Various Dimensions and Aspects of the Legal Problems of the Blockchain Technology

Bedrettin Gürcan
University of Szeged
Faculty of Law and Political Sciences
Ph.D. Student

Introduction

With technological developments in IT, many of the effective regulations start to have problems to answer the new technologic features and possibilities. These developments take the advantage of the legal loophole and uncontrollably grow in the worldwide. One another aspect of the developments on the IT is we start to talk about not only national legal gaps, but also international legal gaps due to the nature of the IT technology worldwide network.

The one of the most promising technology since 2010 is blockchain technology, which is the technology that is open source, software-based, peer to peer technology. It uses a distributed ledger, to store users' transactions. Due to emerging technology of blockchain and cryptocurrencies together, differences of the blockchain technology and cryptocurrencies could not be understood well. The blockchain is a technology, behind of the cryptocurrencies. Cryptocurrency is just a small part of the main driven technology of the blockchain.

There have been several legal concerns of the services that stored or provided a base on the blockchain technology. There is some research to try to determine which kind of legal gaps may be emerged due to blockchain technology. In addition, the big part of the research on the topic examines current legal problems of the blockchain services. However, it has not been studied is the wide scope of the impact of the blockchain technology in the different legal fields of law.

This study is going to include extensive research into the motivations to blockchain legal frame on the several fields of the law. We will also examine the different solutions for the problem or legal gaps of the blockchain services in order to shape the legal framework of the blockchain technology.

Cryptocurrency Services on the Blockchain Technology

In 2009, first decentralized digital currency Bitcoin was launched. Bitcoin was developed by an unidentified programmer, or group of programmers, under the name of Satoshi Nakamoto,[1] who is indicated as the author of a white paper describing the basics of the functioning of Bitcoin.

Since then currently, there are 2074 different cryptocurrencies on the market[2]. Due to the nature of the decentralized structure of the cryptocurrencies, it has grown massively within 9 years. The researches on the cryptocurrency at the beginning try to determine which regulations may implement to cryptocurrencies. The first step was choosing regulations, which must be obeyed by the cryptocurrency service providers.

[1] Nakamoto, Satoshi, Bitcoin: A Peer-to-Peer Electronic Cash System, Retrieved March 18, 2019, from www.bitcoin.org
[2] Number of the cryptocurrencies at the market, 2018, https://coinmarketcap.com

Gamble's research makes clear the legality and regulatory challenges of decentralized cryptocurrencies from the western perspective.[3] He makes the basic explanation of the cryptocurrency system and compares the regulations of the Canada, Australia, USA, UK, where the countries all perform according to Anglo Saxon Legal System. It is a good point to examine the countries that belong to the same legal family. In his paper, he focuses on the aspect of the decentralization and its collective power on the cryptocurrency while presenting authoritative stakeholders conundrum. The common point of these western states regulative aspect is KYC (Know Your Client) and AML (Anti Money Laundering) Acts. Cryptocurrency service providers must adhere to the same rules that apply to banks and other financial institutions due to exchange nature of the cryptocurrencies.[4] She draws attention that western states clarify cryptocurrencies as an asset rather than currency due to nature of cryptocurrency. However, cryptocurrency does not comply with rules of the institutionalized financial sector.

Bryans and Anema's study shows a detailed scheme of anti-money laundering act of the USA and how it can be used for cryptocurrencies.[5] Their research shows federal and state law aspects. It is just a small example of how money laundering acts effect cryptocurrency ecosystem. Indeed, when the thinking of the global scope of the cryptocurrency market, this study shows just a small part of the world as an example.

However, in this research, the concept of money, and security is not being discussed. These concepts may be the potential description of the cryptocurrency. Without the determination of the concept of the cryptocurrency, it is not being able to determine which regulation must be followed.

The biggest obstacle of cryptocurrencies to use as money is volatility. In order to use Bitcoin to store value over time, users need to quantify their expectations about the future value of the currency. [6]

When Gamble discusses the regulatory aspect of cryptocurrencies in his research, one another research on the cryptocurrency raises a question why cryptocurrencies do not warrant increased governmental regulations. [7] Lindquist's study makes a detailed explanation in the light of current regulations about why cryptocurrencies are not able to obey current regulations. [8] He chose most well-known and first cryptocurrency Bitcoin to examine its features and these features' current legal situation. His study draws attention on the AML (Anti-money laundering) and KYC (Know your client) Acts as Glaser. However, he makes a wider examination in the scope of FATS (Financial Action Task Force) 2010 Report [9] on new

