The network's governing computer programme rewards miners who successfully validate a block of transactions with 25 freshly minted Bitcoins in exchange for their efforts.<sup>1</sup>

#### **2.4. Bitcoin as a Security**

The term "security" refers to a financial instrument or interest that can take the form of a note, stock, treasury stock, bond, debenture, evidence of indebtedness, security future, investment contract, certificate of interest, or participation in any profit-sharing agreement, certificate of deposit for security, etc (names vary depending on national legislation).

In the European Union securities are defined as financial instruments and this term is used in European legislation, according to the Hague Securities Convention any shares, bonds,

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<sup>1</sup> To mine and validate a new block of transactions, miners compete to solve a difficult math problem. The miner that solves the problem first validates the transactions in the block and broadcasts his or her proof-of-work to the bitcoin network. Other miners in the network check the successful miner's results. If the miner's work is found to be correct, he or she is rewarded by the system with 25 new bitcoins.

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other financial instruments, financial assets (other than cash), or any interest therein defines as “securities.”

In accordance with UK law, securities were initially defined in 2000 as types of investments whose issuance and trading, as "regulated activities," must be carried out by a person who has been granted authorization or who is exempt from doing so<sup>1</sup>.

Bitcoin ensures high security to the ultimate users compared to centralized monetary systems, even if there is a well-developed variety of software available for operating bitcoins transactions. Nevertheless, the users get experience with the technical fundamentals and recovery platform for human errors or to recover their virtual monetary assets in case of a loss.<sup>2</sup> In the case of Bitcoin miners' security Houy argued that Bitcoin security is directly depending on the whole computational power

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<sup>1</sup> Demchenko, Olena, Bitcoin: Legal Definition and Its Place in Legal Framework Journal of International Trade, Logistics and Law (e-ISSN 2149-9748) Vol.3, #1 (2017), p.23-42, Available at SSRN: <https://ssrn.com/abstract=3101037>

<sup>2</sup> Krombholz, K., Judmayer, A., Gusenbauer, M., & Weippl, E. The other side of the coin: User experiences with bitcoin security and privacy, In International Conference on Financial Cryptography and Data Security (pp. 555-580). Springer, Berlin, Heidelberg, 2016, February, p.1. [https://publications.sba-research.org/publications/TheOtherSideOfTheCoin\\_FC16preConf.pdf](https://publications.sba-research.org/publications/TheOtherSideOfTheCoin_FC16preConf.pdf)

of the miners. But by misconception some people criticize about the security system of Bitcoin activities<sup>1</sup>.

The technological feature that sets Bitcoin (and other decentralised cryptocurrencies) apart is their decentralised management of the public ledger, which eliminates the need for a third party (such as a bank or credit card company) to verify the validity of electronic transactions between buyers and sellers and thus the so-called double spending problem. Public ledger technology might have an impact on a variety of financial transactions (such as buying and selling stocks, bonds, and other financial assets), as well as the traditional payment system<sup>2</sup>.

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<sup>1</sup> Abdirahman Gulled, Jakaria Hossain, Bitcoins Challenge to the Financial Institutions A qualitative study of how Bitcoi technology affects the traditional transaction system, Master's in Business Administration, UMEA Universtiy, I, 15 Credits, Spring 2018, p.9. <http://www.diva-portal.org/smash/get/diva2:1228165/FULLTEXT01.pdf>

<sup>2</sup> Edward V. Murphy, M. Maureen Murphy, Michael V. Seitzinger, opcit, p.2.

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### **2.5. Transactions**

An electronic coin is what we refer to as a series of digital signatures. By digitally signing a hash of the preceding transaction and the subsequent owner's public key and adding them to the end of the coin, each owner transfers ownership of the coin to the next. Payees may the issue is that the payee cannot confirm that one of the owners did not spend the coin twice.

