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КРИПТОВАЛЮТА: ПРАВОВИЙ АСПЕКТ

Анотація

Сьогодні, у сучасному глобалізованому світі, криптовалютна діяльність впливає на фінансову систему в різних країнах світу, і кожній державі потрібна зовсім нова парадигма розвитку, як відповідна відповідь на проблеми та протиріччя розвитку криптовалютної активності. Слід зазначити, що протиріччя розвитку криптовалютної діяльності є поєднанням проблем, загроз та можливостей на різних рівнях, тому необхідно вивчити світовий досвід виникнення, функціонування та регулювання криптовалютної діяльності. У даній роботі аналізуються можливі правові проблеми з криптовалютою та пропонується матриця "Правова основа криптовалютної діяльності" в контексті потенціалу розвитку криптовалютної діяльності.

Ключові слова: криптовалюта, біткоїн, блокчейн, віртуальні гроші, криптовалютна діяльність.

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Аннотация

В настоящее время в современном глобализированном мире криптовалютная деятельность оказывает влияние на финансовую систему в разных странах мира, и для каждого государства требуется совершенно новая парадигма развития, как соответствующий ответ на проблемы и противоречия в развитии криптовалютной активности. Следует отметить, что противоречия в развитии криптовалютной деятельности представляют собой сочетание проблем, угроз и возможностей на разных уровнях, поэтому необходимо изучить мировой опыт возникновения, функционирования и развития правовой основы криптовалютной деятельности. В этой статье анализируются возможные правовые проблемы с криптовалютой и предлагается матрица "Правовые рамки криптовалютной деятельности" в контексте потенциала развития криптовалютной деятельности.

Ключевые слова: криптовалюта, биткоин, блокчейн, виртуальные деньги, криптовалютная деятельность.

Problem statement. At present we have to recognize that legal issues have arisen for cryptocurrency activity. It should be noted that cryptocurrency is an ambiguous multifaceted phenomenon. Undoubtedly, the optimal opinion about cryptocurrency lies somewhere between the two extreme views: positive and negative. It is possible that cryptocurrencies may have an important long-term impact on financial systems, but today, unfortunately,

there are many questions about their development potential in the different aspects, including legal issues.

Analysis of resent studies. From a researcher's point of view, cryptocurrency is now considered the means of enhancing development of the financial system. As Chohan, Usman W. noticed: "Cryptocurrencies are an area of heightened pecuniary, numismatic, technological, and investment interest, and yet a comprehensive understanding of their theories and foundations is still left wanting among many practitioners and stakeholders" [3]. The scholars like A. Greenberg (2011), K. Sagona-Stophel (2013), P. Schuettel (2017) have analyzed the features, benefits, problems and prospects of cryptocurrencies, impact on the payment system in the different regions of the world. So, Mitsuru Iwamura, Yukinobu Kitamura and Tsutomu Matsumoto (2014) point out potential problems with Bitcoin and propose some ideas for an alternative cryptocurrency [10]. In the context of the present study we wish to emphasize that despite the recognition of the need to develop legal framework, many aspects because of its complexity and contradiction are not investigated. So A. Guadamuz and C. Marsden (2015) stress that "the decentralised nature of Bitcoin and a lack of a clear set of actors may prompt some to think that it is not possible or desirable to attempt to regulate the electronic currency. The fact that there is no issuing body and no central authority in charge of the payment scheme may lead one to believe that it is not even possible to undertake any sort of regulatory effort. However, Bitcoin has some practices that make some form of regulation necessary if it becomes widespread" [7].

Main aim of the article is an attempt to study the potential legal problems with cryptocurrency and develop the matrix "Legal framework of cryptocurrency activity" in the context of the development potential of cryptocurrency activity based on existing trends.