3 Gamble, Connor. (2017). The Legality and Regulatory Challenges of the Decentralised Cyrpto Currency:A Western Perspective, 20 Int. Trade & Bus. Rev., p. 361.
4 Helga Danova. (2014, July 20). KYC, AAL and Bitcoin. November 27, 2017 Available at: http://.cex.io: http://blog.cex.io/cryptonews/kyc-amland- bitcoin-6086.
5 Danton Bryans - Franne Jelske Anema, (2018). Bitcoin and Money Laundering: Mining for an effective solution, p. 455-472.
6 Glaser, Florian. C. (2014). Bitcoin-asset or currency? Revealing users' hidden intentions. In Twenty Second European Conference on Information Systems. Tel Aviv, p. 5.
7 Ibid.
8 Lindquist, Aaron. (2014). Funny Money: Why Bitcoin Does Not Warrant Increased Governmental Regulation. 1 Journel of Global Justice and Public Policy, (P. 79-114).
9 FATS (Financial Action Task Force) 2010 Report, P. 17, See: http://www.fatf-gafi.org/. Available at 20 March 2019

Payment Methods. In his research, he shows clearly concerns of the Bitcoin such as customer due diligence, record keeping, value limits, methods of funding, geographical limits, usage limits, and segmentation services. It shows that many requirements of a secure payment system cannot be met by Bitcoin. However, the first question must be raised whether Bitcoin is a payment method or not. The answer to this question is discussed by Kelvin FK Low.[10] He states that since Bitcoin is conceived of as a cryptocurrency and electronic cash, it seems sensible to begin a proprietary analysis by way of a comparison to more established forms of money. They attempt to fill that how the private law might deal with cryptocurrency ownership. They agree upon that as we mentioned above, clarity of the form of cryptocurrency as to private law nature will help regulators determine how best they can or should be regulated.

One of the important current problems of the blockchain is how tax regulations implement to cryptocurrency. Lindquist mentions the taxation of the cryptocurrencies on the example of the German Tax Regulations. [11] He states that classifying the cryptocurrencies as money, private money, taxable voucher or any kind of financial instrument, governments can bring cryptocurrencies within their current tax laws. Lindquist makes the narrow explanation for capital gain and income tax and sale tax perspective. However, the taxation of the cryptocurrencies is not that easy and narrow. The biggest discussion at the beginning of 2014 was the VAT exemption of the cryptocurrencies.

In 2015, the Court of Justice of the European Union qualified that Bitcoin as a digital currency is a currency, not a good and transactions relating to, bank notes, currency, and coins used as legal tender, and exempt from the VAT, and stated ‘’ VAT Directive must be interpreted as meaning that the supply of services such as those at issue in the main proceedings, which consist of the exchange of traditional currencies for units of the ‘bitcoin’ virtual currency and vice versa, performed in return for payment of a sum equal to the difference between, on the one hand, the price paid by the operator to purchase the currency and, on the other hand, the price at which he sells that currency to his clients, are transactions exempt from VAT’’. [12]

The research conducted by Ainsworth and Shact shows the possibility to use blockchain technology to tackle tax frauds. [13] In their research, they discuss whether the blockchain database can be used to track commercial transactions and tackle taxation frauds by means of trustless nature. However, even this possibility brings many legal questions on the mind as data protection of these transactions. We will discuss data protection on the blockchain below.

One another legal issue on the cryptocurrency is possible using of cryptocurrency transfers with the purpose of criminal activities. Ante, on his researchstates that the anonymity of cryptocurrency offers better conditions than established payment methods and it makes the use of cryptocurrency tempting for purposes such as ML (Money Laundering), terrorist financing or tax evasion. [14] It is a nice source to compare on the topic of money laundering

[10] Kelvin FK Low, E. G. (2017). Bitcoin and other cyrptocurrencies as property? Law, Innovation and Technology, Volume: 9, Issue: 2, p. 235-268.
[11] Ibid
[12] Judgment in Case Skatteverket v David Hedqvist., C-264/14, Paragraph 58/1-2 (Court of Justice of the European Union October 22, 2015).
[13] Richard T. Ainsworth, Andrew Shact (2016, June 20). Blockchain (Distrubuted Ledger Technology) Solves VAT Fraud. Law & Economics Working Paper No. 16-41.
[14] Ante, Lennart (2018) "Cryptocurrency, Blockchain And Crime." In *The Money Laundering Market: Regulating the Criminal Economy*, edited by McCarthy Killian J., Agenda Publishing, p. 171-198.

with the research of the Bryans and Anema. The difference of the Ante's research is that he also draws attention to ICOs (Initial Coin Offerings, which means blockchain based crowdfunding). This area of blockchain is surprisingly neglected. The research of (Ante, 2018) presented in the determination which regulations best tackle money laundering and terrorist financing. In addition, it gives an example of regulative bodies and their approaches to the ICOs from different countries, namely Switzerland, Germany, USA, Singapore.