The introduction of a dependable central authority, or mint, that verifies every transaction for double spending is a typical option. To produce a new coin after each transaction, the coin must be brought back to the mint, and only coins that have been minted by the mint themselves are believed to be double-spend-proof. This arrangement has the drawback that, like a bank, the mint's operation determines the future of the entire monetary system, and all transactions must pass through them.

We require a means by which the payee may be informed that the former owners did not sign any prior transactions. We don't worry about later attempts to double-spend because the earliest transaction is the one that matters for our purposes. Being aware of all transactions is the only way to certify the absence of a transaction. The mint in the model based on the mint knew about

every transaction and decided which came first. We need a system that allows participants to agree on a single history of the order in which they were received to achieve this without the use of a trusted third party [1]. Transactions must also be publicly announced. The payee must provide evidence that most nodes concurred that a transaction was the first received at the time it was made. Verify the signatures to confirm the ownership chain.

### **2.5.1. Timestamp Server**

The timestamp server is the first step in the approach we provide. In order for a block of things to be timestamped to function, a hash must be created and widely distributed, for example in a newspaper or Usenet post [2–5]. The timestamp demonstrates that the data had to have been there at the moment in order to be included in the hash, which is clear. Each timestamp forms a chain with the previous timestamp included in its hash, reinforcing the timestamps that came before it.<sup>1</sup>

Bitcoin uses deft social engineering to resolve this issue. The time-stamp function is given to interested users in a competitive manner as opposed to being assigned at random. The time-stamp

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<sup>1</sup> Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System, p.2, Satoshi Nakamoto. <https://bitcoin.org/bitcoin.pdf>

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function requires users of Bitcoin to first complete a tedious mathematical challenge (essentially guessing a correct random number). By design, the puzzle is equally difficult for each competitor (my puzzle is just as difficult as yours), yet each contestant's answer is different (my answer is different from yours). For better or worse, because winners earn a prize of a freshly created Bitcoin, the Bitcoin community refers to competitors as "miners" and refers to the process of validating (or timestamping) transactions as "mining"<sup>1</sup>.

not recorded in an earlier block. Each new block contains a cryptographic link to the immediately preceding block. Thus, all blocks are linked together in a "blockchain."<sup>2</sup>The blockchain thus extends backwards from the most recently mined block all the way to the first "genesis block" created by Satoshi Nakamoto in early 2009<sup>3</sup>.

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<sup>1</sup> Eric D. Chason, *opcit*, p.175.

<sup>2</sup> A blockchain is essentially a public, decentralized, digitized registry stored on peer-to-peer networked computers that enables the fully transparent storage and continuous updating of information, and their unchangeable concatenation in chains of transactions laid down in blocks. see Katrin Becker, *Blockchain Matters—Lex Cryptographic and the Displacement of Legal Symbolics and Imaginaries*, *Law and Critique* 33:113–130, under exclusive license to Springer Nature B.V. 2022 p. 114, <https://doi.org/10.1007/s10978-021-09317-8>

<sup>3</sup> To review Block #0, please visit:

## 2.6. Bitcoins Decentralized Transaction System

Because it offers alternatives for creating one's own money and a flexible transaction system, Bitcoin draws users' attention as a digital currency. The infrastructure also approves transactions in close to real time, so the central bank has no authority over discretionary decision-making or checking for transparency.<sup>1</sup> With the advancement of computer communication technology, electronic payment systems have been rapidly expanding and are eventually eliminating paper checks and physical cash in mature nations. However, Bitcoins do not support a group of knowledgeable specialists or a committee of elected decision-makers. Therefore, algorithmic digital currencies like Bitcoin can put pressure on central banks to adopt stricter monetary policy<sup>2</sup>.