Basic material. A cryptocurrency is a digital asset designed to work as a medium of exchange that uses cryptography to secure its transactions, to control the creation of additional units, and to verify the transfer of assets [1-3]. According to P. Schuettel (2017), "cryptocurrency (math based currency) is a digital currency in which encryption techniques are used to control the generation of units of currency and verify the transfer of funds, operating independently of a central bank. Cryptocurrency businesses oftentimes raise money through ICOs" [3]. Cryptocurrencies are classified as a subset of digital currencies and are also classified as a subset of alternative currencies and virtual currencies [9].

It is known that Bitcoin is the first cryptocurrency and as N. Gandal and

H. Halaburda (2014) notice: "Even though it was introduced in 2009, the digital currency Bitcoin caught the interest of the mainstream media only in 2012. Due to its supposed anonymity, Bitcoin and other digital currencies are often compared to cash" [11]. K. Sagona-Stophel stresses that "bitcoin, a peer-to-peer online virtual currency, is leading the trend of digital currencies around the world. It is decentralized, meaning there is no central bank or hub where Bitcoins are created and it's purely digital, meaning a physical representation of the currency is not needed" [6]. Since then, numerous cryptocurrencies have been created (table 1). These are frequently called altcoins, as a blend of bitcoin alternative. Bitcoin and its derivatives use decentralized control as opposed to centralized electronic money/central banking systems [9].

Table 1

Top Cryptocurrency 2017*

Crypto-currency	Trading Symbol	Established	Founder	Total coins	Price, \$ (December 2017)	Market cap
Bitcoin	BTC	04.02.2009	Satoshi Nakamoto	21000000 BTC	18940	\$317092831403
Ethereum	ETH	30.07.2015	Vitalik Buterin	~900000000 ETH	692,78	\$66768910833
Bitcoin Cash	BCH	01.08.2017	ViaBTC	210000000 BCH	1797,37	\$30301456422
Ripple	XRP	01.05.2013	Chris Larsen & Jed McCaleb	100000000000 XRP	0,7647	\$29623824065
Litecoin	LTC	07.10.2011	Charles Lee	84000000 LTC	298,05	\$16194385253
Dash	DASH	18.01.2014	eduffield	22000000 DASH	915,57	\$7101885388
NEM	XEM	31.03.2015	NemProject	8999999999 XEM	0,6429	\$5819147999
Monero	XMR	25.04.2014	monero	18446744 XMR	321,91	\$4956117192

*According to [4; 5; 8]

However, Mitsuru Iwamura, Yukinobu Kitamura and Tsutomu Matsumoto (2014) have summarized the major characteristics of the Bitcoin system [10, p. 2-3]:

(1) No authority is responsible for issuing and managing the Bitcoin system. It has operational rules open to everyone (i.e. transparent). No discretionary intervention is expected to happen. According to Nakamoto (2008), "a purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution".

(2) In order to verify that an owner does not double-spend a coin, the Bitcoin system uses a timestamp procedure on a peer-to-peer basis. All Bitcoin transactions are organized in the log into blocks, which contain a sequence number, a timestamp, the cryptographic hash of the previous block, some metadata, a nonce, and a set of valid Bitcoin transactions. The block forms a hash chain; each new block contains the cryptographic hash of its predecessor, allowing anyone to verify that no preceding block has been modified.

(3) Any player may choose to become a miner and mine new blocks that add new transactions to the log. A new block is a valid addition to the log if its nonce is chosen so that the new block's hash is less than a target value. This procedure is called the proof-of-work.

(4) Nakamoto (2008) also argues that the proof-of-work also solves the problem of determining representation in majority decision making. If the majority were based on one-IP-address-one-vote, it could be subverted by anyone able to allocate many IPs. Proof-of-work is essentially one-CPU-one-vote. The majority decision is represented by the longest chain, which has the greatest proof-of-work effort invested in it. If a majority of CPU power is controlled by honest nodes, the honest chain will grow the fastest and outpace any competing chains.

(5) To compensate for increasing hardware speed and varying interest in running nodes over time, the proof-of-work difficulty is determined by a moving average targeting an average number of blocks per hour.