Salami's study discusses the using of the RegTech (regulatory technology) to combat terrorist financing in the worldwide.[15] The study includes how the Financial Action Task Force (FATF) combats terrorist financing through the cryptocurrencies. It assesses the limitations of the risk-based approach of the FATF Anti Money Laundering and Financing of Terrorism (AML/CFT) provisions and the effect of these on transactions involving cryptocurrencies.

As it has seen that the biggest legal issues on the cryptocurrency are a determination of the cryptocurrency form, know your customer and anti-money laundering acts, taxation and terrorist financing. These studies above we reviewed are pioneers of the research on this topic. However, there are clear needs that quite detailed studies in this area rather than separate researches. The local regulations must be examined in detail in wider aspect of criminal law, financial regulations, regulative body's decisions, and international acts.

Data Privacy on the Blockchain Technology

The blockchain is a technology store billions of data on its database, which is locked by the every new blocked. Its meaning is every data stored on the blockchain database is being added there on the following consensus of every user on the database. To chancing of any single data on the database of blockchain requires the same consensus of the database, which means billion of block acceptance to change it. Due to the nature of blockchain, data stored on the blockchain is quite secure, almost impossible to hacked and changed.

However, on the data privacy side, there are several rights of the data owners let them control their data freely. However, any data added on the blockchain will be controlled by the whole system consensus. In this respect, blockchain nature conflicts with the data protection regulations. In this part of our study, we review some studies on the data privacy on the blockchain technology.

Many researches focus on the new General Data Protection Regulation (GDPR) of the European Union. It came into force in May 2016, and have become applicable law since May 2018. There are many ongoing discussions on the enforcement of this new detailed regulation. However, this new law brings many questions about how the blockchain will be affected. Kulhari tries to find an answer for how the blockchain solutions may fit into GDPR. [16] In this study, he makes a comparison between GDPR provisions and blockchain features. New GDPR provisions are accountability on article 5, data minimization on article 5, control by the data subject on article 14 to 21, right to be forgotten on article 17, right to data portability on article 20, data protection by the design. on article 25.

[15] Iwa Salami (2018) Terrorism Financing with Virtual Currencies: Can Regulatory Technology Solutions Combat This?, Studies in Conflict & Terrorism, 41:12, p. 968-989.
[16] Kulhari, Shraddha. (2018). Fitting the Blockchain Solution into the GDPR Puzzle. Building the Blocks of a Data Protection Revolution.

The GDPR requires that the controller is responsible for making sure all privacy principles of GDPR as lawfulness, fairness and transparency, purpose limitation, data minimization, accuracy, storage limitation, and integrity and confidentiality are adhered to. Moreover, the GDPR requires that every organization can demonstrate compliance with all the principles. Kulhari states that permissioned blockchain can comply with GDPR's accountability while on the public blockchain, the joint controller would fail to meet the requirements of Article 26 of GDPR due to growing nodes of permissionless nodes. [17]GDPR article 5 regulates the data minimization. Kulhari's research shows that data minimisation on the blockchain may be failed due to the nature of blockchain. [18] Blockchain technology structure replicates the data with each node, which means that these data will be stored even it is not further processed. However, blockchain may find a solution with the anonymity of data by way of zero-knowledge proof.

The digital identity management solution provides on blockchain achieve the stated goal of the GDPR control by data subject to returning control over the user's personal data back. Right of erase is also another challenge of the Blockchain Technology. Gabison takes attention on the blockchain complex system when any stored would like to remove.[19] He shows that how the data erase may make the problem for blockchain technology, but no solution for this problem has been shown in this research. Kulhari suggests that indefinite locking of data on an immutable blockchain should actually be considered compliance with other data protection principles in the GDPR rather than seeking to admonish it under the right of erasing. It may be a reasonable solution for blockchain GDPR compliance.[20]

In the case of data portability, Kulhari divides the conditions of permission and public blockchains.[21] For public blockchain, nobody has access to the off-chain storage of the personal data and only pointers to the data are stored on the blockchain. It means that on the public blockchain, there is no controller of the servers as GDPR data portability means. In the case of permissioned blockchain, the user can use its own digital private key to download its data and move from one digital identity management platform on the blockchain to another one.