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<https://www.blockchain.com/pt/btc/block/00000000019d6689c085ae165831e934ff763ae46a2a6c172b3f1b60a8ce26f>

<sup>1</sup> Glaser, Florian and Glaser, Florian and Zimmermann, Kai and Haferkorn, Martin and Haferkorn, Martin and Weber, Moritz Christian and Siering, Michael, Bitcoin - Asset or Currency? Revealing Users' Hidden Intentions (April 15, 2014). ECIS 2014 (Tel Aviv), Available at SSRN: <https://ssrn.com/abstract=2425247>

<sup>2</sup> Raskin, M., & Yermack, D, Digital currencies, decentralized ledgers, and the future of central banking (No. w22238). National Bureau of Economic Research, 2016, p. 2. <https://www.nber.org/papers/w22238>

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### **3. Legal & Challenges in Bitcoin**

Clients use Bitcoin as a means of financial exchange even though it is an internet currency that is not governed by governments or banks. It is crucial to comprehend one's moral and legal obligations to act in one's best interests. Governments are unsure of how to control its usage, users have little to no legal protection while using Bitcoin, and because of Bitcoin, black market websites are mushrooming everywhere. Every time a new technology enters the world, issues like these develop, and it is up to policymakers and citizens to decide how to address such issues. For individuals looking to use Bitcoin for Theft, Fraud, Money Laundering, or the use of Bitcoins in nations with strict Internet controls, there are several opportunities available. Bitcoin allows revolutionaries and illicit bloggers to pay for services like web publishing without having to divulge their real identities, but it also exposes individuals to crooks<sup>1</sup>.

#### **3.1. Legal status of Bitcoin in different countries**

Central authority is no longer necessary thanks to bitcoin technology. The entire Bitcoin network users feel confident in lawful Bitcoin transactions and issues, allowing the central banks

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<sup>1</sup> Rehana Parveen, Alanoud Alajmi, opcit, p.4.



or government to regulate the flow of Bitcoins. To address this new virtual currency and stop unlawful operations, the government may modify the money transmitter rules against current anti-money laundering efforts<sup>1</sup>.

The European Court on October 22, 2015 issued a decree according to which exchanges of Bitcoins and other digital money is exempt from VAT. Similarly, the European Court of Justice recommended the exclusion of crypto currencies from assets subject to taxation. Unfortunately, not all countries treat Bitcoin and other crypto currencies as progressively, as the European Union does<sup>2</sup>.

In this regard, the Japanese government's strategy acknowledges the significance of legalizing cryptocurrency trading as opposed to allowing them to circulate in an unregulated environment.

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<sup>1</sup> Kelsey L. Penrose, Banking on Bitcoin: Applying Anti-Money Laundering and Money Transmitter Laws, 18 N.C. Banking Inst. 529 (2013). Available at: <https://scholarship.law.unc.edu/ncbi/vol18/iss2/12>

<sup>2</sup> PRASOLOV, Valeriy I. Aspects of Crypto Currency's Legislative Regulation. Utopía y Praxis Latinoamericana, vol. 23, no. 82, 2018. Universidad del Zulia, Venezuela. Available in: <https://www.redalyc.org/articulo.oa?id=27957591021> DOI: <https://doi.org/10.5281/zenodo.1509820>

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The Japanese Financial Services Authority (FSA), which legalizes, regulates, and safeguards the rights of investors, was the first regulatory body in the world to give licenses to cryptocurrency exchanges (platforms that allow trading choices on cryptocurrencies, like Coinbase). The Japanese example demonstrates that present cryptocurrency regulation is limited in scope and motivated by an immediate financial gain from the current market environment. This is because it does not affect any other feature of these cryptocurrencies, particularly their value, and only focuses on making trading in Bitcoin and Ethereum legal.

Other recently published draft regulations, such as in Australia, are to include Bitcoin and cryptocurrency exchanges for the first time, but they mainly focus on anti-money laundering and counter-terrorism financing (AML/CTF) laws<sup>1</sup>.