(6) Incentive is paid for the proof-of-work. Every few years the creation rate of Bitcoin is halved, namely, it was 50 Bitcoins in 2009-2012, 25 Bitcoins in 2013-2016, 12.50 in 2017-2020, 6.25 in 2021-2024, and so on to zero in 2140. Incentive is also paid by transaction fees. If the output value of a transaction is less than its input value, the difference is a transaction fee that is added to the incentive value of the block containing the transaction. After reaching the total supply limit at 21 million Bitcoins, the incentive falls entirely on transaction fees.

Based on Mayer-Schönberger and Crowley, A. Guadamuz and C. Marsden (2015) have constructed four scenarios for virtual currencies: 'Virtual sovereigns': virtual currency providers will serve as regulators by enforcing the terms of their contracts with users to prevent cyber-fraud and ensure proper behaviour. Prohibition: governments could try to block their citizens from using virtual currencies that don't abide by government restrictions and regulations (governments have not been able to completely block access to Web sites nor will total prohibition on virtual currencies succeed). Selective prohibition: government minimize the real-world impact of virtual currencies

by, for instance, banning the sale of real-world goods for virtual currency. This section would also cover the banning and/or criminalisation of the use of the currency to pay for illegal activities or for money laundering. Selective regulation: regulators impose some restrictions to specific aspects of virtual currencies, such as taxation and the regulation of intermediaries. 'Real-world assisted virtual currency self-governance': governments provide support for mechanisms whereby users of virtual currencies can agree upon and enforce their own 'community standards' and rules of conduct [7].

It's important to mention that the legal framework of cryptocurrency activity varies from state to state very much. Some countries have allowed this activity, others have banned or restricted it. And some countries are waiting and making the definite observations. Available information allows us to propose the matrix "Legal framework of cryptocurrency activity" in the context of development potential of cryptocurrency activity in a country (figure 1) (*note: see more detailed information about this matrix in the next article*).

Dynamism and influence of legal regulation	State position (Legal aspect)			
	Regulation	Selective restrictions	Forbiddance	Waiting and observation
Active positive	High potential	High potential	High potential	Uncertainty
Passive positive	High potential	High/Medium potential	High/Medium potential	
Passive negative	Low potential	Low potential	Threat	
Active negative	Low potential/Threat	Threat	Threat	
Neutral	Uncertainty			
Some explanations: Potential (low, medium, high) – different levels of development potential of cryptocurrency activity in a country Threat – legal termination of cryptocurrency activity in a country Uncertainty – unclear trends of development of cryptocurrency activity in a country				

Figure 1. Matrix "Legal framework of cryptocurrency activity"*

*Source: author

Conclusions and directions of further researches. In the light of recent data by the experts, we can summarize that authorities understand the importance and a growing role of cryptocurrency activity for development of the country in context of global challenges and contradictions and try to develop the own position in this question. As A. Guadamuz and C. Marsden (2015) notice: "It is not possible at the moment to foresee what will happen next. If cryptocurrencies remain a niche

interest by the technical elites, then it is difficult to foresee that any of the above recommendations will be implemented. If on the other hand Bitcoin and other VCs finally become widespread, then there will surely be some sort of regulation at some point” [7].

Further research should be focused on developing and implementing of world experience in Ukraine based on a comprehensive analysis of complex problems and their solutions in the context of the legal regulation and development potential of cryptocurrency activity.

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CRYPTOCURRENCY: LEGAL ASPECT

Summary

At present, in the modern globalized world, the cryptocurrency activity has an impact on the financial system in the different countries of the world, and every state requires a completely new development paradigm as the appropriate response to problems and contradictions of the development of cryptocurrency activity. It should be noted that the contradictions of development of cryptocurrency activity present a mix of challenges, threats and opportunities at different levels, thus it is necessary to study the world experience of the emergence, functioning and the development of legal framework of cryptocurrency activity. The potential legal problems with cryptocurrency are analysed and the matrix “Legal framework of cryptocurrency activity” in the context of the development potential of cryptocurrency activity is suggested in this study.

Keywords: cryptocurrency, bitcoin, blockchain, virtual money, cryprocurrency activity.