Copyright Law and the Blockchain Technology

There is inevitably value in the blockchain, and ownership of the IP in it will likely form an important consideration albeit the limitations on the patentability of software and business processes.

The research of Vogel [22] shows that when the internet is decentralized, copyright holders will have no party to sue in order to stop infringement. In this study, he discusses what are the liabilities of the software developers and internet service providers in the case of copyright infringements. He suggests that providing affordable licenses for software developers of decentralized applications, by doing so copyright holders may stand to influence the decentralized culture in their favour.

[17] Ibid.
[18] Ibid.
[19] Gabison, Garry (2016). Policy Considerations for the Blockchain Technology Public and Private Applications,. 19 SMU Sci. & Tech. L. Rev, p. 327.
[20] Ibid.
[21] Ibid.
[22] Vogel, Nick. (2015). The Great Decentralization: How Web 3.0 Will Weakend Copyrights.

Gabison takes attention that removing the content from the public blockchain within one jurisdiction does not affect the chain in another jurisdiction.[23] He shows four entities; copyright holders will turn one of them when their copyright materials are published on the blockchain. There are the original posters of the copyrighted materials, the Intermediary Service Providers (ISP), the public blockchain's creator, or the subsequent downloaders. In the USA and Europe ISPs have limited liability for internet content uploaded by their users. During his research, which entity may be a better option to protect copyrighted materials question is discussed.

One another topic blockchain may find a solution on the copyrights is collective rights management. (CRM) Individual copyright holders use Collective Management Organizations (CMOs) to trace and protect their rights. However, CMOs have been criticised over the years for lack of transparency, time lags in payment of royalties/mandates, abuse of their monopoly positions, and inefficiency. [24]

In this position, blockchain has potential to create agentless protection for copyrights management. Treise, Goldenfein and Hunter's study [25] states blockchain platforms can present the possibility of rightsholders becoming the intermediary themselves, or otherwise disintermediating the relationship between rightsholder and user. They draw attention that the blockchain protocol operates across jurisdictions, eliminating the territorial complexity, and absurdity, of national collective licensing systems and reciprocal relationships.

Savelyev[26] discusses advantages and challenges of the using of blockchain technology to distribute copyrights. As advantages of blockchain technology are accessibility of information about copyright ownership, transparency and traceability of its subsequent changes. However, he raises the questions about possible problems to use blockchain technology for coprytights management as how to align blockchain technology with jurisdictional privileges of state authorities.

Due to fast developments on the technology and more specifically blockchain, copyright protection will continue to be grey zone until to be found proper solutions.

Conclusion

In this study, we show some possible legal issues of the blockchain technology to give an overview to researches about cryptocurrencies and blockchain. We have reviewed some pioneer studies on the area of our research topic and try to make a general overview about the blockchain and its possible and current legislative problems.

The regulative trend in the world goes to understand better technology and categorized features of blockchain to determine their legal obligations. For example, taxation purpose on

[23] Ibid.
[24] Daniel J Gervais, (Re)structuring Copyright (Edward Elgar Publishing, 2017) n 69, Ch 11.
[25] Tresise, Annabel and Goldenfein, Jake and Hunter, Dan, What Blockchain Can and Can't Do for Copyright (August 6, 2018). (2018) 28 Australian Intellectual Property Journal 144. P. 14 Available at SSRN: https://ssrn.com/abstract=3227381.
[26] Savelyev, Alexander Ivanovitch, Copyright in the Blockchain Era: Promises and Challenges (November 21, 2017). Higher School of Economics Research Paper No. WP BRP 77/LAW/2017.AvailableSSRN: https://ssrn.com/abstract=3075246 or http://dx.doi.org/10.2139/ssrn.3075246: Law Wp Brp 77/Law/2017.

the cryptocurrency, the trend is accepting cryptocurrencies as money- payment methods and exclude from value-added taxes.

To sum up, we hear the name of blockchain technology and cryptocurrencies in the following years more. The countries, which can regulate this technology with the supportive approach, can enjoy the benefits and development of this cutting-edge technology. Adoption of blockchain technology to existing legislative system and regulations will not be easy. However, in the end, the law has to catch technology at some point. We are hoping that countries can make legislation without slowing down to technology besides protecting protect users and right holders.