The Central Bank of Russia announced on October 13, 2020, that it will test the viability of a central bank digital currency (CBDC)

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<sup>1</sup>Hanane boujemi, policy and regulatory challenges to deploying blockchain technologies, dissertation submitted in partial fulfilment of the requirements for the degree of master of arts in contemporary diplomacy (internet governance), university of malta, december 2017, p.34. [https://www.diplomacy.edu/wp-content/uploads/2021/06/111220181248\\_Boujemi.pdf](https://www.diplomacy.edu/wp-content/uploads/2021/06/111220181248_Boujemi.pdf)

with a small group of participants and following open consultations. Like cash and non-cash payments, the CBR report states that CBDC will serve the following three purposes: as a mode of payment, a measure of worth, and a store of value. All three versions of the Russian currency will be interchangeable and identical to one another: 1 ruble in cash, 1 ruble in cashless settlement, and 1 ruble in CBDC. Although there are many similarities between CBDC and cryptocurrencies, these two technologies are fundamentally different. Cryptocurrencies do not offer consumer rights protection and do not have a single issuer. They cannot be utilized in Russia to purchase goods and services, and no organization protects such assets. The Russian Central Bank's obligation to implement CBDC through digital means. It is a fiat currency, meaning that the government, through the Central Bank, guarantees its operation and stability. When purchasing goods and services in Russian stores with payment terminals set up to accept it, customers can use their digital ruble wallet. Russians might be able to earn salaries and benefits in the digital ruble, according to the Central Bank's suggestion. The State Duma anticipates the trial of the digital ruble to begin in the first half of 2021.

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In other words, the CBDC is not a cryptocurrency in the traditional sense but rather another form of non-cash payment. Reduced transaction costs and bank stress, more cross-border payments, less reliance on the dollar, and reduced susceptibility to sanctions are the primary drivers behind the establishment of CBDC. The Central Bank plans to employ CBDC, among other things, in sparsely populated and distant locations with restricted access to the financial system. As a result, more people will have access to financial services, increasing their coverage of the population<sup>1</sup>.

Regulation of virtual currencies already exists in Germany and is based on Section 1 of Article 32 of the German Banking Act (Kreditwesengesetz). In accordance with this regulation, the German Federal Financial Supervisory Agency must give formal permission to anybody conducting banking activity or financial services for commercial reasons in Germany (GFFSA). In Sections 1a and 2 of the German Banking Act, the definition of financial services is provided. The Act expressly defines

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<sup>1</sup> Ekaterina Dorokhova, Elena Dorokhova, Tatyana Belykh, Galina Koren'kova, Economic and Legal Aspects of Cryptocurrency Usage in Russia, *Advances in Economics, Business and Management Research*, volume 181, Proceedings of the 3rd International Conference Spatial Development of Territories (SDT 2020), p.331. <https://doi.org/10.2991/aebmr.k.210710.055>

financial services as including the issuance and acceptance of financial instruments. Some financial products are referred to as "Units of Account" (Rechnungseinheiten). Therefore, in accordance with the German Banking Act, the GFFSA has classed "digital currencies," in particular Bitcoins, as units of account. Additionally, the agency and several regional courts [4] have stated the view that businesses do not necessarily need to have a location in Germany to be required to obtain a licence; rather, they only need to serve German clients. Therefore, under German law, commercial Bitcoin platform operators—at least those based in Germany and/or providing services to German clients—need to obtain a license from the GFFSA. According to Section 1 Nr. 2 of Section 54 of the German Banking Act, providing financial services without the requisite license is punishable by jail or a fine.

In Germany, the requirement for a license directly results from already-existing rules, to sum up. That is because the provisions in the German Banking Act are so vague and open-ended that new innovations like virtual currencies can be included. Therefore, according to German regulatory law, new regulations for the registration of Bitcoin firms are not required.

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In the US Bitcoin services have been deemed subject to regulation. While, as mentioned above, the New York State Department of Financial Services is intensively considering the introduction of a special Bit License for all businesses operating (primarily) with decentralized virtual currencies, there are already some legal rules in place that establish a licensing requirement for money transmitters. These rules can be used to control Bitcoin services.

Money transmitters are regulated under federal law as well as under state law in the US. Federal law includes a registration requirement for money transmitting services due to 31 U.S. Code § 5530. Thus, Bitcoin services must register with the Financial Crimes Enforcement Network (FinCEN), if they fall under the category of money transmitters in the sense of the provision. FinCEN does not differentiate between transmitters of official currencies on the one hand and Bitcoin transmitters on the other, hence affirming a registration requirement. Whereas US federal law does not go beyond the need for a registration, additional licensing requirements stem from US state laws causing two big problems. The first problem relates to unclear definitions of the term money transmitter in state law. Therefore, it is quite difficult to identify which licensing requirements apply to a

single Bitcoin business. The bigger issue is that a money transmitter probably needs a license in every state in which it offers its services. The latter issue arises on the international level too because companies offering services on the internet must comply with diverse legal orders. The German authority for instance, takes the view that conducting financial services in Germany means offering financial products to German citizens, no matter where the company is located. However, discussion surrounding this question has been controversial, particularly in view of the extraterritorial effect that such an opinion involves. Given the above, Bitcoin services fall under licensing provisions of both legal orders. In the US, as well as in Germany, governments are keen to license Bitcoin transactions, mainly to control (and survey) the transfer of money <sup>1</sup>.

On the other hand, only a small number of states warned investors and users about the serious hazards connected with using digital currencies, while other countries, like China and India, adopted a forceful and antagonistic stance. Although it is

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<sup>1</sup> Boehm, F., & Pesch, P.J. (2014). Bitcoin: A First Legal Analysis - With Reference to German and US-American Law. Financial Cryptography Workshops. <https://www.semanticscholar.org/paper/Bitcoin%3A-A-First-Legal-Analysis-With-Reference-to-Boehm-Pesch/5a3df2c3f7d7dae520791dc885628123ec9fd7be>

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illegal for Chinese financial institutions to accept Bitcoin, individuals are free to invest in Bitcoin anyway they see fit. The Reserve Bank of India is contemplating implementing blockchain technology in the banking technology <sup>1</sup>.

### **3.2. International Legislation on Bitcoin Concerning Money Laundering and Bitcoin's Involvement in Terrorism**

Given the characteristics of Bitcoin, including its anonymity, tax-free status, independence from central authority, and ease of use in transactions, it is not surprising that in some situations, Bitcoin is viewed as a tool for illegal activities like money laundering or terrorism.

As a result, countless educational seminars, and conferences with briefings on Bitcoin's subject are held all over the world. These include international authorities like Europol and Interpol. In order to further strengthen international cooperation and operational focus against the abuse of virtual currencies, such as Bitcoin, for criminal transactions and money laundering, the European Cybercrime Centre (E.C.3) of Europol and the US ICE Homeland Security Investigations (HSI) jointly organized the Virtual Currencies Conference in 2015, which was held at

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<sup>1</sup> Rehana Parveen, Alanoud Alajmi, opcit, p.



Europol's Headquarters in the Hague.<sup>1</sup> In order to collaborate and share knowledge with peers from other countries, Europol, Interpol, and the Basel Institute on Governance formed a collaboration in 2016 to form a working group on money laundering with digital currencies<sup>2</sup>.

Following the attacks in Paris and Brussels, the European Union bodies expressed alarm about the use of virtual currencies by terrorists. This is because, as investigations revealed, the aforementioned terroristic attacks were funded secretly through online or pre-paid card payments<sup>3</sup>.

However, not all nations view Bitcoin as a risky tool for terrorism and money laundering. Money laundering risk involving such digital currency as Bitcoin is characterized as

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<sup>1</sup> Press Release, US Authorities & Europol Focus On Combating The Abuse Of Virtual Currencies, 24.06.2015, available at: <https://www.europol.europa.eu/newsroom/news/us-authorities-europol-focus-combating-abuse-of-virtual-currencies>

<sup>2</sup> Press Release, Money Laundering With Digital Currencies: Working Group Established, 09.09.2016, available at: <https://www.europol.europa.eu/newsroom/news/money-laundering-digital-currencies-working-group-established>, (accessed 21.12.2016)

<sup>3</sup> Guarascio, Francesco, (2015), EU clamps down on bitcoin, anonymous payments to curb terrorism funding, Reuters, 19.11.2015, available at: <http://www.reuters.com/article/us-france-shooting-eu-terrorism-funding-idUSKCN0T81 BW20151 119>, (accessed 21.12.2016);

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"minimal" in the UK Home Office report on the UK national risk assessment of money laundering and terrorist funding<sup>1</sup>.

Despite third-party reports suggesting the use of anonymous currencies, like BTC, the financing of terrorist operations by the Islamic State is largely unknown, according to Europol's report. It is obvious that the costs of travel, the renting of cars and safe houses, the acquisition of means of communication, weapons, and explosives may involve significant sums of money, but there is no evidence of the Islamic State financing networks in existence<sup>2</sup>.

The European Union works to keep its laws current considering the current terrorism threat and the rapid advancement of technology. The European Commission is willing to: In the Proposal for revising Directive (EU) 2015/849 on the prevention of the use of the financial system for the purposes of money

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<sup>1</sup> The UK national risk assessment of money laundering and terrorist financing report, the UK Home Office, 2015, available at: <https://www.gov.uk/government/publications/uk-national-risk-assessment-of-money-laundering-and-terrorist-financing>, (accessed 21.12.2016).

<sup>2</sup> Changes in modus operandi of Islamic State terrorist attacks, Europol report, 18.01.2016, available at: <https://www.europol.europa.eu/publications-documents/changes-in-modus-operandi-of-islamic-state-terrorist-attacks>, (accessed 21.12.2016).

laundering or terrorist financing and amending the Directive 2009/101/EC,

- To enact strict anti-money laundering legislation that covers virtual currency exchange services and suppliers of virtual currency wallets.
- To limit the use of virtual currencies in an anonymous manner.
- To implement client due diligence procedures when converting virtual currencies into actual money.
- To require Bitcoin businesses to gather identification documents from their clients.
- To offer mechanisms that will allow national Financial Intelligence Units to link virtual currency addresses to the identification of their owners.
- To allow users to voluntarily self-declare to designated authorities should be further evaluated.

According to a forementioned, national legislators are attempting to amend laws or organize international data exchange to prevent crimes related to terrorism and money laundering using Bitcoin. This is due to Bitcoin's nature, anonymity, involvement in many transactions on the Internet surface, lack of governmental control, and many international enforcement bodies. Therefore,

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to successfully implement any modifications and effectively ban the use of Bitcoin in illegal activities, such regulators must first define the legal status of Bitcoin<sup>1</sup>.

The Financial Crimes Enforcement Network (FinCEN) of the US Treasury Department has required bitcoin exchanges to register and abide by these regulations since 2013; other nations have started doing the same. Several noncompliant exchanges have faced legal action since 2017. The most recent development is that the EU wants to change the Fourth Anti-Money Laundering Directive to cover companies that provide hosted wallet services with regulation, including the know-your-customer (KYC) need. That might eventually include the majority of bitcoin users<sup>2</sup>.

### **3.3.Challenges with Bitcoin**

As a digital money, Bitcoin faces a number of technological and legal issues, some of which are listed below:

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<sup>1</sup> Olena Demchenko, opcit.

<sup>2</sup> Ross Anderson, Ilia Shumailov and Mansoor Ahmed, Cambridge University Computer Laboratory, Making Bitcoin Legal,2020 p.6.H, <https://www.cl.cam.ac.uk/~rja14/Papers/making-bitcoin-legal.pdf>

### ***3.3.1. Scopes Bitcoin Creates***

Since the Bitcoin protocol is entirely decentralized, a single entity oversees the whole financial system. The governing party has increased its motivational influence and credibility toward bitcoin miners. Additionally, Bitcoin grows in acceptance in regular economic life, which benefits e-money enterprises. Typically, this kind of cryptocurrency opens doors for virtual transactions, specifically electric money, in the banking sector.

In truth, Bitcoin offers the benefits of extremely speedy payments around the world and the potential to reverse inflations brought on by governments without the risk of government surveillance. Technically, all transactions are highly private when compared to those involving

Bitcoin enables fully worldwide transactions, which have frequently been contrasted with the conventional transaction system, which is still in use for straightforward transactions. However, cryptocurrencies bring about several novel and creative uses, including micropayments, smart property contracts, and escrow transactions for dispute resolution. Bitcoin is increasingly emerging as a viable alternative to the US dollar and the euro. The stakeholders are concerned about Bitcoin's legal

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position and the government's policies even though it dominates the global economy. The use of Bitcoin to launder money used in the trade of illegal drugs, child pornography, and tax avoidance<sup>1</sup>.

### *3.3.2. Anonymity*

The basis for anonymity in Bitcoin technology is the ability for users to generate an unlimited number of anonymous Bitcoin addresses for their transactions.

It was a good starting point at first, but the non-anonymous online infrastructure that supports it has turned out to be a threat to the anonymity of all Bitcoin transactions in the blockchain. Bitcoin holds the distinction of being a "safe and anonymous digital currency," making it nearly hard to identify the actual user. Bitcoin also makes it more difficult to determine the relationship between the sender and the recipient of transactions by combining the coins of many users, which further increases anonymity. said that Bitcoin exposes extremely little information and frequently invents new pseudonyms. This was asserted in the initial identification to maintain a high level of privacy.

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<sup>1</sup> Reuben Grinberg, Bitcoin: An Innovative Alternative Digital Currency, 4 Hastings Sci. & Tech. L.J. 159 (2012). Available at: [https://repository.uchastings.edu/hastings\\_science\\_technology\\_law\\_journal/vol4/iss1/3](https://repository.uchastings.edu/hastings_science_technology_law_journal/vol4/iss1/3)

Traditional banks, on the other hand, also offer anonymity because the affiliated bankers never divulge any official identifying documents to an unauthorized person.<sup>1</sup>

Really, the issue of offering extremely strict anonymity actually brings about more issues, i.e., a perfect crime may happen. Revocable anonymity is the expert's advised remedy as a result, and at that time permission is granted to identify the unethical transactions. For instance, the central government has the authority to continue monitoring banks operations under the traditional banking system<sup>2</sup>.

### ***3.3.3. Volatility (fluctuation and not governed by central bank)***

Extremely volatile, Bitcoin trades at various rates on various exchanges without allowing for price arbitrage. The daily exchange rate of Bitcoin with respect to the US dollar shows almost little association with the exchange rates of other currencies, including the euro, British pound, Swiss franc, yen, and gold.

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<sup>1</sup> Sharman, J C. 2010. "Shopping for Anonymous Shell Companies: An Audit Study of Anonymity and Crime in the International Financial System." *Journal of Economic Perspectives*, 24 (4): 127-40. DOI: 10.1257/jep.24.4.127,

<https://www.aeaweb.org/articles?id=10.1257/jep.24.4.127>

<sup>2</sup> Abdirahman Gulled, Jakaria Hossain, opcit, p.16.

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However, there are risks of volatility in the conventional banking system because of financial flows and globalization. The market participants, pressure on profitability, or escalating rivalry all affect the banking system's volatility. Due to these factors, long-standing banks work to defend the existing limitations on all types of banking activity by maintaining the laws and regulations<sup>1</sup>.

In the case of Bitcoin, regulatory ambiguity, a small market cap, poor liquidity, limited adoption, and other factors all contribute to its volatility. Thus, many who embrace bitcoin are enticed to use it in the hopes of earning quick returns on their investments. They also contend that cryptocurrency's volatility may make it difficult for it to become widely accepted as a form of exchange.

### ***3.3.4. Effect on Traditional Transaction Method***

Franco claims that as compared to other well-established financial organizations, the monetary foundation of Bitcoin is still quite small at the moment. The influence of cryptocurrencies on conventional transaction policy is thought to be extremely

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<sup>1</sup> Honohan, Patrick and Honohan, Patrick, Banking System Failures in Developing and Transition Countries: Diagnosis and Predictions (January 1997). BIS Working Paper No. 39, Available at SSRN: <https://ssrn.com/abstract=860624> or <http://dx.doi.org/10.2139/ssrn.860624>



little. Because central banks run so many financial operations, customers are urged not to trust other businesses.

Benjamin discovered throughout his investigation that traditional institutions (like banks) maintain assets such as gold or deposit money on their accounts for security reasons. Additionally, reserve banking expands the money supply in response to consumer demand, such as for loans. However, Bitcoin is now specifically positioned as a type of digital money that reflects the status of money in the modern monetary system.

Since cryptocurrencies use unique algorithms and are traded in novel ways, their use is currently very widespread. Market capitalization for the currently circulating and generally accessible Bitcoin has already been captured.<sup>1</sup>

Additionally, Bitcoin is regarded as being more successful in comparison to traditional transactions due to its increased trade volume. Bitcoin's operations and payment system have a big impact on traditional transaction systems, but it was primarily created to make online payments simpler. Relying on traditional payment networks like Visa, MasterCard, and Interact has a

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<sup>1</sup> Abdirahman Gulled, Jakaria Hossain, opcit, p.17.

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drawback. Additionally, traditional payment methods like checks and cash have been steadily declining for many years, whereas Bitcoin payments are expanding year after year.<sup>1</sup>

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<sup>1</sup> GEOFF GORDON, (2017). The truth about bitcoin and its impact on business. Available at: <https://www.theglobeandmail.com/report-on-business/small-business/sb-money/thetruth-about-bitcoin-and-its-impact-on-business/article19824887/>

#### **4- Conclusion**

Bitcoin differs from conventional transaction systems in that it is decentralized, which means that no single entity issues or controls it. The blockchain technology that forms the basis of the Bitcoin transaction system allows users to conduct transactions directly with one another, doing away with the necessity for a middleman in the transaction process. In the bitcoin economy, users themselves carry out mining activities, which validates and approves transactions. We have also talked about the increased level of anonymity that bitcoin users can enjoy, which is not achievable with conventional transaction systems. In addition, it has been mentioned that compared to other payment methods, bitcoin transfers have cheaper fees and happen more quickly. We can draw the conclusion that society has benefited from the Bitcoin transaction system. It offers advantages to those who are either subject to severe capital controls, face other limitations on money transfers, lack access to financial institutions, or have no connections to the global economy. In this essay, we examined the Bitcoin virtual currency and its transactional architecture.

We have mapped Bitcoin's distinctive characteristics and examined the significance of these qualities from a variety of

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perspectives. We have addressed the extent to which Bitcoin offers users of the currency opportunities. Additionally, we have examined and emphasized the difficulties that the currency poses to both users and authorities.

### **Abbreviations**

AML Anti-Money-Laundering

CBDC A Central Bank Digital Currency

CTF Counter-Terrorism Financing

ETF Exchange-Traded Funds

E.C.3 European Cybercrime Centre

FinCEN Crimes Enforcement Network

FSA Financial Services Authority

GFFSA German Federal Financial Supervisory Agency

HSI Homeland Security Investigations

KYC Know-Your-Customer

P2P Peer-To-Peer

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